



U.S. DEPARTMENT OF
ENERGY

Annual Report on Federal Government Energy Management and Conservation Programs, Fiscal Year 2013

**Report to Congress
April 2015**

**United States Department of Energy
Washington, DC 20585**

Message from the Assistant Secretary

We are enclosing the *Annual Report to Congress on Federal Government Energy Management and Conservation Programs, Fiscal Year (FY) 2013*. The Federal Government is the largest single energy consumer in the Nation, presenting significant opportunities to conserve and make more efficient use of energy through improved operations and maintenance, the use of new energy efficient technologies, and the application and achievement of energy efficient design and construction. An increase in energy efficiency by the Federal Government benefits the Nation by reducing the cost of Government, reducing national dependence on foreign energy resources, and demonstrating the benefits of greater energy efficiency to the Nation.

This report on Federal energy management for FY 2013¹ provides information on energy consumption in Federal buildings, operations, and vehicles. Some of the highlights:

- In FY 2013, the Federal Government consumed 1.0 quadrillion British Thermal Units (Btu) of site-delivered energy in buildings, vehicles (including ships and aircraft), and operations; 15.3 percent less than in FY 2003, and 7.7 percent less than in FY 2012.
- Total cost of the 1.0 quadrillion Btu was \$24.0 billion in FY 2013 and represented 0.7 percent of the total Federal expenditures of \$3.685 trillion for all purposes in FY 2013. In constant 2013 dollars, this equates to a decrease of 6.9 percent from \$25.7 billion in FY 2012.
- The National Energy Conservation Policy Act (NECPA), as amended, requires that Federal buildings reduce their FY 2013 energy consumption by 24 percent as compared with FY 2003. (42 U.S.C. 8253(a)(1)). The Federal Government decreased energy use per gross square foot by 20.6 percent in FY 2013 relative to FY 2003 for buildings subject to the NECPA energy reduction requirement.
- The Federal Government collectively surpassed the FY 2013 renewable energy goal of a minimum of 7.5 percent of electricity use set in section 203 of EPACK 2005. (42 U.S.C. 15852(a)(3)). Federal agencies reported purchasing or producing 5,077.9 gigawatthours (GWh) of renewable electric energy in FY 2013, equivalent to 9.2 percent of the Federal Government's electricity use of 55,389.0 GWh.
- During FY 2013, Federal agencies invested \$1,360.0 million in energy efficiency, water conservation, and renewable energy projects in buildings and facilities. This funding came from three primary sources:

¹ Responds to section 548 of the National Energy Conservation Policy Act (NECPA; Pub. L. No. 95-619), as amended.

- Direct appropriated funding – \$793.8 million
- Energy savings performance contracts (ESPCs) – \$482.4 million
- Utility energy service contracts (UESCs) – \$83.8 million
- This \$1,360.0 million investment was 12.6 percent less than the \$1,555.3 million investment reported in FY 2012.

This report also documents activities conducted by Federal agencies under:

- The energy management and energy consumption requirements of section 543 of NECPA, Pub. L. No. 95-619, as amended (42 U.S.C. § 8253);
- The energy savings performance contract authority of section 801 of NECPA, Pub. L. No. 95-619, as amended (42 U.S.C. §§ 8287-8287d);
- The renewable energy purchase goal of section 203 of the Energy Policy Act of 2005 (EPACT 2005), Pub. L. No. 109-58 (codified at 42 U.S.C. § 15852);
- The Federal building performance standard requirements under Section 109 of EPACT 2005, Pub. L. No. 109-58 (codified at 42 U.S.C. § 6834(a));
- Sections 431, 432, and 434 of the Energy Independence and Security Act of 2007 (EISA), Pub. L. No. 110-140 (42 U.S.C. § 8253);
- Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management,” 72 Fed. Reg. 3,919 (Jan. 26, 2007); and
- Executive Order 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,” 74 Fed. Reg. 52,117 (Oct. 5, 2009).

This report is being provided to the following Members of Congress:

- **The Honorable Joseph R. Biden, Jr.**
President of the Senate
- **The Honorable John Boehner**
Speaker of the House of Representatives
- **The Honorable Thad Cochran**
Chairman, Senate Committee on Appropriations
- **The Honorable Barbara Mikulski**
Ranking Member, Senate Committee on Appropriations
- **The Honorable Lisa Murkowski**
Chairwoman, Senate Committee on Energy and Natural Resources

- **The Honorable Maria Cantwell**
Ranking Member, Senate Committee on Energy and Natural Resources
- **The Honorable Harold Rogers**
Chairman, House Committee on Appropriations
- **The Honorable Nita M. Lowey**
Ranking Member, House Committee on Appropriations
- **The Honorable Fred Upton**
Chairman, House Committee on Energy and Commerce
- **The Honorable Frank Pallone, Jr.**
Ranking Member, House Committee on Energy and Commerce

If you need additional information concerning the report, please contact me or Brad Crowell, Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

Dr. David T. Danielson
Assistant Secretary
Energy Efficiency and Renewable Energy

List of Acronyms

Agency Acronyms

Broadcasting Board of Governors/ International Broadcasting Bureau	BBG/IBB
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	Interior
Department of Justice	Justice
Department of Labor	DOL
Department of State	State
Department of Transportation	DOT
Department of the Treasury	Treasury
Department of Veterans Affairs	VA
Environmental Protection Agency	EPA
General Services Administration	GSA
National Aeronautics and Space Administration	NASA
National Archives and Records Administration	Archives
Nuclear Regulatory Commission	NRC
Office of Federal Procurement Policy	OFPP
Office of Management and Budget	OMB
Office of Personnel Management	OPM
Pension Benefit Guaranty Corporation	PBGC
Railroad Retirement Board	RRB
Smithsonian Institution	SI
Social Security Administration	SSA
Tennessee Valley Authority	TVA
U.S. Army Corps of Engineers	USACE
United States Postal Service	USPS
White House Council on Environmental Quality	CEQ

Other Acronyms

American Society of Heating, Refrigerating and Air Conditioning Engineers	ASHRAE
British Thermal Unit(s)	Btu
British Thermal Units(s) per Gross Square Foot	Btu/GSF
Combined Heat and Power	CHP
Compressed Natural Gas	CNG
Compliance Tracking System	CTS
Emissions & Generation Resource Integrated Database	eGRID
Energy Independence and Security Act of 2007	EISA
Energy Policy Act of 1992	EPACT 1992
Energy Policy Act of 2005	EPACT 2005
Energy Savings Performance Contract	ESPC
Executive Order	E.O.
Federal Energy Management Program	FEMP
Fiscal Year	FY
Gallon	Gal
Greenhouse Gas	GHG
Gross Square Foot	GSF
Industrial, Landscaping, and Agricultural	ILA
Liquefied Petroleum Gas	LPG
Megawatthours	MWH
Million British Thermal Units	MMBtu
Million Metric Tons of Carbon Dioxide Equivalent	MMTCO ₂ e
National Energy Conservation Policy Act	NECPA
Quadrillion British Thermal Units	Quad
Renewable Energy Certificate	REC
Utility Energy Service Contract	UESC

Executive Summary

This report on Federal energy management for FY 2013 provides information on energy consumption in Federal buildings, operations, and vehicles. It also documents activities conducted by Federal agencies under:

- The energy management and energy consumption requirements of section 543 of NECPA, as amended (42 U.S.C. § 8253);
- The energy savings performance contract authority of section 801 of NECPA, Pub. L. No. 95-619, as amended (42 U.S.C. §§ 8287-8287d);
- The renewable energy purchase goal of section 203 of the Energy Policy Act of 2005 (EPACT 2005), Pub. L. No. 109-58 (codified at 42 U.S.C. § 15852);
- The Federal building performance standard requirements under Section 109 of EPACT 2005, Pub. L. No. 109-58 (codified at 42 U.S.C. § 6834(a));
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- Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management,” 72 Fed. Reg. 3,919 (Jan. 26, 2007); and
- Executive Order 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,” 74 Fed. Reg. 52,117 (Oct. 5, 2009).

Below is a summary of Federal Government-wide progress toward the key statutory and Executive Order goals.

Goals and Requirements	FY 2013 Federal Performance
<p>E.O. 13423 and NECPA: Reduce energy intensity (Btu/GSF) by 24% compared to 2003; 30% reduction required in FY 2015.</p>	<p>Government decreased energy intensity by 20.6% in FY 2013 relative to FY 2003 (18.0% without source savings credits).</p>
<p>EPACT 2005: Use renewable electric energy equivalent to a least 7.5% of total electricity use;</p> <p>E.O. 13423: Ensure that at least half of the statutorily required renewable energy consumed comes from sources developed after January 1, 1999.</p>	<p>Government purchased or produced renewable energy in FY 2013 equivalent to 9.2% of total electricity use, of which 87.5% was from sources developed after January 1, 1999.</p>

Goals and Requirements	FY 2013 Federal Performance
<p>E.O. 13423: Reduce water consumption intensity (Gal/GSF) by 12% relative to 2007 baseline; 16% by the end of FY 2015;</p> <p>E.O. 13514: Reduce water consumption intensity by 26% by FY 2020, relative to 2007 baseline.</p>	<p>Government reduced water consumption intensity by 19.1% in FY 2013 relative to FY 2007.</p>
<p>E.O. 13514: Reduce Government-wide scope 1 and 2 greenhouse gas emissions from targeted sources by 28% in FY 2020 compared to FY 2008</p>	<p>Government reduced scope 1 and 2 greenhouse gas (GHG) emissions by 17.2% in FY 2013 relative to FY 2008.</p>



ANNUAL REPORT ON FEDERAL GOVERNMENT ENERGY MANAGEMENT AND CONSERVATION PROGRAMS FISCAL YEAR 2013

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I. Overview of Federal Energy Consumption

This report on Federal energy management for FY 2013² provides information on energy consumption in Federal buildings, operations, and vehicles. It also documents activities conducted by Federal agencies under:

- The energy management and energy consumption requirements of section 543 of the National Energy Conservation Policy Act (NECPA), Pub. L. No. 95-619, as amended (42 U.S.C. § 8253);
- The energy savings performance contract authority of section 801 of NECPA, Pub. L. No. 95-619, as amended (42 U.S.C. §§ 8287-8287d);
- The renewable energy purchase goal of section 203 of the Energy Policy Act of 2005 (EPACT 2005), Pub. L. No. 109-58 (42 U.S.C. § 15852);
- The Federal building performance standard requirements under Section 109 of EPACT 2005, Pub. L. No. 109-58 (42 U.S.C. § 6834(a));
- Sections 431, 432, and 434 of the Energy Independence and Security Act of 2007 (EISA), Pub. L. No. 110-140 (42 U.S.C. § 8253);
- Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management," 72 Fed. Reg. 3,919 (Jan. 26, 2007); and
- Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance," 74 Fed. Reg. 52,117 (Oct. 5, 2009).

This report summarizes the findings contained in data tables with agency-specific details located online at <http://energy.gov/eere/femp/federal-facility-annual-energy-reports-and-performance>. This data is compiled from agencies' FY 2013 [annual energy/sustainability data reports](#) and includes historical data tables of agency energy use and costs by facility and mobility sectors by energy type for FY 1975 through FY 2013. Detailed annual comprehensive greenhouse gas (GHG) inventories by Federal agency are presented along with progress toward achieving scope 1 and 2 GHG and scope 3 GHG reduction targets. Links to specific data tables detailing findings are located throughout this report. Agency-specific performance is also detailed on their annual Office of Management and Budget (OMB) Sustainability and Energy Scorecards and in their Strategic Sustainability Performance Plans located at <http://sustainability.performance.gov>.

² Responds to section 548 of the National Energy Conservation Policy Act, as amended (NECPA; Pub. L. No. 95-619).

During FY 2013, reports were submitted by the 25 Federal agencies assessed on OMB Sustainability/ Energy Scorecards, as well as by a number of smaller Federal agencies. These reports show that total primary or source energy consumption of the U.S. Government, including energy consumed to produce, process, and transport energy, was [1.4 quadrillion British thermal units \(Btu\) or “quads” during FY 2013.](#)³

These 1.4 quads represent 1.5 percent of the 95.2 quads⁴ used in the United States in FY 2013. The total primary energy consumption in FY 2013 was 23.3 percent less than in FY 1985, 11.5 percent less than in FY 2003, and 5.7 percent less than in FY 2012.

Site-delivered energy consumption by the Federal Government was almost [1.0 quads during FY 2013.](#)⁵ Site-delivered energy consumption in FY 2013 was 33.9 percent less than in FY 1985, 15.3 percent less than in FY 2003, and 7.7 percent less than in FY 2012. The reductions from FY 2012 were primarily a result of a reduction in jet fuel use. Of the 80.1 trillion Btu reduction in energy consumption between FY 2012 and FY 2013, [69.4 trillion Btu \(86.7%\) came from decreased jet fuel consumption.](#)

[Total cost of the 1.0 quads was \\$24.0 billion in FY 2013](#) and represented 0.7 percent of the total Federal expenditures of \$3.6849 trillion⁶ for all purposes in FY 2013.⁷ In constant 2013 dollars, this equates to a decrease of 6.9 percent from \$25.7 billion in FY 2012 to \$24.0 billion in FY 2013. Compared to FY 2012, the combined unit costs of all fuels increased 0.9 percent in FY 2013. Rising transportation fuel prices offset reductions in the building energy costs resulting in slight increases in overall energy costs in FY 2013 compared to the prior year.

³Primary or source energy consumption considers all energy resources used to generate and transport electricity and steam. For this report, DOE uses a source conversion factor for electricity of 11,850 Btu/kWh and site-delivered factor of 3,412 Btu/kWh.

⁴ DOE/EIA, *Monthly Energy Review March 2013*, Table 1.1.
<http://www.eia.gov/totalenergy/data/monthly/pdf/mer.pdf>.

⁵ Site-delivered energy is used in this report to describe Government and agency performance because it can be unambiguously measured. Unless otherwise noted, this report uses the site-measured conversion factors to convert common units for electricity and steam to British thermal units (Btu).

⁶ *Office of Management and Budget Table 1.1—Summary of Receipts, Outlays, and Surpluses or Deficits (-): 1789–2018.* <http://www.whitehouse.gov/omb/budget/Historicals>.

⁷ Unless otherwise noted, all costs cited in this report are in constant 2013 dollars, calculated using Gross Domestic Product implicit price deflators. See Bureau of Economic Analysis web site, <http://www.bea.gov/national/xls/gdplev.xls>. Costs noted as nominal dollars have not been adjusted to remove the effect of changes in the spending power of the dollar.

The most significant changes in per unit costs (as-spent dollars per million Btu) include:

- Jet fuel – 5.5 percent increase,
- Gasoline – 2.5 percent decrease,
- Diesel – 6.0 percent increase,
- Fuel oil – 3.7 percent decrease,
- Natural gas – 2.0 percent decrease, and
- Electricity– 1.1 percent increase.

In addition to prices and 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 2013, the Department of Defense (DOD) spent about \$19.5 billion for energy use, 81.6 percent of the total Federal energy expenditure of \$24.0 billion. DOD used 9.5 percent less site-delivered energy in FY 2013 than in FY 2012.

Figures 1 and 2 depict the Federal Government’s FY 2013 energy consumption and costs. As illustrated, jet fuel and electricity account for 63.5 percent of the total energy consumption by energy type and 72.1 percent of total energy costs by energy type.

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

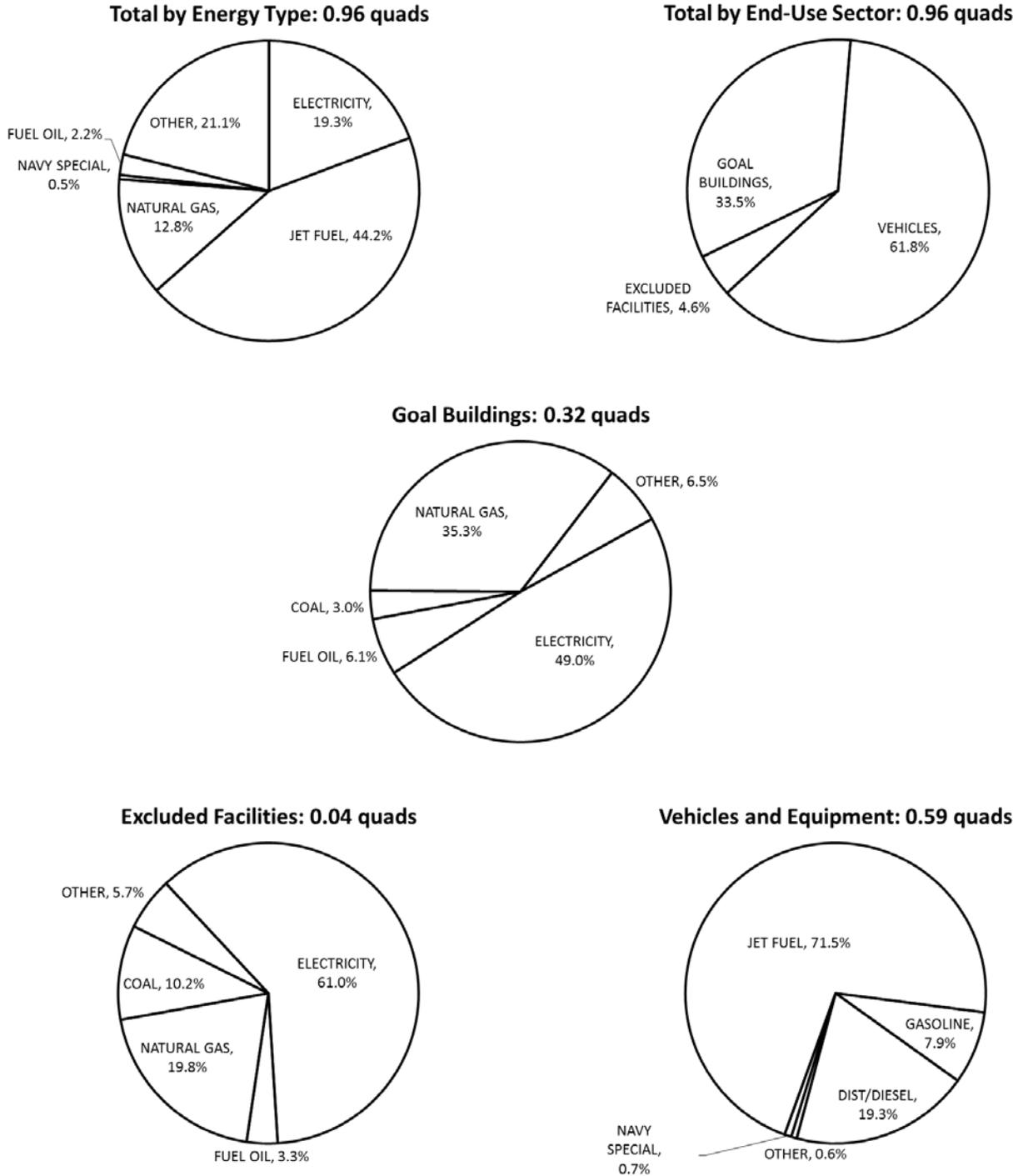
1. Buildings subject to the energy reduction requirements of NECPA, as amended (“goal buildings”);
2. Buildings and structures excluded from the energy reduction requirements of NECPA, as amended (“goal-excluded facilities”); and
3. Vehicles and equipment.

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

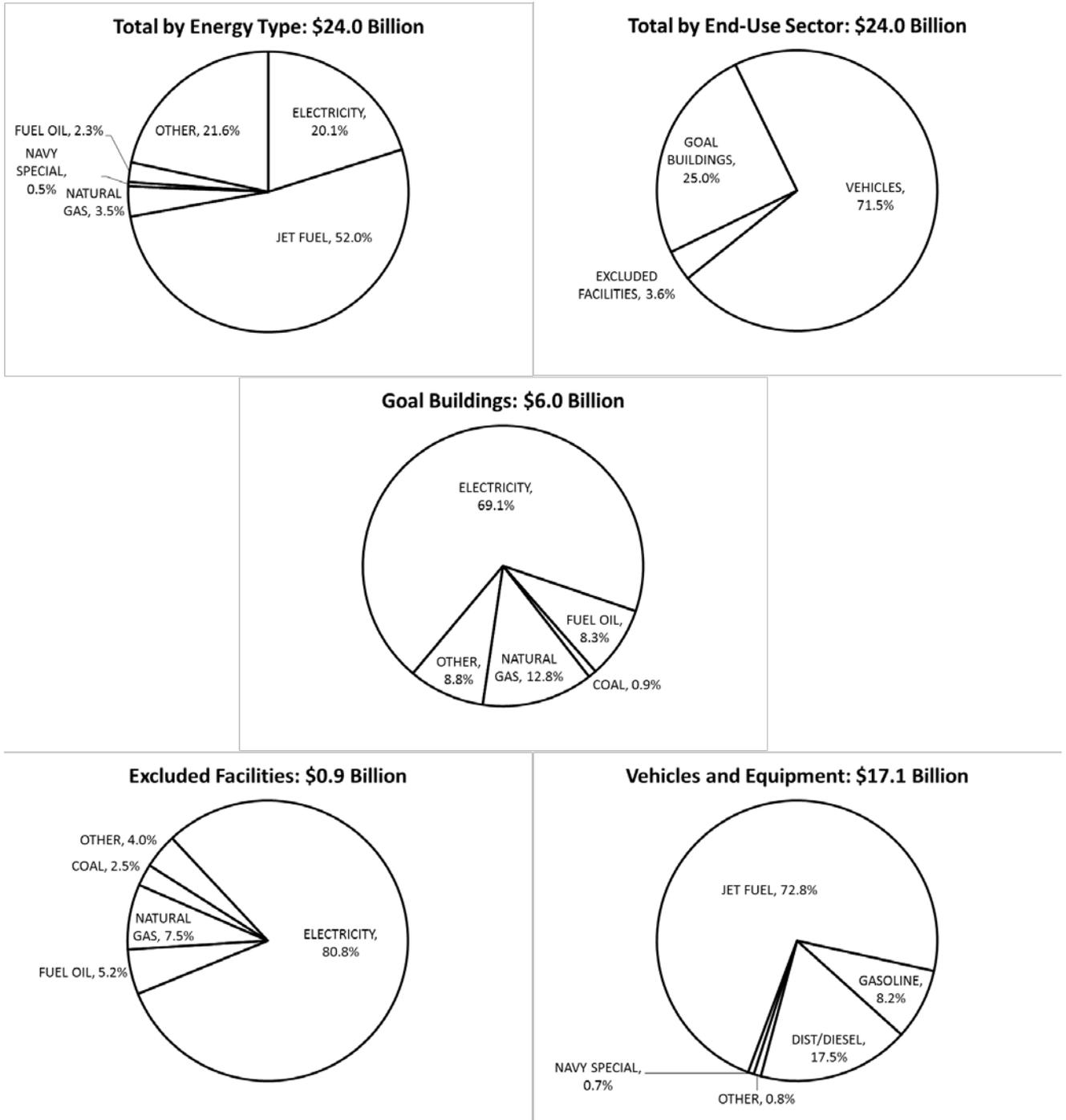
Energy Use	Trillion Btu	Percentage
Goal Buildings	321.8	33.5%
Excluded Facilities	44.5	4.6%
Vehicles & Equipment	592.9	61.8%
<i>Total</i>	<i>959.2</i>	<i>100.0%</i>

Energy Cost	\$Billion	Percentage
Goal Buildings	\$6.0	25.0%
Excluded Facilities	\$0.9	3.6%
Vehicles & Equipment	\$17.1	71.5%
<i>Total</i>	<i>\$24.0</i>	<i>100.0%</i>

Figure 1
Federal Energy Consumption by Fuel Type and End-Use Sector, FY 2013



**Figure 2
Federal Energy Costs by Fuel Type and End-Use Sector, FY 2013**



A. GOAL BUILDINGS

Goal buildings are those buildings not designated by an agency as excluded from the energy intensity performance requirement. (42 U.S.C. § 8253(a)).

In FY 2013, the Federal Government used [321.8 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)). This consumption represents a 35.0 percent decrease compared to FY 1985, a 14.4 percent decrease relative to FY 2003, and a 0.6 percent increase from FY 2012.

The significant drop from FY 1985 levels reflects the success of Federal energy management efforts in reducing fossil fuel use in Federal buildings, as well as a 46.7 percent reduction in defense-related facility energy use from FY 1985. The energy cost for goal buildings in FY 2013 was [\\$6.0 billion](#), an increase of \$22.9 million from FY 2012 expenditures, and an increase of 19.9 percent from FY 2003 expenditures of \$5.0 billion.⁸ Of the \$6.0 billion energy costs for goal buildings, \$3.6 billion was spent by DOD with the remaining \$2.4 billion spent by the civilian agencies.

The 321.8 trillion Btu used in goal buildings comprised 33.5 percent of the total 1.0 quads used by the Federal Government. [Electricity constitutes 49.0 percent of the energy used in goal buildings](#); 35.3 percent is accounted for by natural gas, 6.1 percent by fuel oil, and 3.0 percent by coal. Small amounts of purchased steam, liquefied petroleum gas (LPG)/propane, and “other” energy account for the remaining 6.5 percent.

B. EXCLUDED FACILITIES

Excluded facilities are those facilities designated by agencies that are not subject to the energy intensity performance requirement in accordance with the Department of Energy’s (DOE’s) *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* are available at:

http://energy.gov/sites/prod/files/2013/10/f3/exclusion_criteria.pdf.

Seventeen agencies exclude certain buildings from energy intensity reduction requirements. [Energy used in excluded facilities totaled 44.5 trillion Btu in FY 2013](#), 4.6 percent of the total 1.0 quads used by the Federal Government. [Electricity constitutes 61.0 percent of the energy used](#)

⁸Cost and consumption figures for prior years may be different from those published in last year’s annual report due to conversion to current year dollars and Federal agency updates and data revisions.

[in excluded facilities](#); 19.8 percent is accounted for by natural gas, 10.2 percent by coal, and 3.3 percent by fuel oil. Small amounts of purchased steam, liquefied petroleum gas (LPG)/propane, and energy reported as “other” account for the remaining 5.7 percent.

The energy used in excluded facilities in FY 2013 accounted for 3.6 percent of the total Federal energy bill. The Federal Government spent [\\$847.9 million](#) for this sector’s energy during FY 2013.

C. VEHICLES AND EQUIPMENT

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

In FY 2013, the Federal Government used approximately [592.9 trillion Btu](#) of energy in vehicles and equipment, 61.8 percent of the total 1.0 quads consumed. Total energy consumption in vehicles and equipment decreased 36.5 percent relative to FY 1985 and decreased 12.3 percent relative to the FY 2012 consumption of 676.0 trillion Btu. DOD consumed 539.7 trillion Btu, or 91.0 percent, of all vehicles and equipment energy used by the Federal Government.

The Federal Government spent [\\$17.1 billion](#) on vehicles and equipment energy in FY 2013, \$1.8 billion less than the FY 2012 expenditure, a 13.3 percent decrease in constant dollars. For all fuels, the [cost per million Btu increased from \\$28.04 in FY 2012 to \\$28.88 in FY 2013](#). The real unit cost of the most-used fuel, jet fuel, increased 5.5 percent from the previous year. Gasoline prices paid by the Federal Government decreased 2.5 percent from the previous year.

In FY 2013, Federal agencies reported using 2,595.2 billion Btu of alternative fuels in their fleets at a cost of \$85.2 million.⁹ Alternative fuels comprise 0.4 percent of the Federal Government’s vehicle and equipment energy consumption and 0.5 percent of costs.

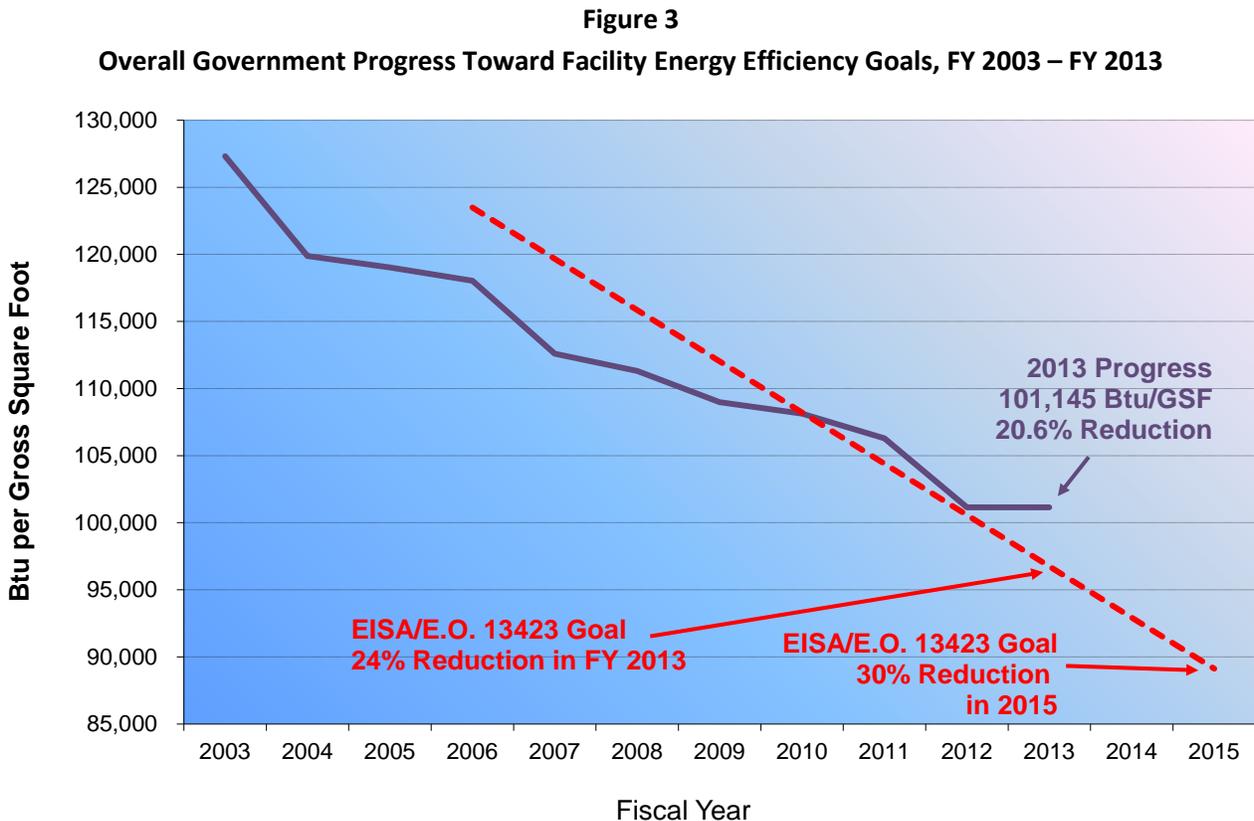
⁹ FY 2013 Federal Fleet Report, U.S. General Services Administration, <http://gsa.gov/portal/category/102859>.

II. Federal Government Performance in FY 2013

A. FACILITY ENERGY INTENSITY REDUCTION REQUIREMENT

The National Energy Conservation Policy Act (NECPA), as amended, requires Federal agencies to improve energy management in their facilities and operations.¹⁰ The requirement was most recently amended by section 431 of the Energy Independence and Security Act of 2007 (EISA) which requires each Federal agency to achieve targeted reductions of 3 percent per year in energy use per square foot, leading to a 30 percent reduction by FY 2015 compared to the FY 2003 base year.

Federal agencies reported that buildings subject to the NECPA energy reduction goals collectively [decreased energy use per gross square foot \(Btu/GSF\) by 20.6 percent in FY 2013 relative to FY 2003](#). This falls short of the 24 percent reduction requirement for FY 2013.



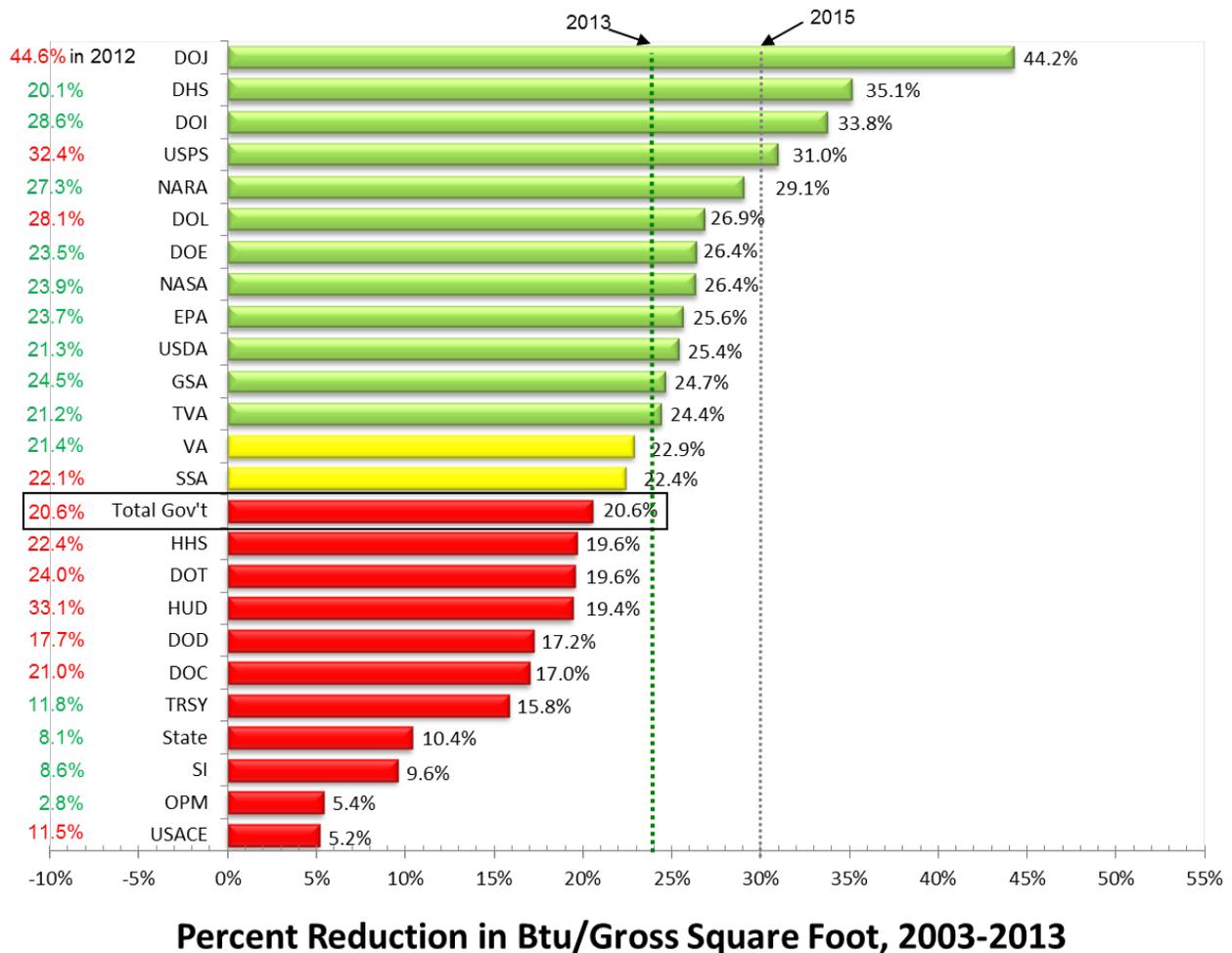
The 20.6 percent reduction in energy intensity includes the subtraction of 10.0 trillion Btu for agency-reported projects that reduce source energy use (but increase site-delivered energy). Without this credit, agencies reduced their energy intensity by 18.0 percent.

¹⁰ See 42 U.S.C. § 8253.

Although the rate of reduction in energy intensity slowed in FY 2013, with reductions similar to the FY 2012 level, several Federal agencies achieved the FY 2013 reductions despite less favorable climatic conditions with heating degree days increasing by 16 percent between FY 2012 and FY 2013.¹¹ Year-over-year changes demonstrated a 4.8 percent increase in natural gas and fuel oil consumption in agencies' goal subject buildings while electricity demand dropped by 1.9 percent.

Individual agency performance in FY 2013, compared to FY 2003, is shown below in Figure 4. Twelve out of 24 OMB Scorecard-assessed agencies that operate buildings reported reduced energy use per gross square foot in goal buildings by more than 24 percent from FY 2003.

Figure 4
Individual Agency Progress in Facility Energy Efficiency Goals, FY 2013



¹¹ U.S. Energy Information Administration Short-Term Energy Outlook: Table 9c. U.S. Regional Weather Data Regional Weather Data http://www.eia.gov/forecasts/steo/xls/STEO_m.xlsx.

B. RENEWABLE ENERGY GOAL

Under section 203 of EFACT 2005, the Secretary of Energy must 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 must come from renewable energy as defined in section 203 of the Act:

- Not less than three percent in FYs 2007 through 2009.
- Not less than five percent in FYs 2010 through 2012.
- Not less than 7.5 percent in FY 2013 and each FY thereafter. (42 U.S.C. § 15852(a)).

In calculating the amount of renewable energy used by a Federal agency for the purpose of the goal, an amount of renewable energy is doubled 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.¹²

Section 203(b) of EFACT 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.¹³

Executive Order 13423 added the following requirements to these EFACT 2005 goals:

- At least half of the statutorily required renewable energy consumed by each agency in a fiscal year must come from new renewable sources, and
- To the extent feasible, each agency should implement renewable energy generation projects on agency property for agency use.

Federal agencies reported purchasing or producing [5,077.9 gigawatt-hours of renewable electric energy in FY 2013, equivalent to 9.2 percent of the Federal Government’s FY 2013 electricity use](#). Of the total, 87.5 percent was from sources developed after January 1, 1999. In terms of total use of Federal goal-eligible renewable energy, DOD consumed 29.7 percent of all renewable energy utilized by Federal agencies, followed by GSA with 23.2 percent; DOE with 17.2 percent; VA with 8.9 percent; EPA with 2.4 percent; and NASA with 2.1 percent.

Figure 5 ranks each agency’s performance under the renewable energy goal in terms eligible renewable energy use as a percentage of their electricity use. In FY 2013, 21 agencies obtained

¹² 42 U.S.C. § 15852(c).

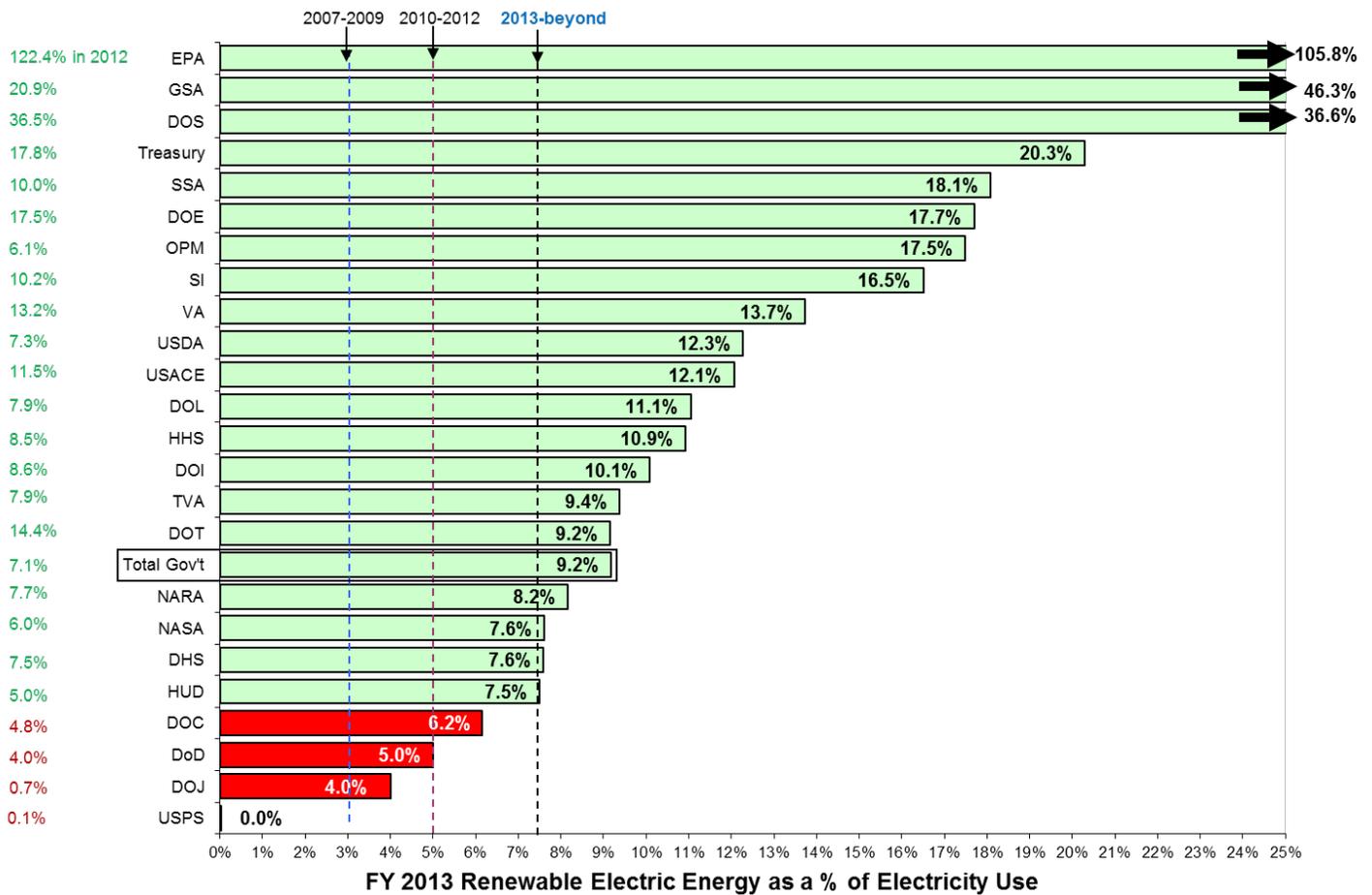
¹³ 42 U.S.C. § 15852(b)(2).

the equivalent of not less than 7.5 percent of total electricity consumption from renewable sources.

EPA’s renewable energy use of 105.8 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 and for electricity used to generate chilled water delivered to its facilities.

More information on the progress of the Federal Government in meeting the renewable energy goals of EFACT 2005 and Executive Order 13423 will be available in the report that is prepared every two years.¹⁴

**Figure 5
Individual Agency Renewable Energy Goal Performance, FY 2013**



¹⁴ Required under Section 203 of EFACT 2005 (42 U.S.C. § 15852(d)).

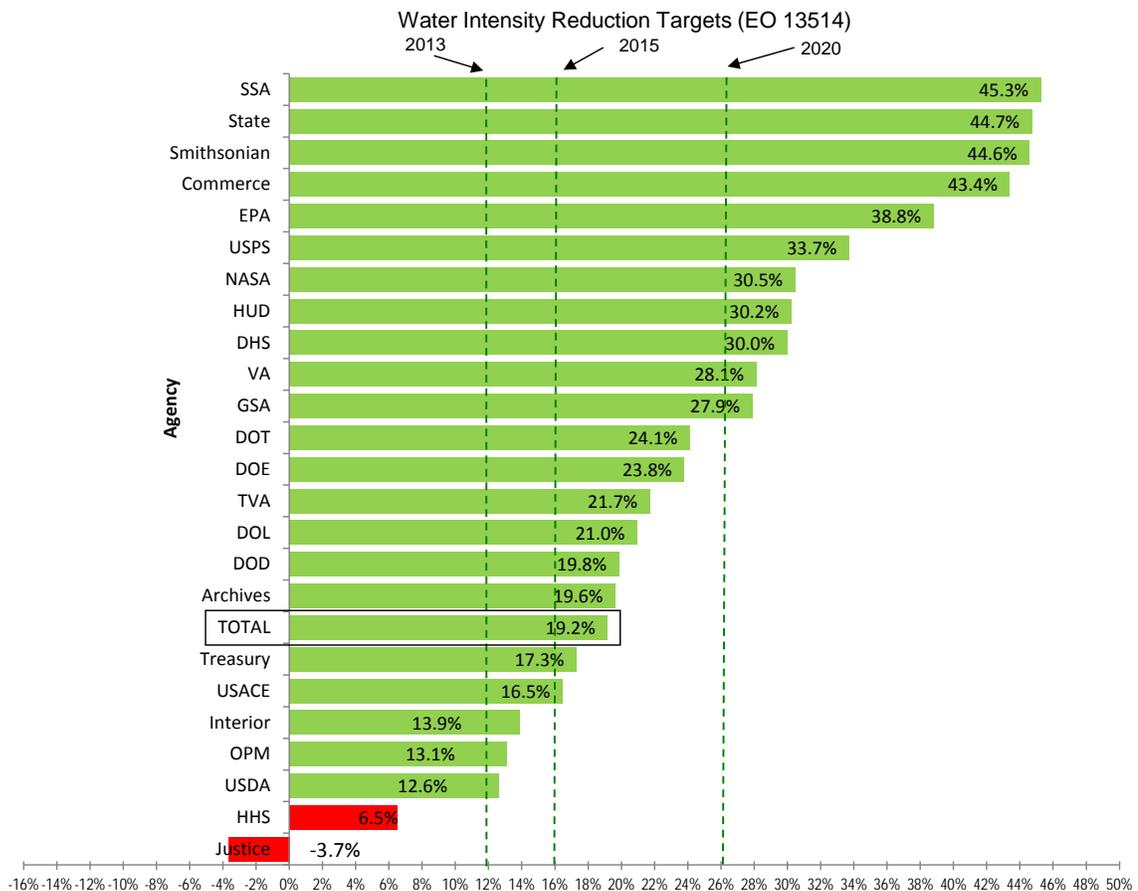
C. WATER INTENSITY REDUCTION GOAL

Section 2(c) of Executive Order 13423 established a water use reduction goal for agencies. Agencies are required to reduce water consumption intensity from the FY 2007 baseline by two percent annually through the end of FY 2015, using life-cycle cost-effective measures, for a cumulative reduction of 16 percent by the end of FY 2015. Executive Order 13514 extended this goal for potable water intensity to 26 percent by FY 2020.

As reported by the agencies, the Federal Government as a whole used [134.1 billion gallons of water in FY 2013 at a cost of \\$512.7 million, for an average price of \\$3.82 per 1,000 gallons.](#)

Agency progress toward meeting the water intensity reduction goal for FY 2013 is illustrated below in Figure 6. Overall, the Federal Government’s water intensity in FY 2013 was [43.0 gallons per gross square foot, a reduction of 19.1 percent from the 53.2 gallons per gross square foot reported in FY 2007.](#)

Figure 6
Individual Agency Water Intensity Reduction Goal Performance, FY 2013



FY 2013 Reductions in Gallons per Square Foot from FY 2007

The Department of Defense represents the largest Federal water consumer. DOD facilities covered approximately 1.9 billion square feet and utilized 91.2 billion gallons of water in FY 2013, representing 68.0 percent of the Federal Government's water consumption for the fiscal year. DOD has a higher than average intensity with a reported 47.8 gallons per gross square foot. The Department of Justice was the second largest Federal water consumer, consuming 7.6 percent of the total Federal water consumption in FY 2013 using a total of 10.2 billion gallons. The Department of Justice also reported the highest water use intensity, 139.1 gallons per gross square foot. This is due to its large percentage of facility space dedicated to custodial housing. HHS and the DOE reported the second and third highest water use intensity, with 60.2 and 54.1 gallons per gross square foot respectively. Agencies such as GSA, and SSA, which are chiefly comprised of office space, have water intensity rates lower than 12 gallons per gross square foot.

As required by Executive Order 13514, agencies began reporting Industrial, Landscaping and Agricultural (ILA) water use for the first time in 2010. In FY 2013, agencies reported using [116.7 billion gallons of non-potable ILA water, a 12.5 percent reduction from the 133.3 billion gallons consumed in FY 2010](#).

D. GREENHOUSE GAS REDUCTION

Executive Order 13514 required Federal agencies to set individual targets for reduction of combined Scope 1 and 2 GHG emissions in FY 2020 compared to FY 2008. When all agency targets are combined, the overall target for the entire Federal Government is a 28 percent reduction in FY 2020 compared to FY 2008. GHG emissions from certain types of activities are not subject to the reduction targets, including emissions from generation of electric power sold to others and from fuels used in excluded vehicles and equipment (tactical, combat support, law enforcement, emergency response, and spaceflight operations). The White House Council on Environmental Quality's (CEQ's) *Federal Greenhouse Gas Accounting and Reporting Guidance* under Executive Order 13515 is located here:

<http://www.whitehouse.gov/administration/eop/ceq/sustainability/fed-ghg>.

Scope 1 GHG emissions are direct emissions and include the following sources:

- **On-Site Fuel Combustion:** Emissions from stationary combustion of fuels for heat or the generation of electricity, steam, or hot water from sources purchased and controlled by the agency (natural gas, fuel oil, propane, coal, etc.). Includes emissions from use of boilers, furnaces, turbines, and emergency generators.
- **Non-Highway Mobility and Equipment:** Emissions from fuels used in aircraft, ships, construction equipment, fork-lifts, etc., including jet fuel, diesel, gasoline, aviation gas, propane, etc.

- **Passenger Fleet Vehicles:** Emissions from fuels used in over-the-road vehicles, including gasoline, diesel, CNG, propane, and alternative fuels.
- **Fugitive Emissions & Incinerators:** Emissions that are not physically controlled, but result from the intentional or unintentional releases of GHGs.
- **Industrial Process Emissions**

Scope 2 emissions are indirect emissions and include:

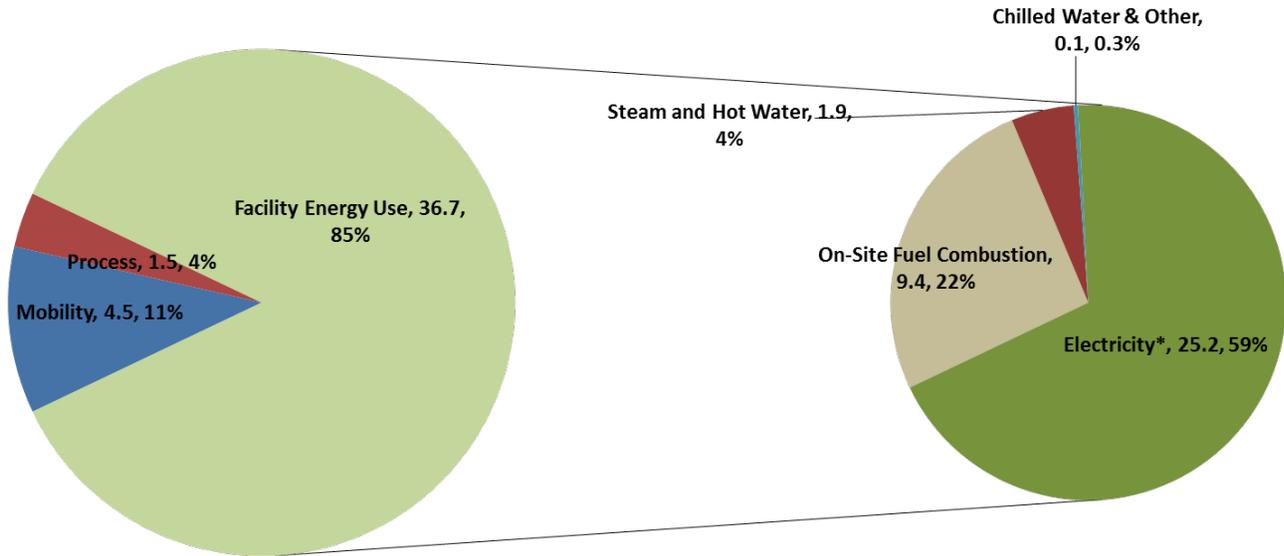
- **Purchased Electricity:** Emissions from electricity consumption as determined using the baseload subregional factors of the Emissions & Generation Resource Integrated Database (eGRID). Does not include transmission and distribution losses which are considered Scope 3.
- **Purchased Steam and Hot Water:** Emissions from fuel combustion (usually natural gas, fuel oil, or coal) required to generate and transport steam and/or hot water purchased by an agency.
- **Purchased Chilled Water:** Emissions from electricity use or fuel combustion required to generate and transport chilled water purchased by an agency.
- **Purchased Biomass and CHP Energy:**
 - For purchased biomass (electricity, fuel or landfill gas), emissions of methane and nitrous oxide resulting from the combustion of the source biomass. The biogenic CO₂ is accounted for separately.
 - For purchased electricity, steam, or hot water from a combined heat and power (CHP facility), the emissions from fuel combustion (usually natural gas, fuel oil, or coal) required to generate and transport electricity, steam and/or hot water purchased by an agency.

Overall, the Federal Government [reduced combined Scope 1 and 2 GHG emissions by 17.2 percent, from 51.6 million metric tons of carbon dioxide equivalent \(MMTCO₂e\) in FY 2008 to 42.7 MMTCO₂e in FY 2013](#). Approximately 2.3 MMTCO₂e of the 8.9 MMTCO₂e in GHG reductions came in the form of purchases of renewable energy or the attributes of renewable energy in the form of Renewable Energy Certificates (RECs).

Figure 7 illustrates the [sources of the 42.7 MMTCO₂e of Scope 1 and 2 GHG emissions](#) subject to the E.O. 13514 reduction targets. Emissions from facility energy use comprise approximately 85.8 percent of the targeted Scope 1 and 2 GHG emissions with emissions from electricity use alone 59.0 percent of the total (64.4 percent if reductions from renewable electricity use are included). Scope 1 on-site fuel combustion (natural gas, fuel oil, coal, LPG/propane, etc.) comprises approximately 22.1 percent of targeted emissions. Biomass energy emissions under

the target comprise methane and nitrous oxide only. Carbon dioxide from biomass combustion is considered biogenic (not included under the target).

Figure 7
FY 2013 Federal Government Scopes 1 & 2 GHG Emissions Covered by Reduction Target (42.7 MMTCO₂e)



*includes reductions from purchases of renewable energy attributes

III. Other Energy Management Activities

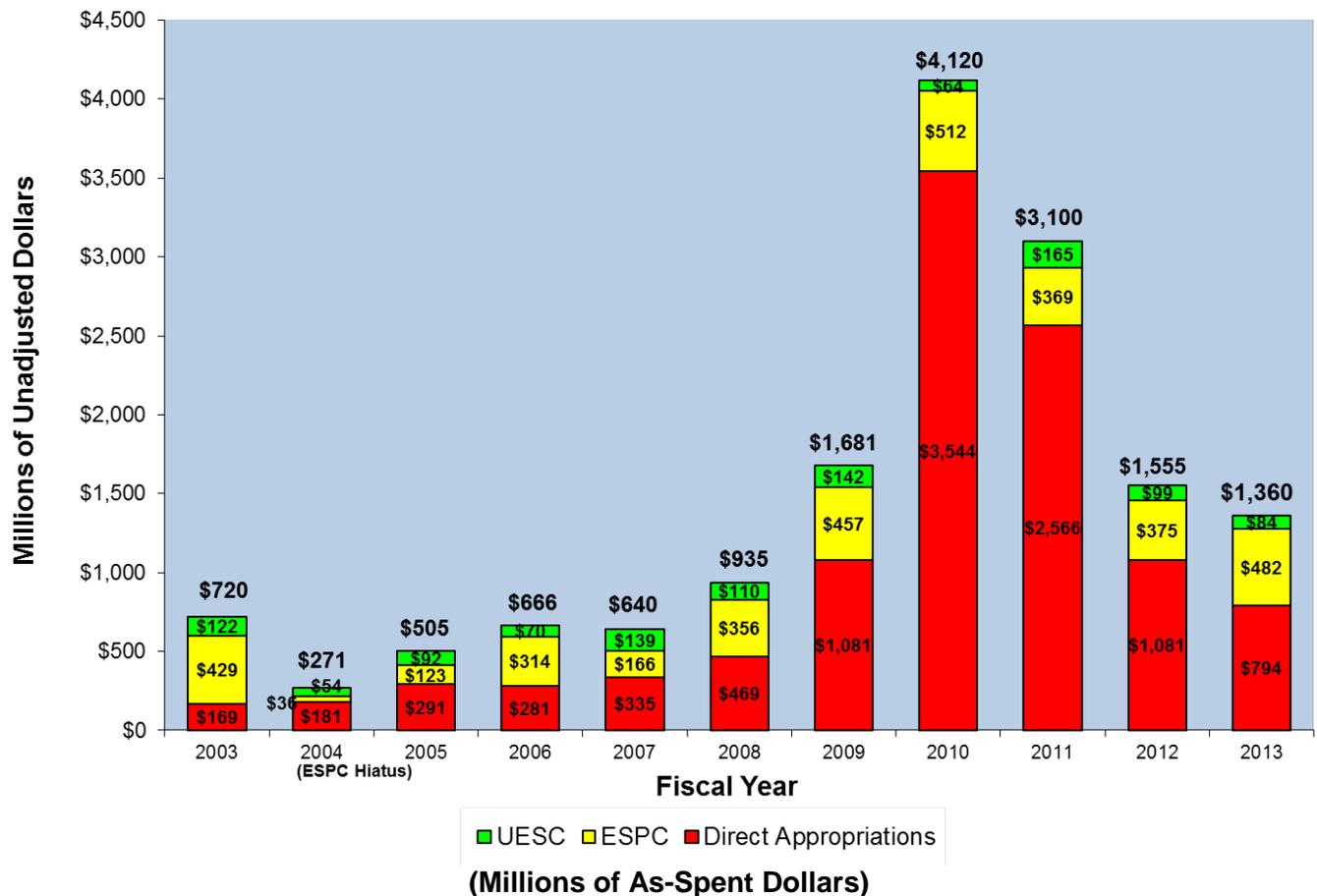
A. FACILITY EFFICIENCY INVESTMENT

During FY 2013, Federal agencies had three primary options for financing energy efficiency, water conservation, and renewable energy projects in buildings: 1) direct appropriated funding, 2) energy savings performance contracts (ESPCs), and 3) utility energy service contracts (UESCs). Known funding from the three sources totaled approximately [\\$1,360.0 million in FY 2013](#).

- Direct appropriations accounted for approximately [\\$793.8 million](#);
- ESPC contract awards by agencies resulted in approximately [\\$482.4 million](#) in estimated project investment in FY 2013; and
- Approximately [\\$83.8 million](#) in project investment came from UESCs.

As Figure 8 illustrates, since 2003 the Federal Government has invested approximately \$15.6 billion in energy efficiency, \$10.8 billion of which was direct agency expenditures, \$3.7 billion was from ESPCs, and \$1.1 billion was from UESCs.

Figure 8
Investment in Energy Efficiency and Renewable Energy, FY 2003 to FY 2013



B. MANAGEMENT OF ENERGY AND WATER EFFICIENCY IN BUILDINGS

Section 432 of EISA amended section 543 of the NECPA by adding a new subsection, *Use of Energy and Water Efficiency Measures in Federal Buildings*.¹⁵ The new subsection outlines a framework for facility energy and water project management and benchmarking, including the following requirements for Federal agencies:

- Designate “covered facilities” and assign “facility energy managers” for ensuring compliance of “covered facilities” subject to the requirements;
- Conduct “comprehensive energy and water evaluations”;
- Implement identified efficiency measures;
- Follow-up on implemented efficiency measures;
- Report data into FEMP’s web-based tracking system for covered facilities’ energy use, evaluations, projects, follow-up, and analysis;
- Benchmark metered buildings that are, or are part of, covered facilities; and
- Disclose agency progress in evaluating covered facilities, project implementation, follow-up status, and benchmarked building performance monitoring status.

Information on FEMP’s EISA Compliance Tracking System (CTS) along with the most recent Government-wide findings can be found here: <http://energy.gov/eere/femp/eisa-compliance-tracking-system-reports-and-data>.

In FY 2013, the energy used in EISA covered facilities comprised 315.5 trillion Btu or 87.8 percent of all Federal Government facility energy use. EISA requires that agencies cover, at a minimum, Federal facilities that constitute at least 75 percent of facility energy use at each agency under the requirement. (42 U.S.C. 8253(f)(2)(B)).

As of July 1, 2014, Federal agencies reported completing comprehensive evaluations of 70 percent of the Federal Government facilities covered by the requirements with 5,889 of 8,437 covered facilities evaluated within the last four years. The facility evaluations conducted by the agencies identified \$10.4 billion in potential investment in facility energy/water efficiency and conservation measures (ECMs). Approximately 82,600 potential ECMs were identified by agencies in audits conducted since 2006. Potential annual cost savings from the identified ECMs is approximately \$984 million per year.

¹⁵ 42 U.S.C. § 8253(f).

C. 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, 2012.¹⁶ The Act specified that the agencies use advanced meters or metering devices that provide data at least daily and measure the consumption of electricity at least hourly to the maximum extent practicable. The law directed the Secretary of Energy to develop guidelines for implementation.¹⁷ The “Guidance for Electric Metering in Federal Buildings” was published on February 3, 2006 and updated in December 2014 and is available at: <http://energy.gov/eere/femp/downloads/federal-building-metering-guidance-usc-8253e-metering-energy-use>.

Agencies are required to submit to DOE by December 2015 an updated 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.

Section 434(b) of EISA amended NECPA to stipulate that agencies must also meter natural gas and steam usage by October 1, 2016.

For FY 2013, agencies were required to report progress on both buildings with standard meters and buildings with advanced meters. Based on reports submitted to DOE, 19 agencies reported that 100 percent of appropriate buildings were metered for electricity use with at least standard electricity meters. The 19 agencies meeting the 100 percent target include the Departments of Agriculture, NARA, DHS, DOL, DOT, EPA, GSA, HHS, HUD, Interior, NRC, NSF, OPM, RRB, SSA, State, Treasury, USPS and VA. Seven agencies, HUD, NARA, NRC, RRB, SSA, VA, and the Department of Labor, reported that they already have advanced metering in 100 percent of their buildings.

Overall, agencies identified 96,471 buildings for which separate electricity meters are appropriate. Of these buildings, 64,914 had standard electricity meters installed and 27,947 had advanced meters installed. Accounting for instances of agencies reporting both the advanced and standard meters in a single building as well as reporting meters in buildings not considered appropriate, overall compliance with the electric metering goal was 96.3 percent.

In total, agencies reported natural gas meters in 17,538 buildings out of 18,221 appropriate buildings or 96.3 percent. For purchased steam, agencies reported 68.7 percent of appropriate buildings as metered (2,295 out of 3,339 buildings).

¹⁶ 42 U.S.C. § 8253(e).

¹⁷ 42 U.S.C. § 8253(e)(2).

D. FEDERAL BUILDING PERFORMANCE STANDARDS

Section 109 of EPACT 2005, “Federal Building Performance Standards,” amended the Energy Conservation and Production Act and directed the Secretary of Energy, to issue a rule that establishes Federal building energy efficiency performance standards.¹⁸ The standards require that, if life-cycle cost-effective, all new Federal buildings must 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.¹⁹

Eight agencies did not achieve full compliance with the mandate, including six agencies below 90 percent compliance. Overall, agencies reported over 91.1 percent of buildings designed since 2007 are 30 percent more efficient than the relevant code. Agencies also have an opportunity to revisit designs to bring them into compliance. Some agencies are also assessing performance of designs underway to determine compliance and will report these findings in future reports.

¹⁸ 42 U.S.C. § 6834(a).

¹⁹ 42 U.S.C. § 6834(a)(3)(A)-(B).