Annual Report to Congress on Federal Government Energy Management and Conservation Programs Fiscal Year 2007

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EXECUTIVE SUMMARY

This report on Federal energy management for fiscal year (FY) 2007 provides information on energy consumption in Federal buildings, operations, and vehicles and documents activities conducted by Federal agencies under:

- The energy management requirements of section 543 of the National Energy Conservation Policy Act (NECPA), as amended (42 U.S.C. § 8253), including the energy consumption reduction requirements;
- The energy savings performance contract authority of Title VIII of NECPA (42 U.S.C. § 8287-8287d);
- The renewable energy purchase goal under section 203 of the Energy Policy Act of 2005 (EPACT 2005) (42 U.S.C. 15852);
- The energy management training requirements of section 157 of the Energy Policy Act of 1992 (EPACT 1992) (42 U.S.C. § 8262c); and
- Executive Order 13423 of January 24, 2007, "Strengthening Federal Environmental, Energy, and Transportation Management". (72 FR 3919; January 24, 2007)

The energy management requirements of the Energy Security and Independence Act of 2007 (Pub. L. No. 110-140; EISA), signed into law on December 19, 2007, will be addressed in the annual report for FY 2008.

OVERVIEW OF CONSUMPTION AND COSTS

- Based on reports submitted to the Department of Energy (DOE) by 30 Federal agencies, the total primary energy consumption of the Government of the United States, including energy consumed to produce, process, and transport energy, was approximately 1.6 quadrillion British thermal units (Btu) or "quads" during FY 2007.
    - These 1.6 quads, consumed by the Government in buildings and operations to provide essential services to its citizens, including the defense of the Nation, represent approximately 1.5 percent of the total 101.6 quads used in the United States.
    - In total, the Federal Government is the single largest energy consumer in the Nation, although its consumption is widely dispersed geographically.
    - The total primary energy consumption in FY 2007 was 16.0 percent less than in FY 1985, 3.7 percent less than in FY 2003, and 0.6 percent more than in FY 2006. The increase from the prior year was largely attributable to increased utilization of military aircraft and vehicles.
- When measured in terms of energy delivered to the point of use or site-delivered energy consumption, the Government consumed almost 1.1 quads (1,085.3 trillion Btu) during FY 2007.
    - The total site-delivered energy consumption in FY 2007 was 25.2 percent less than in FY 1985, 4.5 percent less than in FY 2003, and 1.3 percent more than in FY 2006. Again, the increase from the prior year was largely attributable to increased utilization of military aircraft and vehicles.
- The total cost of the 1.1 quads was $17.1 billion in FY 2007 and represented approximately 0.6 percent of the total Federal expenditures of $2.730 trillion for all purposes in FY 2007.
    - In constant 2007 dollars, this equates to an increase of 57.0 percent from $10.9 billion in FY 2003 to $17.1 billion in FY 2007 (Table A-9).
    - During that same period, the unit cost of all fuel types used increased 64.4 percent, from $9.61 per million Btu in FY 2003 to $15.80 per million Btu in FY 2007.
    - Compared to FY 2006, the combined unit costs of all fuels decreased 6.5 percent in FY 2007. Contributing to the overall decrease in unit costs from the prior year were lower prices paid by the Government for:

        - Jet fuel (16.1 percent decrease),
        - Gasoline (3.0 percent decrease), and
        - Natural gas (13.1 percent decrease).
- Federal agencies now report energy consumption under three end-use sectors:
    - Buildings subject to the energy reduction requirements of NECPA, as amended by section 102 of the EPACT 2005 ("goal buildings");
    - Buildings excluded from the energy reduction requirements of NECPA, as amended by section 102 of EPACT 2005 ("goal-excluded buildings"—see discussion in Section I(B), page 5 for explanation of what buildings may be excluded); and
    - Vehicles and equipment.

- Total Federal energy consumption and costs in FY 2007 are summarized below by end-use sector:

Energy Use	Trillion Btu
Goal Buildings	353.5
Excluded Buildings	38.6
Vehicles & Equipment	693.2
Total	1,085.3

Energy Cost	$Billion
Goal Buildings	$5.8
Excluded Buildings	$0.7
Vehicles & Equipment	$10.7
Total	$17.1

GOVERNMENT ENERGY MANAGEMENT PERFORMANCE IN FY 2007

Energy Performance Requirement for Federal Buildings

- Taking into account credits for purchases of renewable energy and for projects that save primary energy, but increase site-delivered energy, the Federal Government decreased energy use per gross square foot by 11.1 percent in fiscal year 2007 relative to fiscal year 2003 for buildings subject to the NECPA energy reduction requirement. Based strictly on total site energy use per gross square foot (excluding renewable energy purchases and primary energy savings from improved generating efficiency), the Government cut its energy intensity by 7.5 percent.
- Using either accounting method, the Government surpassed the NECPA energy reduction requirement of a 4 percent reduction and the Executive Order 13423 goal of a 6 percent reduction.
- The EISA amendments adopt the Executive Order goals of 3 percent reductions per year starting in FY 2008.

Greenhouse Gas (GHG) Reduction

- Compared to FY 2003, estimated emissions of carbon dioxide, methane, and nitrous oxide from energy use in Federal buildings subject to the NECPA energy reduction requirement decreased 9.4 percent, from 47.1 million metric tons of carbon dioxide equivalent (MTCO2E) to 42.7 MTCO2E in FY 2007.
    - Twenty agencies showed reductions in GHG emissions during the period in this estimation.

Use of Renewable Energy

- FY 2007 is the first year for reporting under the new renewable energy goals in the section 203 EPACT 2005 and Executive Order 13423.
    - The section 203 of EPACT 2005 goal states that the Secretary shall seek to ensure that of the total amount of electric energy the Federal Government consumes during any fiscal year, not less than 3 percent in fiscal years 2007 through 2009 shall be renewable energy.
        - The section 203 of EPACT 2005 goal also provide a bonus to Federal agencies by allowing them to double count renewable energy if it is produced on-site and used at a Federal facility, produced on Federal lands and used at a Federal facility, or produced on Indian land and used at a Federal facility.
    - Executive Order 13423 requires that agencies ensure that:
        - at least half of the statutorily required renewable energy purchased or consumed by the agency in a fiscal year comes from new renewable sources (put in service since 1999), and
        - to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use.
    - Federal agencies met these goals by purchasing or producing the equivalent of 2,774.0 gigawatthours of goal-eligible renewable electric energy in FY 2007, equivalent to 4.9 percent of the Federal Government's electricity use of 56,496.9 gigawatthours.

Petroleum Reduction in Buildings

- Federal agencies have made significant progress in reducing their dependence on fuel oil and LPG/propane in their buildings.
    - Federal agencies reduced petroleum-based fuels by 74.7 percent in FY 2007 compared to FY 1985, from 118.8 trillion Btu to 30.1 trillion Btu.
    - Compared to FY 2003, use of these fuels fell by 30.3 percent.

Investments in Energy Efficiency

- During FY 2007, Federal agencies had three primary options for financing energy efficiency, water conservation, and renewable energy projects in buildings:
    - Direct appropriated funding,
    - Energy savings performance contracts (ESPCs), and
    - Utility energy service contracts (UESCs).
- Known funding from the three sources totaled approximately $640.3 million in FY 2007.
    - Direct appropriations accounted for approximately $335.3 million.
    - ESPC contract awards by agencies resulted in approximately $165.9 million in estimated project investment in FY 2007
        - ($144.4 million from DOE Super ESPC delivery orders and $21.5 million from other agency ESPCs), and
    - Approximately $139.1 million in project investment came from UESCs.
- The total funding of $640.3 million in FY 2007 is slightly lower than the $666 million invested in fiscal year 2006 and the $720 million committed in FY 2003, but substantially higher than the total investments made in FY 2004 and FY 2005 which were lower due to a lapse in ESPC authority.
- Since 2003, the Government has invested approximately $2.8 billion in energy efficiency, $1,256.7 million of which was direct agency expenditures, $1,068.2 million was from ESPCs and $478.1 million was from UESCs.

I. OVERVIEW OF FEDERAL ENERGY CONSUMPTION AND COSTS

This report on Federal energy management for fiscal year (FY) 2007 provides information on energy consumption in Federal buildings, operations, and vehicles and documents activities conducted by Federal agencies to meet the statutory requirements under:

- The energy management requirements of section 543 of the National Energy Conservation Policy Act (NECPA), as amended (42 U.S.C. § 8253);
- The energy savings performance contract authority of Title VIII of NECPA (42 U.S.C. § 8287-8287d);
- The renewable energy purchase requirement under section 203 of the Energy Policy Act of 2005 (EPACT 2005) (42 U.S.C. 15852);
- The energy management training requirements of section 157 of the Energy Policy Act of 1992 (EPACT 1992) (42 U.S.C. § 8262c); and
- Executive Order 13423 of January 24, 2007, "Strengthening Federal Environmental, Energy, and Transportation Management". (72 FR 3919; January 24, 2007)

The energy management requirements of the Energy Security and Independence Act of 2007 (Pub. L. No. 110-140; EISA), signed into law on December 19, 2007, will be addressed in the annual report for FY 2008.

Based on reports submitted to the Department of Energy (DOE) by 30 Federal agencies, the total primary energy consumption of the Government of the United States, including energy consumed to produce, process, and transport energy, was approximately 1.6 quadrillion British thermal units (Btu) or "quads" during FY 2007 (see Table A-1 in Appendix A, Energy Consumption and Cost Detail Tables).[1] These 1.6 quads, consumed by the Government in buildings and operations to provide essential services to its citizens, including the defense of the Nation, represent approximately 1.5 percent of the total 101.6 quads[2] used in the United States. In total, the Federal Government is the single largest energy consumer in the Nation, although its consumption is widely dispersed geographically. The total primary energy consumption in FY 2007 was 16.0 percent less than in FY 1985, 3.7 percent less than in FY 2003, and 0.6 percent more than in FY 2006.

When measured in terms of energy delivered to the point of use or site-delivered energy consumption, the Government consumed almost 1.1 quads (1,085,259.1 billion Btu) during FY 2007 (Table A-2). 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 2007 was 25.2 percent less than in FY 1985, 4.5 percent less than in FY 2003, and 1.3 percent more than in FY 2006.

The total cost of the 1.1 quads was $17.1 billion in FY 2007 and represented approximately 0.6 percent of the total Federal expenditures of $2.730 trillion[3] for all purposes in FY 2007.[4] In constant 2007 dollars, this equates to an increase of 57.0 percent from $10.9 billion in FY 2003 to $17.1 billion in FY 2007 (Table A-12).

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[1] Primary energy consumption considers all energy resources used to generate and transport electricity and steam. Tables 7, 8, and A-1 show primary energy consumption while the rest of the tables in the report reflect site-delivered consumption. See Appendix B for information on energy conversion factors.

[2] DOE/EIA, *Monthly Energy Review May 2008*, Table 1.1. www.eia.doe.gov/emeu/mer/pdf/pages/sec1_3.pdf

[3] *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2009*

[4] Unless otherwise noted, all costs cited in this report are in constant 2007 dollars, calculated using Gross Domestic Product implicit price deflators. See Bureau of Economic Analysis web site, www.bea.gov/bea/dn/gdplev.xls. 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.

During that same period, the unit cost of all fuel types used increased 64.4 percent, from $9.61 per million Btu in FY 2003 to $15.80 per million Btu in FY 2007.

Compared to FY 2006, the combined unit costs of all fuels decreased 6.5 percent in FY 2007. Contributing to the overall decrease in unit costs from the prior year were lower prices paid by the Government for:

- Jet fuel (16.1 percent decrease),
- Gasoline (3.0 percent decrease), and
- Natural gas (13.1 percent decrease).

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 2007, the Department of Defense (DOD) spent almost $13.2 billion for energy out of the total Federal energy expenditure of $17.1 billion or 76.9 percent. Overall, DOD used 2.5 percent more site-delivered energy in FY 2007 than in FY 2006.

Figures 1 and 2 depict the percentage of total energy used by the Federal Government in FY 2007 and its cost. As illustrated, jet fuel and electricity account for approximately 60.3 percent of the total energy consumption represented in Figure 1 and approximately 67.2 percent of the total energy costs in Figure 2.

Federal agencies now report energy consumption under three end-use sectors:

1) Buildings subject to the energy reduction requirements of NECPA, as amended by section 102 of EPACT 2005 ("goal buildings");
2) Buildings excluded from the energy reduction requirements of NECPA, as amended by section 102 of EPACT 2005 ("goal-excluded buildings"); and
3) Vehicles and equipment.

Total Federal energy consumption and costs are summarized below by end-use sector:

Energy Use	Trillion Btu	Percentage
Goal Buildings	353.5	32.6%
Excluded Buildings	38.6	3.6%
Vehicles & Equipment	693.2	63.9%
Total	1,085.3	100.0%

Energy Cost	$Billion	Percentage
Goal Buildings	$5.8	33.8%
Excluded Buildings	$0.7	4.1%
Vehicles & Equipment	$10.7	62.2%
Total	$17.1	100.0%

Figure 1
Federal Energy Consumption by Fuel Type and End-Use Sector, FY 2007

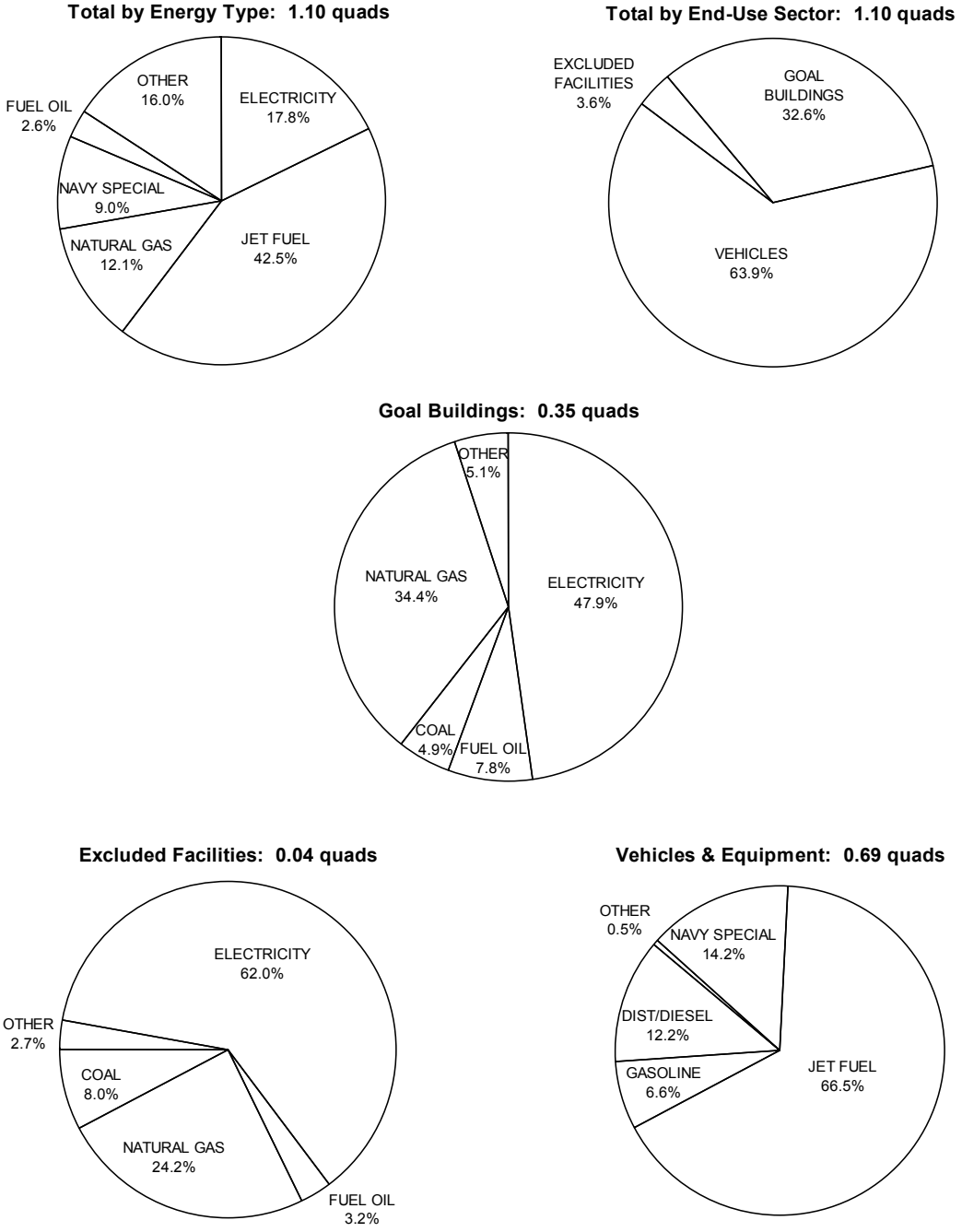
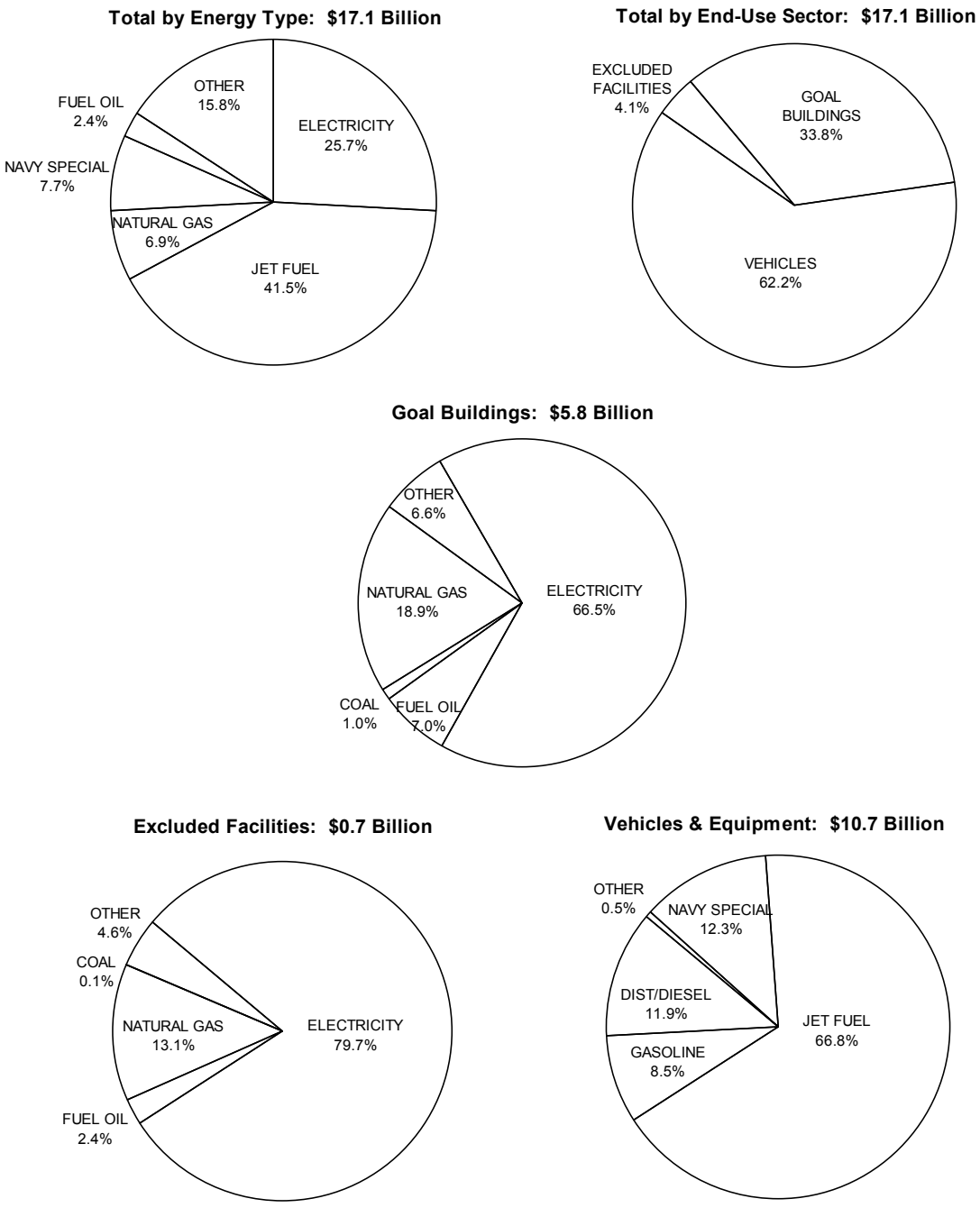


Figure 2
Federal Energy Costs by Fuel Type and End-Use Sector, FY 2007



A. EPACT 2005 Goal Buildings

Formerly, Federal agencies reported energy consumption separately for standard buildings and for industrial, laboratory, and other energy intensive facilities. Under the EPACT 2005 amendments to NECPA, these two end-use sectors are now combined for the purpose of the required performance measurement and are referred to in this report as "goal buildings." (42 U.S.C. 8253(a)(1) and (2)) Below is an overview of energy consumption and costs in goal buildings. See Section II for the discussion on required performance.

In FY 2007, the Federal Government used 353.5 trillion Btu to provide energy to 3.0 billion square feet of building space subject to the energy consumption reduction requirements of NECPA (42 U.S.C. 8253(a)(1)) (Table A-3). This consumption represents a 28.6 percent decrease compared to FY 1985, a 7.7 percent decrease relative to FY 2003, and a 3.1 percent decrease from FY 2006. The significant drop from FY 1985 reflects the success of Federal energy management efforts in reducing fossil fuel use in Federal buildings as well as reduced defense-related facility energy use (43.0 percent less than FY 1985). The cost of energy for goal buildings in FY 2007 was $5.8 billion, a decrease of approximately $159.3 million from FY 2006 expenditures, and an increase of 20.8 percent from the FY 2003 expenditure of $4.8 billion (Table A-4).[5] Of the $5.8 billion spent for energy used in the goal buildings, $3,155.9 million was spent by DOD with the remaining $2,635.0 million spent by the civilian agencies.

The 353.5 trillion Btu used in goal buildings comprised approximately 32.6 percent of the total 1.1 quads used by the Federal Government. Electricity constitutes 47.9 percent of the energy used in goal buildings; 34.4 percent is accounted for by natural gas, 7.8 percent by fuel oil, and 4.9 percent by coal. Small amounts of purchased steam, liquefied petroleum gas (LPG)/ propane, and "other" energy account for the remaining 5.1 percent.

[5]Cost and consumption figures for prior years may be different from those published in last year's annual report since Federal agencies update their files and provide revisions to their data.

B. Excluded Buildings

Under the EPACT 2005 amendments, an agency may exclude from the "goal buildings" any building, and the associated energy consumption and gross square footage, in which energy intensive activities are carried out. (42 U.S.C. 8253(a)(2)) Additionally, an agency may exclude, from the energy performance requirement any Federal building or collection of Federal buildings, if the head of the agency finds that—

(i) compliance with those requirements would be impracticable;

(ii) the agency has completed and submitted all federally required energy management reports;

(iii) the agency has achieved compliance with the energy efficiency requirements of this chapter, the Energy Policy Act of 1992, Executive orders, and other Federal law; and

(iv) the agency has implemented all practicable, life cycle cost-effective projects with respect to the Federal building or collection of Federal buildings to be excluded.

(42 U.S.C. 8253(c)(1)(A))

As required by the EPACT 2005 amendments to NECPA, the Department of Energy's Federal Energy Management Program (FEMP) finalized and promulgated on January 27, 2006 the *Guidelines Establishing Criteria for Excluding Buildings from the Energy Performance Requirements of Section 543 of the National Energy Conservation Policy Act*. (42 U.S.C. 8253(c)(3)) These guidelines were developed through an interagency working group process under the auspices of the Federal Interagency Energy Management Task Force which subsequently concurred with the final product. The *Guidelines* are available at: http://www1.eere.energy.gov/femp/pdfs/exclusion_criteria.pdf.

Thirteen agencies, DOD, DOE, the Departments of Commerce, Health and Human Services, Homeland Security, State, Transportation, and the Treasury; the National Aeronautics and Space Administration (NASA); the General Services

Administration (GSA); the International Broadcast Bureau; the U.S. Postal Service; and the Tennessee Valley Authority have chosen to exclude buildings from energy management requirements. These buildings are listed at: www.eere.energy.gov/femp/ pdfs/excludedfac06.pdf.

In general, excluded buildings are comprised of structures and processes that are not qualified as Federal buildings, buildings under construction or renovation, and certain types of leased space. For example:

- Structures such as outside parking garages which consume essentially only lighting energy, yet are classed as buildings,
- 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 entering or leaving the inventory during the year, buildings down-scaled operationally to prepare for decontamination, decommissioning and disposal, and buildings undergoing major renovation,
- Leased space where the Government may pay for some energy but not all or the space comprises only part of a building, and
- Separately-metered energy-intensive loads that are driven by mission and operational requirements, not necessarily buildings, and not influenced by conventional building energy conservation measures.

If none of the circumstances above apply, then NECPA requires each agency seeking to exclude buildings to demonstrate that for the building being excluded:

- Energy reduction requirements are impracticable,
- All Federally-required energy management reports have been completed and submitted,
- Agency has achieved compliance with all energy efficiency requirements, and
- All practicable, life cycle cost-effective projects have been implemented at the excluded building(s)

Agency-specific details pertaining to their excluded buildings are described in Section III of this report.

Energy used in excluded buildings totaled 38.6 trillion Btu in FY 2007 (Table A-5), approximately 3.6 percent of the total 1.1 quads used by the Federal Government. Electricity constitutes 62.0 percent of the energy used in excluded buildings, 24.2 percent is accounted for by natural gas, 8.0 percent by coal, and 3.2 percent by fuel oil. Small amounts of purchased steam, liquefied petroleum gas (LPG)/ propane, and "other" energy account for the remaining 2.7 percent.

The energy used in excluded buildings in FY 2007 accounted for 4.0 percent of the total Federal energy bill. The Federal Government spent approximately $696.9 million for this category's energy during the fiscal year (Table A-6).

C. Vehicles and Equipment

Vehicles and equipment energy 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 2007, the Federal Government used approximately 693.2 trillion Btu of energy in vehicles and equipment, 63.9 percent of the total 1.1 quads consumed (Table A-7). Total energy consumption in vehicles and equipment decreased 25.8 percent relative to FY 1985 and increased 3.7 percent from the FY 2006 consumption of 668.7 trillion Btu. DOD consumed 646.5 trillion Btu or 93.3 percent of all vehicles and equipment energy used by the Federal Government.

The Federal Government spent $10.7 billion on vehicles and equipment energy in FY 2007 (Table A-9), over $813.8 million less than the FY 2006

expenditure, a 7.1 percent decrease in constant dollars. For all fuels, the cost per million Btu decreased from $17.15 in FY 2006 to $15.37 in FY 2007 (Table A-9). The unit cost of the most-used fuel, jet fuel, decreased 16.1 percent from the previous year. Gasoline prices paid by the Government decreased 3.0 percent from the previous year.

Consumption of alternative fuels and progress toward the EPACT 2005 and Executive Order goals for Federal fleet vehicles is addressed in the report, Federal Fleet Compliance with EPACT and E.O. 13149, Fiscal Year 2007, available at http://www1.eere.energy.gov/vehiclesandfuels/epact/pdfs/2007_fed_fleet_report.pdf.

In FY 2007, Federal agencies reported using 1,719.6 billion Btu of alternative fuels at a cost of $32.7 million. Alternative fuels comprise 0.2 percent of the Government's energy consumption in vehicles and equipment and 0.3 percent of the costs.

II. FEDERAL GOVERNMENT ENERGY MANAGEMENT PERFORMANCE IN FY 2007

A. Overview of Federal Energy Management Policy and Mandates

Energy Intensity Reduction Goal

The National Energy Conservation Policy Act (NECPA), as amended, requires Federal agencies to improve energy management in their facilities and operations. (42 U.S.C. 8253) Amendments to NECPA made by the Federal Energy Management Improvement Act of 1988 (Pub. L. No. 100-615), 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 (Btu/GSF) basis. It also directed DOE to establish life-cycle costing methods and coordinate Federal conservation activities through the Interagency Energy Management Task Force. Section 543 of NECPA contained provisions requiring a reduction in Btu/GSF of 20 percent by 2000, 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.

Section 102 of EPACT 2005 re-established the statutory energy reduction requirement for Federal buildings. Since FY 2000, the Government has been measuring its progress in this area against Executive Order goals that were an extension of the prior goals using a 1985 base year for comparison. The requirement as established under EPACT 2005 uses a base year of FY 2003 and requires reductions of 2 percent per year in energy use per square foot, leading to a 20 percent reduction in the FY 2015. The requirement includes industrial, laboratory, and other energy intensive facilities.

Section 102 of EPACT 2005 also amended NECPA to update the criteria for exclusion of buildings from the energy efficiency goals requirement based on findings by the head of the agency relating to implementation of all life-cycle cost-effective projects, energy intensiveness, and national security functions. (42 U.S.C. 8253(c)(1)) Section 543(c)(3) of NECPA states that the Secretary of Energy shall issue guidelines that establish criteria for exclusions from the energy performance requirement for a fiscal year, any Federal building or collection of Federal buildings, within the statutory framework provided by the law. (42 U.S.C. 8253(c)(3))

On January 27, 2006, DOE issued the *Guidelines Establishing Criteria for Excluding Buildings from the Energy Performance Requirements of Section 543 of the National Energy Conservation Policy Act as Amended by the Energy Policy Act of 2005*. These guidelines were developed through an interagency working group process under the auspices of the Federal Interagency Energy Management Task Force. See www.eere.energy.gov/femp/pdfs/exclusion_criteria.pdf.

On January 24, 2007, President George W. Bush signed Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management. Section 2 of the Order set more challenging goals than the EPACT 2005 amendments, requiring a 3 percent reduction in energy intensity per year (beginning in FY 2006) and leading to a 30 percent reduction in 2015 compared to the FY 2003 base year. The goal for FY 2007 is a 6 percent reduction.

On December 19, 2007, President George W. Bush signed into law the Energy Security and Independence Act of 2007 (EISA). EISA adopts the energy intensity reduction goals of Executive Order 13423 beginning in FY 2008 with a 9 percent reduction and increasing to a 30 percent reduction in FY 2015. The EISA requirements and the related activities of the Government will be discussed in the annual report for FY 2008.

Metering

Section 103 of EPACT 2005 "Energy Use Measurement and Accountability" amended NECPA to

require that all Federal buildings be metered "…for the purposes of efficient energy use and reduction in the cost of electricity used in such buildings…" by October 1, 2012. (42 U.S.C. 8253(e)) The direction is specific to the measurement of electricity in that advanced meters or metering devices that provide data at least daily and measure the consumption of electricity at least hourly will be used to the maximum extent practicable. The law directed that the Secretary of Energy to develop guidelines for implementation. (42 U.S.C. 8253(e)(2)) The Guidance for Electric Metering in Federal Buildings was published on February 3, 2006 and can be found at www1.eere.energy.gov/femp/pdfs/adv_metering.pdf. Agencies were required to submit to DOE an implementation plan identifying personnel responsible for achieving the requirements, and any determination by the agency that advanced meters or metering systems are not practicable in their specific situation.

FY 2007 is the first year for agencies to report on their progress in metering to DOE. Agencies are required to report the cumulative number of buildings metered and cumulative percentage of electricity metered. The guidance required reporting this information for only standard meters in FY 2007. Starting with FY 2008, agencies will be required to report progress on both buildings with standard meters and buildings with advanced meters (measuring at least hourly and reporting data over networks at least daily). Agencies also reported progress made in FY 2007 in meeting the milestones of their metering implementation plans.

Based on reports submitted to DOE, 11 agencies reported that all of their buildings were metered for electricity use with at least standard electricity meters. These 11 agencies include the Departments of Housing and Urban Development, Justice, State, Transportation, and the Treasury; the Environmental Protection Agency, the General Services Administration, the National Archives and Records Administration, the Railroad Retirement Board, the Social Security Administration, and the United States Postal Service. Two agencies, EPA and HUD, reported that they have already have advanced metering in 100 percent of their buildings. Details of metering activities specific to individual agencies can be found in Section IV of this report.

Energy Efficient Procurement

Section 104 of EPACT 2005, "Procurement of Energy Efficient Products" is a requirement that each agency "… incorporate into the specifications for all procurements involving energy consuming products and systems, including guides specifications, project specifications, and construction, renovation, and services contracts that include provision of energy consuming products and systems, and into the factors for the evaluation of offers received for the procurement, criteria for energy efficiency that are consistent with … Energy Star products and for rating FEMP designated products." (42 U.S.C. 8259b)

Energy Savings Performance Contracts

Section 105 of EPACT 2005, "Energy Savings Performance Contracts" extended the authority for Federal agencies to energy into the performance contracts for energy and water conservation to 2016.

Federal Building Performance Standards

To assure that all new Federal buildings incorporate the best energy efficiency techniques available, Section 109 of EPACT 2005, "Federal Building Performance Standards", amended NECPA to direct the Secretary of Energy, within one year, to issue a rule that establishes Federal building energy efficiency performance standards. (42 U.S.C. 6834(a)) The standards require that, if life-cycle cost-effective, all new Federal buildings will be designed to achieve energy consumption levels 30 percent below those of the current version of the applicable ASHRAE standard or the International Energy Conservation Code. (42 U.S.C. 6834(a)(3)(A)(i)(I)) The requirement further states that sustainable design principles are to be applied to the siting, design, and construction of all new and replacement buildings, if life-cycle cost effective. (42 U.S.C. 6834(a)(3)(A)(i)(II)) The section also requires DOE to perform a review within one year of any change to the ASHRAE standard or IECC to see if the Federal standards should be updated. (42 U.S.C. 6834(a)(3)(B)) As an oversight provision, the section also directs each agency to include in its annual budget request

and report under the National Energy Policy Act identification of all new buildings and whether they meet of exceed the developed standards. (42 U.S.C. 6834(a)(3)(C))

Renewable Energy Goal

Section 203 of EPACT 2005 requires the Secretary of Energy to seek to ensure that, to the extent economically feasible and technically practicable, of the total amount of *electric* energy the Federal Government consumes, the following amounts are renewable energy as defined in section 203 of the Act:

- Not less than 3 percent in fiscal years 2007 through 2009.
- Not less than 5 percent in fiscal years 2010 through 2012.
- Not less than 7.5 percent in fiscal year 2013 and each fiscal year thereafter.

(42 U.S.C. 15852(a))

Section 203 of EPACT 2005 also allows Federal agencies to double count renewable energy if it is produced on-site and used at a Federal facility, produced on Federal lands and used at a Federal facility, or produced on Indian land and used at a Federal facility (42 U.S.C. 15852(c)).

Section 203(b) of EPACT 2005 defines the term ''renewable energy'' to mean electric energy generated from solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project. (42 U.S.C. 15852(b)).

Section 2(a) of Executive Order 13423 adds the following provisions with regard to the section 203 of EPACT 2005 goal; that

- at least half of the statutorily required renewable energy consumed by the agency in a fiscal year comes from new renewable sources, and
- to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use.

In January 2008, DOE published *Renewable Energy Requirement Guidance for EPACT 2005 and Executive Order 13423* (www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf). This guidance specifies the conditions for agencies to meet the statutory and Executive Order requirements.

FY 2007 is the first year for reporting under the new Federal renewable energy goals. The key differences in reporting from prior year renewable energy goals is discussed in Section II(D) of this report.

Water Intensity Reduction Goal

Section 2(c) of Executive Order 13423 establishes a water use reduction goal for agencies beginning in FY 2008. Agencies are required to "reduce water consumption intensity, relative to the baseline of the agency's water consumption in fiscal year 2007, through life-cycle cost-effective measures by 2 percent annually through the end of fiscal year 2015 or 16 percent by the end of fiscal year 2015."

In January 2008, DOE published the guidance document, *Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423* to provide clarification and guidance for meeting the water reduction goals (www1.eere.energy.gov/femp/pdfs/water_guidance.pdf).

During FY 2007, agencies provided initial baseline data on water use intensity, defined as gallons of water consumed per gross square foot per year. These initial findings can be found in Section II(G) of this report.

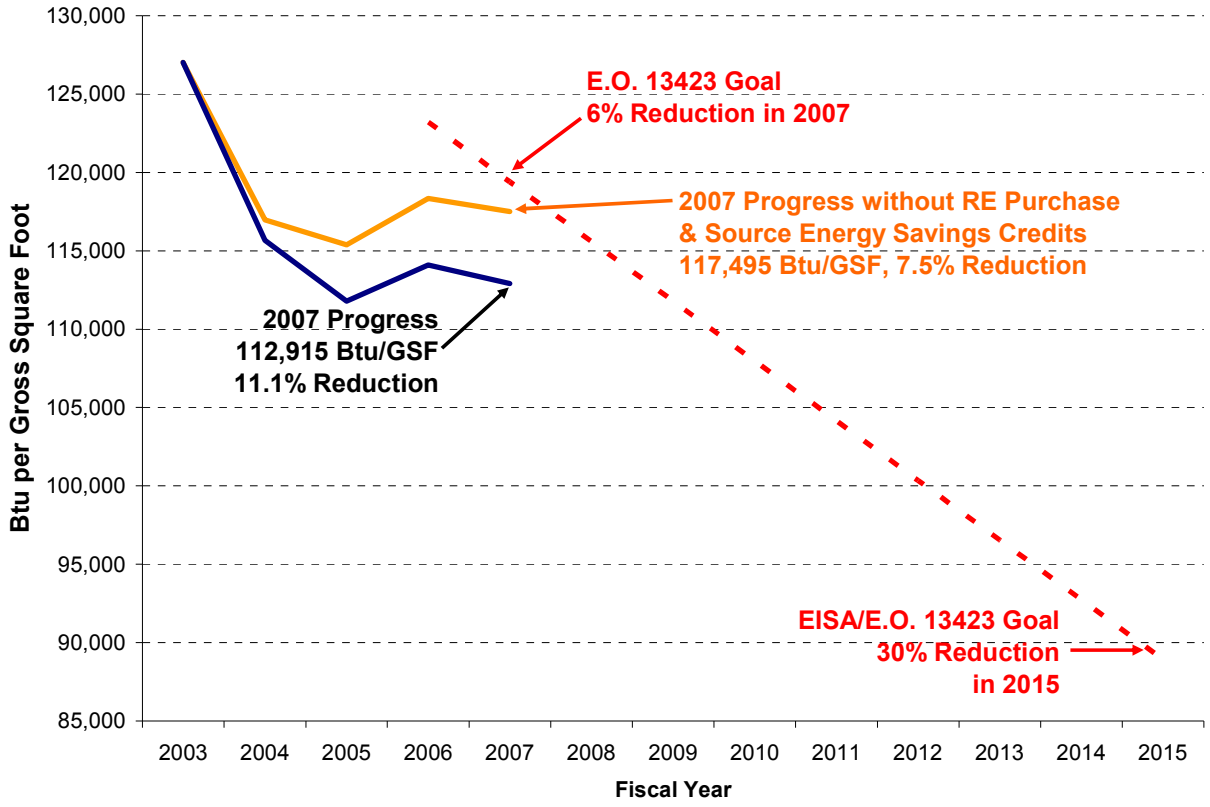
B. Energy Performance Requirement for Federal Buildings

According to data provided by Federal agencies, the Federal Government decreased energy use per gross square foot by 11.1 percent in FY 2007 relative to FY 2003 for buildings subject to the goal. This surpassed the NECPA energy reduction requirement of a 4 percent reduction as well as the 6 percent reduction goal of Executive Order 13423.

Even when measured strictly on the basis of reduced energy intensity, both goals were exceeded with a reduction of 7.5 percent. Subtracting 13.8 trillion Btu for renewable energy purchases and for projects that reduce primary energy use (as opposed to site-delivered energy), the reduction improves to 11.1 percent below the FY 2003 baseline for the purpose of performance measurement. The Government's performance for each year since FY 2003 is illustrated in Figure 3. Overall energy intensity for prior years has changed from previous years' Annual Reports due to significant revisions submitted by the U.S. Postal Service and minor corrections to prior year data provided by other agencies.

EPACT 2005 is silent on whether purchases of renewable energy can be used to achieve energy reduction goals. Under Executive Order 13123 (64 Fed. Reg. 30851; June 8, 1999), agencies were permitted to credit renewable energy purchases toward their performance under the energy reduction goals. These credits were continued for FY 2007, per DOE's *Renewable Energy Requirement Guidance for EPACT 2005 and Executive Order 13423* which will phase out the credits over time (See www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf). In FY 2007, these credits amounted to 9.2 trillion Btu that were subtracted from agencies' consumption before Btu/GSF was calculated.

Figure 3
Overall Government Progress toward Facility Energy Efficiency Goals, FY 2003 through FY 2007



Similarly, Section 502(e) of Executive Order 13123 provided credit to agencies that implement cost-effective projects that save primary energy, but not necessarily site-delivered energy. (See Section II(F) for a discussion of primary energy.) In FY 2007, these credits amounted to 4.5 trillion Btu. This credit is necessary so that cost-effective projects which generate electricity on site (and increase site energy use while reducing source energy use) do not penalize agency performance toward the goal. This practice continues under the goals of Executive Order 13423 through supplemental guidance released by DOE under authority of the Order's implementing instructions.

The additional credits toward energy intensity reduction as applied to each agency are documented in Table 1.

Individual agency performance in FY 2007, compared to FY 2003, is illustrated below in Figure 4 and documented in Table 1. Twenty-one out of 22 agencies reporting their performance toward the goal have reduced energy use per gross square foot in goal buildings by more than 6 percent from 2003.

At the agency level, the largest overall reductions are seen in those agencies taking advantage of renewable energy credits, and to a lesser degree, primary energy project reduction credits. Even without the credits, many agencies have achieved remarkable success in reduction in energy intensity. Nineteen agencies achieved the 6 percent goal without additional credits. Only three agencies, DOT, GSA, and VA pushed past the goal through use of credits.

Figure 4
Individual Agency Reductions in Btu per Square Foot of Goal Building Space in FY 2007 Compared to FY 2003

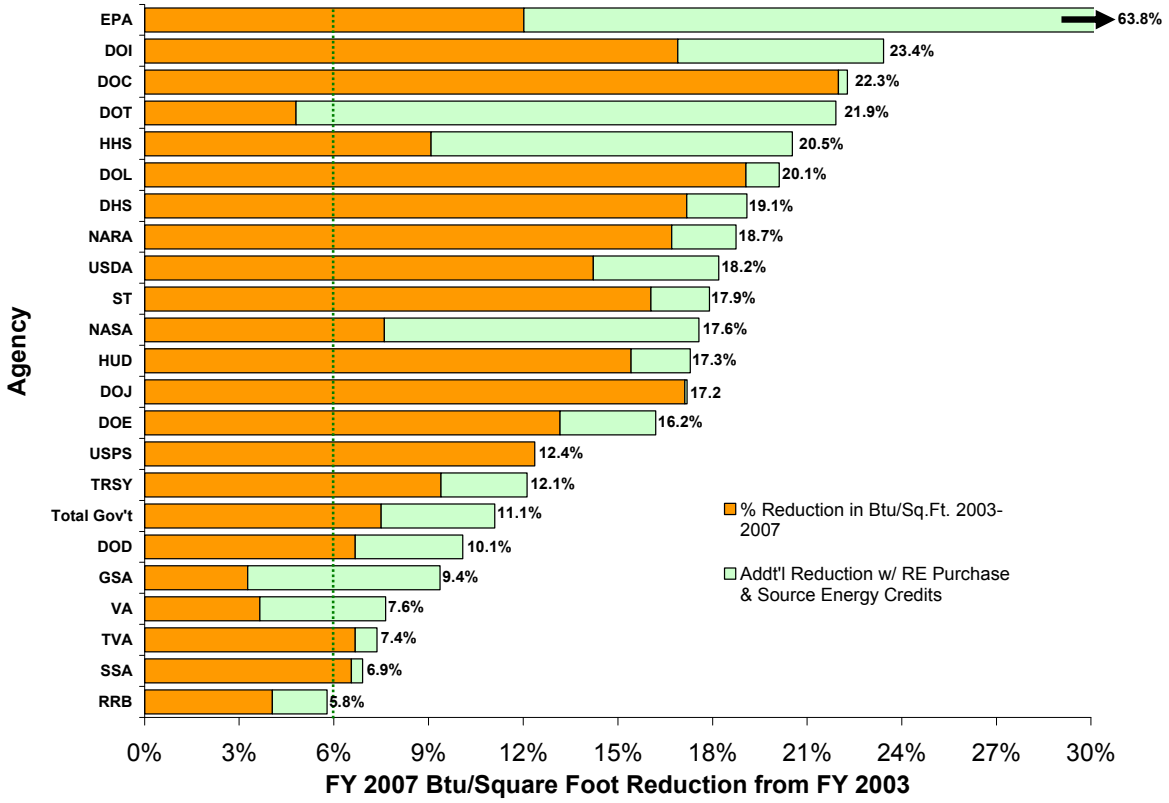


TABLE 1
FEDERAL GOAL BUILDINGS SITE-DELIVERED ENERGY USE PER GROSS SQUARE FOOT (BTU/GSF), FY 2003 AND FY 2007

	FISCAL YEAR 2003			FISCAL YEAR 2007 Unadjusted for RE Purchases and Source Savings				FISCAL YEAR 2007 Adjusted for RE Purchases and Source Savings				
Agency	GSF (Thou.)	Billion Btu	BTU/GSF	GSF (Thou.)	Billion Btu	BTU/GSF	% Change 2003-2007	RE Purchases Billion Btu	Source Savings Billion Btu	Billion Btu	BTU/GSF	% Change 2003-2007
VA	141,326.3	29,278.0	**207,166**	144,836.1	28,908.2	**199,593**	**-3.7**	341.2	854.0	27,713.0	**191,340**	**-7.6**
USPS	313,991.4	31,986.5	**101,871**	312,962.7	27,938.3	**89,270**	**-12.4**	0.0	0.0	27,938.3	**89,270**	**-12.4**
DOE	90,961.3	24,115.7	**265,120**	88,936.9	20,472.8	**230,194**	**-13.2**	714.8	0.0	19,758.0	**222,157**	**-16.2**
DOJ	56,771.1	16,410.0	**289,056**	72,917.6	17,468.0	**239,558**	**-17.1**	15.0	0.0	17,453.0	**239,353**	**-17.2**
GSA	182,825.5	14,082.9	**77,029**	182,396.2	13,590.7	**74,512**	**-3.3**	769.5	87.0	12,734.2	**69,816**	**-9.4**
HHS	27,742.0	9,566.6	**344,842**	30,590.6	9,590.5	**313,512**	**-9.1**	66.4	1,140.6	8,383.6	**274,058**	**-20.5**
NASA	31,728.9	6,850.5	**215,907**	31,656.0	6,315.3	**199,497**	**-7.6**	681.3	0.0	5,633.9	**177,973**	**-17.6**
DOI	57,857.6	5,095.2	**88,064**	61,724.9	4,517.3	**73,185**	**-16.9**	354.7	0.0	4,162.6	**67,439**	**-23.4**
USDA	61,948.6	5,345.0	**86,281**	57,480.9	4,254.2	**74,011**	**-14.2**	197.2	0.0	4,057.0	**70,580**	**-18.2**
DHS	40,141.3	4,747.6	**118,271**	43,948.2	4,304.6	**97,948**	**-17.2**	99.3	0.0	4,205.4	**95,689**	**-19.1**
DOL	21,612.3	2,566.9	**118,769**	23,352.0	2,244.7	**96,122**	**-19.1**	29.2	0.0	2,215.5	**94,872**	**-20.1**
TRSY	12,487.6	2,288.2	**183,237**	12,592.5	2,090.6	**166,018**	**-9.4**	63.0	0.0	2,027.6	**161,014**	**-12.1**
DOC	10,045.0	1,968.5	**195,966**	13,602.9	2,079.5	**152,870**	**-22.0**	7.7	0.0	2,071.8	**152,304**	**-22.3**
EPA	3,648.8	1,310.0	**359,020**	3,723.3	1,176.1	**315,867**	**-12.0**	682.5	10.1	483.5	**129,847**	**-63.8**
SSA	9,262.0	1,151.3	**124,300**	9,262.0	1,075.8	**116,150**	**-6.6**	4.1	0.0	1,071.7	**115,712**	**-6.9**
DOT	7,114.6	721.6	**101,423**	7,265.0	701.5	**96,559**	**-4.8**	126.1	0.0	575.4	**79,199**	**-21.9**
NARA	2,804.6	508.1	**181,166**	4,062.0	613.0	**150,907**	**-16.7**	15.1	0.0	597.9	**147,198**	**-18.7**
TVA	9,796.2	641.9	**65,530**	8,870.4	542.5	**61,153**	**-6.7**	4.0	0.0	538.5	**60,703**	**-7.4**
ST	3,793.5	402.7	**106,162**	4,443.1	396.0	**89,121**	**-16.1**	8.7	0.0	387.3	**87,158**	**-17.9**
HUD	1,432.0	120.9	**84,450**	1,432.0	102.3	**71,427**	**-15.4**	2.3	0.0	100.0	**69,843**	**-17.3**
RRB	346.9	36.0	**103,877**	346.9	34.6	**99,671**	**-4.0**	0.6	0.0	34.0	**97,871**	**-5.8**
OTHER	2,202.1	193.5	**87,881**	0.0	0.0	**NA**	**NA**	0.0	0.0	0.0	**NA**	**NA**
Civilian Agencies Subtotal	1,089,839.6	159,387.5	**146,249**	1,116,402.2	148,416.2	**132,942**	**-9.1**	4,182.6	2,091.7	142,141.9	**127,321**	**-12.9**
DOD	1,926,475.4	223,730.1	**116,134**	1,892,554.3	205,120.5	**108,383**	**-6.7**	5,051.7	2,455.1	197,613.7	**104,416**	**-10.1**
TOTAL	3,016,315.0	383,117.6	**127,015**	3,008,956.5	353,536.7	**117,495**	**-7.5**	9,234.3	4,546.8	339,755.6	**112,915**	**-11.1**

*Other includes the FCC, FTC, NRC, and OPM. Data as of 17 Dec 2008

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

C. Greenhouse Gas Reduction

Although Federal agencies formerly had a greenhouse gas (GHG) reduction goal under Executive Order 13123, there is no statutory goal for GHG reduction. GHG is defined in Executive Order 13213, and a reduction of GHG is identified as an intended benefit of the required reduction in energy intensity. However, Executive Order 13423 does not contain an actual quantitative goal for GHG reduction.[6] DOE will continue, however, to estimate GHG emissions based on agency-reported energy consumption.

Not all of the gases mentioned in the Executive Order 13423 definition[7] can be estimated solely on the energy data provided by the agencies, but DOE's Federal Energy Management Program (FEMP) has developed a method for estimating emissions of carbon dioxide, methane, and nitrous oxide from agency energy use (See Appendix B). Carbon dioxide is overwhelmingly the largest component of GHG emissions from energy use. Even considering the higher global warming potential (GWP) of methane and nitrous oxide, they still make up less than a half of a percent of the GWP of carbon dioxide emissions for any facility fuel.

Since agencies do not report electricity use disaggregated by region, FEMP uses a nationally-derived factor for estimating GHG emissions from electricity use. Purchases of all forms of renewable energy used in buildings are factored out of GHG emission estimates. In future year reporting, agencies will have the option of estimating GHG emissions from their energy use independently based on disaggregated or more detailed data provided that 1) estimates are provided to FEMP for inclusion in Federal Government totals, and 2) agencies provide a detailed description of their estimation methodology.

In another change from GHG reporting prior to FY 2006, emissions are now reported in metric tons of carbon dioxide equivalent ($MTCO_2E$) rather than metric tons of carbon equivalent which does not consider the full molecular weight of the gases. Estimated GHG emissions from buildings excluded from the NECPA energy reduction requirement are not included in the totals.

Table 2 presents estimated GHG emissions from agency energy usage in absolute terms of $MTCO_2E$. Compared to FY 2003, GHG emissions for Federal buildings subject to the NECPA energy reduction requirement decreased 9.4 percent, from 47.1 million $MTCO_2E$ to 42.7 $MTCO_2E$ in FY 2007. Twenty agencies showed reductions in GHG emissions during the period in this estimation.

Table 3 estimates GHG emission intensity by agency in terms of $MTCO_2E$ per thousand gross square foot of their NECPA energy reduction requirement building space. The largest percentage decreases are seen at the agencies with large purchases of renewable energy. The National Archives and Records Administration, which showed an increase in GHG emissions of 21.5 percent in absolute terms, shows a 16.1 percent decrease in terms of $MTCO_2E$ per million gross square foot. This metric takes into consideration the 44.8 percent increase in NARA's square footage between FY 2003 and FY 2007.

[6] Section 2(a) of E.O. 13423 states that "the head of each agency shall. . .improve energy efficiency and reduce greenhouse gas emissions of the agency, through reduction of energy intensity by 3 percent annually through the end of fiscal year 2015, or 30 percent by the end of fiscal year 2015, relative to the baseline of the agency's energy use in fiscal year 2003;"

[7] Under E.O. 13423, "greenhouse gases" means carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride;

TABLE 2
ESTIMATED EMISSIONS OF CARBON DIOXIDE, METHANE AND NITROUS OXIDE FROM GOAL BUILDING ENERGY USE, BY AGENCY
(In Metric Tons of Carbon Dioxide Equivalent ($MTCO_2E$))

Agency	**FY 2003**	FY 2004	FY 2005	FY 2006	**FY 2007**	**% Change 03 - 07**
DOD	**26,457,374**	27,277,006	26,202,708	24,844,614	**24,373,693**	**-7.9%**
USPS	**4,494,629**	4,741,447	5,209,891	4,889,244	**4,250,960**	**-5.4%**
VA	**3,134,169**	3,115,446	3,049,670	2,940,906	**3,033,802**	**-3.2%**
DOE	**3,372,883**	3,296,898	3,098,448	2,878,482	**2,695,784**	**-20.1%**
GSA	**2,120,721**	2,294,961	1,932,453	1,910,225	**1,919,922**	**-9.5%**
DOJ	**1,913,488**	1,400,455	1,523,751	1,850,980	**1,812,003**	**-5.3%**
HHS	**1,147,628**	951,937	1,054,667	899,623	**996,026**	**-13.2%**
NASA	**967,625**	981,722	1,018,266	836,029	**807,771**	**-16.5%**
DHS	**623,914**	606,168	585,335	529,741	**559,247**	**-10.4%**
DOI	**642,481**	618,998	580,033	545,997	**478,852**	**-25.5%**
USDA	**678,093**	537,891	575,848	498,784	**470,534**	**-30.6%**
TRSY	**351,905**	338,637	332,459	294,683	**308,334**	**-12.4%**
DOC	**254,315**	269,562	209,629	188,147	**260,373**	**2.4%**
DOL	**286,746**	283,589	273,807	234,840	**255,016**	**-11.1%**
SSA	**165,623**	154,728	160,082	148,019	**150,669**	**-9.0%**
TVA	**123,386**	121,860	118,172	111,416	**101,487**	**-17.7%**
DOT	**109,366**	105,763	104,156	98,335	**84,782**	**-22.5%**
NARA	**62,661**	72,464	86,475	82,034	**76,133**	**21.5%**
ST	**64,370**	54,660	58,238	86,874	**63,839**	**-0.8%**
HUD	**21,108**	19,703	19,755	17,648	**17,469**	**-17.2%**
RRB	**4,002**	3,975	3,992	3,926	**3,825**	**-4.4%**
EPA	**101,248**	27,804	18,369	7,880	**-19,466**	**-119.2%**
Other*	**34,551**	16,125	17,676	1,611	**0**	**-100.0%**
Total	**47,132,288**	47,291,798	46,233,877	43,900,039	**42,701,053**	**-9.4%**

Data as of 17 Dec 2008

*Other includes the FCC, FTC, NRC, and OPM.
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.

TABLE 3
ESTIMATED EMISSIONS OF CARBON DIOXIDE, METHANE AND NITROUS OXIDE FROM GOAL BUILDING ENERGY USE, BY AGENCY
((Metric Tons of Carbon Dioxide Equivalent per Thousand Gross Square Foot ($MTCO_2E$/Thousand GSF))

Agency	**FY 2003**	FY 2004	FY 2005	FY 2006	**FY 2007**	**% Change 03 - 07**
HHS	**41.4**	35.3	38.7	31.6	**32.6**	**-21.3%**
DOE	**37.1**	35.0	33.9	32.2	**30.3**	**-18.3%**
NASA	**30.5**	28.6	29.5	26.5	**25.4**	**-16.6%**
DOJ	**33.7**	23.1	24.0	27.4	**24.9**	**-26.3%**
TRSY	**28.2**	26.8	26.4	23.4	**24.5**	**-13.1%**
VA	**22.2**	20.4	19.0	20.7	**20.9**	**-5.5%**
DOC	**25.3**	25.5	19.9	17.9	**19.1**	**-24.4%**
NARA	**22.3**	19.1	21.9	20.2	**18.7**	**-16.1%**
SSA	**17.9**	16.7	17.3	16.0	**16.3**	**-9.0%**
ST	**17.0**	20.0	18.3	19.2	**14.4**	**-15.3%**
USPS	**14.3**	15.3	16.8	15.6	**13.6**	**-5.1%**
DOD	**13.7**	13.0	12.4	13.2	**12.9**	**-6.2%**
DHS	**15.5**	14.5	13.8	12.6	**12.7**	**-18.1%**
HUD	**14.7**	13.8	13.8	12.3	**12.2**	**-17.2%**
DOT	**15.4**	14.7	14.5	13.6	**11.7**	**-24.1%**
TVA	**12.6**	12.7	12.1	11.8	**11.4**	**-9.2%**
RRB	**11.5**	11.5	11.5	11.3	**11.0**	**-4.4%**
DOL	**13.3**	12.7	12.1	11.5	**10.9**	**-17.7%**
GSA	**11.6**	11.7	9.9	10.6	**10.5**	**-9.3%**
USDA	**10.9**	10.0	9.6	9.4	**8.2**	**-25.2%**
DOI	**11.1**	10.0	9.3	8.6	**7.8**	**-30.1%**
EPA	**27.7**	7.5	5.0	2.1	**-5.2**	**-118.8%**
Other*	**14.3**	7.0	15.9	10.8	**0.0**	**-100.0%**
Total	**15.6**	14.7	14.2	14.7	**14.2**	**-9.2%**

Data as of 17 Dec 2008

*Other includes the FCC, FTC, NRC, and OPM.
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.

D. Renewable Energy Use

FY 2007 is the first year for reporting under the new Federal renewable energy goals. Compared with prior year accounting procedures, the Government's renewable energy use as a percentage of electricity use drops significantly due to the narrower definitions of renewable energy of EPACT 2005 and Executive Order 13423. The changes to the goal performance metric include:

- EPACT 2005's language limiting the renewable energy goal to electric energy only (42 U.S.C. 15852(a)),
- Executive Order 13423's provision that at least half of the statutorily required renewable energy consumed by the agency in a fiscal year must come from new renewable sources developed after January 1, 1999.

Offsetting these limitations somewhat is EPACT 2005's provision for a double credit for renewable energy produced and used on-site or on Native American lands. (42 U.S.C. 15852(c))

Table 4 ranks the agencies according to their total use of renewable energy eligible for counting toward the goal. DOD used 59.1 percent of eligible renewable energy followed by GSA with 8.2 percent; DOE with 7.5 percent; and EPA with 7.2 percent. Federal agencies reported purchasing or producing 2,774.0 gigawatthours of renewable electric energy in FY 2007, equivalent to 4.9 percent of the Federal Government's electricity use.

TABLE 4
FEDERAL AGENCY USE OF RENEWABLE ELECTRIC ENERGY AS A PERCENTAGE OF FACILITY ELECTRICITY USE, FY 2007

	Renewable Energy and Electricity Use (Megawatthours)					
Agency	New RE (without Bonus)	Bonus, Federal or Indian Land	Eligible Old RE	Total Renewable Energy Use	Total Electricity Use	RE as % of Electricity Use
DOD	898,911	67,848	673,165	1,639,924	29,656,103	5.5%
GSA	227,890	900	0	228,791	2,934,656	7.8%
DOE	200,392	2,687	6,019	209,098	4,888,286	4.3%
EPA[1]	200,143	118	0	200,260	130,423	153.5%
Interior	65,310	2,753	43,842	111,905	613,623	18.2%
VA	53,465	3,465	50,000	106,931	3,128,624	3.4%
USDA	58,252	444	1,096	59,792	569,732	10.5%
NASA	56,371	205	0	56,576	1,610,501	3.5%
DOT	37,458	494	6	37,958	946,176	4.0%
DHS	20,978	210	8,347	29,535	729,494	4.0%
TVA	8,742	7,542	4,200	20,484	532,117	3.8%
HHS	4,012	250	14,604	18,867	973,603	1.9%
Treasury	15,468	0	3,000	18,468	403,747	4.6%
Commerce	8,417	61	1,100	9,577	315,835	3.0%
Labor	8,555	0	0	8,555	289,449	3.0%
Justice	2,094	0	3,414	5,508	1,760,928	0.3%
Archives	4,415	0	0	4,415	94,497	4.7%
State	2,556	0	0.2	2,556	115,021	2.2%
USPS	0	0	2,536	2,536	6,582,348	0.04%
SSA	1,321	131	0	1,452	195,000	0.7%
HUD	665	0	0	665	22,170	3.0%
RRB	183	0	0	183	4,519	4.0%
Total	1,875,597	87,108	811,328	2,774,033	56,496,854	4.9%

[1]EPA's renewable energy use is 153.5% of its electricity use due to its purchases of renewable electricity for space that it leases but is not responsible for payment of energy costs.

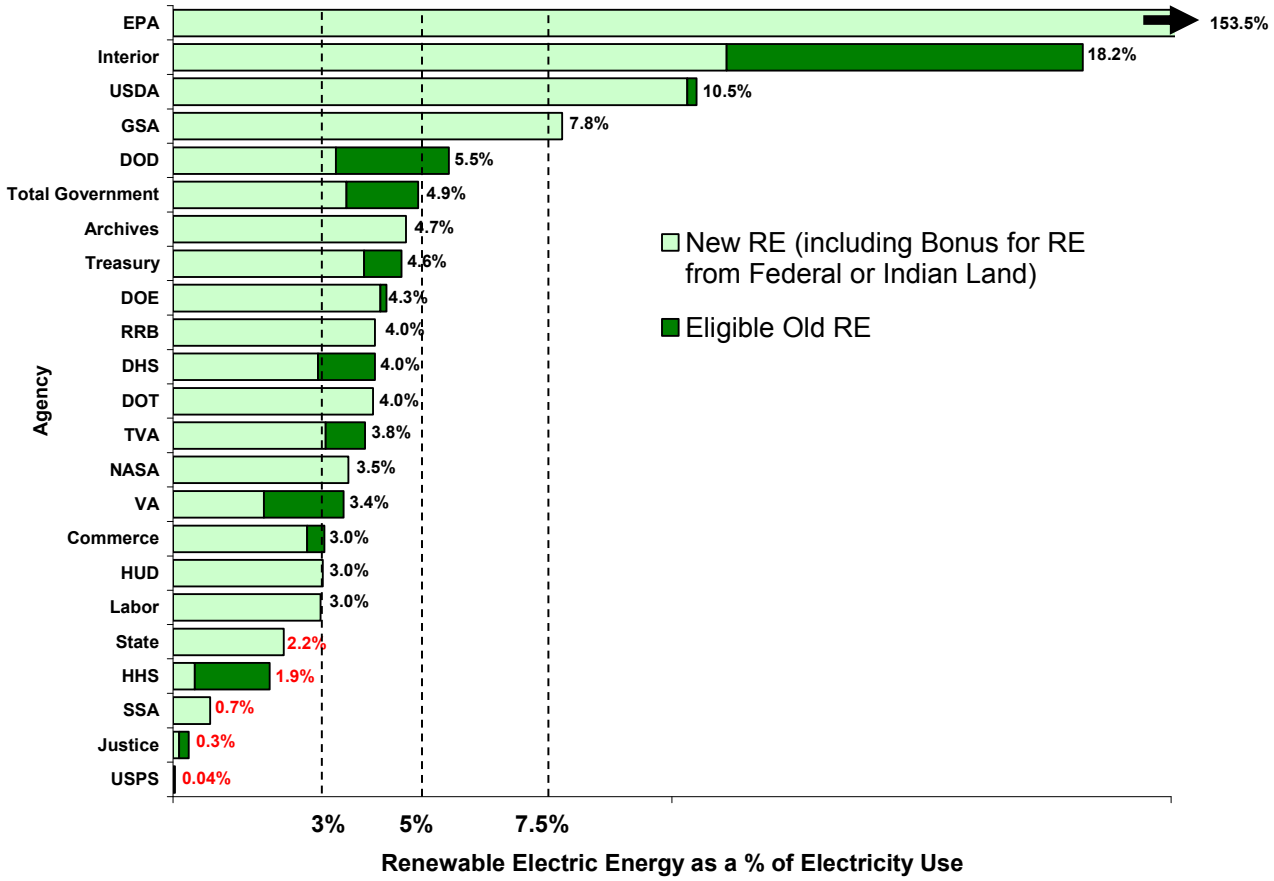
Figure 5 ranks each agency's performance under the renewable energy goal in terms of eligible renewable energy use as a percentage of their electricity use.

In FY 2007, 17 agencies obtained the equivalent of more than 3.0 percent of total electricity consumption from renewable sources. These agencies are EPA (153.5 percent), Interior (18.2 percent); USDA (10.5 percent); GSA (7.8 percent); DOD (5.5 percent); NARA (4.7 percent); Treasury (4.6 percent); DOE (4.3 percent); RRB, DHS, and DOT (4.0 percent); TVA (3.8 percent); NASA (3.5 percent); VA (3.4 percent); and Commerce, HUD, and Labor (3.0 percent). Five agencies reported renewable energy use amounting to less than 3 percent of electricity use.

EPA's remarkable renewable energy use of 153.5 percent of its electricity use was achieved through purchases of renewable electricity for space that it leases but for which is not responsible for payment or reporting of energy costs and consumption.

More information on the progress of the Federal Government in meeting the renewable energy goals of EPACT 2005 and Executive Order 13423 will be available in the report required under Section 203 of EPACT 2005 (42 U.S.C. 15852(d)). This report is prepared every two years. The first report is available at www1.eere.energy.gov/femp/pdfs/epact_sec203_report.pdf. The next report was due April 15, 2009 and was in DOE review at the time that this report was published.

Figure 5
Renewable Electric Energy Use as a Percentage of Facility Electricity Use, FY 2007



E. Petroleum Reduction

The strategic nature of petroleum-based fuel reduction has long been recognized by statutory and Executive Branch authorities.

In FY 2007, petroleum-based fuels accounted for 717,261.6 billion Btu (0.72 quads) of the total 1.1 quads consumed by the Federal Government (Table 5). Of that, approximately 670,634.8 billion Btu (0.67 quads) were used by DOD primarily for jet fuel, navy special fuel oil, and distillate/diesel for vehicles and equipment energy. Only 0.03 quads (30,058.9 billion Btu) of petroleum-based fuels were used for Federal non-excluded building energy.

Federal agencies have made significant progress in reducing their dependence on fuel oil and LPG/ propane in their buildings. Table 6 shows that Federal agencies reduced petroleum-based fuels by 74.7 percent in FY 2007 compared to FY 1985, from 118.8 trillion Btu to 30.1 trillion Btu. Compared to FY 2003, use of these fuels fell by 30.3 percent. Figure 6 illustrates the trend for petroleum-based fuel consumption in goal buildings from FY 1995 to FY 2007 and for FY 1985 and FY 1990.

Figure 6
Petroleum-Based Fuel Consumption in Federal Goal-Subject Buildings; 1985, 1990, and 1995 through 2007

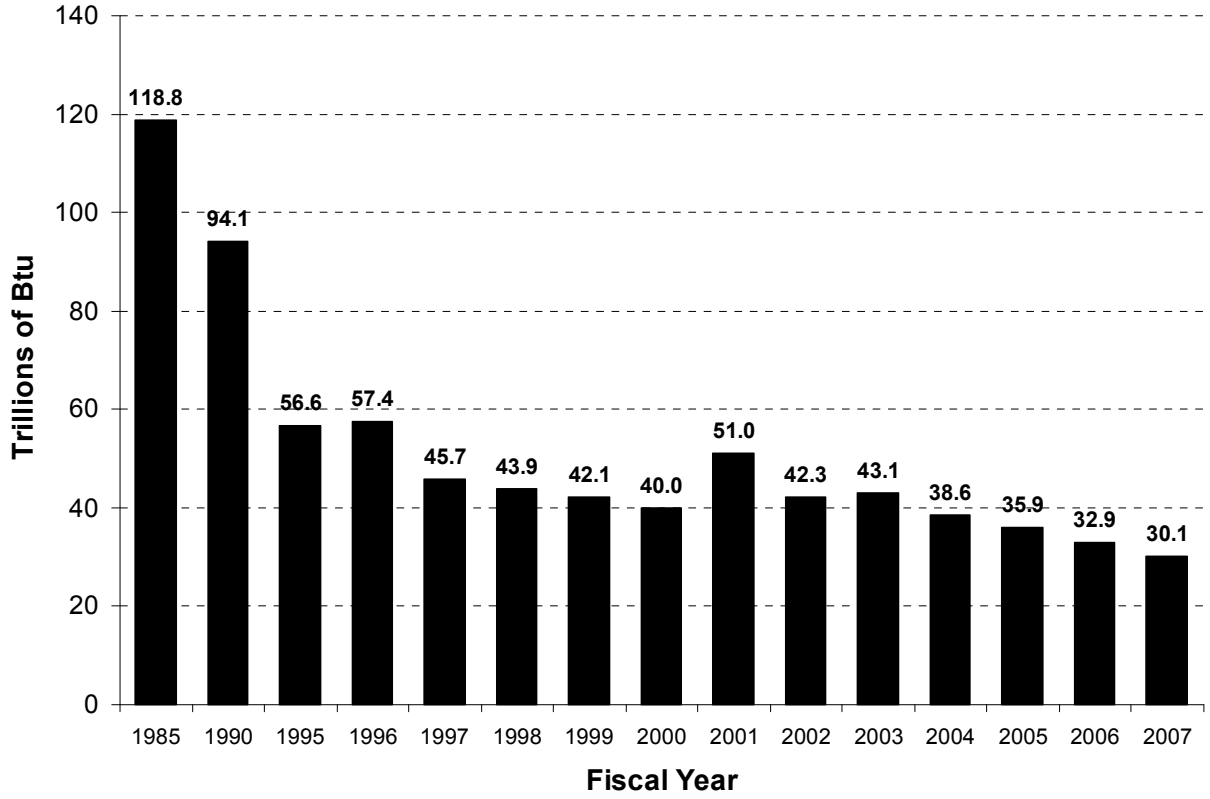


TABLE 5
FEDERAL PETROLEUM USAGE IN FY 2007
(in Thousands of Gallons, Billions of Btu, and Petajoules [Joule x 10^{15}])

	Unit Total (K Gal)	BBTU* DOD	BBTU* Civilian	BBTU* Total	Petajoules* Total
EPACT Goal Buildings					
Fuel Oil	198,175.7	21,905.8	5,581.2	27,487.0	29.0
LPG/Propane	26,931.2	1,330.2	1,241.7	2,571.9	2.7
Excluded Facilities					
Fuel Oil	8,763.1	847.0	368.4	1,215.4	1.3
LPG/Propane	359.7	14.0	20.3	34.3	0.0
Vehicles & Equipment					
Motor Gas	367,813.3	17,812.3	28,164.4	45,976.7	48.5
Dist-Diesel & Petrol.	609,340.4	74,366.9	10,148.6	84,515.5	89.2
Aviation Gas	2,908.5	105.0	258.6	363.6	0.4
Jet Fuel	3,547,239.7	455,591.3	5,549.9	461,141.2	486.5
Navy Special Fuel Oil	707,680.5	96,942.3	1,212.9	98,155.3	103.6
LPG/Propane	824.4	0.5	78.2	78.7	0.1
Other	2,933.6	1,719.4	1,214.2	2,933.6	3.1
Total		670,634.8	46,626.8	717,261.6	756.7

*Uses a conversion factor of:
95,500 BTUs/gallon for lpg/propane
138,700 BTUs/gallon for fuel oil, distillate-diesel & petroleum, and navy special
125,000 BTUs/gallon for motor gasoline and aviation gasoline
130,000 BTUs/gallon for jet fuel
947.9 Billion BTUs/Petajoule
1,055 Petajoule/quad

Data as of 17 Dec 2008

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

Source: Federal Agency Annual Energy Management Data Reports

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

AGENCY	**FY 1985. . .**	FY 1990. . .	FY 1995. . .	FY 2000	FY 2001	FY 2002	**FY 2003**	FY 2004	FY 2005	FY 2006	**FY 2007**	**% CHANGE 85-07**	**% CHANGE 03-07**
DOD	**101,385.4**	77,517.0	46,340.5	32,748.8	39,297.4	33,794.7	**33,260.8**	29,756.0	27,393.5	25,546.6	**23,236.0**	**-77.1**	**-30.1**
DHS	**0.0**	0.0	0.0	0.0	0.0	0.0	**1,400.3**	1,223.1	1,279.3	1,187.4	**1,102.5**	**NA**	**-21.3**
DOE	**1,773.3**	1,965.8	2,093.2	1,063.9	1,706.0	1,207.3	**1,493.2**	1,409.4	1,322.0	1,178.6	**1,096.8**	**-38.1**	**-26.5**
DOI	**1,591.6**	1,273.9	1,574.3	996.7	1,324.0	1,382.5	**1,249.1**	1,574.8	1,292.9	1,307.9	**1,087.6**	**-31.7**	**-12.9**
VA	**2,176.7**	2,219.3	1,292.9	1,045.4	3,040.5	1,206.2	**1,659.6**	1,114.7	911.5	931.2	**885.2**	**-59.3**	**-46.7**
USPS	**1,673.2**	1,502.2	813.9	857.9	1,425.5	719.9	**997.6**	1,342.9	1,388.5	1,089.5	**680.9**	**-59.3**	**-31.7**
HHS	**2,096.5**	2,282.0	1,152.5	751.4	897.0	636.6	**892.8**	477.4	612.9	501.9	**659.3**	**-68.6**	**-26.2**
USDA	**900.6**	732.7	426.7	226.0	327.6	422.4	**943.6**	586.2	809.6	397.6	**488.1**	**-45.8**	**-48.3**
DOL	**437.8**	331.2	210.8	193.2	210.0	405.0	**362.4**	337.4	181.8	172.2	**199.4**	**-54.5**	**-45.0**
NASA	**652.6**	896.4	360.9	206.1	265.2	229.0	**220.8**	308.6	219.6	170.5	**189.2**	**-71.0**	**-14.3**
DOJ	**381.7**	371.6	286.2	240.5	261.5	289.0	**188.8**	161.1	284.3	171.3	**137.1**	**-64.1**	**-27.4**
GSA	**3,120.0**	2,040.4	250.3	121.1	466.7	99.7	**140.1**	103.0	50.1	101.9	**125.5**	**-96.0**	**-10.4**
DOC	**157.2**	77.6	354.8	77.7	56.6	33.7	**122.7**	42.8	69.2	42.6	**58.1**	**-63.0**	**-52.6**
TRSY	**22.5**	291.4	117.1	120.7	102.1	80.1	**61.5**	60.4	55.0	52.8	**57.3**	**154.7**	**-6.8**
SSA	**0.0**	0.0	0.0	40.2	37.7	50.9	**44.0**	40.6	31.5	30.4	**36.9**	**NA**	**-16.1**
EPA	**16.7**	5.9	43.4	33.7	113.3	17.7	**97.3**	95.4	26.2	32.8	**15.9**	**-4.8**	**-83.7**
TVA	**4.2**	3.2	3.9	1.9	1.5	1.5	**1.5**	1.9	1.5	0.7	**2.3**	**-45.2**	**53.3**
DOT	**2,380.4**	1,524.1	912.2	815.0	928.2	1,014.2	**3.8**	3.4	2.3	1.5	**0.8**	**-100.0**	**-78.9**
NARA	**0.0**	0.0	7.1	7.4	82.2	0.0	**0.0**	0.0	0.0	0.0	**0.0**	**NA**	**NA**
BBG/IBB	**0.0**	1,055.2	375.6	472.7	472.7	660.1	**0.0**	0.0	0.0	0.0	**0.0**	**NA**	**NA**
Other	**21.1**	13.3	1.3	0.6	0.6	0.6	**0.6**	0.0	0.4	0.3	**0.0**	**-100.0**	**-100.0**
TOTAL	**118,791.5**	94,103.3	56,617.5	40,020.9	51,016.3	42,251.0	**43,140.3**	38,639.3	35,931.8	32,917.9	**30,058.9**	**-74.7**	**-30.3**

Data as of 17 Dec 2008

*Petroleum-based fuels comprise fuel oil and LPG/propane.
Other includes, for certain years, FCC, FEMA, FTC, NRC, OPM.

Note: Ellipses after fiscal year (1985. . .) indicate where intervening years' data are left off the table, but available upon request from FEMP.
Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

F. Primary Energy Use

Primary energy consumption considers all resources used to generate and transport electricity and steam in addition to the energy delivered to the site of use. DOE uses National-level source conversion factors of 11,850 Btu per kilowatt hour for electricity and 1,390 Btu per pound of steam to estimate primary energy consumption. See Appendix B for background on the conversion factors for calculating both primary and site-delivered energy consumption.

Table 7 shows that primary energy use in Federal buildings subject to the NECPA energy reduction requirement declined 12.0 percent in FY 2007 compared to FY 1985, from 882.9 trillion Btu to 777.3 trillion Btu. Compared to FY 2003 consumption of 817.6 trillion Btu, FY 2007 primary energy use declined 4.9 percent. Primary energy used in Federal buildings during FY 2007 decreased 2.3 percent from the previous year.

Table 8 shows Federal agency progress toward the NECPA energy reduction requirement in terms of primary energy use per gross square foot. Measured in terms of primary energy, the Federal Government shows a reduction of 10.2 percent in FY 2007 compared to FY 2003. The difference from the site-delivered Btu/GSF reduction of 11.0 percent (as shown previously in Table 1) reflects declines in direct use of fossil fuels and the offsetting increases in the share of the fuel mix contributed by electricity and purchased steam.

Without purchases of renewable energy in FY 2007, estimated primary energy intensity is 6.1 percent below the FY 2003 Btu/GSF baseline. The purchases of renewable energy, particularly electric energy, displace the energy input of the fossil fuels used to generate electricity. EPA's purchase of more renewable electric energy than is actually accounted for under its goal buildings energy use results in a negative energy intensity for FY 2007.

TABLE 7
PRIMARY ENERGY USE IN GOAL-SUBJECT 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 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	% Change 85-07	% Change 03-07	% Change 06-07
USPS	40,143.9	47,824.8	57,606.8	66,217.4	62,202.1	62,145.5	81,289.9	85,144.1	93,846.3	89,891.7	78,203.6	94.8	-3.8	-13.0
VA	42,864.1	44,400.3	47,474.3	49,633.7	52,031.5	52,217.8	54,990.9	54,694.9	55,320.2	54,275.7	55,800.1	30.2	1.5	2.8
DOE	66,407.8	67,974.2	62,984.0	56,356.8	52,584.0	56,996.4	57,381.4	56,585.1	54,576.6	51,070.4	49,002.5	-26.2	-14.6	-4.0
GSA	45,589.4	39,162.3	36,535.0	40,614.0	41,558.5	40,737.5	36,938.2	41,404.9	41,301.6	35,132.5	36,389.1	-20.2	-1.5	3.6
DOJ	9,048.5	9,512.4	14,011.8	20,975.6	21,300.2	21,209.2	33,924.4	24,556.5	26,693.2	33,270.5	32,634.6	260.7	-3.8	-1.9
HHS	10,128.2	13,188.5	12,084.2	14,633.6	15,334.3	15,696.3	19,087.6	16,672.1	18,139.0	16,207.2	17,918.7	76.9	-6.1	10.6
NASA	17,379.0	20,954.2	21,138.1	19,625.0	19,363.4	19,018.2	17,483.5	17,741.2	18,840.6	16,031.6	15,824.9	-8.9	-9.5	-1.3
DHS	0.0	0.0	0.0	0.0	0.0	0.0	10,750.2	10,479.6	10,327.5	9,597.1	10,198.7	NA	-5.1	6.3
DOI	8,542.8	7,616.8	7,770.1	8,202.1	9,685.2	9,690.9	11,166.6	11,428.7	10,675.2	10,681.3	9,730.5	13.9	-12.9	-8.9
USDA	7,947.0	9,668.0	9,502.6	9,339.8	9,620.4	9,078.5	11,913.0	9,548.6	10,099.3	9,287.5	9,124.2	14.8	-23.4	-1.8
TRSY	1,723.3	5,542.3	6,009.7	7,148.0	6,972.5	7,032.5	6,021.9	5,882.8	5,826.6	5,335.9	5,591.1	224.4	-7.2	4.8
DOC	3,075.3	3,283.3	4,906.6	3,963.2	4,893.2	4,400.1	4,511.8	4,804.5	4,759.8	4,602.6	4,740.5	54.1	5.1	3.0
DOL	3,734.1	3,916.2	3,979.2	4,392.2	4,666.0	4,813.7	5,068.9	4,997.8	4,855.8	4,314.6	4,701.1	25.9	-7.3	9.0
SSA	0.0	0.0	0.0	3,070.2	3,001.2	2,889.9	2,993.2	2,785.5	2,904.3	2,739.5	2,746.6	NA	-8.2	0.3
EPA	1,644.1	1,643.0	2,165.1	1,959.9	2,297.0	2,089.6	2,441.9	2,467.7	2,475.8	2,398.0	2,288.9	39.2	-6.3	-4.5
DOT	8,746.5	7,217.0	8,472.5	8,810.5	8,849.0	9,326.2	1,979.3	1,969.9	1,881.9	1,817.5	1,985.9	-77.3	0.3	9.3
TVA	1,779.6	1,830.1	2,797.8	2,426.6	2,427.2	2,210.2	2,220.6	2,188.3	2,127.7	2,053.5	1,871.5	5.2	-15.7	-8.9
NARA	0.0	215.9	1,546.3	1,293.8	1,323.6	1,249.0	1,150.2	1,296.0	1,549.0	1,472.7	1,429.1	NA	24.2	-3.0
ST	702.6	833.6	260.3	389.6	324.4	738.6	1,036.8	975.1	1,040.4	1,498.4	1,114.9	58.7	7.5	-25.6
HUD	356.2	435.0	322.3	324.2	336.7	327.8	339.4	317.2	315.9	297.1	299.7	-15.9	-11.7	0.9
RRB	0.0	103.7	99.0	79.1	74.6	75.6	73.1	72.5	72.9	72.9	72.7	NA	-0.5	-0.3
OTHER*	1,668.4	4,539.1	6,011.0	4,965.9	4,905.1	7,115.4	602.4	287.8	316.3	29.4	0.0	-100.0	-100.0	-100.0
Civilian Agencies Subtotal	271,480.5	289,860.9	305,676.8	324,421.1	323,749.9	329,059.0	363,365.2	356,300.7	367,945.7	352,077.7	341,668.9	25.9	-6.0	-3.0
DOD	611,431.9	663,669.2	556,998.4	492,646.7	482,168.3	480,472.1	454,249.4	471,709.4	465,121.1	443,264.5	435,623.5	-28.8	-4.1	-1.7
Total	882,912.4	953,530.1	862,675.2	817,067.8	805,918.2	809,531.1	817,614.6	828,010.1	833,066.8	795,342.2	777,292.5	-12.0	-4.9	-2.3
MBOE	151.6	163.7	148.1	140.3	138.4	139.0	140.4	142.1	143.0	136.5	133.4			
Petajoule	931.4	1005.9	910.1	862.0	850.2	854.0	862.6	873.5	878.9	839.1	820.0			

Other includes, for certain years, FCC, FEMA, FTC, NRC, and OPM. Data as of 17 Dec 2008

Notes: Renewable energy purchases have not been subtracted primary energy consumption in this table, making it comparable with Table A-3 which presents site-delivered energy use.

This table uses a conversion factor for electricity of 11,850 Btu per kilowatt hour and 1,390 Btu per pound of steam.

Ellipses after fiscal year (1985. . .) indicate where intervening years' data are left off the table, but available upon request from FEMP.

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

TABLE 8
FEDERAL GOAL-SUBJECT BUILDINGS PRIMARY ENERGY USE PER GROSS SQUARE FOOT (BTU/GSF), FY 2003 AND FY 2007

	FISCAL YEAR 2003			FISCAL YEAR 2007			%CHANGE
	GSF (Thou.)	Billion Btu	**BTU/GSF**	GSF (Thou.)	Billion Btu	**BTU/GSF**	**2003-2007**
USPS	313,991.4	81,289.9	**258,892**	312,962.7	*78,203.6*	***249,882***	**-3.5**
VA	141,326.3	54,990.9	**389,106**	144,836.1	*54,615.1*	***377,082***	**-3.1**
DOE	90,961.3	57,381.4	**630,833**	88,936.9	*46,520.0*	***523,067***	**-17.1**
GSA	182,825.5	36,938.2	**202,041**	182,396.2	*33,716.8*	***184,855***	**-8.5**
DOJ	56,771.1	33,924.4	**597,564**	72,917.6	*32,582.6*	***446,841***	**-25.2**
HHS	27,742.0	19,087.6	**688,039**	30,590.6	*17,688.2*	***578,224***	**-16.0**
NASA	31,728.9	17,483.5	**551,066**	31,656.0	*13,458.6*	***425,150***	**-22.8**
DHS	40,141.3	10,750.2	**267,809**	43,948.2	*9,853.9*	***224,217***	**-16.3**
DOI	57,857.6	11,166.6	**193,002**	61,724.9	*8,498.6*	***137,686***	**-28.7**
USDA	61,948.6	11,913.0	**192,305**	57,480.9	*8,439.2*	***146,817***	**-23.7**
TRSY	12,487.6	6,021.9	**482,232**	12,592.5	*5,372.3*	***426,624***	**-11.5**
DOC	10,045.0	4,511.8	**449,159**	13,602.9	*4,713.8*	***346,527***	**-22.8**
DOL	21,612.3	5,068.9	**234,538**	23,352.0	*4,599.7*	***196,974***	**-16.0**
SSA	9,262.0	2,993.2	**323,174**	9,262.0	*2,732.5*	***295,023***	**-8.7**
TVA	9,796.2	2,220.6	**226,680**	8,870.4	*1,857.6*	***209,420***	**-7.6**
DOT	7,114.6	1,979.3	**278,197**	7,265.0	*1,547.9*	***213,059***	**-23.4**
NARA	2,804.6	1,150.2	**410,118**	4,062.0	1,376.8	**338,943**	**-17.4**
ST	3,793.5	1,036.8	**273,311**	4,443.1	1,084.6	***244,112***	**-10.7**
HUD	1,432.0	339.4	**236,990**	1,432.0	291.8	***203,784***	**-14.0**
RRB	346.9	73.1	**210,862**	346.9	*70.5*	***203,319***	**-3.6**
EPA	3,648.8	2,441.9	**669,244**	3,723.3	*-81.4*	***-21,861***	**-103.3**
OTHER*	2,202.1	602.4	**273,538**	0.0	0.0	**NA**	**NA**
Civilian Agencies Subtotal	1,089,839.6	363,365.2	**333,412**	1,116,402.2	*306,136.3*	***274,217***	**-17.8**
DOD	1,926,475.4	454,249.4	**235,793**	1,892,554.3	*425,719.6*	***224,944***	**-4.6**
TOTAL	3,016,315.0	817,614.6	**271,064**	3,008,956.5	*731,856.0*	***243,226***	**-10.3**

*Other includes the FCC, FTC, NRC, and OPM .

Data as of 17 Dec 2008

Italics indicates that reductions were made to FY 2007 energy use and Btu/GSF to reflect purchases of renewable energy. When calculating Btu/GSF, the following amounts were subtracted from agency energy use for FY 2007: VA, 1,185.0 BBtu; DOE, 2,482.5 BBtu; GSA, 2,682.5 BBtu; DOJ, 52.0 BBtu; HHS, 230.5 BBtu; HUD, 7.9 BBtu; NASA, 2366.3 BBtu; DOI, 1,231.9 BBtu; DHS, 344.8 BBtu; USDA, 685.0 BBtu; TRSY, 218.8 BBtu; DOC, 26.7 BBtu; DOL, 101.4 BBtu; RRB, 2.2 BBtu; SSA, 14.1 BBtu; EPA, 2,370.3 BBtu; TVA, 13.9 BBtu; DOT, 438.0 BBtu; ST, 30.3 BBtu; and DOD, 17,544.9 BBtu.

Note: This table uses a conversion factor for electricity of 11,850 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

G. Water Conservation

Section 2(c) of Executive Order 13423 requires agencies "beginning in FY 2008, reduce water consumption intensity, relative to the baseline of the agency's water consumption in fiscal year 2007, through life-cycle cost effective measures by 2 percent annually through the end of fiscal year 2015 or 16 percent by the end of fiscal year 2015." This supersedes the water conservation goals under the previous Executive Order 13123, which required agencies to develop water management plans and implement best practices. Agencies are still encouraged to use these tools to meet the new water goals.

DOE issued supplemental guidance for implementing the water goal of Executive Order 13423. *Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423* (available at www1.eere.energy.gov/femp/pdfs/water_guidance.pdf) provides clarification and assists in the implementation of, and ultimate compliance with, Executive Order 13423. Specifically, three key elements of compliance were identified and presented: baseline development, efficiency opportunity identification/implementation, and necessary reporting. For each key area, this document provides an explanation of the relevant Executive Order language, suggests a path forward, and provides resources for additional information.

As reported by the agencies, the Federal Government as a whole used 164.4 billion gallons of water in FY 2007 at a cost of $536.3 million. Table 9 ranks agencies according to water use. Water intensity in terms of gallons use per gross square foot of facility space is also represented. The facility gross square footage in the table represents all facility space, including buildings subject to the energy intensity reduction goal and those that are excluded. On average, the Federal Government's water intensity in FY 2007 was 52.5 gallons per gross square foot.

The Department of Defense represents the largest Federal water consumer. With an area associated with water usage of almost 2.0 billion square feet, DOD consumed 116.8 billion gallons of water in FY 2007, representing 71.1 percent of the Federal Government's water consumption for FY 2007. The Department of Veterans Affairs, with its mission in both the cemetery and health care environments, was the second largest Federal water consumer, consuming 5.7 percent of the total Federal water consumption in FY 2007 or 9.3 billion gallons.

Meeting the goals of Executive Order 13423 requires all Federal agencies to develop a water use baseline based on FY 2007 water intensity. The calculation of a water baseline takes into account water use intensity, defined as gallons of water used at the building, facility, or site, per gross square foot of total facility space. All potable water used in goal and excluded facilities is included, whether used for human consumption, building processes, power plant or building cooling, landscape watering, irrigation, or industrial uses.

Figure 7 ranks agencies according to their FY 2007 water intensity. The Department of Justice reported the highest water use intensity, 123.3 gallons per gross square foot. This is due to its large percentage of facility space dedicated to custodial housing. The VA reported the second highest water use intensity, 64.5 gallons per gross square foot, followed by DOD, which reported 59.8 gallons per gross square footage. Agencies such as Railroad Retirement Board, HUD, GSA, and SSA that are chiefly comprised of office space, have water intensity rates lower than 16 gallons per gross square foot.

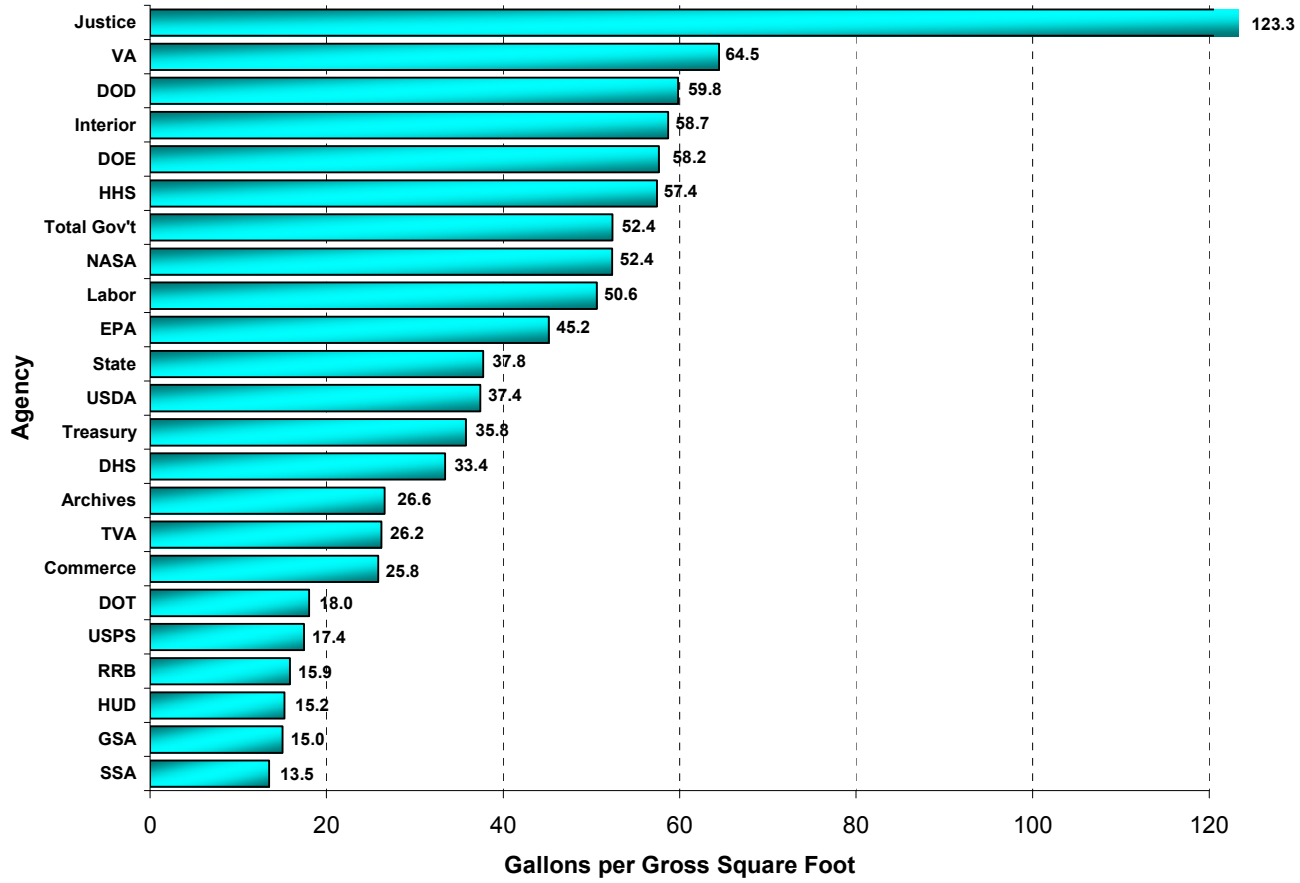
Agency-specific details pertaining to their water conservation activities are described in Section III of this report.

TABLE 9
FY 2007 AGENCY WATER CONSUMPTION INTENSITY AND COSTS
(In Millions of Gallons and Gallons per Gross Square Foot)

Agency	Annual Consumption (Million Gallons)	Annual Cost (Thou. $)	Facility Gross Square Feet (Thou.)	Gallons per Gross Square Foot
DOD	116,752.0	$358,806.6	1,952,056.2	59.8
VA	9,337.3	$26,511.4	144,836.1	64.5
Justice	8,990.3	$27,928.4	72,917.6	123.3
DOE	6,455.2	$13,838.8	111,942.5	57.7
USPS	5,455.9	$29,265.6	312,962.7	17.4
Interior	3,624.3	$10,905.9	61,724.9	58.7
GSA	2,651.2	$18,104.9	176,414.5	15.0
USDA	2,150.9	$4,876.0	57,480.9	37.4
NASA	2,036.5	$5,085.8	38,896.2	52.4
HHS	1,799.7	$11,814.7	31,338.4	57.4
DHS	1,522.8	$12,442.9	45,556.7	33.4
Labor	1,029.0	$4,816.3	20,335.8	50.6
TVA	733.0	$2,248.2	27,969.8	26.2
DOT	464.1	$3,002.8	25,722.1	18.0
Treasury	431.1	$1,795.5	12,049.6	35.8
Commerce	352.1	$1,571.2	13,627.9	25.8
State	169.0	$762.2	4,476.7	37.8
EPA	168.1	$1,196.0	3,723.3	45.2
SSA	125.0	$617.1	9,262.0	13.5
Archives	107.9	$552.9	4,062.0	26.6
HUD	21.8	$139.1	1,432.0	15.2
RRB	5.5	$19.5	346.9	15.9
Total	164,382.9	$536,301.9	3,129,134.9	52.5

Data as of 17 Dec 2008

Figure 7
FY 2007 Federal Agency Water Intensity



Source: Federal Agency Annual Energy Management Data Reports

H. Investments in Energy Efficiency

During FY 2007, Federal agencies had three primary options for financing energy efficiency, water conservation, and renewable energy projects in buildings: direct appropriated funding, energy savings performance contracts (ESPCs), and utility energy service contracts (UESCs). As shown in Table 10, reported funding from the three sources totaled approximately $640.3 million in FY 2007. Direct appropriations accounted for approximately $335.3 million. ESPC contract awards by agencies resulted in approximately $165.9 million in estimated project investment in FY 2007 ($144.4 million from DOE Super ESPC delivery orders and $21.5 million from other agency ESPCs), and approximately $139.1 million in project investment came from UESCs.

On August 3, 2007, then Chairman of the Council on Environmental Quality, James L. Connaughton, sent a memorandum to the heads of Executive Branch departments and agencies challenging them to substantially increase investment in energy efficiency projects. The memorandum set targets for agencies to invest amounts equivalent to 20 percent of their annual energy costs on efficiency enhancements, with at least 10 percent to be financed through ESPCs or UESCs. Table 10 shows each agency's total investment and financed investment as a percentage of facility energy costs. Overall, the Government invested the equivalent of 9.8 percent of facility energy costs on efficiency enhancements in FY 2007. More than $305.0 million of this investment was financed through ESPCs or UESCs, equivalent to 4.7 percent of FY 2007 facility energy costs.

Since 2003, the Government has invested approximately $2.8 billion in energy efficiency, $1,256.7 million of which was direct agency expenditures, $1,068.2 million was from ESPCs and $478.1 million was from UESCs. Figure 8 illustrates investment trends during the period from each funding source.

1. Direct Appropriations

In support of the information required in annual budget request to Congress under section 545 of NECPA, each agency identifies funds requested for energy conservation measures. (42 U.S.C. § 8255) Table 11-A presents agency funding (in nominal dollars) reported from FY 1985 through FY 2007 for energy conservation retrofits and capital equipment. Table 11-B presents the same information in constant 2007 dollars. Reports from Federal agencies indicated that $335.3 million was spent on energy efficiency projects in FY 2007, compared with $287.1 million in FY 2006, a 16.8 percent increase in constant dollars. 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.

The U.S. Postal Service reported $50.0 million in investment in FY 2007, a 40.2 percent increase from FY 2006. DHS increased its direct funding by more than 10 times from the previous year to $31.1 million in FY 2007. DOD funded $168.1 million for energy efficiency projects in FY 2007, an increase of 3.6 percent from the previous year. GSA spent $19.9 million compared to $28.6 million in FY 2006. VA reported funding $17.5 million in FY 2007 up from $8.6 million in FY 2006.

2. Energy Savings Performance Contracts

During FY 2007, 21 ESPC contracts or delivery orders were awarded at eight agencies. These include delivery orders awarded through the DOE/FEMP Super ESPC programs as well as projects awarded by the DOD and the U.S. Postal Service. Project investment from these projects totaled approximately $165.9 million, providing the Government with an opportunity to save more than 1.1 trillion Btu each year. Details of these contract awards are provided by agency in Table 12.

Through a decentralized approach, DOD awarded the largest number of contracts/delivery orders with 10 ESPC projects in FY 2007. These contracts include many infrastructure upgrades and new equipment to help DOD installations reduce energy and water consumption. Examples include new thermal storage systems, chillers, boilers, lights, motors, energy management control systems (EMCS), and water reducing devices.

TABLE 10
INVESTMENT IN ENERGY EFFICIENCY AND RENEWABLE ENERGY IN FY 2007
(By Source of Funding and as a Percentage of Facility Energy Costs)

	Investment in Energy Efficiency/Renewable Energy (FY 2007)						
Agency	Direct Obligations	ESPC	UESC	Total Investment	Facility Energy Costs (FY 2007)	Total Investment as a % of Energy $	Financed Investment as a % of Energy $
DHS	$31,050,460	$31,308,918	$0	$62,359,378	$100,783,721	61.9%	31.1%
Smithsonian	$0	$19,908,524	$0	$19,908,524	$33,601,600	59.2%	59.2%
EPA	$5,654,170	$0	$0	$5,654,170	$19,859,676	28.5%	0.0%
HHS	$2,498,000	$0	$34,748,509	$37,246,509	$168,434,787	22.1%	20.6%
Interior	$10,884,500	$3,657,852	$0	$14,542,352	$94,926,740	15.3%	3.9%
NASA	$11,155,000	$3,391,000	$4,895,000	$19,441,000	$156,206,500	12.4%	5.3%
USDA	$4,210,890	$0	$5,460,000	$9,670,890	$80,346,457	12.0%	6.8%
Treasury	$2,211,600	$0	$3,136,700	$5,348,300	$45,466,100	11.8%	6.9%
DOD	$168,111,709	$96,693,600	$90,896,600	$355,701,909	$3,416,696,484	10.4%	5.5%
USPS	$50,000,000	$3,534,600	$0	$53,534,600	$610,394,395	8.8%	0.6%
Archives	$1,097,400	$0	$0	$1,097,400	$13,548,824	8.1%	0.0%
Commerce	$3,787,909	$0	$0	$3,787,909	$48,218,406	7.9%	0.0%
RRB	$35,000	$0	$0	$35,000	$530,900	6.6%	0.0%
GSA	$19,864,400	$3,827,467	$0	$23,691,867	$421,245,300	5.6%	0.9%
VA	$17,500,000	$0	$0	$17,500,000	$475,454,051	3.7%	0.0%
DOT	$4,324,700	$0	$0	$4,324,700	$124,461,600	3.5%	0.0%
SSA	$500,000	$0	$0	$500,000	$24,881,400	2.0%	0.0%
TVA	$325,000	$0	$0	$325,000	$24,991,350	1.3%	0.0%
DOE	$1,337,413	$3,557,332	$0	$4,894,745	$376,736,358	1.3%	0.9%
Labor	$500,000	$0	$0	$500,000	$57,554,905	0.9%	0.0%
Justice	$268,800	$0	$0	$268,800	$192,740,460	0.1%	0.0%
State	$0	$0	$0	$0	$15,380,950	0.0%	0.0%
HUD	$0	$0	$0	$0	$3,595,335	0.0%	0.0%
Total	$335,316,951	$165,879,293	$139,136,809	$640,333,053	$6,506,056,298	9.8%	4.7%

Note: Total facility energy cost includes costs of the Smithsonian Institution which is not a Federal Executive Branch agency and therefore not included in the main data set of this report. It appears in this table in order to reflect its $19.9 million ESPC investment awarded under the DOE's Super ESPC contract vehicle.

Figure 8
Investment in Energy Efficiency and Renewable Energy, FY 2003 to FY 2007
(Millions of As-Spent Dollars)

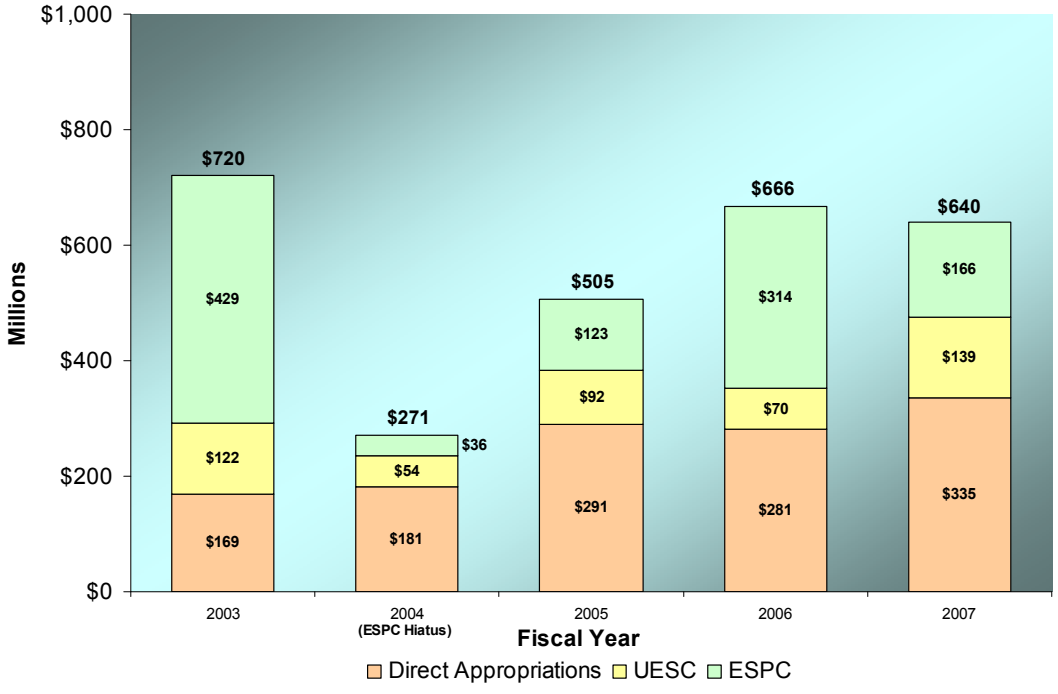


TABLE 11-A
AGENCY DIRECT EXPENDITURES FOR ENERGY EFFICIENCY PROJECTS, FY 1985 THROUGH FY 2007
(THOUSANDS OF NOMINAL (AS-SPENT) DOLLARS)

AGENCY	FY 1985. . .	FY 1990. . .	FY 1995. . .	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	**FY 2006**	**FY 2007**	**% CHANGE 06-07**
DOD	$136,100	$1,020	$189,600	$44,442	$57,113	$60,600	$103,490	$121,400	$188,961	**$158,792**	**$168,112**	**5.9**
USPS	$55,300	$4,000	$10,050	$6,000	$0	$0	$0	$0	$0	**$34,908**	**$50,000**	**43.2**
DHS	$0	$0	$0	$0	$0	$0	$1,700	$1,740	$2,714	**$2,810**	**$31,050**	**1,005.2**
GSA	$6,700	$11,125	$7,242	$17,000	$5,000	$4,500	$4,800	$5,000	$35,213	**$28,000**	**$19,864**	**-29.1**
VA	$13,000	$11,200	$11,960	$0	$15,000	$898	$686	$2,000	$18,700	**$8,426**	**$17,500**	**107.7**
NASA	$11,800	$2,943	$20,666	$11,731	$6,045	$9,389	$8,501	$11,118	$10,950	**$13,753**	**$11,155**	**-18.9**
DOI	$3,198	$0	$779	$23,999	$3,220	$22,800	$26,134	$5,740	$7,592	**$10,463**	**$10,885**	**4.0**
EPA	$0	$0	$1,720	$0	$1,963	$1,684	$2,439	$3,458	$3,790	**$2,950**	**$5,654**	**91.7**
DOT	$13,650	$0	$3,793	$2,664	$4,321	$2,085	$1,243	$978	$2,318	**$2,289**	**$4,325**	**88.9**
USDA	$2,500	$1,547	$2,894	$1,954	$2,100	$3,818	$2,000	$2,958	$2,655	**$1,000**	**$4,211**	**321.1**
DOC	$0	$0	$0	$257	$257	$1,883	$621	$3,537	$3,405	**$4,960**	**$3,788**	**-23.6**
HHS	$0	$427	$1,271	$8,440	$8,640	$1,771	$3,700	$2,934	$7,363	**$2,095**	**$2,498**	**19.3**
TRSY	$0	$1,134	$2,810	$2,152	$4,670	$8,678	$7,854	$8,662	$2,379	**$3,667**	**$2,212**	**-39.7**
DOE	$14,800	$19,500	$30,200	$0	$2,000	$1,400	$1,500	$1,963	$1,951	**$4,366**	**$1,337**	**-69.4**
NARA	$0	$0	$0	$0	$9	$68	$140	$100	$295	**$584**	**$1,097**	**87.9**
DOL	$238	$17	$0	$0	$0	$0	$0	$0	$448	**$500**	**$500**	**0.0**
SSA	$0	$0	$0	$1,000	$1,000	$500	$175	$500	$885	**$370**	**$500**	**35.1**
TVA	$0	$0	$4,277	$284	$300	$365	$400	$336	$278	**$276**	**$325**	**17.8**
DOJ	$0	$6,100	$994	$1,170	$489	$968	$223	$1,300	$651	**$788**	**$269**	**-65.9**
RRB	$0	$0	$33	$0	$35	$10	$15	$15	$15	**$15**	**$35**	**133.3**
STATE	$0	$0	$0	$0	$260	$4	$847	$70	$0	**$36**	**$0**	**-100.0**
HUD	$0	$0	$43	$0	$55	$22	$68	$8	$0	**$26**	**$0**	**-100.0**
Total	$257,286	$59,013	$288,332	$121,093	$112,476	$121,442	$166,536	$173,815	$290,563	**$281,073**	**$335,317**	**19.3**

Data as of 17 Dec 2008

Notes: Does not include energy savings performance contracts, utility energy service contracts, and utility demand side management incentives. Ellipses after fiscal year (1985. . .) indicate where intervening years' data are left off the table, but available upon request from FEMP. Sum of components may not equal total due to independent rounding.
Source: Federal Agency Annual Energy Management Data Reports

TABLE 11-B
AGENCY DIRECT EXPENDITURES FOR ENERGY EFFICIENCY PROJECTS, FY 1985 THROUGH FY 2007
(THOUSANDS OF CONSTANT 2007 DOLLARS)

AGENCY	FY 1985. . .	FY 1990. . .	FY 1995. . .	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	**FY 2006**	**FY 2007**	**% CHANGE 06-07**
DOD	$260,229	$1,659	$273,199	$52,346	$66,799	$69,735	$116,150	$131,528	$198,697	**$162,198**	**$168,112**	**3.6**
USPS	$105,736	$6,504	$14,481	$7,067	$0	$0	$0	$0	$0	**$35,656**	**$50,000**	**40.2**
DHS	$0	$0	$0	$0	$0	$0	$1,908	$1,885	$2,854	**$2,870**	**$31,050**	**981.9**
GSA	$12,811	$18,089	$10,435	$20,024	$5,848	$5,178	$5,387	$5,417	$37,027	**$28,601**	**$19,864**	**-30.5**
VA	$24,857	$18,211	$17,233	$0	$17,544	$1,033	$770	$2,167	$19,664	**$8,607**	**$17,500**	**103.3**
NASA	$22,562	$4,785	$29,778	$13,817	$7,070	$10,804	$9,541	$12,045	$11,514	**$14,048**	**$11,155**	**-20.6**
DOI	$6,115	$0	$1,122	$28,267	$3,766	$26,237	$29,331	$6,219	$7,983	**$10,687**	**$10,885**	**1.8**
EPA	$0	$0	$2,478	$0	$2,296	$1,938	$2,737	$3,746	$3,985	**$3,013**	**$5,654**	**87.6**
DOT	$26,099	$0	$5,465	$3,138	$5,054	$2,399	$1,395	$1,060	$2,438	**$2,338**	**$4,325**	**85.0**
USDA	$4,780	$2,515	$4,170	$2,301	$2,456	$4,394	$2,245	$3,204	$2,792	**$1,021**	**$4,211**	**312.2**
DOC	$0	$0	$0	$303	$301	$2,167	$697	$3,832	$3,580	**$5,066**	**$3,788**	**-25.2**
HHS	$0	$694	$1,831	$9,941	$10,105	$2,038	$4,153	$3,179	$7,742	**$2,140**	**$2,498**	**16.8**
TRSY	$0	$1,844	$4,049	$2,535	$5,462	$9,986	$8,815	$9,384	$2,502	**$3,746**	**$2,212**	**-41.0**
DOE	$28,298	$31,707	$43,516	$0	$2,339	$1,611	$1,684	$2,127	$2,052	**$4,460**	**$1,337**	**-70.0**
NARA	$0	$0	$0	$0	$10	$78	$157	$108	$310	**$597**	**$1,097**	**84.0**
DOL	$455	$28	$0	$0	$0	$0	$0	$0	$471	**$511**	**$500**	**-2.1**
SSA	$0	$0	$0	$1,178	$1,170	$575	$196	$542	$931	**$378**	**$500**	**32.3**
TVA	$0	$0	$6,163	$335	$351	$420	$449	$363	$292	**$282**	**$325**	**15.3**
DOJ	$0	$9,919	$1,432	$1,378	$572	$1,113	$250	$1,408	$685	**$805**	**$269**	**-66.6**
RRB	$0	$0	$48	$0	$41	$12	$17	$16	$16	**$15**	**$35**	**128.4**
STATE	$0	$0	$0	$0	$304	$4	$951	$76	$0	**$37**	**$0**	**-100.0**
HUD	$0	$0	$62	$0	$64	$26	$76	$8	$0	**$27**	**$0**	**-100.0**
Total	$491,943	$95,956	$415,464	$142,630	$131,551	$139,749	$186,909	$188,315	$305,534	**$287,102**	**$335,317**	**16.8**

Data as of 17 Dec 2008

Notes: Does not include energy savings performance contracts, utility energy service contracts, and utility demand side management incentives. Ellipses after fiscal year (1985. . .) indicate where intervening years' data are left off the table, but available upon request from FEMP. Sum of components may not equal total due to independent rounding.
Source: Federal Agency Annual Energy Management Data Reports

Normally, cost savings are used to first pay the contractor, and then are used to offset other base operating support expenses. In some cases, however, installations decided to seek a shorter contract term and defer all Government cost savings until contract completion. In these cases, the savings generated by ESPCs help to reduce the energy consumption, but do not reduce the total cost of operation until the contracts expire. After contract expiration and the retrofits are paid in full, DOD will retain any future cost savings.

During FY 2007, 15 delivery orders were awarded under DOE/FEMP Super ESPCs. Super ESPCs are broad area indefinite delivery, indefinite quantity (IDIQ) contracts that allow agencies to negotiate site-specific performance-based delivery orders with an energy service company under the umbrella contracts. Project investment totaled $144.4 million, providing annual savings of almost 883.9 billion Btu to the Government.

TABLE 12
ENERGY SAVINGS PERFORMANCE CONTRACTS, DELIVERY ORDERS, AND CONTRACT MODIFICATIONS AWARDED BY FEDERAL AGENCIES IN FY 2007

Agency	Number of Delivery Orders/ Modifications/ Contracts	Project Investment (Thou. $)	Total Guaranteed Cost Savings	Payment to Contractor	Net Savings to Government (Thou. $)	Annual Energy Savings (MMBtu)	Range of Contract Length (Years)
DOD	10	$96,694	$257,836	$239,401	$18,435	778,257	15-20
DHS	3	$31,309	$50,677	$50,677	$0	124,115	11-13
USPS	3	$3,535	$4,719	$4,719	$0	51,397	Not reported
DOE	1	$3,557	$12,674	$12,602	$71	41,272	24
GSA	1	$3,827	$8,587	$8,900	-$313*	30,620	17
Interior	1	$3,658	$7,269	$7,263	$6	29,263	20
NASA	1	$3,391	$8,174	$7,447	$727	19,050	Not reported
Smithsonian	1	$19,909	$44,563	$43,348	$1,216	42,121	20
Total	21	$165,879	$394,499	$374,357	$20,141	1,116,095	11-24

*Payments to contractor exceed guaranteed cost savings due to pre-performance period payments made to reduce financing.

3. Utility Energy Service Contracts

In FY 2007, Federal agencies awarded 35 UESCs as shown in Table 13. Total project investment in the projects totaled $139.1 million. The estimated annual energy savings from the 35 projects is 1.1 trillion Btu.

Of the 35 UESCs awarded in FY 2007, 25 were implemented by the DOD. Projects were undertaken to accomplish a wide variety of energy and water efficiency improvements. Contracts were put in place to perform infrastructure upgrades and purchase new equipment. Examples of equipment purchased with UESCs include: HVAC and steam system upgrades, chillers, boilers, lights, motors, EMCS systems and water reducing devices.

TABLE 13
UTILITY ENERGY SERVICE CONTRACTS AND DELIVERY ORDERS AWARDED BY FEDERAL AGENCIES IN FY 2007

Agency	Number of Delivery Orders/ Contracts	Total Project Investment (Thou. $)	Financed Investment (Thou. $)	Appropriations (Thou. $)	Annual Energy Savings (MMBtu)
DOD	25	$90,897	$89,206	$1,691.0	732,096
HHS	5	$34,749	$34,749	$0.0	228,212
Treasury	3	$3,137	$3,137	$0.0	11,500
NASA	1	$4,895	$4,895	$0.0	60,878
USDA	1	$5,460	$5,460	$0.0	30,000
Total	35	$139,137	$137,446	$1,691	1,062,687

III. INTERAGENCY EXCHANGE OF INFORMATION

A. Federal Coordination

In FY 2007, meetings of the Federal Interagency Energy Management Task Force were held on November 20, 2007; September 19, 2007; July 18, 2007; May 24, 2007; April 18, 2007; January 18, 2007; and November 15, 2006. The memoranda of record from these meetings are posted at www1.eere.energy.gov/ femp/about/fiemtf.html. Issues highlighted in these meetings included the following:

- Agency energy management programs, budgets, challenges, opportunities, and activities to meet reduction and renewable energy goals for FY 2007.
- Distribution and discussion of issues relating to FY 2007 energy reporting requirements.
- Guidance for completing annual reports and scorecards.
- Discussion and clarification of Executive Order 13423 Implementing Instructions.
- The discussion and release of guidelines to help Federal agencies meeting energy management and renewable energy requirements mandated in the Energy Policy Act (EPAct) of 2005 and Executive Order 13423, including the completion of *2007 Federal Energy Management Program Renewable Energy Requirement Guidance for EPAct 2005 and Executive Order 13423* and *Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423.*
- The importance of the work and growth of the energy savings performance program.
- Federal Energy and Water Management Awards and the Presidential Leadership in Federal Energy Management event status and successes.
- FEMP's technical assistance programs, workshops, and conferences related to Federal energy management.

B. Training

Many agencies have their own internal training and recognition programs. Overall, Federal agencies reported spending $10.7 million to train 21,680 Federal personnel in energy efficiency, renewable energy, and water conservation projects. During FY 2007, FEMP conducted training workshops and symposia for approximately 2,229 attendees. FEMP workshops conducted during FY 2007 included the following:

- Advanced ESPC/Financing,
- Best Practices Steam Systems Tool Suite Webcast,
- Energy Conference
- Energy Efficiency and Renewable Energy in Historic Buildings
- Evolving Energy Markets
- Federal Energy Management Advisory Committee Meeting
- FUPWG Meeting (Federal Utility Partnership Working Group Meeting)
- Interagency Task Force Meeting
- Intermediate Level Distributed Energy
- Energy 2006 Conference
- Introduction to ESPC
- Introduction to Super ESPC Course
- Labs 21 Advanced Course: Laboratory Ventilation Design
- Super ESPC Program Meeting
- Utility Energy Services Contracts (UESC)

GovEnergy 2007, the premiere energy efficiency workshop and exposition for Federal agencies, was held in New Orleans, Louisiana August 5 – 8, 2007. The conference was sponsored by FEMP, and co-sponsored by the U.S. Departments of Defense, Veterans Affairs, and Homeland Security; the U.S. General Services Administration; and the U.S. Environmental Protection Agency. The conference provided participants with opportunities to explore such topics as innovative procurement strategies, improving building operations, use of alternative financing, increasing renewable energy use, the latest in new technology advances, and an update on recent Federal energy legislation.

The conference had panel discussions and an exhibit hall featuring advanced energy efficiency products and services. A total of 1,875 people attended the conference, a 30 percent growth from

the previous year. The expo included participation of 84 exhibitors.

C. Awards and Recognition

Outstanding accomplishments in energy efficiency and water conservation in the Federal sector were recognized with the presentation of the 2007 Federal Energy and Water Management Awards on November 2, 2007. Awards were selected from outstanding Federal energy managers who have demonstrated:

- third-party financing with the private sector to accomplish projects;
- sustainable design principles;
- highly-efficient and secure combined heat and power generating plants;
- renewable energy installations;
- purchase of energy efficient products; and
- public outreach programs

There were 25 awardees representing nine different Federal Agencies. Through a combination of public and private partnerships, the award winners collectively saved more than $18.3 million in energy expenses and 2.9 trillion Btu. Distribution of awards among Federal agencies is indicated in Table 12.

The Presidential Awards in Leadership in Federal Energy Management recognize highly successful efforts, leadership, and support in promoting and improving Federal energy management. These awards were held in 2007 at the Eisenhower Executive Office Building in Washington, DC. Five organizations, the Departments of Defense, Homeland Security, Energy, Interior, Justice, and the Environmental Protection Agency, received this prestigious award. These organizations included 51 federal employees and contractors and were responsible for efforts that resulted in estimated annual savings of more than $133 million and almost 4.6 trillion Btu, equivalent to the energy used in approximately 50,000 typical homes.

TABLE 14
2007 FEDERAL ENERGY AND WATER MANAGEMENT AWARDS
BY GROUP AND TYPE

Agency	Individual	Small Group	Organization	**Total**	Energy Efficiency	Renewable Energy	Water Conservation	Energy Security	Exceptional Service
USDA	1	0	0	**1**	1	0	0	0	0
USAF/DOD	1	3	3	**7**	2	1	3	1	0
Army/DOD	0	1	1	**2**	1	1	0	0	0
US Marine Corps/DOD	0	1	0	**1**	0	1	0	0	0
Navy/DOD	2	0	5	**7**	7	0	0	0	0
DOI	1	0	0	**1**	0	1	0	0	0
DOE	0	0	1	**1**	0	1	0	0	0
EPA	1	0	0	**1**	0	0	0	0	1
GSA	0	1	0	**1**	1	0	0	0	0
HHS	1	0	0	**1**	0	0	0	0	1
USPS	1	0	0	**1**	1	0	0	0	0
VA	0	0	1	**1**	0	0	1	0	0
TOTAL	8	6	11	**25**	13	5	4	1	2

D. Public Education Programs

The DOE's Office of Energy Efficiency and Renewable Energy (EERE) Information Center provides basic, technical, and financial information on various energy efficiency and renewable energy technologies and programs. The EERE Information Center telephone number is 877-337-3463. The EERE Information Center has two operations—the Message Center and the Mail Center. The Message Center is the location where the calls are answered, and emails and letters are received. The Mail Center ships the products requested from the orders received from the Message Center.

EERE maintains a website (www.eere.energy.gov) and offers free subscriptions to the *EERE Network News* e-mail newsletter. The number of visitors to the EERE website has increased from 12,000 in FY 1996 to 602,926 in FY 2007. *EERE Network News* showed steady subscribers growth throughout the year. Since last year, the number of subscribers has increased by 2,128. The national attention to energy efficiency and renewable energy issues contributed to this impressive growth. In FY 2006, the site's subscriber base grew 29 percent—the largest increase in one year.

The Energy Information Administration's National Energy Information Center (NEIC) serves as the world-wide energy information point of contact for energy information for Federal, State, and local agencies; the academic community; researchers; industrial and commercial organizations; foreign governments and international organizations; the news media; financial institutions, and the general public. NEIC distributes this information through the Agency's Web site (www.eia.doe.gov), printed publications, listserv notices, press releases, and the National Contact Center (Center). During FY 2007 the Center responded to over 26,044 telephone, e-mail, and postal inquiries on energy production, consumption, prices, analyses, and forecasts. The EIA website recorded 36.3 million user sessions. Inquiries maybe received by telephone at 202-586-8800, e-mail at InfoCtr@eia.doe.gov and postal delivery at Energy Information Administration 1000 Independence Ave. (EI-3), SW., Washington, DC 20585.

The Office of Scientific and Technical Information (OSTI), as part of the Office of Science, provides leadership and coordination for the DOE-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. 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. 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. In FY 2007 there were more than 74 million transactions for Web products maintained on OSTI servers.

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 Program.

SEP provides funding to states to carry out their own energy efficiency and renewable energy programs. SEP funding enables state energy offices to design and implement programs according to the needs of their economies, the potential of their natural resources, and the participation of local industries. States use grants to address their energy priorities and program funding to adopt emerging renewable energy and energy efficiency technologies. Funding from SEP goes to state energy offices in all states and U.S. territories. SEP projects are managed by state energy offices, not by DOE directly. There are three sources of funding for DOE's SEP: DOE grants, SEP Special Projects, and Petroleum Violation Escrow (PVE) Funds.

The SEP provides grants based on a yearly appropriation by Congress and a formula that takes into account population and energy consumption in each state. The second source of funding is from technology programs in DOE's Office of Energy Efficiency and Renewable

Energy for deployment projects in the states. EERE awards this funding annually to state energy offices through a competitive solicitation for SEP Special Projects. Since the competition for these funds is keen, many states join forces with private sector partners and contribute their own funds toward these projects. State energy offices can use PVE funds for SEP projects if they appear in the SEP plan that the states file yearly with DOE. These funds proceed from court settlements for overcharges by oil companies in the 1970s and 1980s. The last distribution of PVE funds was in the late 1980s, and a final distribution of funding from these escrow accounts was scheduled for 2005. The SEP plays a role when the state energy office is involved in the project, the State Energy Program provides funding, or the state uses petroleum violation escrow funds for part of the project and it is in the states SEP plan. The results from the State Energy Program reflect the work of state energy offices. The outcome is an innovative deployment of new energy efficiency and renewable energy technologies across the geographic panorama of the United States and its territories. Additional information is on their website: www.eere.energy.gov/state_energy_program.

The Industrial Assessment Centers (IACs), sponsored by EERE's Industrial Technologies Program, provide no-cost energy, waste, and productivity assessments to help eligible small and mid-sized manufacturers identify measures to maximize energy-efficiency, reduce waste, and improve productivity. Additionally, the IACs serve as a training ground for the next-generation of energy savvy engineers. The assessments are conducted by local teams of engineering faculty and students from 26 participating universities across the country. Additional information is on the website: www.eere.energy.gov/industry/bestpractices/iacs.html.

IV. FEDERAL AGENCY ENERGY MANAGEMENT ACTIVITIES

A. Department of Agriculture

Reduction Goal Performance

In FY 2007, USDA reported using 70,580 Btu per gross square foot in its goal subject buildings, an 18.2 percent decrease in energy intensity from 86,281 Btu/GSF used in FY 2003. USDA received credit for purchases of 197.2 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 74,011 Btu/GSF to 70,580 Btu/GSF. Without the credit for renewable energy purchases, USDA's reduction from FY 2003 is 14.2 percent.

Metering

In FY 2007, USDA reported 4,639 of its buildings metered for electricity use. This represents 49.1 percent of the total electricity consumed by USDA.

In FY 2007, USDA and its agencies attained all of the milestones on its metering plan, including issuing metering objectives, policy and guidance; conducting metering infrastructure surveys; developing financing strategies; and conducting training, outreach and awareness activities. Additionally, all USDA facilities within the National Capital Region, which includes the USDA Headquarters Complex and the George Washington Carver Center, have advanced electric meters installed.

ARS has conducted an in-house electric meter survey of all of its buildings. Additionally, ARS has contracted for planning phase services in support of the electric metering project. The A-E firm will validate the in-house electric meter survey, determine the cost/benefit of installing the metering and projected energy cost savings, provide metering recommendations to meet the requirements of EPACT 2005, and develop general conceptual designs including cost and schedule estimates. The results of this report will be used to obtain funding, and for subsequent meter design and installation.

The Forest Service estimates that approximately 4,500 buildings are currently metered either internally or by the local utility with standard meters; this represents an estimated 50 percent of the buildings that have electricity service. In FY 2007, the Forest Service funded a project through the Missoula Technology and Development Center, which is reviewing available advanced meters and software, preparing to install these meters at three pilot sites, and will evaluate the results in FY 2008.

New Building Designs

USDA began the design process for six new facilities during FY 2007. Of these six facilities, five will be designed to use 30 percent less energy than relevant code. Federal building energy efficiency standards do not apply to one of these facilities, a campground facility, but the design will achieve the maximum level of energy efficiency that is life-cycle cost-effective.

Renewable Energy Use

In FY 2007, USDA reported using 59,792 megawatthours (MWh) of renewable electric energy, equivalent to 10.5 percent of its facility electricity use. Of this total, 58,252 MWh was from new renewable sources developed after January 1, 1999. In addition, USDA received a bonus of 444 MWh of electricity generated on Federal or Indian land. Almost all of USDA's renewable electricity use was from new sources, meeting the Executive Order goal. Eligible old renewable electricity use by USDA totaled 1,096 MWh.

Also, as part of its Renewable Energy Systems and Energy Efficiency Improvements program, USDA made available $176.5 million in loan guarantees and almost $11.4 million in grants to support investments in renewable energy and energy efficiency improvements by agricultural producers and small businesses. The Renewable Energy and Energy Efficiency loan and grant program was established under Section 9006 of the 2002 Farm Bill to encourage agricultural producers and small rural businesses to create renewable and energy efficient systems.

Self Generated Renewable Energy
In FY 2007, USDA agencies generated a total of 514 million Btu on-site. ARS's Beltsville Agricultural Research Center (BARC), has installed approximately 74 generators operated by B-20 (biodiesel fuel) in its facilities. Though the use of these generators is infrequent, each recycled at least once a month during FY 2007. BARC utilizes a turbine at the dairy fueled by methane abstracted from animal waste. Also, the ARS facility in Bushland, Texas operated nine wind energy systems which generated 40.6 MWh of electricity.

The Forest Service continued to install photovoltaic systems at remote sites, and used passive solar design strategies, to the greatest extent possible, in new facility design and construction. Since 1990, Forest Service has installed over 500 photovoltaic units mainly at remote sites formerly served by fossil-fueled generators. In FY 2007 there were many self-generated renewable energy projects implemented or continued across National Forest System lands. This included eight 90-watt photovoltaic panels and one 75-watt photovoltaic panel were installed at Trappers Lake (in Colorado) to provide power for a remote water distribution system that serves 60 campsites. The panels provide power to operate a 400 watt well pump and a 19-watt chlorinator pump. Estimated annual energy generated is 155 kWh per year. This power is generated and used on Federal lands.

Investment in Energy Efficiency

In FY 2007, USDA invested $9.67 million in energy efficiency and renewable energy projects, 12.0 percent of its total facility energy costs. Of this total, $4.2 million was funded directly by the agency and $5.4 was financed through UESCs.

In FY 2007, USDA agencies realized energy and cost savings from Energy Savings Performance Contracts (ESPCs) awarded in previous fiscal years. USDA agencies are considering and pursuing other ESPCs opportunities. Specifically, agencies are reviewing data from the Federal Energy Management Program's Energy Efficiency Expert Evaluations (E4) and other energy audits conducted in FY 2007 to determine if it will be cost effective to employ the use of ESPCs or Utility Energy Services Contracts (UESC) as a follow-up to the site evaluations and audits.

USDA's Office of Operations signed a UESC with Washington Gas Energy Services in FY 2007. The UESC is a ten year contract for $10 million and covers the USDA Headquarters (HQ) Complex and the George Washington Carver Center (located in Beltsville, Maryland); these two facilities cover more than three million gross square feet. The UESC is open to all USDA agencies that operate facilities within the Washington Gas service area. The HQ Complex projects began with an investment grade energy audit, and will potentially explore ECMs for electrical and mechanical systems, lighting, heating and cooling upgrades, weatherization, water conservation, co-generation, summer steam use reduction through on-site generation, as well as renewable and alternative energy projects. Estimated energy and cost savings will be determined once the full audit results are finalized in mid-FY 2008.

The ARS facility in Gainesville, Florida is starting the process to implement an ESPC. The project plans to include controls and ventilation upgrades and the use of renewable energy (i.e., thermal and photovoltaic solar energy). Other ARS locations are also considering employing the use of an ESPC, such as the facility in Weslaco, Texas where an E4 energy audit was conducted in the latter part of FY 2007. ARS is also reconsidering a previously investigated ESPC at its Athens, Georgia facility.

Water Consumption

In FY 2007, USDA reported using 2,150.9 million gallons of water at a cost of $4.9 million in 57.5 million square feet of facility space. This establishes a final baseline for USDA water consumption of 37.4 gallons per gross square foot.

The average unit cost for USDA water nationwide in FY 2007 was $2.27 per thousand gallons, which is consistent with other GSA/Federal national water costs. USDA lacks a departmental system for tracking water use, and has to rely on cost-based estimates (from water, trash, and other utilities object class accounting codes) for reporting. However, improved data collection

continues to capture more consumption and costs each year.

USDA and its agencies reported implementation of a wide variety of new and ongoing water conserving methods and practices. Within ARS, water meters, rain sensors, leak detection devices, and aspirators were installed at various locations. The Forest Service reported implementing many water conservation measures during FY 2007, including installed water meters as part of new construction projects, installing low-flow devices, and using native plant species for landscaping. Huge reductions in water use, within the Office of Operations, were attributed to process improvements such as decreased irrigation, fixture upgrades, chiller improvements and account reviews with the water provider. The Office of Operations also formed the USDA Headquarters Sustainable Landscape Partnership to address sustainable landscaping at USDA facilities within the National Capital Region.

Training

In FY 2007, USDA reported training 331 employees at a cost of $28,700. In FY 2007, USDA personnel participated in energy management-related training sessions throughout FY 2007 from a variety of sources, including Department of Energy's Federal Energy Management Program, the U.S. Green Building Council (USGBC) and the Association of Energy Engineers. Numerous representatives from USDA agencies participated in the series of Electric Metering Webcasts and the GovEnergy Conference sponsored by FEMP. Additionally, USDA employees attended green building seminars and workshops conducted by USGBC, Green Globes and other training providers.

USDA's Facilities Energy and Water Program Manager received AEE certifications in Measurement and Verification (of energy savings), as well as Sustainable Development. Also, USDA's Office of Operations maintained three trained Certified Energy Managers on staff. Other training events attended by USDA personnel addressed topics such as, E.O. 13423, Energy Saving Performance Contracts (ESPC), and Environmental Management Systems.

USDA developed the Sustainable Operations Website, which provides employees with access to energy-related policy, guidance, scorecards and other resources associated with the management and operations of USDA facilities and fleet vehicles. Also, USDA disseminated hundreds of copies of various energy awareness and educational materials throughout the Department as part of the YHTP campaign.

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B. Department of Commerce

Reduction Goal Performance

In FY 2007, DOC reported using 152,304 Btu per gross square foot in its goal subject buildings, a 22.3 percent decrease in energy intensity from 195,966 Btu/GSF used in FY 2003. DOC received credit for purchases of 7.7 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 152,870 Btu/GSF to 152,304 Btu/GSF. Without the credit for renewable energy purchases, DOC's reduction from FY 2003 is 22.0 percent.

Metering

In FY 2007 DOC reported 765 of its buildings metered for electricity use. This represents 55.4 percent of the total electricity consumed by DOC.

The NIST staff has identified the facilities requiring advanced meters at both their Gaithersburg, MD, campus, and Boulder, CO, campuses. NIST has used an advanced metering system at their Gaithersburg, MD, site for several years, and has advanced metering installed on 85 percent of its appropriate facilities (22 buildings) on the campus. During FY 2007, NIST completed installation of advanced metering on two additional buildings on its Gaithersburg, MD, campus.

The Herbert C. Hoover Building in Washington D.C. is a GSA-owned building and has been identified to undergo a major multi-year renovation. Advanced metering will be installed as part of the renovation project. Other Department facilities have been more of a challenge for advanced metering. Census occupies a group of small, GSA-owned buildings in Jeffersonville, IN, most of which are already separately metered with standard meters. Census will work with GSA to determine if the metering should be upgraded, and if so, who should pay for the project. NOAA's facilities are primarily small buildings. NOAA is in the process of identifying those buildings that require metering upgrades, and programming them for installation of the advanced meters.

New Building Designs

DOC began the design process for one new facility during FY 2007. It is still to be determined if the facility will use 30 percent less energy than relevant code. It has already been determined that it will achieve the maximum level of energy efficiency that is life-cycle cost effective.

Excluded Buildings

In FY 2007, DOC reported using 15.7 billion Btu in its excluded buildings, 0.75 percent of the agency's total facility use. DOC's excluded buildings occupy approximately 25,000 gross square feet, 0.2 percent of the agency's total facility space. The Department has excluded several facilities from the requirements of EPACT 2005. These facilities, categorized as Assumed Excluded Structures, are primarily radar and radio transmitter facilities.

Renewable Energy Use

In FY 2007, DOC reported using 9,577 MWh of renewable electric energy, equivalent to 3.0 percent of its facility electricity use. Of this total, 8,417 MWh was from new renewable sources developed after January 1, 1999. In addition, DOC received a bonus of 61 MWh of electricity generated on Federal or Indian land. More than half of DOC's renewable electricity use was from new sources, meeting the Executive Order goal. Eligible old renewable electricity use by DOC totaled 1,100 MWh.

Operating units in the Department are responsible for funding and implementing the use of renewable energy.

Self Generated Renewable Energy

Small-scale projects that self-generate energy using renewable sources (such as photovoltaics or wind turbines) or renewable energy thermal projects (such as solar thermal, biomass, or geothermal) are used to supplement commercial power. NOAA continues to operate a 6-kilowatt (kW) photovoltaic unit in American Samoa and a 10-kW photovoltaic system in San Diego, California. NIST continues to operate its 32-kW photovoltaic array on the roof of the Administration Building at its Gaithersburg, Maryland, facility. The NIST campus in Boulder, Colorado, also has solar-powered lighting for its Building 2 parking lot. In 2007, the NOAA and NIST systems

produced a total of 26.8 MWh and 33.9 MWh of electricity, respectively.

Purchased Renewable Energy
NOAA continues to purchase wind-generated renewable power to supply a portion of the electrical needs at their Boulder, CO facilities. In FY 2007, NOAA consumed 1,129 MWh of purchased renewable energy. NIST purchased 5,300 MWh of renewable energy certificates to meet their renewable energy goals for FY 2007.

Investment in Energy Efficiency

In FY 2007, DOC invested $3.8 million in energy efficiency and renewable energy projects, 7.9 percent of its total facility energy costs. DOC did not finance any projects with energy savings performance contracts during FY 2007.

NOAA continues to try to find a way to utilize ESPCs. A strategy has been developed to combine small facilities to be more attractive to the energy service companies.

The Department Energy Program Manager participates in the Federal ESPC Steering Committee, and has requested that the committee create a working group to develop solutions for small sites.

Water Consumption

In FY 2007, DOC reported using 352.1 million gallons of water at a cost of $1.6 million in 13.6 million square feet of facility space. This establishes a final water baseline of 25.8 gallons per gross square foot.

The Department's water consumption baseline is composed of actual water meter readings for the NIST, NTIS and OS facilities. The Census facility obtains its water from an on-site well, and estimates its consumption. NOAA facilities are a combination of metered water usage and estimated well water consumption.

NIST is constructing a project to reclaim ground water at the Advanced Measurement Laboratory complex in Gaithersburg, MD, to redirect this water as make-up water at the Central Plant's cooling towers. The project is expected to be completed in FY 2008 and meet all water conservation metrics mandated by E.O. 13423. NIST also installed low-flow aerators on all sinks and showers at the at its Boulder, CO facility.

The OS staff implemented a plan to fix leaking water fixtures in the Herbert C. Hoover Building (HCHB), and initiated a public awareness campaign announcing the program and encouraging HCHB employees to report leaks promptly.

Training

In FY 2007, DOC reported training 114 energy managers at a cost of $52,500. The Agency Energy Team promotes energy-related training opportunities for facility energy management personnel. Annually, employees attend the Federal government-sponsored energy training workshop.

Operating units make energy awareness a key part of their energy programs, using materials provided through the FEMP You Have the Power program as well as other supplemental materials. The Department implements annual energy conservation awareness campaigns in conjunction with Energy Awareness Month and Earth Day.

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C. Department of Defense

Reduction Goal Performance

In FY 2007, DOD reported using 104,416 Btu per gross square foot in its goal subject buildings, a 10.1 percent decrease in energy intensity from 116,134 Btu/GSF used in FY 2003. DOD received credits for purchases of 5,051.7 billion Btu of renewable energy in FY 2007 and for project source energy savings of 2,455.1 billion Btu, reducing the performance measure of these buildings from 108,383 Btu/GSF to 104,416 Btu/GSF. Without these credits, DOD's reduction from FY 2003 is 6.7 percent.

Metering

In FY 2007 DOD reported 28,170 of its buildings metered for electricity. This represents 30.6 percent of the total electricity consumed by DOD. DOD reported advanced electricity meters on 2,552 of its buildings. This figure represents 3.3 percent of the total electricity consumed by DOD.

The Department of the Army achieved 100 percent of its agency metering plan milestones in FY 2007. Those milestones were to 1) prioritize Army installations for central funding of installing meters in compliance with EPACT 2005 requirements, 2) develop a performance specification for metering equipment as the standard to be used on all centrally funded installations, and 3) develop an acquisition plan for procuring equipment and services to execute the Army Metering Implementation Plan.

The Department of the Navy has established an Advanced Metering Infrastructure (AMI) Program and is currently performing a global evaluation of all sites and developing a full site design for a prototype deployment.

The Defense Commissary Agency (DeCA) metering plan is being revised to coordinate additional metering and advanced metering with individual host installations as they pursue their DOD metering plans. The goal is to reimburse the host installations for meters installed with the understanding that DeCA will have real time, electronic access to metered data for energy monitoring and analysis purposes.

New Building Designs

DOD began the design process for 193 new facilities during FY 2007. Of these facilities, 55 are expected to exceed the ASHRAE 90.1 requirements by at least 30 percent.

A total of 129 facilities will not use 30 percent less energy than relevant code nor will they achieve the maximum level of energy efficiency that is life-cycle cost effective. A majority of these facilities are Navy facilities that were all initiated (and budgeted for) prior to the established requirements of EPACT 2005 and Executive Order 13423. Navy policy is now in place that requires compliance with the EPACT 2005 and Executive Order 13423 for all new buildings beginning in FY 2009.

Four facilities will not use 30 percent less energy than relevant code, but will be designed to achieve the maximum level of energy efficiency that is life-cycle cost-effective. The calculations of design and energy use for five facilities have either not been calculated or are unknown. One facility, BRAC Visiting Officers Quarters, did not provide any new construction project information.

Excluded Buildings

In FY 2007 the DOD reported using 12.9 trillion Btu in its excluded buildings, 5.9 percent of the agency's total facility use. DOD's excluded buildings occupy 61.7 million square feet, 3.2 percent of the agency's total facility space.

The Department of the Navy excludes mission critical, concentrated energy use transmitters, simulators, cold iron support to ships, and some private party facilities as authorized by the DOE exclusion criteria. The Air Force has identified several exempt facilities. Numerous military family housing facilities are privatized or in the process of privatization with the utility systems belonging to the housing contractor. The housing contractor pays for the costs of the utilities excluding them from the energy goals. Several communication/test lab facilities are also being considered as excluded due to energy intensive loads driven by mission and operational requirements and not influenced by conventional building energy conservation measures.

Renewable Energy Use

In FY 2007, DOD reported using 1,639,924 MWh of renewable electric energy, equivalent to 5.5 percent of its facility electricity use. Of this total, 898,911 MWh was from new renewable sources developed after January 1, 1999. In addition, DOD received a bonus of 67,848 MWh for renewable electricity generated on Federal or Indian land. More than half of DOD's renewable electricity use was from new sources, meeting the Executive Order goal. Eligible old renewable electricity use by DOD totaled 673,165 MWh.

Self Generated Renewable Energy

The Army had 30 active renewable energy projects operating in FY 2007. Of the total, 15 were generating electricity qualifying for credit toward the renewable energy goal and nearly all the energy produced was used on-site in Federal Army facilities. The exception was an Army National Guard site at which some of the electricity generated was used on state-owned buildings. The Army retained the renewable attributes of the electricity generated for all but one of these projects, a PV roof project at U.S. Army Garrison, Mannheim Germany. This project was funded by the local municipal electric company, which retained the attributes to meet host nation renewable portfolio requirements. The following two new projects were implemented in FY 2007:

- A PV street/parking lot lighting project was implemented at White Sands Missile Range, NM with a 3.3 kW capacity.
- A PV Anderson pool project was implemented in Fort Knox, KY with a 2.0 kW capacity.

In addition to the projects implemented in FY 2007, the Army obtains a substantial amount of electricity generated from renewable sources from hydropower at Rock Island Arsenal, Illinois; PV panels at Fort Irwin, California; PV and wind power at Fort Huachuca, Arizona; a large PV array at Kwajalein Atoll; and eight separate PV and wind power projects implemented by the Arizona Army National Guard with over 60 kW of total capacity.

The Navy is increasing generation of renewable energy, operating the largest wind/diesel hybrid plant in the world and the two largest Federal PV systems in the United States. The Navy is generating "free" thermal energy from the waste heat of five cogeneration systems, and contracted for a sixth plant in Yokosuka Japan, due to be on line in June 2008. Navy projects made operational in FY 2007 include:

Photovoltaics

Naval Base Ventura County, CA
Naval Support Detachment Monterey, CA
Naval Air Facility El Centro, CA
Fleet Activities Yokosuka, Japan

Solar Thermal

Marine Corps Air Ground Combat Center Twenty-nine Palms, CA

The Air Force has a number of self generating renewable energy projects, including:

- Cannon AFB, New Mexico, and Davis Monthan AFB, Arizona, installed solar-powered street and security lighting.
- Moody AFB, Georgia, installed solar water heating for an indoor pool reducing natural gas consumption by 50 percent resulting in $20,000 annual savings.
- Hill AFB, Utah, generated approximately 2.1 MWh of electricity from landfill gas. The project was constructed with planned expansion in mind. A current contract modification is in place to increase plant capacity by adding a 3rd generator, effectively increasing plant production to 3.2 MW.
- Laughlin AFB, Texas, awarded a project for installation of six 1 MW architectural wind turbines.
- Eielson AFB, Alaska, refuse derived fuel (RDF) program collected and processed over 560 tons of paper products for use in the base's Central Heat and Power Plant providing 7,820 million Btu of energy and saving 500 tons of coal. The program reduced the waste stream entering the Fairbanks North Star Borough from both the base and the Borough. The program is currently suspended because the pellet plant is inoperable.

- Eielsen AFB, Alaska, has solar panel controller installations at 23 range sites resulting in 13 MWh of production which saved 464 gallons of propane.
- Eielsen AFB, Alaska, has wind turbines at 17 of the remote range sites that resulted in 45.6 MWh of electricity production. The wind turbines saved 1,700 gallons of propane.

Purchased Renewable Energy
The Army purchased 93,000 MWh of electricity qualifying toward the renewable energy goal, the majority of which is in the form of renewable energy certificates (REC) at Fort Lewis, Washington, and Fort Carson, Colorado.

Most of the purchased energy that came from renewable sources was from municipal solid waste plants at Redstone Arsenal, Alabama, and Aberdeen Proving Ground, Maryland. The thermal energy does not qualify toward the EPACT 2005 renewable energy goal; however purchase decisions were based on economics, consistent with the Army Energy and Water Campaign Plan for Installations, as energy is purchased from these plants at the equivalent average cost of less than six cents per kilowatt-hour.

The Navy generated and purchased renewable electricity equivalent to 0.3 percent of annual electricity consumption. These sources include wind energy and solar energy only. Including all renewable energy sources (thermal), the Navy is consuming 2.9 percent of its total energy needs from renewable sources.

Investment in Energy Efficiency

In FY 2007, DOD invested $355.7 million in energy efficiency and renewable energy projects, 10.4 percent of its total facility energy costs. Of this total, $168.1 was funded directly by the agency, $96.7 million was financed through energy savings performance contracting, and $90.9 million was financed as a result of utility energy service contracts.

The following are some notable FY 2007 DOD ESPC projects:

- Fort Jackson, South Carolina, awarded a $5.0 million ESPC task order at the end of FY 2007. The project includes EMCS, building recommissioning, thermal energy storage, substation upgrades, and central plant improvements. An additional $1.6 million in services is included in the task order. This task order was done under the DOE Super ESPC program.

- Aberdeen Proving Ground, Maryland, awarded an ESPC contract for a $6.1 million steam system rehabilitation project. Implementation of advance controls was also included in the project.

- U.S. Army Garrison Vicenza, Italy, awarded a $2.2 million ESPC contract for a 1.5 MW cogeneration project.

Fort Knox, Kentucky, awarded five UESC task orders. Three of the five included geothermal heat pumps, lighting retrofits, cool roofs, and steam boilers. The total investment value was $18.7 million.

Water Consumption

In FY 2007, DOD reported using 116,752 million gallons of water at a cost of $358.8 million in 1.95 billion square feet of facility space. This establishes a final baseline for DOD water consumption of 59.8 gallons per gross square foot.

In FY 2007, the Army used 45.2 billion gallons of potable water at a cost of $63.5 million. The Army's total water use and disposal have declined for many years. Greater treatment and testing requirements imposed on water suppliers by the Safe Water Drinking Act of 1974 (and amendments) have increased the cost of providing potable drinking water. Similarly, the vulnerability assessments of installation water supplies, emergency response plans, and protective measures required by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107-188) have added to the cost.

Many Army installations have reported lower water consumption in FY 2007 due to the privatization of on-base housing to Private Partnerships or missions changes due to the effects

of the Base Realignment and Closure Act of 2005.

Army installations in areas of the United States affected by drought, and those with water restrictions, naturally have reported much lower water consumption for figures for FY 2007. Rain water collection and reuse, a matter of course for the Army National Guard in the Virgin Islands, is being looked at on the U.S. mainland, where LEED credits can be earned for new construction projects.

Department of Navy consumed 34.6 billion gallons of water at a cost of $80.8 million, establishing a water intensity baseline for future reports at 73.5 gallons per square foot.

Training

In FY 2007, DOD reported training 19,291 energy managers at a cost of $1,824.3 million. The Army saw a large increase in the number of people receiving energy management training in FY 2007. The Army conducted training at the two-day Army Energy Forum attended by nearly 200 people and conducted in conjunction with the annual Federal energy exposition and workshop GovEnergy in New Orleans, Louisiana. Army also sponsored a certified energy manager training course conducted by the Association of Energy Engineers (AEE).

In FY 2007, 240 Navy personnel received training in areas specified in EPACT 2005. These personnel included:

- Energy Managers,
- Energy Conservation Officers,
- Maintenance Mechanics,
- Planners,
- Equipment Mechanics,
- Facilities Supervisors,
- Accountants,
- Admin. Officers,
- Project Managers,
- APWO's,
- Architects,
- Environmental Engineers,
- Electrical Engineers,
- Division Directors,
- Controls Mechanics,
- Civil Engineers,
- Budget Analysts,
- Boiler Plant Personnel,
- Regional Energy Managers, and
- Utility Engineers.

This brings total personnel receiving training to 2,512 since the program began. The Department of Navy has seen 162 personnel registered "Certified Energy Managers" since the program's inception.

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D. Department of Energy

Reduction Goal Performance

In FY 2007, DOE reported using 222,157 Btu per gross square foot in its goal subject buildings, a 16.2 percent decrease in energy intensity from 265,120 Btu/GSF used in FY 2003. DOE received credit for purchases of 714.8 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 230,194 Btu/GSF to 222,157 Btu/GSF. Without the credit for renewable energy purchases, DOE's reduction from FY 2003 is 13.2 percent.

Metering

In FY 2007, DOE had standard electricity meters on 1,336 of its buildings. This figure represents 25.2 percent of the electricity consumed by DOE.

New Building Design

DOE began the design process for three new facilities during FY 2007. Of the three facilities, two will be designed to use 30 percent less energy than relevant code. It is still to be determined if one of the facilities, a Uranium Processing Facility in Oak Ridge, will consume 30 percent less energy than relevant code, but it will certainly achieve the maximum level of energy efficiency that is life-cycle cost-effective.

Excluded Buildings

In FY 2007, DOE reported using 9.5 billion Btu in its excluded buildings, 31.6 percent of the agency's total facility use. DOE's excluded buildings occupy 23.0 million square feet, 20.6 percent of the agency's total facility space. Most of DOE's facilities that are excluded from the goals of EPACT 2005 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 included in the EPACT goal subject category.

Renewable Energy Use

In FY 2007, DOE reported using 209,098 MWh of renewable electric energy, equivalent to 4.3 percent of its facility electricity use. Of this total, 200,392 MWh was from new renewable sources developed after January 1, 1999. In addition, DOE received a bonus of 2,687 MWh for renewable electricity generated on Federal or Indian land, meeting the Executive Order goal.

Almost all of DOE's renewable electricity use was from new sources, meeting the Executive Order goal. Eligible old renewable electricity use by DOE totaled 6,019 MWh.

Self-Generated Renewable Energy

In FY 2007, DOE facilities reported generating 2,687 MWh of renewable electricity from 32 on-site projects, approximately 1 percent of DOE's total of eligible renewable energy. Two renewable thermal energy projects produced 51.1 million Btu of energy.

Fermilab is currently investigating the possible installation of on-site generation under the BAMF Super-ESPC program.

The Idaho National Laboratory's (INL) Records Storage Facility includes a solar wall that provides heat, resulting in approximately $1,250 per year in avoided electric energy costs for space conditioning.

Oak Ridge National Laboratory (ORNL) has several photovoltaic (PV) panels at approximately 10 remote sites. The panels range from 5-6 watts in capacity up to 55 watts where 6-8 panels are grouped together. The panels are used to recharge batteries that power remote, data-gathering equipment. As a demonstration project and in advance of the Southeast Solar Summit held at the Southeast Solar Summit held at the Laboratory, ORNL installed a PV array at the main entrance to ORNL. The ORNL/Daylight Direct beta test for hybrid lighting continued this year. ORNL has several offices that have a combination of passive solar lighting and fluorescent lighting on the top floor of one of its leased facilities. The solar

collector was shut down for part of the year after a mishap occurred at a different test site where the focal point of the parabolic dish shifted and ignited the plastic parabolic dish. There have been other shakedown issues such as pulsating light during windy conditions which will need to be addressed before commercialization.

The National Renewable Energy Laboratory (NREL) has 46 kilowatts (kW) of PV panels that generate about 66,500 kilowatt hours (kWh) of electricity each year. The energy offsets South Table Mountain (STM) and National Wind Technology Center (NWTC) loads. These panels are located at the Solar Energy Research Facility (SERF), the STM Site Entrance Building, the Outdoor Test Facility (OTF), the NWTC Site Entrance Building and the Distributed Energy Resources Test Facility as well as remote applications including signs, walkway lights and parking lighting. In FY 2006 a total of 9 kW of PV panels were installed at the OTF, SERF, and DER test facility. The NWTC has approximately 1,600 kW of installed wind turbine capacity used for research purposes. When the turbines are running, the energy produced is used to offset simultaneous NWTC site energy use. The turbines produced over 45,800 kWh in FY 2006. The total self-generated electricity at NREL was 112,300 kWh. Also at NWTC's Building 251, approximately 10.2 million Btu of renewable thermal energy is produced through the solar panels heating the domestic water.

Lawrence Livermore National Laboratory (LLNL) has a grid-tied photovoltaic (PV) system to encourage adaptation of the technology at the Laboratory and in the surrounding community. The system is comprised of examples of PV applications including tracking, standing seam roof (at ground-level) and car port arrays totaling about 3.5 kW in generating capacity. The Visitor's Center PV Exhibit is an important stop in frequent grade-school tours at the LLNL Discovery Center. The LLNL Environmental Remediation Department has also deployed a number of Solar Treatment Units (STUs) throughout the main site and Site-300. The STUs are PV-powered, portable groundwater contamination treatment units.

The Savannah River Site covers an area of over 300 square miles. The Site's use of self-generated renewable energy in FY 2007 was relegated to remote locations across the Site where utilities were not available. Small photovoltaic arrays were used in applications such as traffic signals, railroad crossings, and environmental monitoring stations. The Site utilizes two mobile and 41 fixed solar-powered emergency sirens. Each siren is powered by two 120 watt panels totaling 240 watts and producing 12 volts.

Five photovoltaic highway message reader boards (MRBs) inform Hanford drivers of changing conditions. In addition, two 530 Hz low power AM broadcast stations and two radio station sites are powered by a solar charged battery system. A series of solar charging stations and remote-operated valves and pressure transmitters are used to provide monitoring and control capabilities from the water plant control room located in the 200 West Area. The site operates an 85-foot tall tower with a 1.5 kVA wind turbine to provide back-up power for the photovoltaic powered railroad crossing signal located on Route 4 South about 2 miles north of the 300 Area. The wind turbine satisfies a requirement that uninterruptible reliable emergency power be provided to the primary power source.

Portsmouth Gaseous Diffusion Plant and Paducah Gaseous Diffusion Plant have several small environmental monitoring units, air samplers, and field weather monitors that utilize photovoltaic cells for power.

The WIPP Site maintains solar systems to provide security lighting at two off-site locations. The systems have performed well and were recently overhauled and upgraded with new batteries and electronics. Additional projects are being reviewed through an ESPC planned for FY 2008. A solar traffic light is utilized to enhance safety at an intersection close to the WIPP.

DOE Headquarters (Headquarters) installed 7 kW PV arrays and solar water collectors at the Germantown, Maryland, and Forrestal building child development centers. Headquarters also installed PV arrays at Earth Day Park and on the south side of Forrestal's South Building.

Purchased Renewable Energy
During FY 2007, DOE purchased 39,586 MWh of green power and 155,991 MWh of renewable energy certificates (RECs) from new renewable sources. Also in FY 2007, 6,019 MWh of RECs from old renewable sources were purchased as well as 36.2 billion Btu of renewable gas and thermal energy. Purchased renewable electricity comprises 97.4 percent of DOE's goal-eligible renewable energy use.

DOE Headquarters purchased 23,380 MWh of renewable electricity for the Forrestal Building, 100 percent of the headquarters building's electricity consumption.

The Strategic Petroleum Reserve (SPR) acquired 1,735 MWH of RECs to satisfy the 3 percent goal as mandated in EPACT 2005. In August 2007, SPR's broker (Element Markets LLC from Sugarland, Texas) purchased 5 percent of the SPR's total annual electricity consumption in wind credits for the SPR.

In FY 2007, ORISE purchased 720 blocks (108,000 KWh) of renewable electricity through the TVA Green Power Switch program. 5.1 percent of the total ORISE electricity for FY 2007 was produced by green power sources.

Investment in Energy Efficiency

In FY 2007, DOE invested $4.9 million in energy efficiency and renewable energy projects, 1.3 percent of its total facility energy costs. Of this total, $1.3 million was funded directly by the agency and $3.6 million was financed through ESPCs.

Obtaining private sector financing for energy efficiency projects in the form of ESPCs or UESCs is considered vital to continued energy reductions. As part of the TEAM Initiative, DOE had received 12 Initial Proposals for ESPC task orders from energy service companies by the end of December 2007 and are expecting approximately 18 more in the first half of FY 2008. The Initial Proposals received so far represent a 6 percent decrease in DOE's overall energy intensity, and when combined with efforts from previous years, puts DOE nearly halfway toward meeting the 30 percent reduction goal. By the end of FY 2008, DOE anticipates to have contracts in place that will exceed E.O. 13423 and statutory efficiency and renewable goals. As a result of TEAM, a Center of Excellence has been created to assist DOE facilities in the use of ESPCs and other alternative financing methods. The Center of Excellence provides a single point of expertise for legal and procurement issues associated with ESPCs, and is available exclusively to DOE sites.

Water Consumption

In FY 2007, DOE reported using 6.5 billion gallons of water at a cost of $13.8 million in 112.1 million square feet of facility space. This establishes a final baseline for DOE water consumption of 57.6 gallons per gross square foot.

At Lawrence Livermore National Laboratory, all new construction must comply with California Title-24 requirements that specify water saving plumbing fixtures. LLNL has implemented a waterless urinal pilot program that has been implemented with funding assistance from DOE FEMP.

Training

During FY 2007, DOE organizations reported training 66 employees in energy management at a cost of $154,100. The following DOE organizations have training programs in place, or take advantage of training and education opportunities as they arise: Hanford, Fermilab, SRS, INL, Princeton Plasma Physics Laboratory (PPPL), BNL, NREL, Savannah River Site, TJNAF, NETL, ORNL and PNNL.

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E. Department of Health and Human Services

Reduction Goal Performance

In FY 2007, HHS reported using 274,058 Btu per gross square foot in its goal subject buildings, a 20.5 percent decrease in energy intensity from 344,842 Btu/GSF used in FY 2003. HHS received credits for purchases of 66.4 billion Btu of renewable energy in FY 2007 and for project source energy savings of 1.1 trillion Btu reducing the performance measure of these buildings from 313,512 Btu/GSF to 274,058 Btu/GSF. Without these credits, the HHS reduction from FY 2003 is 9.1 percent.

Metering

In FY 2007 the Department of Health and Human Services reported 987 buildings metered for electricity use. This represents 36.0 percent of the total electricity consumed by HHS.

HHS Headquarters issued guidelines to all components requiring each to develop metering plans in compliance with EPACT 2005. The Humphrey Building currently has advanced meters installed.

The metering plan for Centers for Disease Control (CDC) is ahead of the EPACT goals, with 72 percent of all GSF metered; 64 percent of all GSF has advanced metering. Metering progress reported by the number of buildings is misleading, as the majority of electricity use is in large, energy intensive lab buildings, whereas older facilities still have a large number of small square footage, low-use buildings. The current metering plan calls for most of the smaller buildings to be exempted due to unfavorable life cycle cost analysis results.

New Building Design

In FY 2007, HHS began the design process for 28 new facilities. Of these 28 new facilities it is estimated that 26 will be designed to use an estimated 30 percent less energy than relevant code.

Excluded Buildings

In FY 2007, the HHS reported using 22.5 billion Btu in its excluded buildings, 0.2 percent of the Agency's total facility use. The HHS excluded buildings occupy 1.6 million square feet, 5.0 percent of the Agency's total facility space.

HHS has two Operating Divisions (OPDIVs) with excluded facilities. The NIH has five parking garages and one building (Bldg. 3) that are considered exempt facilities. These are all found on the Bethesda, Maryland campus. The garages only consume energy for lighting and are exempted based on the guidelines. Building 3 is vacant, has been decontaminated, and will soon be renovated. CDC also has several parking structures.

Renewable Energy Use

In FY 2007, HHS reported using 18,867 MWh of renewable electric energy, equivalent to 1.9 percent of its facility electricity use. Of this total, 4,012 MWh was from new renewable sources developed after January 1, 1999. In addition, HHS received a bonus of 250 MWh of electricity generated on Federal or Indian land. Less than half of HHS' renewable electricity use was from new sources. Eligible old renewable electricity use by HHS totaled 14,604 MWh.

Electricity is purchased by each OPDIV and site separately as required to maintain the mission of the facilities. The HHS Energy Program promotes and encourages renewable energy practices through seminar topics, newsletters, and direct communication.

Self Generated Renewable Energy

In FY 2007, the Office of the Secretary completed the installation of a solar thermal water heating system for the roof of the Humphrey Building to heat domestic water supplies.

NIH has installed roof and ground mounted solar heating and air preheating systems. Additionally, NIH has three shuttle stops on campus with lighting and electrical needs supplied by solar power. A solar energy feasibility study was completed at the FDA Beltsville Facility in Beltsville, Maryland. The study identified projects that are estimated to reduce energy costs by more than $77,200 per year from solar air heating at the pasture buildings, MOD 1 & 2 buildings, and the

BRF buildings. The energy savings would represent 4.4 percent of the current energy use at the Beltsville Facility. Specifically, the projects include the installation of 21 solar roofing panels and siding systems or ground mounted solar heating systems for 17 out buildings and four emergency generators. The solar roofing, siding, and ground mounted systems, covering 70,000 square feet, would produce solar heated air and deliver the air to preheat outside air for the buildings or equipment. The estimated cost for the projects is $745,600, yielding a simple payback period of 9.7 years. This project will be implemented under the new UESC to begin in FY 2008 at the facility.

Purchased Renewable Energy
In FY 2007, several HHS facilities entered into competitive contracts for the procurement of electricity with a green component or purchased Renewable Energy Certificates (RECs). Other OPDIVs and sites are analyzing options to comply with the renewable energy requirement.

The Albuquerque Indian Health Center and Santa Fe Indian Hospital continue to purchase 10 percent of their electrical usage from wind energy.

Investment in Energy Efficiency

In FY 2007, HHS invested $37.2 million in energy efficiency and renewable energy projects, 22.1 percent of its total facility costs. Of this total, $2.5 million was funded directly by the agency and $34.7 was financed through utility energy service contracts.

A UESC feasibility study was completed for the Humphrey Building in FY 2007. OS is working with GSA to determine the realistic date of the building renovation in order to decide which energy conservation measures (ECMs) may be implemented. The ECMs with the best economic status are the retrofit of the garage lighting, installation of variable frequency drives, conversion of the air distribution system to variable air volume boxes, and an upgrade to the energy management control system main computer station.

NIH has performed much of its past and current energy and water conservation work using performance contracts. The two main contracts used by NIH are the DOE Super ESPC contract, and both of the UESCs that are available in the Bethesda area (Pepco electric company and Washington Gas). There are three energy and water conservation projects active in FY 2007: one ESPC and two UESCs at Bethesda. The ESPC project was signed in a prior year.

Larger projects within FDA have been funded through alternative financing contracts. In FY 2007, project implementation and enhancements continued under the Jefferson Laboratories Complex (JLC) UESC with Entergy. Three large office areas in Building 53 were renovated with new variable air volume air handlers and duct distribution system, as well as lighting occupancy sensors. In addition, fan coil units were installed in a corridor to reduce fresh outdoor air requirements. The total cost of these projects was $740,000 and the estimated annual energy saving is $76,300.

The UESC for the FDA Beltsville Facility was signed in FY 2007. This contract covers 25 ECMs including:

- water and steam use enhancements,
- free-cooling plate-and-frame heat exchanger,
- chiller replacement,
- variable air volume conversion,
- control system upgrades,
- solar air preheating, variable frequency drives,
- and occupancy sensors.

The total projected project cost is $14.2 million with an estimated annual energy and water savings of $1.3 million and a simple payback period of 11.3 years.

In FY 2007, the Irvine Lab installed insulating and shade film on windows. This project totaled $58,000 and was completed by O&M contractor with direct agency funding.

Water Consumption

In FY 2007, HHS reported using 1,799.7 million gallons of water at a cost of $11,814.7 million in 31,338.4 million square feet of facility space. This establishes a preliminary baseline for HHS water consumption of 57.4 gallons per square foot.

In FY 2007, several HHS OPDIVs refined water management plans in accordance with E.O. 13423 and only six percent of the HHS water consumption is estimated. This task enabled facility managers to further prioritize water conservation projects and highlight areas of waste or opportunity. Many HHS laboratories reported that it was common for facilities to change the type of experiment performed or the frequency of performance, which would in turn, change the amount of water used in that facility.

Currently, OS does not currently directly pay for water, but efforts are made to minimize water waste through the use of low flow plumbing fixtures and motion sensor control devices. In FY 2007, a water saving project involving the installation of low flow flush valves on the toilets that saved roughly 500,000 gallons of water per year was completed at the Headquarters building. In FY 2008, OS will investigate the installation of low faucet aerators on the restrooms sinks.

Training

During FY 2007, HHS reported training 104 energy personnel at a cost of $8,086. In addition, thousands of employees received educational materials or were involved in energy and water conservation activities.

The formal training for energy personnel included a two-day course on Labs21Advanced Laboratory Design, EO 13423, alternative financing, green procurement, sustainability, OPDIV specific workshops, DOE Federal Energy Management Program and the Association of Energy Engineer classes, and utility or manufacturer-sponsored training. The subject content of the courses covered the broad spectrum of energy and water efficiency, varying from specific equipment instruction to alternative financing techniques and sustainable design.

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F. Department of Homeland Security

Reduction Goal Performance

In FY 2007, DHS reported using 95,689 Btu per gross square foot in its goal subject buildings, a 19.1 percent decrease in energy intensity from 118,271 Btu/GSF used in FY 2003. DHS received credit for purchases of 99.3 billion Btu of renewable energy in FY 2007, reducing the performance measure of these facilities from 97,948 Btu/GSF to 95,689 Btu/GSF. Without the credit for renewable energy purchases, DHS' reduction from FY 2003 is 17.2 percent. The reduction has been attributable to a variety of efforts including the cumulative effect of long term measures conducted by the U.S. Coast Guard (USCG) through both ESPCs and numerous energy efficiency projects, better energy accounting and tracking, and the hiring of savings-funded Resource Efficiency Managers.

Metering

In FY 2007 the Department of Homeland Security reported 170 of its buildings metered for electricity use. This represents 15.8 percent of the total electricity consumed by DHS.

In FY 2008 DHS plans to install meters on 10 more buildings. This represents 13.2 percent of the total electricity consumed by DHS. In FY 2008 DHS also plans to install advanced meters on two of its buildings. This represents 14.6 percent of the total electricity consumed by DHS.

The Department of Homeland Security overall has met the milestones of the Department's metering plan. Some components have progressed ahead of the schedule. One component had to cancel a solicitation because the costs exceeded the point of economic practicability.

New Building Designs

DHS began the design process for 52 new facilities in FY 2007. Of these 52 facilities, 16 will be designed to use 30 percent less energy than relevant code. Sixteen of the new facilities are GSA assumed design facilities, and if funding is available, the contract will be amended so that the facilities will use 30 percent less energy than relevant code. Eighteen of the new facilities have been designated DHS Center of Excellence facilities and, if funding is available, the contract will be amended so that the facilities will use 30 percent less energy than relevant code.

Excluded Buildings

In FY 2007, DHS reported using 116.7 billion Btu in its excluded buildings, 2.6 percent of the agency's total facility use. The DHS excluded buildings occupy 1,612.5 thousand square feet, 3.5 percent of the agency's total facility space.

For FY 2007, the Customs Border Protection (CBP) has intense lighting and remote video surveillance systems along the border. CBP currently tracks consumption and cost data for those sites and systems that are separately metered. However, some are not separately metered from facilities. CBP has 852 facilities (antennas and parking garages/lots) eligible to be considered excluded from the energy intensity reduction goal.

Both Transportation Security Administration (TSA) Headquarters and TSA Freedom Center (TSAFC) are excluded. Headquarters is excluded under the "Assumed Exclusion of Structures and Processes Not Qualified as Federal Buildings." The category "Assumed exclusions for certain types of leased space" states that "this applies to leased space where the Government may pay for some energy but not all." Headquarters is under the contract lease which requires that the owners of the building will pay an allotted amount for energy each month. Whenever TSA exceeds that allotment in energy use, TSA will pay the excess. TSA Headquarters is an excluded facility.

Renewable Energy Use

In FY 2007, DHS reported using 29,535 MWh of renewable electric energy, equivalent to 4.0 percent of its facility electricity use. Of this total, 20,978 MWh was from new renewable sources developed after January 1, 1999. In addition, DHS received a bonus of 210 MWh for renewable electricity generated on Federal or Indian land. More than half of DHS' renewable electricity use was from new sources, meeting the Executive Order goal. Eligible old renewable electricity use by DHS totaled 8,347 MWh.

CBP purchased 1,536 MWh of renewable energy certificates (RECs) in FY 2007 through the Defense Energy Support Center. This equates to 3 percent of the CBP annual electrical consumption.

Self Generated Renewable Energy
The Coast Guard continually evaluates renewable energy projects for economic viability. Several wind turbine and photovoltaic feasibility studies are currently under development. In FY 2007, the following self-generated renewable energy projects were in operation:

Solar Water Heating
- 62 Housing units in Honolulu, Hawaii
- 149 Homes in Puerto Rico Air Station
- Indoor swimming pool in Alameda, CA
- San Francisco Air Station

Photovoltaics
- Roof panels in Petaluma, CA
- PV system for charging battery for emergency generator in Puerto Rico
- Lighted aids to navigation - 4,779 solar panel/battery powered light-buoys; 11,620 solar panel/battery powered lighted-fixed aids to navigation

Other
- Bio-diesel feasibility study for marine applications
- Ground source heat pump in Cape Cod, MA

Purchased Renewable Energy
The USCG facilities in New York City are included as part of an electric utility contract awarded in FY 2006 and continuing through FY 2010. Part of the award package included a requirement for the equivalent of 10 percent of the total load or roughly 60,000 kWh per annum purchased from renewable sources. These buildings covered under this contract are all standard buildings. CBP purchased 1,535,760 kWh of Renewable Energy Credits (REC) in FY 2007 through the Defense Energy Support Center. This equates to 3 percent of the CBP annual electrical consumption.

Investment in Energy Efficiency

In FY 2007, DHS invested $62.4 million in energy efficiency and renewable energy projects, 61.9 percent of its total facility energy costs. Of this total, $31.1 million was funded directly by the agency and $31.3 was through ESPCs. DHS did not finance any projects through utility energy service contracts.

In addition to direct obligations, the Coast Guard has embraced alternative financing as an approach to quickly implement projects to addressing the goals of Executive Order 13423 and EPACT 2005. In FY 2007, the Coast Guard awarded ESPCs for ARSC Elizabeth City, a nine site project on the West Coast and at ISC Kodiak with a total contract value of over $49.5 million. The Coast Guard has also accepted requests for the commencement of Initial Proposals for potential ESPCs at ISC Boston and the Coast Guard Academy.

Water Consumption

In FY 2007, DHS reported using 1.5 billion gallons of water at a cost of $124.4 million in 45.6 million square feet of facility space. This establishes a preliminary baseline for DHS water consumption of 33.4 gallons per gross square foot.

In FY 2007, the U.S. Coast Guard (USCG) established a baseline of water consumption of 1,146.9 million gallons of water at a cost of $7,034,676. A review of water utility invoices for FY 2007 showed numerous database errors. The database has been corrected for the largest water consuming accounts within the Coast Guard. Additional data reconciliation is scheduled for FY 2008. The USCG formalized the water management plans at four major campuses which comprise 17 percent of the total building footprint of the USCG. In addition to the water management plans performed by the National Renewable Energy Laboratory (NREL) in FY 2006, the Coast Guard also contracted with NREL to enhance the water management program in FY 2007 and perform water conservation audits in FY 2008. Other activities are in process to expand the campuses that have water management plans and to establish a minimum of four best water management practices at each site with a water management plan.

It is estimated that the Customs and Border Protection (CBP) consumed 85.8 million gallons of water at a cost of $338,200 in FY 2007. Accurate consumption and cost data is difficult to capture since, in some remote areas of the country, water is shipped in for consumption and purchased via the use of a government-authorized credit card. Activities taken to improve water efficiency include the Best Management Practices (BMP) of water efficient landscaping, waterless urinals, low-volume faucets and showerheads, and water reuse and recycling at vehicle wash stations.

The Federal Law Enforcement Training Center (FLETC) has made significant efforts with regard to water savings. A total of 259 water meters, at a cost of approximately 1.2 million, have been installed at Glynco for the City of Brunswick to meter the water usage. An FY 2007 FLETC preliminary baseline of 30.5 gallons per square footage has been established.

Science and Technology (S&T) Plum Island Animal Disease Center (PIADC)'s water supply consists of treated groundwater extracted from on-site, government-owned water supply wells, not from a municipal water supply system. Ongoing efforts to conserve water include a general awareness of water conservation among researchers and support staff. The conversion from 50-plus year old and temporary boilers to the three new boilers, coupled with repairs and replacement of older, leaking steam lines result in an overall decrease in water usage. In addition, procedural changes in some areas such as cleaning of animal holding pens; conversion to low-flow fixtures and water saving appurtenances all help conserve water.

TSA Headquarters consumed 15.3 million gallons of water at a cost of $108,000. TSAFC consumed 1.2 million gallons of water at a cost of $6,000. Beginning in July, a water conservation effort included modifying the sprinkler system at TSAFC to be manually operated. Personnel are able to determine the necessity of operating the sprinklers based on many factors, including weather and drought. The United States Secret Service does utilize low volume and low flow devices as well as sensor controls on lavatory faucets. The Service will continue to investigate other devices to help conserve water and ensure goals are met. The estimated water consumption for FY 2007 is 3.5 million gallons.

Training

In FY 2007, DHS reported training 148 energy managers at a cost of $7,700.

The Department of Homeland Security provided a Certified Energy Manager (CEM) review class during FY 2007 and an opportunity to sit for the Association of Energy Engineers certification exam. Two DHS employees sat for the exam and are awaiting results. The class is being considered again for 2008, along with a Leadership in Energy and Environmental Design (LEED) class. Information on energy training and education is distributed through USCG energy websites and email. A master energy stakeholder email list provides a mechanism for outreach activities that includes disseminating information from the Federal Energy Management Program, and other energy awareness notices.

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G. Department of Housing and Urban Development

Reduction Goal Performance

In FY 2007, HUD reported using 69,843 Btu per gross square foot in its Washington, DC, headquarters building, the sole building subject to the EPACT 2005 amendments goal. This is a 17.3 percent decrease in energy intensity from 84,450 Btu/GSF used in FY 2003. HUD received credits for purchases of 2.3 billion Btu of renewable energy in FY 2007.

Metering

HUD installed an electric meter on its headquarters building. This represents 100 percent of the total electricity consumed by HUD. All meters in the headquarters building have been upgraded. The advanced meters were installed by the local utility company in 2004. The building operating engineers monitor and record meter readings monthly.

New Building Designs

HUD did not start any new designs in FY 2007.

Renewable Energy Use

In FY 2007, HUD reported using 665 MWh of renewable electric energy, equivalent to 3.0 percent of its facility electricity use. Of this total, all was generated from renewable sources developed after January 1, 1999. HUD did not generate any electricity on Federal or Indian land. All of HUD's renewable electricity use was from new sources, meeting the Executive Order goal. HUD did not generate any electricity from old renewable energy sources.

Self Generated Renewable Energy
HUD currently does not use any self-generated energy. The Department will continue to explore renewable energy opportunities, including the possibility of installing solar photovoltaic (PV) panels and/or small wind turbines on headquarters building rooftop. Further study is required, including the life-cycle cost and comparison of different products. It should be noted that the installation of these products is subject to the review and approval of the General Services Administration (GSA) and the District of Columbia Office of Planning and Historic Preservation Review Board.

Purchased Renewable Energy
HUD is serviced by the power procurement aggregate, initiated by GSA. The contract requires three percent energy credits be given as Renewable Energy Certificates (RECs); therefore, meeting the renewable energy consumption goal.

Investment in Energy Efficiency

In FY 2007, HUD did not invest in energy efficiency and renewable energy projects.

Water Consumption

In FY 2007, HUD reported using 21.8 million gallons of water at a cost of $139.1 million in 1.4 million square feet of facility space. This establishes a final baseline for HUD water consumption of 15.2 gallons per gross square foot.

In FY 2007, several water conservation projects were funded and implemented. HUD upgraded the outdoor planters' irrigation system. The new system uses a mist spray versus a stream spray to irrigate the planters and was programmed for shorter operating times. HUD approved and started the renovation of the first floor lobby restroom facilities as part of the capital improvement projects. All newly installed water closets have 1.6-gallon tanks while all urinals feature one-gallon tanks. The new faucets feature low-flow and have automatic water sensors. HUD also has a comprehensive maintenance program that incorporates many of the Best Management Practices identified by FEMP into everyday requirements for operations and maintenance. The program includes a user-friendly method to report leaks and repair them immediately. The program also encourages cleaning and custodial crews to report problems as soon as they are identified.

Training

In FY 2007, HUD reported training eight energy personnel at no cost. HUD employees attended workshops and seminars provided by the Department of Energy/ Federal Energy Management Program. Employees participated in the DOE Interagency Energy Management Task Force Meetings and the GSA Power Group

Members Meetings. Employees have also attended meetings sponsored by the Office of the Federal Environmental Executive, where different energy and water conservation and renewable energy products are presented.

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H. Department of the Interior

Reduction Goal Performance

In FY 2007, DOI reported using 67,439 Btu per gross square foot in its goal subject buildings, a 23.4 percent decrease in energy intensity from 88,064 Btu/GSF used in FY 2003. DOI received credit for purchases of 354.7 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 73,185 Btu/GSF to 67,439 Btu/GSF. Without the credit for renewable energy purchases, DOI's reduction from FY 2003 is 16.9 percent.

Metering

In FY 2007 the Department of Interior reported 10,690 of its buildings metered for electricity use. This represents 48.0 percent of the total electricity consumed by DOI. Interior bureaus are making progress in identifying and installing electric meters in all appropriate buildings by October 2012. All FY 2007 Departmental metering plan milestones have been achieved. Interior issued Electric Metering Implementation Guidance, in March 2006, which supplemented the DOE's Guidance for Electric Metering in Federal Buildings. The Interior guidance is flexible to accommodate the diverse missions of the Bureaus yet provides a solid framework for Interior specific information to be included in the Bureau Electric Metering Implementation Plans. Interior Bureaus have reviewed existing building and energy consumption databases and conducted site visits to identify existing metering infrastructure and buildings appropriate for metering. Interior Bureaus have requested funding to install advanced electric meters through the Federal budget process. Metering systems are being installed through new construction and major renovations, energy savings performance contracts and utility company upgrades.

New Building Designs

DOI began the design process for 15 new facilities during FY 2007. Of these 15 facilities, three have been designed to use 30 percent less energy than relevant code. It is still to be determined if 12 of the facilities will use 30 percent less energy than relevant code.

Renewable Energy Use

In FY 2007, DOI reported using 111,905 MWh of renewable electric energy, equivalent to 18.2 percent of its facility electricity use. Of this total, 65,310 MWh was from new renewable sources developed after January 1, 1999. In addition, DOI received a bonus of 2,753 MWh for renewable electricity generated on Federal or Indian land. More than half of DOI's renewable electricity use was from new sources, meeting the Executive Order goal. Eligible old renewable electricity use by DOI totaled 43,842 MWh.

The use of solar and other renewable energy sources is encouraged if the development of the resource is economically, environmentally, and technically feasible.

Self Generated Renewable Energy
Interior has implemented 1,692 on-site renewable energy projects including standalone and grid connected photovoltaic systems, solar thermal (hot water) projects, geothermal (ground source) heat pumps, new hydro generation projects and wind related projects. During FY 2007, Interior Bureaus continued to inventory their respective on-site renewable energy components. The Bureaus effort in gathering the information for this inventory and resultant energy generation contributed tremendously towards meeting the renewable energy consumption goal.

The Bureau of Indian Affairs (BIA) completed the installation of a 5-kW photovoltaic system at Alamo Navajo Community School in Magdalena, New Mexico and a 2.5 kW photovoltaic system at Jemez Day School in Jemez Pueblo, New Mexico. The teaching staff at each of these schools is planning to incorporate these renewable energy systems into their course curriculum. A 70-kW photovoltaic roof at Southwest Indian Polytechnic Institute, New Mexico is currently being installed and will be operational in FY 2008. The Circle of Nations-Wahpeton Indian Boarding School in Wahpeton, North Dakota is replacing the dormitory and administration building and will incorporate a campus wide geothermal heating project.

The Bureau of Land Management (BLM) renewable energy systems that went on line in FY

2007 include a new photovoltaic water well pumping system in San Pedro Riparian National Conservation Area.

BLM renewable energy installations currently under design or construction in FY 2007 included the construction of the California Trails Center near Elko, Nevada, which incorporates natural lighting, energy efficient features, heating and cooling provided by ground-source heat pumps (38 tons total), occupancy sensors, low-flow plumbing fixtures, and minimal exterior and site lighting to protect the night sky.

In FY 2007, the Fish and Wildlife Service (FWS) completed the installation of two photovoltaic systems at the San Andreas National Wildlife Reserve (NWR), New Mexico, a 1.8-kW and 2.4-kW grid-tied solar panels were installed at the Refuge headquarters and parking facility. A 6 kW photovoltaic system was installed at the Bitter Lake NWR Visitor Center, New Mexico. A 10 kW photovoltaic system was installed at the Bosque del Apache NWR, New Mexico. A net-metered, grid-tied 5-kW photovoltaic system was completed at the Wilna Lodge at the Rappahannock River NWR, Virginia in July 2007. The system uses 28 Sharp (180-W) single crystal (long life) panels in the solar array, which is mounted on two seasonally-adjusted pole mounts. In addition, a 32-square-foot solar boiler provides solar hot water.

Purchased Renewable Energy

Interior continues to purchase energy from renewable sources. In FY 2007 Interior purchased a total of 355 billion Btu of renewable energy.

BIA and USGS purchased 85,076 MWh of renewable energy certificates produced from wind and biomass energy. BLM continued to purchase wind-generated renewable energy for its Moab Field Office, as well as for the Escalante Science Center during FY 2007. These purchases were made under the Blue Skies Program offered by the utility company, Utah Power and Light. BLM also purchased renewable energy at the National Interagency Fire Center in Boise, Idaho through Idaho Power's Blue Sky Program.

Investment in Energy Efficiency

In FY 2007, DOI invested $14.5 million in energy efficiency and renewable energy projects, 15.3 percent of its total facility energy costs. Of this total, $10.8 million was funded directly by the agency and $3.7 was financed through energy savings performance contracts. DOI did not finance any projects with utility energy service contracts in FY 2007.

The BLM began using ESPCs in FY 2006 with a pilot project at the National Interagency Fire Center and the BLM's Boise District Complex. BLM awarded Phase Two of the ESPC task order to Johnson Controls, Inc. for 105 facilities across six BLM states in FY 2007.

BLM and Johnson Controls, Inc. (JCI) again partnered creating a new approach to further streamline the ESPC process. During Phase 2, JCI is visiting approximately 10 percent of BLM's field facilities (e.g., fire stations, recreation sites, wild horse and burro facilities, air tanker bases, and visitor centers). Based on this sampling JCI will propose energy and water conservation and renewable energy opportunities for all BLM owned facilities (i.e., those that use more than $1,000 of electricity annually) in those six states. BLM and JCI will then: 1) concur on the typical conservation measures to be installed; 2) agree on the contract vehicle stocked with the typical conservation measures and simply install them. A BLM employee will verify the types and numbers of measures installed and submit that verification to BLM's central engineering office for processing.

Water Consumption

In FY 2007, DOI reported using 3.6 billion gallons of water at a cost of $10.9 million in 61.7 million square feet of facility space. This establishes a final baseline for DOI water consumption of 58.7 gallons per square foot. Many of Interior's buildings do not have metered water consumption; Bureaus were encouraged to provide estimates of the water consumption utilizing DOE draft guidance document "Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423" and Federal Water Use Indices provided on the FEMP website.

Training

In FY 2007, DOI reported training 157 energy personnel at a cost of $108,200. During the reporting period, Interior energy managers provided information to personnel on available energy management training and encouraged them to attend as much training as operational requirements and funding permitted. Energy managers involved in building energy efficiency and water conservation have attended workshops offered by DOE's Federal Energy Management Program. Several have also attended training offered by other organizations such as Office of the Federal Environmental Executive, Environmental Protection Agency (EPA), the Association of Energy Engineers, American Society of Heating, Refrigerating and Air-Conditioning Engineers, U.S. Green Buildings Council, and public utilities, on topics such as green power purchase, the LEED rating system, building insulation advances, and water conserve-ation. Interior energy personnel attended on-site training and satellite broadcasts of the Federal Energy Management Program's courses on Metering Technologies, Energy Saving Performance Contracts, and Utility Energy Savings Contracts as well as attended the Department of Energy's GovEnergy 2007 Conference.

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I. Department of Justice

Reduction Goal Performance

In FY 2007, DOJ reported using 239,353 Btu per gross square foot in its goal subject buildings, a 17.2 percent decrease in energy intensity from 289,056 Btu/GSF used in FY 2003. DOJ received credit for purchases of 15.0 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 239,558 Btu/GSF to 239,353. Without the credit for renewable energy purchases, DOJ's reduction from FY 2003 is 17.1 percent.

Metering

The Department of Justice reported 23 of its buildings metered for electricity use. This represents 100 percent of the total electricity consumed by DOJ.

In FY 2007 DOJ submitted a metering plan to complete the installation of advanced meters by September 30, 2012, in compliance with the requirements of the Energy Policy Act of 2005 Section 103, Energy Use Measurement and Accountability where it is practical to do so.

New Building Designs

DOJ did not start any new designs in FY 2007.

Renewable Energy Use

In FY 2007, DOJ reported using 5,508 MWh of renewable electric energy, equivalent to 0.3 percent of its facility electricity use. Of this total, 2,094 MWh was from new renewable sources developed after January 1, 1999. DOJ did not generate any electricity on Federal or Indian land. Less than half of DOJ's renewable electricity use was from new sources. Eligible old renewable electricity by DOJ totaled 3,414 MWh.

The DOJ is investigating the potential for purchasing renewable energy at each of the facilities where DOJ pays the electric bill.

The Bureau of Prisons (BOP) has two active ESPC renewable energy projects that provide solar heated hot water and electricity. These systems produced 1,116 MWh of renewable during FY 2007 which resulted in $166,000 annual savings.

In FY 2007 BOP purchased renewable energy through GSA contracts for 2,094 MWh of renewable energy.

Investment in Energy Efficiency

In FY 2007, DOJ invested $268,800 in energy efficiency and renewable energy projects, 0.1 percent of its total facility energy costs. This total amount was funded directly by the agency. DOJ did not finance any projects with ESPCs or UESCs during FY 2007.

In FY 2007 BOP developed three ESPC projects that are now in the final detailed energy survey (DES) stages. The anticipated award for these projects is early FY 2008. Seventeen more ESPC projects are in various DES stages with awards anticipated in mid FY 2008 or early FY 2009.

Water Consumption

In FY 2007, DOJ reported using 9.0 billion gallons of water at a cost of $27.9 million in 72.9 million square feet of facility space. This establishes a final baseline for DOJ water consumption of 123.3 gallons per square foot. All DOJ facilities perform regular maintenance checks of plumbing fixtures to check for leaks and have installed water conserving water fixtures where applicable. The DOJ's water conservation efforts during FY 2007 resulted in a 2.8 percent decrease in water consumption agency-wide.

Training

In FY 2007, DOJ reported training 51 energy managers at a cost of $52,800.

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J. Department of Labor

Reduction Goal Performance

In FY 2007, DOL reported using 94,872 Btu per gross square foot in its goal subject buildings, an 20.1 percent decrease in energy intensity from 118,769 Btu/GSF used in FY 2003. DOL received credit for purchases of 29.2 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 96,122 Btu/GSF to 94,872 Btu/GSF. Without the credit for renewable energy purchases, DOL's reduction from FY 2003 is 19.1 percent.

Metering

The Department of Labor has installed standard electricity meters in 720 of its facilities. This figure represents 30 percent of the total electricity consumed by the DOL. There were no advanced meters installed during FY 2007; however, there are 45 installations planned for FY 2008.

New Building Designs

DOL began the design process for one new facility during FY 2007. The facility, the New Milwaukee Center, will be designed to use 40 percent less energy than relevant code.

Excluded Buildings

DOL currently does not exclude any buildings from the energy reduction goal. However, the Mine Safety and Health Administration (MSHA) reports that its Accreditation and Certification Center located in Triadelphia, West Virginia serves as a testing facility and may fall within the FEMP guidelines for establishing excluded buildings. After consultation with DOE officials, MSHA will determine if the Accreditation and Certification Center is a facility that meets the energy intensive process requirements and if it qualifies as a facility that clearly demonstrates that process-dedicated energy overwhelms other building energy consumption, the requirement for designation as an excluded facility.

Renewable Energy Use

In FY 2007, DOL reported using 8,555 MWh of renewable electric energy, equivalent to 3.0 percent of its facility electricity use. Of this total, all was purchased from new renewable sources developed after January 1, 1999. DOL did not generate any electricity from renewable sources.

Participation in the LEED accreditation program will allow the Office of Job Corps to qualify to purchase renewable energy at the Albuquerque Job Corps Center.

The Albuquerque Job Corps Center completed construction of new dormitory that meets the LEED Gold Rating requirements and features state-of-the-art energy conservation technologies. As part of its design, a wood pellet stove utilizing renewable energy sources is used to provide domestic hot water. A newly constructed dormitory the Arecibo Job Corps Center now uses solar energy to provide most of the domestic hot water for the center.

Investment in Energy Efficiency

In FY 2007, DOL invested $500,000 in energy efficiency and renewable energy projects, 0.9 percent of its total energy costs. During FY 2007 DOL did not award any energy savings performance contracts or utility energy service contracts.

Water Consumption

In FY 2007, DOL reported using 1.0 billion gallons of water at a cost of $4.8 million in 20.3 million square feet of facility space. This establishes a preliminary baseline for DOL water consumption of 50.6 gallons per gross square foot.

Due to the large volume of facilities within the Job Corps program, over 120 Job Corps centers nationwide, most of the Department's water conservation efforts are focused at Job Corps facilities. Specific activities undertaken to improve water efficiency are described below.

Approximately 30 Job Corps centers have had energy audits which resulted in the decision to install energy efficient water fixtures. All new construction and renovation projects must now utilize low-flow fixtures.

Other potential water conservation strategies that will be applied where feasible and cost effective include: (a) using high efficiency irrigation

technology or captured rain or recycled water to reduce potable water consumption for irrigation; (b) using native planting materials to minimize the need for site irrigation; (c) installation of high efficiency fixtures and dry fixtures to reduce the volume of waste water; (d) utilizing Energy Star rated equipment for activities which require high levels of water, such as washing machines, dishwashers and cooling towers; and (e) using rainwater catchment systems for irrigation and toilet flushing.

Training

In FY 2007, DOL reported training 377 energy managers at a cost of $16,700.

At the Departmental level, DOL participates in training sessions provided by the Environmental Protection Agency's Office of Federal Facilities Enforcement, and FEMP. These forums provide an opportunity to exchange information that is shared with the subordinate program staff having responsible for energy conservation management.

The Office of Job Corps has developed a web-based training curriculum of courses, in partnership with International Facility Management Association, covering energy conservation and environmental awareness in the following areas:

- Facility and energy management,
- Heating, ventilation and air conditioning,
- Preventive maintenance on facilities, and
- Renewable energy

Job Corps also provides information that promotes energy conservation awareness among as part of its Job Corps student development and vocational skills training programs. Job Corps' base curriculum now includes courses focused on the importance of energy conservation and ways to improve the conservation and energy efficiency of residences.

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K. Department of State

Reduction Goal Performance

In FY 2007, the State Department reported using 87,158 Btu per gross square foot in its goal subject buildings, a 17.9 percent decrease in energy intensity from 106,162 Btu/GSF used in FY 2003. State received credit for 8.7 billion Btu of renewable energy purchases in FY 2007, reducing the performance measure of these buildings from 89,121 Btu/GSF to 87,158 Btu/GSF. Without the credit for renewable energy purchases, the State Department's reduction from FY 2003 is 16.1 percent.

Metering

As of FY 2007 the Department of State reported 10 of its facilities metered for electricity use. This represents 100 percent of the total electricity consumed by the Department.

Each of the Department's buildings is metered with a standard kWh meter at the point electricity enters the building. Certain load centers within the buildings are sub-metered to track instantaneous loads, such as computing centers. At present, approximately 60 percent of the Department's large computing centers are equipped with these advanced metering systems. All newly constructed computing centers include this technology, and as existing computer rooms are upgraded or expanded, such meters are considered for installation.

New Building Designs

The State Department did not start any new designs in FY 2007.

Excluded Buildings

The Department has not identified any excluded buildings as defined in EPACT 2005 for FY 2007. Instead, the Department has identified specific components of buildings—namely computing centers—as energy intensive areas that warrant exclusion from the standards set for normal office building. The computer applications in these areas are considered critical infrastructure to the Department, requiring 24 x 7 x 365 day operation. Four distinct computing centers have been excluded and each of these centers has advanced metering systems installed to track power consumption. Energy to cool those specific areas has been calculated since there are no metering devices on the chilled water loops serving each area. Several of these computing centers comprise multiple computer rooms, all fed off common power/load centers that are metered. There are several additional computing centers within the Department's domestic facilities, but those sites do not, as yet, have advanced metering installed, so the power consumption supporting those operations remain aggregated in their respective building's totals.

Renewable Energy Use

In FY 2007, State reported using 2,556 MWh of renewable electric energy, equivalent to 2.2 percent of its facility electricity use. Eligible old renewable electricity use by State totaled 0.2 MWh.

The Department of State has installed photovoltaic (PV) cells for the parking lot and perimeter building security lighting at the Florida Regional Center (FRC) along with a passive solar trough for hot water heating. The array and trough generate approximately 159 KWh for lighting and hot water heating use. Additional solar PV arrays are being considered for installation at FRC to accomplish net-metering (generating electricity to be fed back into the grid) and provide electrical power to the facility. However, it is projected that all power generated on-site will be consumed on-site.

In addition, there is a small 35.1-KW PV solar array installed on the roof of HST.

Investment in Energy Efficiency

The State Department did not report any investment in energy efficiency and renewable energy projects in FY 2007.

Water Consumption

In FY 2007, the State Department reported using 169.0 million gallons of water in 4.5 million square feet of facility space. This establishes a baseline for the State Department's water consumption of 37.8 gallons per gross square foot.

Training

In FY 2007, the State Department reported training six energy managers at a cost of $3,400. All purchase/credit card holders are required to complete appropriate procurement training—including "buying green" and Energy-Star® purchasing requirements—when they first are issued a credit card and periodically thereafter. Several Intranet websites provide on-line training and procurement guidance and are available to the entire Departmental staff. A/OPR organizations support professional development of staff members through occasional training programs, seminars, and credentialing activities. This past year, one individual became a Leadership in Energy and Environmental Design (LEED) accredited professional while a second staff member retained her Accredited Professional (AP) credential; three other staff members maintained their Certified Energy Manager credentials; and several facility managers participated in sequential on-line seminars ("webinars") on energy conservation and sustainable buildings topics.

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L. Department of Transportation

Reduction Goal Performance

In FY 2007, DOT reported using 79,199 Btu per gross square foot in its goal subject buildings, a 21.9 percent decrease in energy intensity from 101,423 Btu/GSF used in FY 2003. DOT received credit for purchases of 126.1 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 96,559 Btu/GSF to 79,199 Btu/GSF. Without the credit for renewable energy purchases, DOT's reduction from FY 2003 is 4.8 percent.

Metering

In FY 2007, DOT reported 15,650 of its buildings metered for electricity use. This represents 100 percent of the total electricity consumed by DOT. Progress towards advanced metering continues to be investigated. Training has been provided on metering strategies and equipment utilizing the greatest amount of electrical power has been identified. Plans are under review to install individual, advanced meters in various locations in FY 2008; for instance FAA's Aeronautical Center currently has 38 buildings with advanced electric meters and 26 buildings with advanced gas meters. The Aeronautical Technical Center has 22 advanced meters planned for FY 2008, completion scheduled for FY 2012.

New Building Designs

The Department of Transportation did not start any new designs in FY 2007.

Excluded Buildings

In FY 2007 DOT reported using 3,530.2 billion Btu in its excluded buildings, 83.4 percent of the agency's total facility use. DOT's excluded buildings occupy 20.3 million square feet, 73.7 percent of the agency's total facility space.

The buildings and facilities listed on the FAA FY 2007 Excluded Facilities Inventory are National Airspace (NAS) electronic and plant support systems for air traffic control within the continental U.S. A sampling survey was conducted of typical buildings and facilities and that survey showed an overwhelming proportion of process dedicated energy for those NAS systems. The process energy used is for FAA Air Route Traffic Control Center (ARTCC) systems and NAS support systems and it is technically infeasible to meet the reduction goals in these spaces because of the higher amount of process energy required. FAA, in the design of NAS systems, incorporates energy savings components where possible. Also, the heating, ventilation, lighting and air conditioning systems are necessary for the direct support of the NAS to create an environment that is suitable for both the temperature sensitive equipment and Air Traffic Control personnel providing air traffic control in a stressful environment.

The equipment in the FAA's buildings is served through a series of centralized electric buses and distribution panels that would make isolating the loads of HVAC, lighting, and equipment by functional area an expensive and impractical task. The FAA continues to evaluation its exempt buildings and facilities list to determine which spaces should be re-categorized.

The Maritime Administration operates three ship storage facilities. Over 250 ships of the National Reserve Fleet are maintained in various states of readiness in support of the Department of Defense. Power is provided to the ships primarily for ventilation and cathodic protection or what is referred to as "cold iron energy."

The St. Lawrence Seaway Development Corporation (SLSDC) operates two locks on the St. Lawrence River. During the winter months these locks are closed and drained of water for maintenance. Portions of the locks are temporarily partitioned and heated during maintenance. Since the locks are not buildings and are industrial in nature, the energy consumed during maintenance is reported as excluded.

The Turner-Fairbank Research Facility is a mixture of indoor and outdoor labs used for short and long term testing of various highway systems. A major portion of the facility is dedicated to the laboratory space with some heavy process dedicated energy users. The testing workload varies from year to year and additional energy consuming laboratory equipment is being installed in the near future. Significant efforts continue at this site.

Renewable Energy Use

In FY 2007, DOT reported using 37,958 MWh of renewable electric energy, equivalent to 4.0 percent of its facility electricity use. Of this total, 37,458 MWh was from new renewable sources developed after January 1, 1999. In addition, DOT received a bonus of 494 MWh for renewable electricity generated on Federal or Indian land. Almost all of DOT's electricity use was from new sources, meeting the Executive Order goal. Eligible old renewable electricity use by DOT totaled 6 MWh.

The Office of Real and Personal Property and Asset Management issued guidance on the use of renewable energy to all DOT Operating Administrations. As a result, the use of self-generated renewable energy and purchase of renewable energy certificates increased for FY 2007.

Self Generated Renewable Energy

The Department continues to encourage the use of renewable energy through funding, training, promoting, and partnering with other Federal agencies. The FAA has been partnering with the FEMP to conduct photovoltaic studies at small ATO (Air Traffic Organization) facilities in Colorado. The FEMP contractor working with the FAA through grant funding will develop a detailed photovoltaic design of a remote communications air/ground system based on these study results. In FY 2007, ATO generated roughly 406 MWh of renewable energy from a combination of hydrogen powered fuel cells, photovoltaics, and wind power systems. These systems are located in FAA's Western, Central, and Eastern Service Areas.

The ATO National Program Office also funded 11 new photovoltaic projects at remote sites in their Western (WSA) and Central Service Areas (CSA). The photovoltaic projects in WSA are in the bidding phase. The photovoltaic projects in the CSA are in the construction phase. FAA's Aeronautical Technical Center (ACT) has installed 48 solar panels that produce 2.61 kW of power. A solar tracked mirror skylight system was installed that provides daylight in the Airport Pavement Test Facility. The calculated non-electric renewable energy generated was 478.4 million Btu.

The Maritime Administration continues the use of geothermal heating and cooling, completing the installation of a geothermal heating and cooling system for Palmer Hall resulting in 3 out of 6 barracks now using geothermal technology. Geothermal installations will continue during FY 2008 for Murphy Hall.

Purchased Renewable Energy

The FAA's WSA purchased 500 MWh of its energy requirements in its Legacy Northwest Mountain, Western Pacific, and Alaskan Regions from renewable sources. The FAA's Aeronautical Center has been supporting/purchasing as a Large Power & Light customer. Additionally, the DOT Headquarters Building, located in Washington, D.C. utilized 100 percent renewable energy totaling 33.9 MWh via credits from a GSA area-wide contract.

Investment in Energy Efficiency

In FY 2007, DOT invested $4.3 million in energy efficiency and renewable energy projects, 3.5 percent of its total facility energy costs. During FY 2007, DOT did not finance any projects through energy saving performance contracts or with utility energy service contracts.

In FY 2007, FAA's National Energy Program Office and the WSA began collaborating with the DOE's Hydrogen Infrastructure Office to develop a performance-based Interagency Agreement for the Installation of Hydrogen Fuel Cells. The DOE's Hydrogen Infrastructure Group will provide up to $110,000 for the cost of the fuel cells and the WSA will provide the resources to install the fuel cells and the intellectual property in the form of data gathered from their operation. The DOE funding is based on the difference to run the fuel cells versus a more conventional stand-by power technology.

Water Consumption

In FY 2007, DOT reported using 464.1 million gallons of water at a cost of $3.0 million in 25.7 million square feet of facility space. This establishes a final water baseline of 18.0 gallons per gross square foot.

Training

In FY 2007, DOT reported training 65 energy managers at a cost of $89,700. DOT relies on the broad training opportunities offered by the annual energy conferences sponsored by the DOE, GSA, and DOD. DOT also relies on the "You Have the Power" campaign materials for our outreach and employee awareness efforts.

The FAA Air Traffic Organization's Energy Management Program Office funded, organized, and facilitated one national training workshop in FY 2007 for the agency's Regional Energy Managers (REM's) and various team members. The workshop was held in Long Island, New York in conjunction with the Association of Energy Services Professionals (AESP) Energy Technology Symposium. The AESP Symposium provided education and training on buildings automatic control technologies, utility peak demand limiting rates, and end use technology integration strategies. It also provided an opportunity for the FAA Headquarters Energy Management Program members to conduct a program review of the Service Areas' energy projects. The REM's and the Technical Center energy team discussed project implementation, challenges, and successes.

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M. Department of the Treasury

Reduction Goal Performance

In FY 2007, Treasury reported using 161,014 Btu per gross square foot in its goal subject buildings, a 12.1 percent decrease in energy intensity from 183,237 Btu/GSF used in FY 2003. Treasury received credit for purchases of 63.0 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 166,018 Btu/GSF to 161,014 Btu/GSF. Without the credit for renewable energy purchases, Treasury's reduction from FY 2003 is 9.4 percent.

Metering

The Department of Treasury reported 31 of its buildings metered for electricity use. This represents 100 percent of the total electricity consumed by the Department of the Treasury.

The IRS has met its metering goal for FY 2007 by surveying all existing sites.

The United States Mint has standard meters at all of its manufacturing facilities, and has advanced metering capabilities at the Philadelphia Mint. Mint intends to explore advanced metering capabilities at other facilities in FY 2008 through local utility providers, and explore metering of specific equipment in accordance with Mint's metering plan.

The Office of Thrift Supervision (OTS) investment grade energy audit included the requirement of advanced metering. In accordance with metering plan milestones, the OTS investment grade energy audit included the requirement of advanced metering. In accordance with metering plan milestones, the OTS is working on the best approach depending upon electrical utility upgrades.

New Building Designs

The Department of Treasury did not start any new designs in FY 2007.

Excluded Buildings

In FY 2007 Treasury reported using 1.8 billion Btu in its excluded buildings, 0.1 percent of the agency's total facility use. Treasury's excluded buildings occupy 57.0 million square feet, 0.5 percent of the agency's total facility space.

Based on DOE guidelines, the IRS has parking lot lights that are separately metered in Atlanta, Georgia and Covington, Kentucky and the consumption data for which are reported as excluded energy.

Renewable Energy Use

In FY 2007, Treasury reported using 18,468 MWh of renewable electric energy, equivalent to 4.6 percent of its facility electricity use. Of this total, 15,468 MWh was from new renewable sources developed after January 1, 1999. Treasury did not generate any electricity on Federal or Indian land. Eligible old renewable electricity use by Treasury totaled 3,000 MWh.

Self Generated Renewable Energy
Treasury has not yet fully implemented any self-generating renewable energy projects.

Purchased Renewable Energy
The Bureau of Engraving and Printing (BEP) purchased renewable energy from competitive suppliers which were selected through GSA reverse auctions. The percent of renewable energy is specified in the GSA contract agreements. In FY 2007, 4 percent of BEP electrical consumption was renewable energy.

In 2007, the Bureau of Public Debt (BPD) purchased 3,000 MWh of Renewable Energy Certificates (REC) from bio-mass generators located in Georgia, South Carolina, and Alabama. Besides helping to reduce energy consumption from non-renewable sources, the purchase of RECs provide LEED points for the new Avery Street building. This purchase of RECs was in the second year of a 4-year contract. The RECs purchased were from generators placed in service in 1998 and earlier.

The IRS has purchased 7,500 MWh of Renewable Energy Credits (RECs) for FY 2007, up from 7,000 MWh in 2006.

In FY 2007, the Mint purchased 4,201 MWh of renewable energy from new renewable electricity

sources. The renewable energy is 3 percent of the total electrical energy consumption. Renewable energy purchases are currently made through the local utility in Denver, CO and Philadelphia, PA.

Investment in Energy Efficiency

In FY 2007, Treasury invested $5.3 million in energy efficiency and renewable energy projects, 11.8 percent of its total facility energy costs. Of this total, $2.2 million was funded directly by the agency and $3.1 was financed through UESCs. During FY 2007 Treasury did not finance any projects with energy savings performance contracts.

During FY 2007, the IRS contracted with Washington Gas to conduct a detailed feasibility study to determine whether the energy conservation measures proposed last year in an independent building audit are feasible, therefore minimizing the government's risk in implementing these measures based on proposed cost savings. All five ECMs were determined feasible with payback periods of less than ten years, with an annual estimated savings of $515,239. IRS will implement these measures utilizing the GSA's Area-wide Contract, starting in FY 2008 with the design and engineering/design build phase.

Water Consumption

In FY 2007, Treasury reported using 431.1 million gallons of water at a cost of $1.8 million in 12.1 million square feet of facility space. This establishes a final baseline for the Treasury water consumption of 35.8 gallons per square foot.

Training

In FY 2007, Treasury reported training 31 energy managers at a cost of $53,700.

In FY 2007, 30 employees attended the DOE-sponsored GovEnergy 2007 workshop, an increase of 36 percent over the previous year. Treasury promotes course offerings from the Federal Energy Management Program office and encourages participation by Bureau energy managers in FY 2008.

During FY 2007 Treasury Bureaus implemented energy awareness displays during October energy awareness month with supplies and posters provided by the Federal Energy Management Program "You Have the Power Campaign." In addition, Treasury has implemented a Green Purchasing Program to include the purchase of EenrgyStar® products, which is also included in the Federal purchase card user training.

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N. Department of Veterans Affairs

Reduction Goal Performance

In FY 2007, VA reported using 191,340 Btu per gross square foot in its goal subject buildings, a 7.6 percent decrease in energy intensity from 207,166 Btu/GSF used in FY 2003. VA received credit for purchases of 341.2 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 199,593 Btu/GSF to 191,340 Btu/GSF. Without the credit for renewable energy purchases, VA's reduction from FY 2003 is 3.7 percent.

Metering

The Department of Veterans Affairs reported that it had not installed any building-level electric meters to date. Per VA's metering plan, VA developed specifications for building-level electric metering and selected two pilot regions for initial implementation. VA elected to include water, natural gas and thermal energy meters for these pilots as well. The solicitation that VA developed for these pilots also includes centralized bill auditing and commodity data services for all VA facilities nationwide.

New Building Designs

The VA began the design process for three new facilities during FY 2007. All three of these facilities have been designed to use 30 percent less energy than relevant code.

Renewable Energy Use

In FY 2007, VA reported using 106,931 MWh of renewable electric energy, equivalent to 3.4 percent of its facility electricity use. Of this total, 53,465 MWh was from new renewable sources developed after January 1, 1999. In addition, VA received a bonus of 3,465 MWh for renewable electricity generated on Federal or Indian land. Half of VA's renewable electricity use was from new sources, meeting the Executive Order goal. Eligible old renewable electricity use by VA totaled 50,000 MWh.

Self Generated Renewable Energy
VA generated both electric and non-electric energy from renewable sources in FY 2007, and much more than in FY 2006. VA continues to improve Department-wide understanding of this technology category and anticipates increases in self-generated renewable energy use. VA is planning to install solar power generation systems in two pilot medical centers, and is planning to award wind and geothermal system installation projects in FY 2008.

Purchased Renewable Energy
VA purchased 100.0 gigawatthours of renewable energy at a cost of $219,000. VA anticipates increases in purchased renewable energy. However, VA will be more focused on installing self-generated renewable energy systems.

Investment in Energy Efficiency

In FY 2007, VA invested $17.5 million in energy efficiency and renewable energy projects, 3.7 percent of its total facility energy costs. The entire $17.5 million was funded directly by the agency.

The VA has completed facility energy assessments for 64 facilities and developed recommended water and energy conservation measures (ECMs) for each facility. The facilities represent approximately 25 percent of VA square footage and 17 percent of VA major facilities, clustered in 6 of VA's 21 regions.

Water Consumption

In FY 2007, VA reported using 9.3 billion gallons of water at a cost of $26.5 million in 144.8 million square feet of facility space. This establishes a final baseline for VA water consumption of 64.5 gallons per square foot. VA has reduced its water consumption from FY 2006 to FY 2007 by 10 percent, but related costs by only 0.9 percent. An increasing number of VA facilities are identifying potential water conservation measures during facility assessments and selecting them for implementation, and the National Cemetery Administration is leading the way in innovative practices. However, VA's mission in both the cemetery and health care environments means that reductions achievable in certain applications are limited.

Training

In FY 2007, VA reported training 106 energy managers at a cost of $168,000. VA co-sponsored the DOE annual energy workshop, GovEnergy

2007, which took place August 6-9 in New Orleans. VA speakers addressed participants at a number of sessions, and VA conducted a day-long training session immediately following the event for VA employees.

In August, after the GovEnergy 2007 VA session, VA created an Energy Engineers Training Planning Board to plan, develop and provide energy training for new energy engineers in FY 2008 and beyond. A number of VA employees also took advantage of Energy Star Web-based conferences.

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O. Environmental Protection Agency

Reduction Goal Performance

In FY 2007, EPA reported using 129,847 Btu per gross square foot in its goal subject buildings, a 63.8 percent decrease in energy intensity from 359,020 Btu/GSF used in FY 2003. EPA received credit for purchases of 682.5 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 315,867 Btu/GSF to 129,847 Btu/GSF. Without the credit for renewable energy purchases, EPA's reduction from FY 2003 is 12.0 percent.

Metering

The Environmental Protection Agency reported 33 of its buildings metered for electricity use. This represents 100 percent of the total electricity consumed by EPA.

EPA met 100 percent of its advanced metering goals in FY 2007. EPA plans to meet or exceed EPACT 2005 requirements with advanced metering of other utilities in all of its reporting facilities. Additionally, EPA plans to integrate all metered energy data from different facilities into a singe, Web-based "clearinghouse." EPA anticipates this will improve accuracy and save time by replacing the existing practice of manually tracking and entering consumption data.

In FY 2008, EPA plans to make additional progress towards Agency-wide implementation of advanced metering. EPA plans to procure a software package that will serve as the Agency's nationwide advanced metering software platform. Finally, by the end of FY 2008, EPA will procure and install new advanced metering hardware in several targeted facilities, starting with laboratories in Research Triangle Park (RTP) and Cincinnati.

New Buildings Design

The EPA did not begin any new designs in FY 2007.

Renewable Energy Use

In FY 2007, EPA reported using 200,260 MWh of renewable electric energy, equivalent to 153.5 percent of its facility electricity use. EPA received a bonus of 118 MWh for renewable electricity generated on Federal land. All of EPA's renewable electricity use was from new sources, meeting the Executive Order goal.

Purchased Renewable Energy

On September 1, 2006, EPA became the first major federal agency to purchase green power equivalent to 100 percent of its annual electricity use. Reaching this milestone is a testament to EPA's dedication to improve the Agency's own environmental performance through an ever-expanding green power procurement program. The largest single purchase of green power by EPA to date, a contract for 110 million kWh that went into effect September 1, 2006, includes major EPA facilities not previously covered by green power contracts through FY 2007.

Self Generated Renewable Energy

From its current onsite renewable energy projects, EPA generated more than 117.8 kWh of solar electricity and nearly 9.2 billon Btu of renewable thermal energy in FY 2007, by employing a variety of onsite renewable energy technologies. EPA continued to operate numerous renewable self-generation technologies in FY 2007:

- *Solar Arrays:* EPA continued to operate a 9-kW photovoltaic (PV) array installed in 2004 at the Western Ecology Division Laboratory in Corvallis, Oregon; a 100-kW PV array installed in April 2002 on the roof of the NCC in RTP; a 10-kW solar array installed on the roof of its Region 5 office in Chicago's Metcalfe Federal Building in 2000; and, as part of the new regional office building in Denver, a new 48-panel, 10-kW PV array on the building's eighth floor.

- *PV Lighting:* EPA's RTF campus includes solar streetlights and have served the entrance road and parking lot facilities since FY 2002.

- *Solar Water-Heating Systems*: In FY 2004, the Agency installed a solar water-heating system at the Region 9 Child Care and Fitness Center in San Francisco. EPA's Region 2 laboratory in Edison, New Jersey, utilizes

three solar water-heating systems that have been the primary source of hot water in their respective facilities since 1998. Each system helps augment its respective facility's energy use by reducing the need for electricity and natural gas.

- *Solar Power Awnings:* EPA's New England Regional Laboratory in Chelmsford, Massachusetts, has operated a PV awning system since September 2001. The 2-kW capacity awnings feed the regional electric grid and reduce cooling needs by providing shade for the facility's office windows.

- *Solar Wall:* EPA Region 8 Laboratory's transpired solar collector has augmented the Golden, Colorado, facility's heating and cooling system since March 2002, generating approximately 1.4 billion Btu of solar power annually.

- *Ground-Source Heat Pump:* A geothermal heat pump was installed as part of the Robert S. Kerr Environmental Research Station's ESPC upgrade in Ada, Oklahoma, in June 2004. This heat pump generates approximately 7.8 billion Btu annually and reduces EPA's need for primary fuels (electric and gas) accordingly.

Investment in Energy Efficiency

In FY 2007, EPA invested $5.7 million in energy efficiency and renewable energy projects, 28.5 percent of its total facility energy costs. During FY 2007, EPA did not finance any projects through energy savings performance contracts or with utility energy service contracts.

Water Consumption

In FY 2007, EPA reported using 168.1 million gallons of water at a cost of $1.2 million in 3.7 million square feet of facility space. This establishes a final baseline for EPA water consumption of 45.2 gallons per square foot.

Training

In FY 2007, EPA reported training 153 energy managers at a cost of $62,400.

To educate EPA employees on the requirements of EPAct 2005 and E.O. 13423, EPA's Sustainable Facilities Practices Branch (SFPB) developed several internal energy and green buildings training sessions in FY 2007. These training sessions also meet a specific goal of E.O. 13423, which mandates that agencies establish an internal environmental training program that will provide initial awareness and review of the executive order goals and related instructions, including the environmental impacts of employees' actions. In addition to two sessions dedicated to meeting the requirements of E.O. 13423 and EPAct 2005, presentations were made on ASHRAE 90.1-2004, as it applies to laboratories, and facility commissioning. Nearly 100 EPA employees attended.

Labs21 is a voluntary partnership program dedicated to improving the environmental performance of U.S. laboratories. Co-sponsored by EPA and DOE, the program is committed to helping build sustainable, high-performing, and low-energy laboratories.

As of October 2007, 5,975 industry professionals were involved in Labs21 through the Labs21 Network, which provides monthly updates on the various program components, including an annual conference, partnership and supporter programs, and a tool kit of technical resources.

In FY 2007, Labs21 held its largest conference to date. From October 17 to 19, 2006, 565 architects, engineers, federal employees, facility managers, and other laboratory professionals—including 37 EPA employees—convened in San Antonio, Texas, to discuss the latest trends in sustainable laboratory design and construction.

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P. General Services Administration

Reduction Goal Performance

In FY 2007, GSA reported using 69,816 Btu per gross square foot in its goal subject buildings, a 9.4 percent decrease in energy intensity from 77,029 Btu/GSF used in FY 2003. GSA received credits for purchases of 769.5 billion Btu of renewable energy and for project source energy savings of 87.0 billion Btu in FY 2006, reducing the performance measure of these buildings from 74,512 Btu/GSF to 69,816 Btu/GSF. Without these credits, GSA's reduction from FY 2003 is 3.3 percent. The agency achieved this reduction by directly investing in energy and water conservation opportunities with paybacks of 10 years or less.

Metering

GSA reported 1,303 of its buildings metered for electricity use. This represents 100 percent of the total electricity consumed by GSA.

GSA has had a great deal of activity with the metering effort in FY 2007. The Square D-ION EEM front end system to be used to tie in data nationally was in place, so much of the efforts centered around working to generate and receive proposals for the work to connect existing advanced meters into the national system for analysis.

GSA submitted a Strategic Action Plan Initiative for FY 2007 which was approved for advanced metering funds. The $6 million in funding was not available until late in the fiscal year but provided for a significant amount of meter hardware purchases, complete project installation awards, task orders issued for connection of existing advance meters to the front end system as well as awards to implement utility offered programs.

Staff at the regional level supplied prioritized requests for metering funds for their sites that were in line with the approach outlined in GSA's Metering Plan. The funds were distributed and spent at the regional level. With completion of these efforts GSA will have advanced metering in place at 127 sites which together comprise 28 percent of the agencies annual electricity use.

There were several approaches pursued this fiscal year and the various scopes and lessons learned from each project are being shared across the agency. The largest effort was undertaken by the Denver Federal Center which is comprised of 50 buildings and is the single largest electricity consumer in GSA's inventory.

The largest obstacle encountered which continues to hinder progress is related to the HSPD-12 security clearances process. The delay this process adds to a project can be significant. Additionally, efforts were needed to coordinate and educate GSA IT staff at the national level and regional level as to the various requirements of this mandate in order to provide for some consistency in how the advanced metering would be connected within GSA's network.

New Buildings Design

GSA began the design process for nine new facilities during FY 2007. All of these nine facilities will be designed to use 30 percent less energy than relevant code.

Excluded Buildings

In FY 2007, the GSA reported using 5,453.0 billion Btu in its excluded buildings, 28.6 percent of the agency's total facility use. GSA's excluded buildings occupy 31.1 thousand square feet, 14.6 percent of the agency's total facility space.

Generally, the buildings and facilities listed on the GSA Excluded Facilities Inventory are generally excluded from EPACT 2005 performance goals for the following reasons:

- nuclear waste dump; minimal use
- buildings under renovation,
- lease space that comprises only part of a building
- buildings that are partially vacant,
- buildings entering or leaving the inventory that do not have a full year of data,
- leased space where GSA doesn't pay all utilities,
- building disposal is pending, and
- parking facilities with minimal energy use.

Renewable Energy Use

In FY 2007, GSA reported using 228,791 MWh of renewable electric energy, equivalent to 7.8 percent of its facility electricity use. Of this total, 227,890 was from new renewable sources developed after January 1, 1999. In addition, GSA received a bonus of 900 MWh for renewable electricity generated on Federal or Indian land. All of GSA's renewable electricity use was from new sources, exceeding the Executive Order goal.

GSA continues to include a minimum of 3 percent new renewable requirement in all competitive electricity supply contracts. The lack of final renewable guidance resulted in some difficulty in structuring the competitive supply contracts and direct renewable purchase contracts to ensure they will comply with final guidance.

Self Generated Renewable Energy

GSA considers opportunities for solar and other renewable energy in building design and retrofits. When GSA performs an energy audit of a facility, renewable opportunities are identified and implemented if they are life-cycle cost effective. In addition, The Facility Standards for Public Buildings, PBS P100.2 incorporates language for solar/renewable energy sources to be considered in the proposed design.

In FY 2007, GSA used an estimated 4.1 billion Btu in energy from self-generated projects. Approximately 988.7 MWh of this came from GSA's 14 photovoltaic installations; 738 million Btu was from GSA's four solar thermal projects and one completed geothermal project. GSA also has funded the repair of five existing solar thermal projects that are currently inactive to bring them back to operating condition.

In FY 2007, GSA funded two new photovoltaic systems. The first is a large 1-MW pole mounted photovoltaic system at the Denver Federal Center. The second is a 512-kW tracking carport photo-voltaic system at the Otay Mesa Border Station in CA. GSA is exploring the viability of onsite wind turbines at various border stations.

Purchased Renewable Energy

In FY 2007, GSA purchased a total of 226,902 MWh of electricity from renewable sources through competitive power contracts and use of green power programs offered by local distribution companies.

In FY 2007, GSA had active competitive power contracts that contained green power components in 5 of 11 Regions:

- New England Region,
- Northeast Caribbean Region,
- Great Lakes Region,
- Northwest Arctic Region, and
- National Capital Region.

GSA attempts to include the option for renewable purchases in all competitive procurements issued, and exercises the option when it makes sense. The use of Renewable Energy Certificates has become the most viable choice for these purchases.

Investment in Energy Efficiency

In FY 2007, GSA invested $23.7 million in energy efficiency and renewable energy projects, 5.6 percent of its total facility energy costs. Of this total, $19.9 million was funded directly by the agency and $3.8 million was financed through energy savings performance contracting. During FY 2007 GSA did not finance any projects with utility energy service contracts.

Water Consumption

In FY 2007, GSA reported using 2.7 billion gallons of water at a cost of $18.1 million in 176.4 million square feet of facility space. This establishes a final baseline for GSA water consumption of 15.0 gallons per square foot.

In FY 2007, GSA funded and implemented several water conservation projects.

- A.J. Celebrezze FB in Cleveland, OH renovated 90 percent of its restrooms and will retrofit the remainder in FY 2008.

- John W. Peck FB in Cincinatti, OH began a major renovation to all restrooms which began in FY 2007 and will be completed in FY 2008.

- Custom Cargo Facility in Detroit, MI installed waterless urinals in restrooms.

GSA utilizes a proactive approach with water management. Every GSA facility has an O&M plan that incorporates water management. The majority of energy audits that GSA complete each year include water conservation as well. Lastly, GSA has a comprehensive maintenance program that already incorporates many of the Best Management Practices identified by FEMP into our everyday requirements for maintenance at our facilities.

GSA continues to experience extreme difficulty in obtaining water consumption data for buildings located in the District of Columbia. The data comes in sometimes as much as a year behind, making it very difficult to provide actual consumption data for these sites. GSA was able to establish a direct contact with DC water personnel to assist in sorting out the information for setting this baseline. The data provided is unavailable specific to an agency, but rather comes in a large cumbersome file for all Federal accounts they serve with the only a street address listed to identify the account.

Additionally, the following obstacles are greatly increasing the level of effort required to report on this goal and impacting the accuracy of data:

- Rebilling for the same time period by companies based on previously estimated data sent by the company or due to a problem encountered with the actual meter itself.
- Inconsistency in quantitative measurements across the water industry.
- There are approximately 5,000 different water companies which results in an extraordinary effort of record maintenance.
- Billing is sometimes done quarterly or even every six months, which results in data not being available for reporting purposes.

Training

In FY 2007, GSA reported training 110 energy managers at a cost of $140,000. In 2007, GSA held or co-sponsored three conferences/workshops. These workshops included the following dates, locations and approximate attendees:

- Federal Utility Partnership Working Group Nov. 1-2, 2006; San Francisco, CA; Approximately 75 attendees.
- Federal Utility Partnership Working Group May 1-2, 2007; Cape Canaveral, FL; Approximately 75 attendees.
- GovEnergy 2007 in New Orleans, LA; Aug. 6-8, 2007 with approximately 1875 attendees.

GSA continues to train its own personnel in all aspects of energy and water management and conservation. GSA also includes project managers responsible for renovation and new construction projects in many of these training activities. GSA currently has on staff 28 trained energy managers. Routine training includes such topics, among others, as:

- Industrial Energy Process and Building Analysis
- ASHRAE 90.1
- Energy Management Techniques
- Building Life Cycle Costing

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Q. National Aeronautics and Space Administration

Reduction Goal Performance

In FY 2007, NASA reported using 177,973 Btu per gross square foot in its goal subject buildings, 17.6 percent decrease in energy intensity from 215,907 Btu/GSF used in FY 2003. NASA received credit for purchases of 681.3 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 199,497 Btu/GSF to 177,973 Btu/GSF. Without the credit for renewable energy purchases, NASA's reduction is 7.6 percent.

Metering

NASA reported 226 of its buildings separately metered for electricity use. This represents 7.3 percent of the total electricity consumed by NASA. With regard to progress of meeting milestones, in FY 2007 NASA implemented nine out of ten of the milestones planned for completion in FY 2007 in NASA's Electricity Metering and Information Systems Implementation Plan. Completed milestones included concluding the study, sharing NASA's experiences outside the agency at the GovEnergy Federal energy workshop, obtaining training by attending GovEnergy metering sessions, briefing senior management on progress on three occasions, creating and submitting the plan, and obligating the remaining project funding. NASA missed one milestone by briefing senior management on only three occasions instead of the quarterly frequency anticipated in the project plan.

Regarding providing meter data to facilities management personnel, NASA sites utilize off-the-shelf systems or continue to develop in-house capabilities for utility information management. For example, in FY 2007 Wallops Flight Facility (WFF) utilized in-house personnel to develop a "Utility Information System" to make electrical consumption and cost information more accessible. WFF tailored this internal web application to energy management personnel and energy-minded employees. This tool provides a quick way to compare the electrical costs associated with particular buildings against each other and over time. WFF has begun development efforts to extend this tool into domestic water, wastewater, and fuel oil.

New Building Design

NASA began the design process for two new facilities during FY 2007. Of these two facilities one will be designed to use 30 percent less energy than relevant code. It is too early in the design process to determine if the other facility will meet this standard.

Excluded Buildings

In FY 2007, NASA reported using 2,989.9 billion Btu in its excluded buildings, 32.1 percent of the agency's total facility use. NASA's excluded buildings occupy 7.2 million gross square feet, 18.6 percent of the Agency's total facility space.

Examples of exclusions include abandoned buildings with abnormally low Btu/GSF, and highly specialized energy-intensive facilities constructed for specific space flight and research programs, such as 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 relatively newer facilities that support the Space Shuttle, International Space Station, and deep space exploration programs.

Renewable Energy Use

In FY 2007, NASA reported using 56,576 MWh of renewable electric energy, equivalent to 3.5 percent of its facility electricity use. Of this total, 56,371 MWh was from new renewable sources developed after January 1, 1999. In addition, NASA received a bonus of 205 MWh for renewable electricity generated on Federal or Indian land. All of NASA's renewable electricity use was from new sources, exceeding the Executive Order goal.

If the metric included all of NASA's renewable energy generation and purchases, such as waste-to-steam and landfill methane for steam, then NASA would report the equivalent of 18.1 percent of purchased electricity consumption from renewable energy---over five times the renewable electricity-only percentage.

Purchased Renewable Energy
NASA focuses on purchasing renewable energy from sources cost-competitive with conventional energy. The following purchases qualify for the NECPA requirement as electrical renewable energy, and qualify as new for the Executive Order 13423 requirement:

- Dryden Flight Research Center (DFRC) reimburses electricity costs to Edwards Air Force Base, which continues to obtain 57 percent of its electrical power from renewable sources. This translated into DFRC using 14,120 MWh of green electricity in FY 2007.
- White Sands Test Facility (WSTF) began purchasing green electricity from the local electricity utility company, and purchased 498 MWh in FY 2007.
- Goddard Space Flight Center (GSFC) began participating in a new FY 2007 General Services Administration electricity procurement that includes 3 percent green electricity. In FY 2007, GSFC received 1,166 MWh green electricity.
- Johnson Space Center (JSC) continued separately purchasing RECs through a Defense Energy Support Center (DESC) solicitation. In FY 2007, JSC purchased 30,381 MWh.
- Kennedy Space Center (KSC) began greening a portion of its annual incoming conventional electricity by separately purchasing RECs through a DESC solicitation. In FY 2007, KSC purchased 8,000 MWh.
- Ames Research Center (ARC) continued greening a portion of its annual incoming electricity by separately purchasing RECs through a Western Area Power Administration solicitation. In FY 2007, ARC purchased 2,000 MWh.

Self Generated Renewable Energy
In FY 2007, Kennedy Space Center (KSC) and White Sands Test Facility both installed an additional PV streetlight for pedestrian safety. In KSC's case, the PV light replaced a temporary diesel fuel generator light set deployed at a crosswalk.

Investment in Energy Efficiency

In FY 2007, NASA invested $19.4 million in energy efficiency and renewable energy projects, 12.4 percent of its total facility energy costs. Of this total, $11.2 was funded directly by the agency, $3.4 was financed through energy savings performance contracts and $4.9 was financed through utility energy savings contracts.

Water Consumption

In FY 2007, NASA reported using 2.0 billion gallons of water at a cost of $5.1 million in 38.9 million square feet of facility space. This establishes a final baseline for NASA water consumption of 52.4 gallons per square foot.

Training

In June 2007, Facilities Engineering and Real Property Division held its biennial Facilities Engineering and Real Property Conference and Workshop. This year's workshop focused on the identification of facilities-related risks and the impact to mission. To illustrate potential means of addressing facility energy risks to mission, a NASA Energy Efficiency Panel (EEP) member presented *Energy Management Technologies* featuring renewable energy, combined heating and power, and building metering and tune-ups.

In FY 2007, NASA reported training 333 energy managers at a cost of $150,100. NASA employees and contractors received energy and water management training through NASA- and FEMP-sponsored courses, industry conferences, and commercial or academic sources. HQ repeated a successful new idea from FY 2006---centrally funding registration costs for civil servants to participate in DOE's GovEnergy Federal workshop, and conducting an all-day EEP meeting at the workshop location on the day after the workshop.

NASA employees attended a variety of other training opportunities to further support NASA's mission. Opportunities included topics such as Association of Energy Engineers comprehensive training for energy managers; U.S. Green Building Council (USGBC)-sponsored LEED training courses; DOE/National Renewable Energy Laboratory UESC workshop; American Society of

Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Heating, Ventilating, and Air Conditioning (HVAC) systems and dehumidification; Creating a Sustainable Energy Plan; lighting; efficient boiler plant operation; energy monitoring and control systems (EMCS); and metering. One NASA employee became a new Certified Energy Manager.

Several NASA Centers utilize energy/water management personnel to provide education and awareness to other employees. In addition to focusing training and education efforts on better supporting the NASA mission, NASA also shares Agency energy/water program experiences at Federal and industry conferences.

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R. National Archives and Records Administration

Reduction Goal Performance

In FY 2007, NARA reported using 147,198 Btu per gross square foot in its goal subject buildings, an 18.7 percent decrease in energy intensity from 181,166 Btu/GSF used in FY 2003. NARA received credit for purchases of 15.1 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 150,907 Btu/GSF to 147,198 Btu/GSF. Without the credit for renewable energy purchases, NARA's reduction is 16.7 percent.

Metering

In FY 2007, NARA reported 15 of its buildings metered for electricity use. This represents 100 percent of the total electricity consumed by NARA. In addition to all NARA facilities having standard meters, three have advanced metering. A scope of work to install advanced metering at all facilities was developed in 2007. A blueprint for the implementation of this scope of work was incorporated into the agency's energy plan. The current schedule has NARA installing advanced metering in FY 2008 at Archives II. Installation at the remaining facilities is scheduled to begin in FY 2009.

New Building Designs

NARA did not start any new designs in FY 2007.

Renewable Energy Use

In FY 2007, NARA reported using 4,415 MWh of renewable electric energy, equivalent to 4.7 percent of its facility electricity use. NARA generated all of its electricity from new renewable sources developed after January 1, 1999. NARA did not generate any electricity on Federal or Indian land.

Self Generated Renewable Energy
NARA does not presently utilize any self-generated energy. However the facilities department is currently soliciting proposals for a solar energy installation to evaluate its feasibility.

Purchased Renewable Energy
NARA purchased 4,415 MWh of renewable energy credits through the GSA area-wide contract.

Investment in Energy Efficiency

In FY 2007, NARA invested $1.1 million in energy efficiency and renewable energy projects, 8.1 percent of its total facility energy costs. The entire amount was funded directly by the agency. During FY 2007, NARA did not finance any projects with energy savings performance contracts or utility energy service contracts.

Water Consumption

In FY 2007, NARA reported using 107.9 million gallons of water at a cost of $552.9 million in 4.2 million square feet of facility space. This establishes a final baseline for NARA water consumption of 26.6 gallons per square foot. Strong water conservation measures continue at NARA. Archives II has awarded a contract for a cooling tower well that will replace roughly one third of the Archives II consumption with well water. As part of the Archives II Super ESPC, all plumbing fixtures in the building were replaced with low flow devices.

Training

In FY 2007, NARA reported training 3 energy managers at a cost of $7,548. Several members of the agency energy team attended the DOE FEMP annual energy conference in New Orleans. Several members followed the O&M track and one followed the alternative financing track.

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S. Railroad Retirement Board

Reduction Goal Performance

In FY 2007, RRB reported using 97,871 Btu per gross square foot in its headquarters building, the sole building subject to the EPACT 2005 amendments goal, a 5.8 percent decrease in energy intensity from 103,877 Btu/GSF used in FY 2003. RRB received credit for purchases of 0.6 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 99,671 Btu/GSF to 97,871 Btu/GSF. Without the credit for renewable energy purchases, RRB's reduction from FY 2003 is 4.0 percent.

Metering

The RRB has electrical meters on its main headquarters facility, meeting the EPACT 2005 requirement to install metering or advanced metering on all facilities by October 31, 2012. In addition RRB has previously purchased an advanced metering system called "Energy Tracker" from its local electric utility provider. This advanced electrical metering system is currently installed on all electrical meters in the facility to monitor electrical consumption at half hour intervals and provides for daily data collection.

New Building Designs

RRB did not start any new designs in FY 2007.

Renewable Energy Use

In FY 2007, RRB reported using 183 MWh of renewable electric energy, equivalent to 4.0 percent of its facility electricity use. RRB did not generate any electricity on Federal or Indian land. All of RRB's renewable electricity use was from new sources, exceeding the Executive Order goal.

Self Generated Renewable Energy

GSA, as the Government owner of the RRB building, has the responsibility to fund all projects and facility improvements over $50,000. As part of the GSA inventory, all self-generated renewable projects and solar roof projects of this type would fall under the jurisdiction of GSA based on this delegation of authority agreement.

Purchased Renewable Energy

In FY 2007, the RRB participated in partnership efforts with GSA Region 5 in an Illinois Electric Solicitation. This solicitation had a component which included a portion of the power to be electricity generated from renewable energy sources. This contract began January 1, 2007 and was awarded to Pepco Energy Services. The RRB purchased 183 MWH of renewable power in FY 2007.

Investment in Energy Efficiency

In FY 2007, RRB invested $35,000 in energy efficiency and renewable energy projects, 6.6 percent of its total facility energy costs. The entire amount was funded directly by the agency.

The RRB has not entered into any ESPC contracts. The comparatively small size of potential contracts available to RRB, because of the delegation of authority agreement with GSA, is not practical for this type of procurement. However, the RRB was contacted by a Super ESPC contractor who was granted permission by the Facility Manager through FEMP to proceed with obtaining an initial proposal under the Super ESPC contract. This initial proposal is on hold pending the active involvement and support for the project from GSA.

Water Consumption

In FY 2007, RRB reported using 5.5 million gallons of water at a cost of $19.5 thousand in 346.9 thousand square feet of facility space. This establishes a final baseline for RRB water consumption of 15.9 gallons per square foot. Independent water meters are installed for the first floor commercial tenant spaces which were not included in the RRB's consumption total. Total consumption increased slightly from the previous fiscal year due to construction project work. This construction work involved the installation of new fire sprinkler upgrades and draining and filling the fire system several times throughout the year.

Training

In FY 2007, RRB reported training three energy managers at no cost. In accordance with the energy management training provision of the Energy Policy Act (EPACT), personnel responsible for energy management will receive the additional training that is to be provided by the

General Services Administration (GSA) under the EPACT requirements. This training includes additional FEMP sponsored seminars. Seminars offered this year included a workshop on meeting Federal renewable energy goals in Federal facilities. It also included a workshop on the metering requirements of EPACT 2005 relative to Federal agencies.

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T. Social Security Administration

Reduction Goal Performance

In FY 2007, SSA reported using 115,712 Btu per gross square foot in its goal subject buildings, a 6.9 percent decrease in energy intensity from 124,300 Btu/GSF used in FY 2003. SSA received credit for purchases of 4.1 billion Btu of renewable energy in FY 2007, reducing the performance measure of these buildings from 116,150 Btu/GSF to 115,712 Btu/GSF. Without the credit for renewable energy purchases, SSA had a decrease of 6.6 percent from FY 2003.

Metering

The Social Security Administration reported 20 of its buildings metered for electricity use. This figure represents 100 percent of the total electricity consumed by the Social Security Administration. SSA repaired and upgraded the advanced metering at the Wilkes-Barre Data Operation Center (WBDOC) delegated facility. During the prospectus repairs at the Headquarters Operations Building advanced metering was upgraded and repaired. All SSA delegated facilities have standard metering.

New Buildings Design

The Social Security Administration did not begin any new designs in FY 2007.

Renewable Energy Use

In FY 2007, SSA reported using 1,452 MWh of renewable electric energy, equivalent to 0.7 percent of its facility electricity use. SSA generated 1,321 MWh of electricity from new renewable sources developed after January 1, 1999. SSA generated 131 MWh of electricity on Federal land. Almost all of SSA's renewable electricity use was from new sources.

Self Generated Renewable Energy
SSA has three self-generating renewable energy systems, described below:

- Mid-Atlantic Social Security Center (MATSSC) in Philadelphia, Pennsylvania has a solar hot water system that has been on line since 2003. This system saves approximately 10,300 KWh of electricity per year. SSA has also installed solar/wind lighting on the parking lot of this facility.

- Harold Washington Social Security Center (HWSSC) in Chicago, IL has a 100-KW photovoltaic solar system which came on-line in July of 2005. In FY 2006, this system generated 90,645 KWh of electricity.

- The Frank Hagel Federal Building in Richmond, CA installed a 17-KW photovoltaic system which came on line in April 2006.

Purchased Renewable Energy
Ten percent of the power for SSA's Joseph P. Addabbo Federal Building in Jamaica, NY is from renewable sources. SSA purchased a total of almost 1,190 MWh of renewable power.

Investment in Energy Efficiency

In FY 2007, SSA invested $500,000 in energy efficiency and renewable energy projects, 2.0 percent of its total facility energy costs. The entire amount was funded directly by the agency.

SSA awarded contracts for energy audits to be performed in the Northeastern Program Center (NEPSC) and MATSSC delegated facilities to determine possible capital improvement projects.

The Super ESPC awarded at HWSSC in Chicago, IL was modified to include additional energy conservation measures identified that include solar hot water. Installation of additional photovoltaic cells at HWSSC was completed this fiscal year which brings the system up to full capacity.

SSA awarded a contract for the installation of newer energy efficient T-8 bulbs in WBDOC, which replaced our original T-8's. WBDOC also replaced the front end for the lighting controls and installed vending misers on appropriate cafeteria equipment. Solar shades were also installed at WBDOC. Energy efficient lighting was also installed in several areas of MATSSC and HWSSC. A contract to install over-ride switches at the Headquarters East High and Low Rise Buildings was awarded. SSA also upgraded panel lighting controllers at HWSSC.

NEPSC received funding to upgrade the boiler and hot water system (controls and building computer system). Projects to insulate building overhangs, improve HVAC in the lobby areas were also initiated at NEPSC. A major restroom renovation was also funded which includes upgrades that will improve energy and water efficiency.

SSA installed a 250kw cogeneration system for combined heat and power at the FHFB as part of the ESPC.

SSA in conjunction with GSA is utilizing sustainable design and life cycle cost analysis in the prospectus projects for SSA's Headquarters Complex.

SSA requests that GSA include energy efficiency and sustainable design in all of our leases.

Water Consumption

In FY 2007, SSA reported using 125.0 million gallons of water at a cost of $617.1 thousand in 9.3 million square feet of facility space. This establishes a baseline for SSA water consumption of 13.5 gallons per square foot.

SSA purchased flushometers for MATSSC in FY 2007. WBDOC completed installation of new fixtures in the restrooms. SSA's Headquarters Operations Building has completed the major restroom renovations which include energy efficient fixtures and technology.

Training

In FY 2007, SSA reported training 48 energy managers at a cost of $6,300. Fourteen SSA employees attended the 2007 GovEnergy workshop sponsored by DOE. In addition seven SSA employees received training on Super ESPC Energy Conservation Measures as well as ESPC Project Deliverables.

SSA staff also attend periodic meetings with GSA and DOE. SSA employees are active participants on numerous committees such as DOE's Interagency Task Force and "You Have the Power".

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U. Tennessee Valley Authority

Reduction Goal Performance

In FY 2007, TVA reported using 60,703 Btu per gross square foot in its goal subject buildings, a 7.4 percent decrease in energy intensity from 65,536 Btu/GSF used in FY 2003. TVA received credit for purchases of 4.0 billion Btu of renewable energy in FY 2006, reducing the performance measure of these buildings from 61,153 Btu/GSF to 60,703 Btu/GSF. Without the credit for renewable energy purchases, TVA's reduction from FY 2003 is 6.7 percent.

Metering

Under TVA's Metering Plan, funding for metering projects, including advanced meter installation, starts in FY 2008.

New Building Designs

The Tennessee Valley Authority began the design process for six buildings in FY 2007. However, three of the projects were cancelled while in design. The design of the other three projects is complete, but the projects are currently on hold. These projects were designed to use 30 percent less energy than relevant code.

Excluded Buildings

In FY 2007, TVA reported using 1,278 billion Btu in its excluded buildings, 70.2 percent of the agency's total facility use. TVA's excluded buildings occupy 19.1 million gross square feet, 68.3 percent of the agency's total facility space. 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 recognition of this and the fact that only so much can be done to make these buildings more efficient in a cost effective manner, TVA has elected to exclude these buildings.

Renewable Energy Use

In FY 2007, TVA reported using 20,484 MWh of renewable electric energy, equivalent to 3.8 percent of its facility electricity use. Of this total, 8,742 MWh was from new sources developed after January 1, 1999. TVA received a bonus of 7,542 MWh for generating renewable electricity on Federal land. Eligible renewable energy from old sources totaled 4,200 MWh.

Self Generated Renewable Energy
Through TVA's Green Power Switch (GPS) program, TVA utilizes photovoltaics, wind, and biomass methane as part of its mix to provide renewable energy to its customers. TVA identifies and evaluates emerging renewable energy technologies in support of its strategic needs. The renewable energy program provides data to support debate on renewable energy policy; monitors advancements in renewables to keep TVA organizations and customers informed on technology issues; and demonstrates and develops the most viable technologies in the areas of bio-energy, wind, solar, and other renewable resources.

Commercial and industrial customers can sign up for the 150 kilowatthour blocks of green power based on the amount of energy they use each month. As of September 30, 2006, there were 95 TVA power distributors participating in the GPS program throughout the Tennessee Valley.

Purchased Renewable Energy
TVA purchased 1,170 MWh of renewable energy for use in its Knoxville Office Complex, Chattanooga Office Complex, and Huntsville office.

Investment in Energy Efficiency

In FY 2007, TVA invested $325,000 in energy efficiency and renewable energy projects, 1.3 percent of its total facility energy costs. The total amount was funded directly by the agency.

Water Consumption

In FY 2007, TVA reported using 733.0 million gallons of water at a cost of $2.2 million in 28.0 million square feet of facility space. This establishes a final baseline for TVA water consumption of 26.2 gallons per square foot.

Training

In FY 2007, TVA reported training 175 energy managing employees at a cost of $26,000. Multiple methods of training are used to accomplish the

objectives of the TVA Internal Energy Management Program. The TVA Intranet and employee awareness programs are used as tools to educate employees on how they impact energy efficiency and use, both at work and at home. Employees are shown their impact on facility energy use through a facility performance poster campaign. Posters showing monthly energy use and energy saving tips are placed in the lobbies of major energy-using facilities. Energy efficiency and information updates on current Federal requirements and regulations are provided to employees, managers, and TVA customers upon request. Energy management and associated environmental training is provided to managers and employees as needed. TVA also educates staff on energy and environmental related topics through the TVA Training and Development Organization.

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V. United States Postal Service

Reduction Goal Performance

In FY 2007, USPS reported using 89,270 Btu per gross square foot in its goal subject buildings, a 12.4 percent decrease in energy intensity from 101,871 Btu/GSF used in FY 2003. USPS did not receive any credit toward its reduction goal for purchases of renewable energy in FY 2007.

Metering

As of FY 2007 the USPS reported 34,239 of its buildings metered for electricity use. This represents 100 percent of the total electricity consumed by the United States Postal Service.

Through the combined efforts of the Utility Management System (UMS) and the Enterprise Energy Management System which is currently being developed, the USPS will meet the intent of advanced metering requirements and have detailed consumption information for our largest energy consuming facilities.

In addition, the USPS is reviewing the latest utility requirements of some states that require local utilities to provide 15 minute interval data free of charge to their larger customers. This may provide additional consumption information with minimal cost to the USPS.

New Building Designs

The United States Postal Service began the design process for 29 designs in FY 2007. Of these 29 facilities, five will be designed to use 30 percent less energy than relevant code. Of the remaining, one building is designed to use 25 percent less energy than relevant code and analysis is not yet complete to determine if the buildings will use less energy than 30 percent of relevant code.

Excluded Buildings

The Postal Service does not have any excluded buildings. Instead, it excludes the separately-metered process energy use that is essential and critical to the USPS mission. Therefore, this operational energy usage is excluded from the reduction goals.

Renewable Energy Use

In FY 2007, USPS reported generating and using 2,536 MWh of renewable electric energy, equivalent to 0.4 percent of its facility electricity use. However, USPS did not generate any electricity from renewable sources developed after January 1, 1999.

Self Generated Renewable Energy

The USPS has eight facilities with solar photovoltaic systems. USPS has two additional sites in the installation phase that will come online in FY 2008.

Investment in Energy Efficiency

In FY 2007, USPS invested $53.5 million in energy efficiency and renewable energy projects, 8.8 percent of its total facility energy costs. Of the total, $50.0 million was funded directly by the agency. During FY 2007, USPS financed $3.5 million through shared energy savings contracts, its version of ESPCs. In FY 2007 USPS did not finance any projects through utility energy savings contracts.

Water Consumption

In FY 2007, USPS reported using 5.6 billion gallons of water at a cost of $29.3 million in 313.0 million square feet of facility space. This establishes a baseline for USPS water consumption of 17.4 gallons per square foot.

Training

Individual training, education planning, and implementation are decentralized to facility and/or supervisor-subordinate level. However, the USPS has national training courses for both management and craft employees, where some of these courses have been reworked to include energy awareness and conservation practices. These courses will be offered to management and craft employees beginning in FY 2008. In addition to standard USPS training, Postal employees are encouraged to participate in the various educational and training opportunities presented by the Federal Energy Management Program (FEMP). Further, energy training is integrated into broader training provided to employees with operations and maintenance (O&M) responsibilities at our facilities. For example, Heating, Ventilation, and

Air Conditioning (HVAC) systems training covers energy efficiency aspects of such systems. These training programs are conducted at the USPS National Training Center in Norman, OK.

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APPENDIX A

ENERGY CONSUMPTION AND COST DETAIL TABLES

TABLE A-1
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 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	% Change 85-07	% Change 03-07	% Change 06-07
USPS	**51,668.1**	59,961.0	72,178.0	89,381.4	86,142.5	85,320.9	**104,482.3**	107,357.7	117,218.9	**113,522.3**	**101,390.7**	**96.2**	**-3.0**	**-10.7**
DOE	**98,876.9**	90,859.5	88,840.8	72,041.6	72,338.7	72,682.0	**76,764.8**	73,854.2	71,457.5	**74,808.5**	**73,149.2**	**-26.0**	**-4.7**	**-2.2**
VA	**43,456.9**	44,918.6	47,827.9	50,557.0	52,945.1	53,074.2	**56,164.9**	55,729.1	56,612.2	**55,386.5**	**56,858.9**	**30.8**	**1.2**	**2.7**
GSA	**47,235.8**	40,780.8	36,626.3	42,409.1	42,969.5	42,297.8	**45,093.7**	43,057.0	43,535.2	**43,254.7**	**44,495.4**	**-5.8**	**-1.3**	**2.9**
DOJ	**11,112.5**	11,610.3	17,193.4	30,431.8	30,338.1	28,515.1	**40,200.8**	29,118.2	31,426.8	**38,986.9**	**35,863.2**	**222.7**	**-10.8**	**-8.0**
NASA	**23,771.3**	28,741.6	29,434.4	26,087.4	25,210.0	24,726.7	**25,276.6**	23,302.1	24,063.1	**23,729.8**	**24,364.0**	**2.5**	**-3.6**	**2.7**
DHS	**0.0**	0.0	0.0	0.0	0.0	0.0	**24,340.6**	29,351.8	24,809.3	**22,908.1**	**23,298.0**	**NA**	**-4.3**	**1.7**
HHS	**10,501.4**	13,188.5	12,189.6	15,255.5	16,078.3	15,903.6	**19,660.0**	17,033.8	18,732.6	**16,636.0**	**18,328.6**	**74.5**	**-6.8**	**10.2**
DOT	**28,959.2**	28,666.3	28,971.2	41,018.6	32,503.7	30,707.3	**13,522.3**	12,897.4	12,200.4	**11,272.2**	**13,574.9**	**-53.1**	**0.4**	**20.4**
DOI	**11,596.7**	10,969.3	10,552.2	12,041.4	14,497.5	12,999.8	**14,317.8**	14,206.3	14,018.0	**13,784.4**	**12,743.3**	**9.9**	**-11.0**	**-7.6**
USDA	**12,266.6**	14,620.4	14,324.3	12,365.5	12,096.6	11,622.1	**14,289.6**	12,056.6	12,821.3	**11,758.9**	**11,635.8**	**-5.1**	**-18.6**	**-1.0**
TVA	**8,856.0**	8,214.3	7,913.9	8,325.7	8,392.7	7,945.1	**7,517.8**	7,332.2	7,317.2	**7,543.2**	**6,927.9**	**-21.8**	**-7.8**	**-8.2**
TRSY	**3,878.3**	7,015.4	7,783.1	9,651.3	9,550.3	9,910.8	**7,878.2**	6,193.5	8,201.6	**5,725.1**	**5,883.3**	**51.7**	**-25.3**	**2.8**
DOC	**4,085.5**	6,383.7	5,667.2	4,117.5	5,489.0	4,760.0	**4,917.0**	4,935.5	5,654.6	**5,517.9**	**5,727.1**	**40.2**	**16.5**	**3.8**
DOL	**3,966.3**	4,155.2	4,336.2	4,761.1	5,024.8	5,177.0	**5,466.3**	5,395.0	5,277.2	**4,688.0**	**5,113.4**	**28.9**	**-6.5**	**9.1**
ST	**717.3**	868.5	1,342.3	7,631.9	6,503.0	1,669.3	**1,800.0**	2,130.9	2,395.6	**2,401.7**	**2,660.0**	**270.8**	**47.8**	**10.8**
EPA	**1,776.4**	1,643.0	2,264.7	2,057.7	2,407.0	2,204.4	**2,575.0**	2,577.8	2,582.4	**2,536.0**	**2,453.0**	**38.1**	**-4.7**	**-3.3**
NARA	**0.0**	215.9	1,546.3	1,293.8	1,323.6	1,249.0	**1,336.4**	1,296.0	1,549.0	**1,472.7**	**1,429.1**	**NA**	**6.9**	**-3.0**
HUD	**356.2**	435.0	347.7	362.0	370.1	365.8	**370.8**	349.8	340.6	**330.2**	**327.1**	**-8.2**	**-11.8**	**-0.9**
RRB	**0.0**	103.7	99.0	79.1	74.6	75.6	**73.1**	72.5	72.9	**72.9**	**72.7**	**NA**	**-0.5**	**-0.3**
OTHER*	**2,250.4**	5,271.6	7,003.9	8,081.3	7,955.1	10,064.2	**6,092.7**	5,379.3	5,503.6	**4,727.6**	**4,436.2**	**97.1**	**-27.2**	**-6.2**
Civilian Agencies Subtotal	**365,331.7**	378,622.4	396,442.6	437,950.8	432,210.4	421,270.7	**472,140.7**	453,627.1	465,789.9	**461,063.5**	**450,731.8**	**23.4**	**-4.5**	**-2.2**
DOD	**1,502,111.8**	1,545,014.4	1,197,891.7	1,042,511.1	1,043,757.4	1,097,163.4	**1,156,325.9**	1,223,168.6	1,186,700.2	**1,098,456.5**	**1,117,715.2**	**-25.6**	**-3.3**	**1.8**
Total	**1,867,443.5**	1,923,636.8	1,594,334.3	1,480,462.0	1,475,967.9	1,518,434.1	**1,628,466.6**	1,676,795.7	1,652,490.1	**1,559,520.0**	**1,568,447.0**	**-16.0**	**-3.7**	**0.6**
MBOE	**320.6**	330.2	273.7	254.2	253.4	260.7	**279.6**	287.9	283.7	**267.7**	**269.2**			
Petajoule	**1,970.1**	2,029.4	1,682.0	1,561.8	1,557.1	1,601.9	**1,718.0**	1,769.0	1,743.3	**1,645.2**	**1,654.6**			

*Other includes, for certain years, CFTC, CIA, EEOC, FEMA, FTC, NSF, NRC, OPM, SSA, BBG/IBB, and FERC. Data as of 17 Dec 2008

Notes: This table uses a conversion factor for electricity of 11,850 Btu per kilowatt hour and 1,390 Btu per pound of steam. Agencies are listed in descending order of consumption for the current year. Ellipses after fiscal year (1985. . .) indicate where intervening years' data are left off the table, but available upon request from FEMP. FY 2003 was the first year for reporting by the Department of Homeland Security. Significant declines in energy use were also evident in that year for agencies such as the Departments of Transportation and the Treasury which transferred functions to the new Department. Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

TABLE A-2
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 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	% Change 85-07	% Change 03-07	% Change 06-07
USPS	**27,762.5**	30,616.2	36,220.9	43,284.2	43,397.4	41,617.4	**50,893.0**	50,457.8	53,513.4	**51,762.7**	**45,848.8**	**65.1**	**-9.9**	**-11.4**
DOE	**52,201.6**	43,454.6	47,255.4	30,492.9	31,065.5	30,668.3	**31,599.2**	31,398.5	29,629.0	**32,938.9**	**31,479.0**	**-39.7**	**-0.4**	**-4.4**
VA	**25,144.7**	24,898.4	25,428.9	27,043.9	27,661.9	27,722.6	**30,452.0**	29,888.5	29,984.7	**29,293.6**	**29,967.0**	**19.2**	**-1.6**	**2.3**
DOJ	**8,176.0**	6,961.6	10,193.3	19,693.0	19,681.9	17,692.4	**22,686.4**	17,544.4	18,752.3	**23,506.5**	**20,696.6**	**153.1**	**-8.8**	**-12.0**
GSA	**20,721.1**	17,536.0	13,671.8	17,632.3	18,415.8	17,473.9	**19,622.4**	18,291.6	18,430.3	**18,160.1**	**19,095.2**	**-7.8**	**-2.7**	**5.1**
DHS	**0.0**	0.0	0.0	0.0	0.0	0.0	**18,333.3**	23,527.9	18,869.7	**17,147.7**	**17,126.0**	**NA**	**-6.6**	**-0.1**
NASA	**10,855.1**	12,399.0	12,394.7	11,120.8	10,934.5	10,677.0	**10,798.7**	9,858.1	10,283.0	**10,187.3**	**10,570.4**	**-2.6**	**-2.1**	**3.8**
HHS	**5,953.5**	7,119.0	6,129.7	7,952.5	8,541.0	7,999.8	**10,139.0**	8,761.5	9,595.6	**9,257.6**	**9,944.7**	**67.0**	**-1.9**	**7.4**
DOI	**7,816.3**	7,391.9	6,378.4	7,845.9	9,504.5	8,224.9	**8,246.4**	8,742.6	8,577.5	**8,137.4**	**7,530.1**	**-3.7**	**-8.7**	**-7.5**
USDA	**8,358.7**	9,573.4	9,045.8	7,446.7	7,373.6	7,170.5	**7,721.6**	6,978.5	7,456.9	**6,798.4**	**6,765.9**	**-19.1**	**-12.4**	**-0.5**
DOT	**19,568.0**	18,965.2	18,688.7	21,215.6	17,810.2	18,256.8	**5,617.9**	5,159.4	4,952.9	**4,616.9**	**5,587.8**	**-71.4**	**-0.5**	**21.0**
DOC	**2,489.1**	4,476.3	2,882.8	1,907.1	2,521.9	2,197.3	**2,345.1**	2,216.8	2,930.7	**2,861.6**	**3,040.8**	**22.2**	**29.7**	**6.3**
DOL	**2,385.2**	2,376.0	2,385.7	2,480.7	2,671.4	2,775.1	**2,964.3**	2,896.2	2,682.7	**2,451.0**	**2,656.9**	**11.4**	**-10.4**	**8.4**
TVA	**2,975.9**	2,717.7	2,687.9	3,006.6	3,005.8	2,824.0	**2,838.2**	2,717.7	2,676.8	**2,857.2**	**2,437.8**	**-18.1**	**-14.1**	**-14.7**
TRSY	**2,868.3**	3,643.0	4,132.6	5,337.0	5,355.6	5,506.3	**4,144.4**	2,585.3	4,569.5	**2,374.3**	**2,378.5**	**-17.1**	**-42.6**	**0.2**
ST	**246.9**	302.7	437.3	3,379.1	2,700.7	626.6	**938.7**	1,032.5	1,111.9	**1,417.0**	**1,657.9**	**571.5**	**76.6**	**17.0**
EPA	**904.5**	747.0	1,120.5	1,038.1	1,228.3	1,094.5	**1,443.1**	1,421.3	1,416.9	**1,390.5**	**1,340.2**	**48.2**	**-7.1**	**-3.6**
NARA	**0.0**	81.9	792.2	544.6	573.9	529.2	**578.6**	565.5	685.2	**637.7**	**613.0**	**NA**	**5.9**	**-3.9**
HUD	**116.9**	140.3	131.3	144.1	149.0	148.0	**152.3**	145.0	138.4	**133.6**	**129.6**	**10.9**	**-14.9**	**-3.0**
RRB	**0.0**	46.5	40.1	36.2	36.0	36.4	**36.0**	35.4	34.0	**34.5**	**34.6**	**NA**	**-3.9**	**0.3**
OTHER*	**1,156.1**	2,943.6	3,276.1	3,150.6	3,117.2	4,041.1	**2,403.9**	2,093.6	2,109.4	**1,871.5**	**1,758.3**	**52.1**	**-26.9**	**-6.0**
Civilian Agencies Subtotal	**199,700.5**	196,390.1	203,294.2	214,752.0	215,746.1	207,281.9	**233,954.5**	226,317.9	228,400.9	**227,835.8**	**220,659.1**	**10.5**	**-5.7**	**-3.1**
DOD	**1,250,613.8**	1,241,655.8	926,022.9	779,055.2	787,216.4	837,525.4	**902,341.0**	960,668.6	933,162.0	**843,707.9**	**864,600.0**	**-30.9**	**-4.2**	**2.5**
Total	**1,450,314.3**	1,438,045.9	1,129,317.1	993,807.2	1,002,962.5	1,044,807.3	**1,136,295.5**	1,186,986.5	1,161,563.0	**1,071,543.7**	**1,085,259.1**	**-25.2**	**-4.5**	**1.3**
MBOE	**249.0**	246.9	193.9	170.6	172.2	179.4	**195.1**	203.8	199.4	**184.0**	**186.3**			
Petajoule	**1,530.0**	1,517.1	1,191.4	1,048.4	1,058.1	1,102.2	**1,198.8**	1,252.2	1,225.4	**1,130.4**	**1,144.9**			

*Other includes, for certain years, CFTC, CIA, EEOC, FEMA, FTC, NSF, NRC, OPM, SSA, BBG/IBB, and FERC. Data as of 17 Dec 2008

Notes: 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. Ellipses after fiscal year (1985. . .) indicate where intervening years' data are left off the table, but available upon request from FEMP. FY 2003 was the first year for reporting by the Department of Homeland Security. Significant declines in energy use were also evident in that year for agencies such as the Departments of Transportation and the Treasury which transferred functions to the new Department. Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

TABLE A-3
SITE-DELIVERED ENERGY CONSUMPTION IN FEDERAL GOAL 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 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	% Change 85-07	% Change 03-07	% Change 06-07
VA	24,552.0	24,380.1	25,075.4	26,120.6	26,748.3	26,866.2	29,278.0	28,854.2	28,692.6	28,182.8	28,908.2	17.7	-1.3	2.6
USPS	16,238.3	18,480.0	21,649.7	25,238.3	24,974.3	23,671.1	31,986.5	32,796.1	35,237.2	33,999.2	27,938.3	72.1	-12.7	-17.8
DOE	35,595.2	33,118.6	30,679.0	24,013.4	23,446.4	24,263.8	24,115.7	23,614.0	22,635.7	21,525.4	20,472.8	-42.5	-15.1	-4.9
DOJ	6,112.0	4,863.8	7,011.7	10,236.8	10,643.9	10,386.5	16,410.0	12,982.7	14,018.8	17,790.2	17,468.0	185.8	6.4	-1.8
GSA	20,012.4	16,897.3	13,580.5	16,821.8	17,824.4	16,890.2	14,082.9	17,586.9	17,498.8	13,074.5	13,590.7	-32.1	-3.5	3.9
HHS	5,580.3	7,119.0	6,024.2	7,351.0	7,817.4	7,813.1	9,566.6	8,418.8	9,068.3	8,910.0	9,590.5	71.9	0.2	7.6
NASA	7,256.4	8,523.9	8,281.8	7,849.2	7,832.2	7,613.6	6,850.5	7,138.0	7,739.5	6,347.7	6,315.3	-13.0	-7.8	-0.5
DOI	4,762.4	4,039.4	3,596.3	4,006.6	4,692.2	4,916.0	5,095.2	5,965.0	5,234.7	5,034.3	4,517.3	-5.1	-11.3	-10.3
DHS	0.0	0.0	0.0	0.0	0.0	0.0	4,747.6	4,680.7	4,407.2	4,092.4	4,304.6	NA	-9.3	5.2
USDA	4,039.1	4,621.1	4,224.1	4,421.0	4,897.5	4,626.9	5,345.0	4,470.4	4,734.9	4,326.9	4,254.2	5.3	-20.4	-1.7
DOL	2,153.0	2,137.1	2,028.8	2,111.8	2,312.5	2,411.8	2,566.9	2,499.0	2,261.3	2,077.6	2,244.7	4.3	-12.6	8.0
TRSY	713.4	2,169.8	2,359.2	2,833.7	2,777.8	2,628.0	2,288.2	2,274.7	2,194.6	1,986.9	2,090.6	193.0	-8.6	5.2
DOC	1,478.9	1,376.0	2,122.2	1,752.8	1,926.0	1,837.3	1,968.5	2,085.7	2,035.9	1,974.1	2,079.5	40.6	5.6	5.3
EPA	772.3	747.0	1,020.9	940.3	1,118.3	979.7	1,310.0	1,311.2	1,310.3	1,252.5	1,176.1	52.3	-10.2	-6.1
DOT	4,614.5	3,750.4	3,669.1	3,716.4	3,913.8	3,971.4	721.6	713.8	676.8	643.6	701.5	-84.8	-2.8	9.0
NARA	0.0	81.9	792.2	544.6	573.9	529.2	508.1	565.5	685.2	637.7	613.0	NA	20.6	-3.9
TVA	526.4	540.1	829.1	702.8	702.6	640.1	641.9	634.7	617.0	593.8	542.5	3.1	-15.5	-8.6
ST	232.2	267.8	92.9	152.9	123.2	245.5	402.7	323.8	337.5	513.7	396.0	70.5	-1.7	-22.9
HUD	116.9	140.3	105.9	106.3	115.6	109.9	120.9	112.3	113.7	100.5	102.3	-12.5	-15.4	1.8
RRB	0.0	46.5	40.1	36.2	36.0	36.4	36.0	35.4	34.0	34.5	34.6	NA	-3.9	0.3
OTHER*	574.0	2,211.2	2,283.2	3,105.2	3,068.5	3,982.3	1,344.8	1,092.4	1,136.7	1,047.1	1,075.8	87.4	-20.0	2.7
Civilian Agencies Subtotal	135,329.7	135,510.9	135,466.3	142,061.7	145,544.9	144,419.1	159,387.5	158,155.5	160,670.7	154,145.6	148,416.2	9.7	-6.9	-3.7
DOD	359,933.9	360,310.7	285,129.5	243,246.0	240,178.0	234,774.5	223,730.1	226,850.8	225,632.8	210,558.7	205,120.5	-43.0	-8.3	-2.6
Total	495,263.6	495,821.6	420,595.8	385,307.7	385,722.9	379,193.7	383,117.6	385,006.2	386,303.4	364,704.3	353,536.7	-28.6	-7.7	-3.1
MBOE	85.0	85.1	72.2	66.1	66.2	65.1	65.8	66.1	66.3	62.6	60.7			
Petajoules	522.5	523.1	443.7	406.5	406.9	400.0	404.2	406.2	407.5	384.7	373.0			

*Other includes for certain years CIA, FEMA, FTC, NSF, NRC, OPM, SSA, BBG/IBB, and FERC. Data as of 17 Dec 2008

Notes: Ellipses after fiscal year (1985. . .) indicate where intervening years' data are left off the table, but available upon request from FEMP. FY 2003 was the first year for reporting by the Department of Homeland Security. Significant declines in energy use were also evident in that year for agencies such as the Departments of Transportation and the Treasury which transferred functions to the new Department. Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

TABLE A-4
CONSUMPTION AND COSTS OF FEDERAL GOAL BUILDINGS ENERGY BY FUEL TYPE IN FY 2007, FY 2006, AND FY 2003
(Constant 2007 Dollars)

ENERGY TYPE	BILLION BTU	COST (MILLION $)	COST/ MILLION BTU	COST PER PHYSICAL UNIT
2007				
ELECTRICITY	169,284.5	$3,851.311	$22.75	$77.62 /MWH
FUEL OIL	27,487.0	$402.764	$14.65	$2.03 /Gallon
NATURAL GAS	121,459.7	$1,093.338	$9.00	$9.28 /Thou. Cubic. Ft.
LPG/PROPANE	2,571.9	$42.141	$16.39	$1.56 /Gallon
COAL	17,370.7	$60.390	$3.48	$85.45 /Short Ton
PURCHASED STEAM	13,100.1	$305.799	$23.34	$23.34 /MMBtu
OTHER	2,262.9	$35.192	$15.55	$15.55 /MMBtu
TOTAL	353,536.7	$5,790.935		
AVERAGE COST PER MMBTU = $16.380				
2006				
ELECTRICITY	171,867.1	$3,822.76	$22.24	$75.89 /MWH
FUEL OIL	30,356.6	$416.99	$13.74	$1.91 /Gallon
NATURAL GAS	123,781.7	$1,274.75	$10.30	$10.62 /Thou. Cubic. Ft.
LPG/PROPANE	2,561.3	$40.10	$15.66	$1.50 /Gallon
COAL	19,214.2	$62.32	$3.24	$79.72 /Short Ton
PURCHASED STEAM	14,369.9	$295.52	$20.57	$20.57 /MMBtu
OTHER	2,553.6	$37.84	$14.82	$14.82 /MMBtu
TOTAL	364,704.3	$5,950.271		
AVERAGE COST PER MMBTU = $16.315				
2003				
ELECTRICITY	172,955.4	$3,351.68	$19.38	$66.12 /MWH
FUEL OIL	39,911.8	$261.14	$6.54	$0.91 /Gallon
NATURAL GAS	129,152.7	$832.91	$6.45	$6.65 /Thou. Cubic. Ft.
LPG/PROPANE	3,228.5	$36.40	$11.27	$1.08 /Gallon
COAL	17,412.3	$47.44	$2.72	$66.97 /Short Ton
PURCHASED STEAM	17,364.1	$222.06	$12.79	$12.79 /MMBtu
OTHER	3,092.8	$44.10	$14.26	$14.26 /MMBtu
TOTAL	383,117.6	$4,795.725		
AVERAGE COST PER MMBTU = $12.518				

Data as of 17 Dec 2008

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 A-5
ENERGY CONSUMPTION, COSTS, AND GROSS SQUARE FOOTAGE OF FEDERAL GOAL-EXCLUDED BUILDINGS, FY 2007

	Energy Consumption		Energy Costs		Facility Gross Square Feet	
Agency	Billion Btu	% of Agency's Total Facility Use	($ Million)	% of Agency's Total Facility Costs	(Thou. Sq. Ft.)	% of Agency's Total Facility Space
DOD	12,941.7	5.9%	$260.786	7.6%	61,674.4	3.2%
DOE	9,470.3	31.6%	$103.114	27.4%	23,005.6	20.6%
GSA	5,453.0	28.6%	$89.212	21.2%	31,058.9	14.6%
DOT	3,530.2	83.4%	$107.708	86.5%	20,328.9	73.7%
NASA	2,989.9	32.1%	$46.132	29.5%	7,240.2	18.6%
USPS	2,133.6	7.1%	$50.026	8.2%	0.0	0.0%
TVA	1,278.2	70.2%	$17.022	68.1%	19,099.5	68.3%
USIA	489.5	100.0%	$15.376	100.0%	962.5	100.0%
DHS	116.7	2.6%	$2.218	2.2%	1,612.5	3.5%
ST	114.5	22.4%	$3.596	23.4%	33.6	0.8%
HHS	22.5	0.2%	$1.167	0.7%	1,623.8	5.0%
DOC	15.7	0.75%	$0.489	1.01%	25.0	0.2%
TRSY	1.8	0.09%	$0.051	0.11%	57.0	0.5%
Total	38,557.8	NA	$696.895	NA	166,721.9	NA

Data as of 17 Dec 2008

Source: Federal Agency Annual Energy Management Data Reports

TABLE A-6
CONSUMPTION AND COSTS OF FEDERAL GOAL-EXCLUDED BUILDINGS BY FUEL TYPE FY 2007

ENERGY TYPE	BILLION BTU	COST (MILLION $)	COST/ MILLION BTU	COST PER PHYSICAL UNIT
ELECTRICITY	23,890.0	$555.504	$23.25	$79.34 /MWH
FUEL OIL	1,215.4	$16.895	$13.90	$1.93 /Gallon
NATURAL GAS	9,346.4	$91.393	$9.78	$10.08 /Thou. Cubic. Ft.
LPG/PROPANE	34.3	$0.533	$15.54	$1.48 /Gallon
COAL	3,072.7	$0.873	$0.28	$6.98 /Short Ton
PURCHASED STEAM	900.2	$30.011	$33.34	$33.34 /MMBtu
OTHER	98.7	$1.686	$17.08	$17.08 /MMBtu
TOTAL	38,557.7	$696.895		

AVERAGE COST PER MMBTU = $18.074

Data as of 17 Dec 2008

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 A-7
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 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	**FY 2006**	**FY 2007**	**% CHANGE 85-07**	**% CHANGE 06-07**
USPS	**11,524.2**	12,136.2	14,571.2	15,976.3	16,192.1	15,831.8	17,173.5	15,821.0	16,215.4	**15,391.0**	**15,777.0**	**36.9**	**2.5**
DHS	**0.0**	0.0	0.0	0.0	0.0	0.0	13,583.9	18,837.1	14,454.8	**12,951.9**	**12,704.7**	**NA**	**-1.9**
DOJ	**2,064.0**	2,097.9	3,181.6	9,456.3	9,037.9	7,305.9	6,276.4	4,561.7	4,733.6	**5,716.3**	**3,228.6**	**56.4**	**-43.5**
DOI	**3,053.9**	3,352.5	2,782.2	3,839.3	4,812.3	3,308.9	3,151.2	2,777.6	3,342.8	**3,103.1**	**3,012.7**	**-1.3**	**-2.9**
USDA	**4,319.6**	4,952.3	4,821.7	3,025.7	2,476.2	2,543.5	2,376.6	2,508.0	2,722.0	**2,471.4**	**2,511.6**	**-41.9**	**1.6**
DOE	**2,882.0**	2,520.4	1,841.9	1,803.4	1,714.4	1,587.0	1,417.1	2,736.6	2,015.2	**1,389.0**	**1,535.9**	**-46.7**	**10.6**
DOT	**11,957.0**	12,150.8	12,193.7	11,122.9	8,739.3	10,865.9	1,476.3	1,146.8	1,098.2	**1,035.2**	**1,356.1**	**-88.7**	**31.0**
NASA	**1,972.7**	1,736.7	1,750.9	1,490.1	1,455.1	1,372.2	982.8	1,263.1	1,104.2	**974.0**	**1,265.2**	**-35.9**	**29.9**
ST	**14.8**	34.9	0.0	486.4	37.1	49.4	444.2	451.7	449.0	**903.3**	**1,147.4**	**7652.7**	**27.0**
VA	**592.8**	518.3	353.6	923.4	913.6	856.4	1,174.0	1,034.2	1,292.0	**1,110.8**	**1,058.8**	**78.6**	**-4.7**
DOC	**1,010.2**	3,100.3	760.6	154.3	595.8	360.0	360.0	131.1	894.8	**867.1**	**945.6**	**-6.4**	**9.1**
TVA	**578.5**	476.6	541.7	850.1	822.3	747.9	942.3	845.3	794.4	**958.7**	**617.2**	**6.7**	**-35.6**
DOL	**232.2**	239.0	356.9	368.9	358.9	363.3	397.4	397.2	421.3	**373.3**	**412.3**	**77.6**	**10.4**
TRSY	**2,155.0**	1,473.2	1,773.4	2,503.3	2,577.8	2,878.3	1,856.3	310.5	2,374.8	**386.7**	**286.1**	**-86.7**	**-26.0**
HHS	**373.3**	0.0	105.5	593.2	715.2	178.5	572.4	335.1	500.5	**314.7**	**331.7**	**-11.1**	**5.4**
EPA	**132.3**	0.0	99.6	97.9	110.0	114.8	133.1	110.1	106.6	**138.0**	**164.1**	**24.0**	**18.9**
GSA	**144.1**	128.1	91.3	127.0	112.7	74.9	80.3	49.2	71.7	**54.6**	**51.6**	**-64.2**	**-5.5**
HUD	**0.0**	0.0	25.4	37.8	33.4	38.0	31.4	32.6	24.7	**33.0**	**38.0**	**NA**	**15.2**
OTHER*	**582.1**	732.4	992.9	45.3	48.8	58.8	30.7	57.3	62.0	**160.0**	**182.5**	**-68.6**	**14.1**
Civilian Agencies Subtotal	**43,588.5**	45,649.7	46,244.1	52,901.5	50,753.0	48,535.5	52,459.7	53,406.1	52,678.1	**48,332.1**	**46,627.1**	**7.0**	**-3.5**
DOD	**890,679.9**	881,345.1	640,893.4	526,234.1	537,168.4	593,506.3	662,116.2	723,008.8	698,547.6	**620,354.4**	**646,537.7**	**-27.4**	**4.2**
Total	**934,268.4**	926,994.8	687,137.4	579,135.6	587,921.5	642,041.8	714,575.9	776,414.9	751,225.7	**668,686.5**	**693,164.8**	**-25.8**	**3.7**
MBOE	**160.4**	159.1	118.0	99.4	100.9	110.2	122.7	133.3	129.0	**114.8**	**119.0**		
Petajoule	**985.6**	977.9	724.9	611.0	620.2	677.3	753.9	819.1	792.5	**705.4**	**731.2**		

Data as of 17 Dec 2008

*Other includes for certain years the CFTC, CIA, FEMA, NSF, NRC, OPM, and BBG/IBB.
Note: Sum of components may not equal total due to independent rounding.
Source: Federal Agency Annual Energy Management Data Reports

TABLE A-8
CONSUMPTION AND COSTS OF VEHICLE AND EQUIPMENT ENERGY BY FUEL TYPE IN FY 2007

ENERGY TYPE	BILLION BTU	COST (MILLION $)	COST/ MILLION BTU	COST PER PHYSICAL UNIT
AUTO GASOLINE	45,976.7	909.1	$19.77	$2.47 /Gallon
DIST/DIESEL	84,515.5	1,263.9	$14.95	$2.07 /Gallon
LPG/PROPANE	78.2	1.5	$18.61	$1.78 /Gallon
AVIATION GASOLINE	363.6	$10.715	$29.47	$3.68 /Gallon
JET FUEL	461,141.2	$7,117.560	$15.43	$2.01 /Gallon
NAVY SPECIAL	98,155.3	$1,312.449	$13.37	$1.85 /Gallon
OTHER	2,933.6	$40.615	$13.84	$13.84 /MMBtu
TOTAL	693,164.1	$10,655.766		

AVERAGE COST PER MMBTU = $15.373

Data as of 17 Dec 2008

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

Source: Federal Agency Annual Energy Management Data Reports

TABLE A-9
FEDERAL ENERGY EXPENDITURES, FY 1985–FY 2007
(Constant 2007 Dollars)

Sector/ Fiscal Year	Annual Energy Use (BBtu)	Annual Energy Cost ($ Million)	Annual Energy Cost ($/MMBtu)	Change in Energy Costs from 1985 ($ Million)[1]
Goal-Subject Buildings				
1985	495,263.6	$8,075.866	$16.306	$0.000
1986	464,032.4	$7,312.181	$15.758	-$763.685
1987	490,272.3	$7,247.271	$14.782	-$828.595
1988	496,119.2	$7,048.818	$14.208	-$1,027.048
1989	489,915.9	$6,419.379	$13.103	-$1,656.487
1990	495,821.6	$7,281.958	$14.687	-$793.908
1991	473,518.0	$7,127.526	$15.052	-$948.340
1992	494,091.4	$6,909.262	$13.984	-$1,166.604
1993	457,456.5	$6,708.230	$14.664	-$1,367.636
1994	439,868.6	$6,316.866	$14.361	-$1,759.001
1995	420,595.8	$5,855.111	$13.921	-$2,220.755
1996	412,191.8	$5,679.254	$13.778	-$2,396.612
1997	401,729.1	$5,327.789	$13.262	-$2,748.077
1998	394,158.8	$4,983.334	$12.643	-$3,092.532
1999	383,326.8	$4,650.148	$12.131	-$3,425.718
2000	385,307.7	$4,574.488	$11.872	-$3,501.379
2001	385,722.9	$5,301.835	$13.745	-$2,774.031
2002	379,193.7	$4,919.254	$12.973	-$3,156.612
2003	383,117.6	$4,795.725	$12.518	-$3,280.141
2004	385,006.2	$5,097.533	$13.240	-$2,978.333
2005	386,303.4	$5,407.002	$13.997	-$2,668.864
2006	364,704.3	$5,950.271	$16.315	-$2,125.595
2007	353,536.7	$5,790.935	$16.380	-$2,284.931
Vehicles & Equipment				
1985	934,268.4	$11,593.671	$12.409	$0.000
1986	924,833.7	$6,931.919	$7.495	-$4,661.752
1987	958,904.3	$7,319.054	$7.633	-$4,274.618
1988	846,896.2	$6,892.624	$8.139	-$4,701.047
1989	959,994.6	$7,762.401	$8.086	-$3,831.270
1990	926,994.8	$8,567.203	$9.242	-$3,026.468
1991	970,454.3	$10,983.713	$11.318	-$609.958
1992	783,122.4	$6,481.404	$8.276	-$5,112.267
1993	772,633.8	$6,804.117	$8.806	-$4,789.554
1994	722,790.5	$4,802.659	$6.645	-$6,791.012
1995	687,137.4	$4,938.026	$7.186	-$6,655.645
1996	675,111.5	$4,761.667	$7.053	-$6,832.004
1997	665,386.0	$5,353.586	$8.046	-$6,240.085
1998	627,339.2	$5,537.844	$8.828	-$6,055.827
1999	607,527.2	$4,770.269	$7.852	-$6,823.403
2000	579,135.6	$3,782.379	$6.531	-$7,811.292
2001	587,921.5	$5,434.854	$9.244	-$6,158.817
2002	642,041.8	$5,782.474	$9.006	-$5,811.197
2003	714,575.9	$5,472.245	$7.658	-$6,121.426
2004	776,414.9	$6,680.401	$8.604	-$4,913.270
2005	751,225.7	$9,332.608	$12.423	-$2,261.063
2006	668,686.5	$11,469.598	$17.152	-$124.073
2007	693,164.6	$10,655.767	$15.373	-$937.904

Sector/ Fiscal Year	Annual Energy Use (BBtu)	Annual Energy Cost ($ Million)	Annual Energy Cost ($/MMBtu)	Change in Energy Costs from 1985 ($ Million)[1]
Excluded Facilities				
1985	20,782.4	$371.700	$17.885	$0.000
1986	17,835.0	$296.293	$16.613	-$75.406
1987	17,145.0	$279.904	$16.326	-$91.796
1988	17,295.9	$270.202	$15.622	-$101.497
1989	14,766.8	$257.440	$17.434	-$114.259
1990	15,229.5	$297.553	$19.538	-$74.147
1991	17,769.1	$354.827	$19.969	-$16.872
1992	17,588.8	$289.648	$16.468	-$82.052
1993	16,706.3	$273.035	$16.343	-$98.664
1994	15,561.6	$276.226	$17.750	-$95.474
1995	21,583.8	$246.947	$11.441	-$124.753
1996	21,160.6	$254.146	$12.010	-$117.554
1997	24,864.5	$357.082	$14.361	-$14.617
1998	16,385.6	$303.911	$18.547	-$67.789
1999	20,780.4	$291.819	$14.043	-$79.881
2000	29,363.9	$454.648	$15.483	$82.948
2001	29,318.2	$532.211	$18.153	$160.511
2002	23,571.9	$467.894	$19.850	$96.194
2003	38,602.0	$650.483	$16.851	$278.783
2004	25,565.4	$435.862	$17.049	$64.163
2005	24,033.9	$444.052	$18.476	$72.352
2006	38,152.9	$682.359	$17.885	$310.659
2007	38,557.8	$696.895	$18.074	$325.196
Total Energy - All Sectors				
1985	1,450,314.4	$20,041.237	$13.819	$0.000
1986	1,406,701.1	$14,540.393	$10.337	-$5,500.844
1987	1,466,321.6	$14,846.229	$10.125	-$5,195.009
1988	1,360,311.3	$14,211.645	$10.447	-$5,829.592
1989	1,464,677.3	$14,439.220	$9.858	-$5,602.017
1990	1,438,045.9	$16,146.714	$11.228	-$3,894.523
1991	1,461,741.4	$18,466.067	$12.633	-$1,575.170
1992	1,294,802.6	$13,680.314	$10.566	-$6,360.923
1993	1,246,796.6	$13,785.382	$11.057	-$6,255.855
1994	1,178,220.7	$11,395.750	$9.672	-$8,645.487
1995	1,129,317.0	$11,040.084	$9.776	-$9,001.154
1996	1,108,463.9	$10,695.067	$9.649	-$9,346.170
1997	1,091,979.6	$11,038.457	$10.109	-$9,002.780
1998	1,037,883.6	$10,825.089	$10.430	-$9,216.148
1999	1,011,634.4	$9,712.236	$9.601	-$10,329.001
2000	993,807.2	$8,811.515	$8.866	-$11,229.722
2001	1,002,962.6	$11,268.899	$11.236	-$8,772.338
2002	1,044,807.4	$11,169.623	$10.691	-$8,871.615
2003	1,136,295.5	$10,918.452	$9.609	-$9,122.785
2004	1,186,986.5	$12,213.796	$10.290	-$7,827.441
2005	1,161,563.0	$15,183.661	$13.072	-$4,857.576
2006	1,071,543.7	$18,102.227	$16.894	-$1,939.010
2007	1,085,259.1	$17,143.597	$15.797	-$2,897.640

[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.

APPENDIX B

DATA COLLECTION AND CARBON CALCULATIONS

APPENDIX B

DATA COLLECTION

Buildings and Facilities

The Federal agencies that own or control buildings are required to report the energy consumption in these buildings to FEMP by January 1 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 7, 8, and A-1 of this report account for primary energy use, which is the sum of the energy directly consumed by end users (site energy) and the source energy consumed in the production and delivery of energy products. Using 2002 data from EIA, a blended heat rate of 10,191 Btu/kWh was calculated for fossil and nuclear steam-electric plants. In addition to conversion losses, transmission and distribution losses (9 percent) and power plant use (5 percent) are also factored into the delivered heat content, resulting in a total source energy input for electricity of 11,850 Btu/kWh. 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
Federal agencies are required to report the energy consumption of their fleet vehicles through DOE's Federal Automotive Statistical Tool (FAST) no later than November 1 after the end of each fiscal year. Energy consumption in other types of equipment not reported through FAST is required to be reported to FEMP by January 1 after the end of each fiscal year.

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 the 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

ESTIMATING THE CARBON DIOXIDE-EQUIVALENT EMISSIONS OF CARBON DIOXIDE, METHANE, AND NITROUS OXIDE FROM FEDERAL FACILITY ENERGY USE

Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management," defines greenhouse gases as "carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride." While the Order does not contain a quantitative goal for reducing greenhouse gas emissions, the Department of Energy's Federal Energy Management Program (FEMP) will continue to estimate emissions from energy use in Federal buildings subject to the goals of E.O. 13423.

Formerly, FEMP only reported on the carbon-equivalent emissions of carbon dioxide attributed to facility energy use. In light of E.O. 13423's new definition, this new methodology was developed for generating estimates of non-carbon dioxide emissions using the energy consumption data that is reported to FEMP. Existing means were identified and adopted that allow the use of currently-reported data to generate, in terms of carbon dioxide-equivalence, emissions estimates for carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).[8] In another change from previous reporting, these estimates will now be reported in units of metric tons of *carbon dioxide* equivalent ($MTCO_2E$) rather than metric tons of *carbon* equivalent (MTCOE)

Emission Factors

To calculate the carbon dioxide-equivalent emissions of gases, fuel-to-gas specific emission factors from the Energy Information Administration (EIA) are used for all fuels except electricity and purchased steam.[9] These fuel-to-gas specific emission factors are couched in terms of:

- Million metric tons of carbon per quadrillion Btu (for CO_2)
- Grams per gigajoule (for CH_4)
- Kilograms per terajoule (for N_2O)

The Energy Information Administration provides five emission factors for coal; these emission factors differ depending upon the industrial sector in which the coal is consumed. The 'Commercial' emission factor for coal is used in this methodology.[10]

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[8] An examination of GHG sources was conducted to identify those sources whose emissions can be directly tied to primary energy or electricity consumption. This examination indicated that there is no rigorous means to estimate hydrofluorocarbon, perfluorocarbon, or sulfur hexafluoride emissions based solely upon the data reported by agencies; these emissions are not related in any meaningful way to primary energy or electricity consumption. Thus, calculations are made only for CO_2, CH_4, and N_2O.

[9] Energy Information Administration. Documentation for Emissions of Greenhouse Gases in the United States 2004. December 2006. DOE/EIA-0638 (2004). Table 2-13 (CH4), Table 3-6 (N2O), Table 6-1 (CO2/C) Available at http://www.eia.doe.gov/oiaf/1605/ggrpt/documentation/pdf/0638(2004).pdf.

[10] Energy Information Administration. Form EIA-6A (March 2005), Coal Distribution Report – Annual. "Residential/Commercial (RC): Housing units; wholesale or retail businesses (except coal wholesale dealers); health institutions (hospitals); social and educational institutions (schools and universities); and Federal, State, and local governments (military installations, prisons, office buildings, etc.). Exclude shipments to Federal power projects, such as TVA; and rural electrification cooperatives, power districts, and State power projects. These are to be included in Electric Generation (EG)." Available at http://www.eia.doe.gov/cneaf/coal/page/surveys/formeia6.pdf.

Global Warming Potentials

The Intergovernmental Panel on Climate Change (IPCC) has developed a methodology that allows for emissions of all greenhouse gases to be expressed in units of carbon dioxide-equivalence. This methodology is based upon the Global Warming Potential of a particular gas. According to the Environmental Protection Agency:

> "The concept of a Global Warming Potential (GWP) was developed to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to another gas. The definition of a GWP for a particular greenhouse gas is the ratio of heat trapped by one unit mass of the greenhouse gas to that of one unit mass of CO_2 over a specified time period."[11]

The carbon dioxide-equivalent calculations utilize IPCC-generated global warming potentials as follows:

- Carbon dioxide has a GWP of 1.
- Methane (CH_4) has a GWP of 21.
- Nitrous oxide (N_2O) has a GWP of 310.[12]

Calculating Fuel Specific CO_2-Equivalent Emission Coefficients

The calculation of fuel specific carbon dioxide-equivalent emission coefficient can be generically expressed as follows:

CO_2-equivalent emission = EIA emission factor x (unit conversions) x GWP

Fuel-specific calculations of carbon dioxide-equivalent emission coefficients are shown below.

Calculations for Fuel Oil, Natural Gas, LPG/Propane, and Coal Emission Coefficients

The emission coefficients for fuel oil, natural gas, LPG/propane, and coal presented in the table are calculated from emissions coefficients found in the Energy Information Administration's Documentation for Emissions of Greenhouse Gases in the United States 2004.[13] The calculations are as follows; original EIA coefficient units in the equations are shown in **bold**.

CO_2 estimates (in terms of metric tons of CO_2-equivalent per billion Btu) are calculated as follows from data found in Table 6-1 of EIA's Documentation. The EIA reports CO_2 emissions in terms of million metric tons of carbon per quadrillion Btu; thus, to convert to metric tons of CO_2-equivalent per billion Btu, it is necessary to divide by 12/44 to account for the full molecular weight of carbon dioxide (12/44 is the ratio of the atomic mass of a carbon atom to the atomic mass of a carbon dioxide molecule).

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[11] Environmental Protection Agency. "High GWP Gases and Climate Change" webpage. Available at http://www.epa.gov/highgwp/scientific.html#sf6

[12] Environmental Protection Agency. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2005. Draft for Public Review. Table ES-1.
Available at http://www.epa.gov/climatechange/emissions/usinventoryreport07.html

[13] Energy Information Administration. Documentation for Emissions of Greenhouse Gases in the United States 2004. December 2006. DOE/EIA-0638 (2004). Available at http://www.eia.doe.gov/oiaf/1605/ggrpt/documentation/pdf/0638(2004).pdf

$$\frac{MTCE}{BBtu} = \left(\frac{\text{million\_MT C}}{\text{Quad}}\right) \times \left(\frac{1\ \_\ Quad}{1{,}000\ {,}000\ \_\ BBtu}\right) \times \left(\frac{MTCE}{.000001\ \_\ million\ \_\ MTC}\right) \times \left(1\right) / \frac{12}{44}$$

CH_4 estimates (in terms of metric tons of carbon equivalent per billion Btu) are calculated as follows from data found in Table 2-13 of EIA's Documentation:

$$\frac{MTCE}{BBtu} = \left(\frac{\text{g}_{\text{CH4}}}{\text{GJ}}\right) \times \left(\frac{1000\ \_\ GJ}{TJ}\right) \times \left(\frac{1\ \_\ TJ}{947{,}817{,}120\ \_\ Btu}\right) \times \left(\frac{1{,}000{,}000{,}000\ \_\ Btu}{1\ \_\ BBtu}\right) \times \left(\frac{1\ \_\ MT}{1{,}000{,}000g}\right) \times \left(21\right)$$

N_2O estimates (in terms of metric tons of carbon equivalent per billion Btu) are calculated as follows from data found in Table 3-6 of EIA's Documentation:

$$\frac{MTCE}{BBtu} = \left(\frac{\text{kg}_{\text{N2O}}}{\text{TJ}}\right) \times \left(\frac{1\ \_\ TJ}{947\ {,}817\ {,}120\ \_\ Btu}\right) \times \left(\frac{1\ \_\ MT}{1{,}000\ \_\ kg}\right) \times \left(\frac{1{,}000\ {,}000\ {,}000\ Btu}{1\ \_\ BBtu}\right) \times \left(310\right)$$

Calculations for Electricity and Purchased Steam Emission Coefficients

The Energy Information Administration does not publish, in its Documentation, CO_2 emissions coefficients for electricity or purchased steam.

The **CO_2 emission coefficient for electricity** is calculated by dividing CO_2 emissions from electric power plants by the amount of electricity they sell. This accounts for the primary energy inputs for electricity delivered to the customer site. CO_2 emissions and electricity sales data are obtained from the Energy Information Administration's Electric Power Annual.[14]

$$\frac{MTCE}{BBtu} = \left(\frac{\text{MT}_{\text{CO2}}}{\text{MWh}}\right) \times \left(\frac{1\ \_\ MWh}{1000\ \_\ kWh}\right) \times \left(\frac{1\ \_\ kWh}{3{,}412\ \_\ Btu}\right) \times \left(\frac{1{,}000\ {,}000\ {,}000\ Btu}{1\ \_\ BBtu}\right)$$

CH_4 emission coefficient for electricity is calculated from EIA data as follows:[15]

$$\frac{MTCE}{BBtu} = \left(\frac{\text{lbs}_{\text{CH4}}}{\text{MWh}}\right) \times \left(\frac{1\ \_\ MWh}{1000\ \_\ kWh}\right) \times \left(\frac{1\ \_\ kWh}{3{,}412\ \_\ Btu}\right) \times \left(\frac{1{,}000{,}000{,}000\,Btu}{1\ \_\ BBtu}\right) \times \left(\frac{1\ \_\ MT}{2204.6\ \_\ lbs}\right) \times \left(21\right)$$

N_2O emission coefficient for electricity is calculated from EIA data as follows:[16]

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[14] For CO2 emissions, see the EIA's "Emissions from Energy Consumption for Electricity Production and Useful Thermal Output at Combined-Heat-and-Power Plants" webpage (available at http://www.eia.doe.gov/cneaf/electricity/epa/epat5p1.html).
For electricity sales data, see "Direct Use and Retail Sales of Electricity to Ultimate Customers by Sector, by Provider" webpage (available at http://www.eia.doe.gov/cneaf/electricity/epa/epat7p2.html).
3,412 Btu/kWh is an EIA standard, as per www.eia.doe.gov/emeu/aer/txt/stb1306.xls)

[15] Energy Information Administration. Updated State-level Greenhouse Gas Emission Coefficients for Electricity Generation, 1998-2000. Available at http://tonto.eia.doe.gov/FTPROOT/environment/e-supdoc-u.pdf

[16] Energy Information Administration. Updated State-level Greenhouse Gas Emission Coefficients for Electricity Generation, 1998-2000. Available at http://tonto.eia.doe.gov/FTPROOT/environment/e-supdoc-u.pdf

$$\frac{MTCE}{BBtu} = \left(\frac{\mathbf{lbs_{N2O}}}{\mathbf{MWh}}\right) \times \left(\frac{1\_MWh}{1000\_kWh}\right) \times \left(\frac{1\_kWh}{3{,}412\_Btu}\right) \times \left(\frac{1{,}000{,}000{,}000\,Btu}{1\_BBtu}\right) \times \left(\frac{1\_MT}{2204.6\_lbs}\right) \times (310)$$

The electricity emission coefficients are national averages, since agencies do not report their consumption broken out by state. This approach therefore assumes that the Government's electricity consumption is distributed according to national electricity use overall.

Because of mismatches in when generation and emissions data are available from EIA and when FEMP reports are produced, year-old emissions data are used (2006 emissions are calculated using 2005 coefficients). This is unlikely to generate large discrepancies in the emission estimates for agencies. Since 2000, calculated electricity coefficients have varied less than 1 percent year to year.

This methodology assumes that purchased steam is generated from the consumption of coal, and using FEMP's historical conversion factor, that the production-to-delivery chain is 72 percent efficient (that is, in order to deliver 1,000 Btu per pound of steam to an end-user, 1,390 Btu of heat input is necessary at the plant). Thus, to arrive at the emission coefficient for purchased steam, the EIA emission coefficients for CO_2, CH_4, and N_2O for coal are multiplied by 1.39.

Carbon Dioxide-Equivalent Emission Coefficients

The results of the above calculations are presented in the following table in terms of metric tons of CO_2-equivalent per billion Btu of site-delivered energy use.

Energy Type	Carbon Dioxide ($MTCO_2E$/ Site-Delivered Billion Btu)	Methane ($MTCO_2E$/ Site-Delivered Billion Btu)	Nitrous Oxide ($MTCO_2E$/ Site-Delivered Billion Btu)	Total GHG ($MTCO_2E$/ Site-Delivered Billion Btu)
Electricity, 2003	193.3342	0.0310	0.7913	194.1654
Electricity, 2004	193.7825	0.0310	0.7913	194.6048
Electricity, 2005	193.3088	0.0310	0.7913	193.1310
Electricity, 2006	188.8801	0.0310	0.7913	189.7023
Electricity, 2007	188.8801	0.0310	0.7913	189.7023
Fuel Oil	73.1500	0.0048	0.1962	73.3510
Natural Gas	53.0567	0.0598	0.0327	53.1492
LPG/Propane	62.2967	0.0054	0.0327	62.3348
Coal	95.4800	0.0007	0.4579	95.9386
Purchased Steam	132.7172	0.0009	0.6365	133.3546

Calculating Agency-Level Emissions

To calculate agency-level CO_2-equivalent emissions of a particular GHG as a result of consumption of a particular fuel, the fuel-specific emission coefficient shown in the table above is multiplied by the agency's consumption of that fuel in terms of billions of British thermal units (BBtu) delivered to the site. For example:

$$CO_2E\ Emissions_{agency,\ CH4} = Site\text{-}delivered\ Energy\ consumption_{agency,\ fuel}\ x\ CO_2E\ Emission\ coefficient_{CH4,\ fuel}$$

Two notes on the calculation of agency-level emissions.

1. Purchases of green power, renewable energy certificates, and renewable thermal energy are netted out of agency totals before calculating emissions.
2. Agencies have the option of estimating GHG emissions from their energy use independently based on disaggregated or more detailed data provided that:
    a. Estimates are provided to FEMP for inclusion in Federal Government totals, and
    b. Agencies provide a detailed description of their estimation methodology.

APPENDIX C

ACRONYMS

Agency Acronyms

Broadcasting Board of Governors/ International Broadcasting Bureau	BBG/IBB
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 Homeland Security	DHS
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 Postal Service	USPS

Other Acronyms

Assessment of Load and Energy Reduction Techniques	ALERT
Building Life-Cycle Cost	BLCC
British Thermal Unit(s)	Btu
Energy Citations Database	ECD
Energy Information Administration	EIA
Office of Energy Efficiency and Renewable Energy	EERE
Energy Management Control Systems	EMCS
Energy Policy Act of 1992	EPACT 1992
Energy Policy Act of 2005	EPACT 2005
Energy Efficiency and Renewable Energy Clearinghouse	EREC
Energy Service Company	ESCO
Energy Savings Performance Contract	ESPC
Facility Energy Decision System	FEDS
Federal Automotive Statistical Tool	FAST
Federal Energy Management Program	FEMP
Fiscal Year	FY
Gross Square Foot	GSF
Industrial Assessment Center	IAC
Indefinite-Delivery, Indefinite Quantity Contract	IDIQ
Life-Cycle Cost	LCC
Liquefied Petroleum Gas	LPG
Megawatthours	MWH
Military Construction	MILCON
Million Barrels of Oil Equivalent	MBOE
Million British Thermal Units	MMBtu
National Energy Conservation Policy Act	NECPA
National Energy Information Center	NEIC
National Institute of Standards and Technology	NIST
Office of Industrial Technologies	OIT
Office of Scientific and Technical Information	OSTI
Quadrillion British Thermal Units	Quad
Research and Development	R&D
State Energy Program	SEP
Utility Energy Service Contract	UESC