

September 2008

# FEDERAL ENERGY MANAGEMENT

## Addressing Challenges through Better Plans and Clarifying the Greenhouse Gas Emission Measure Will Help Meet Long-term Goals for Buildings





Highlights of [GAO-08-977](#), a report to congressional requesters

## Why GAO Did This Study

The federal government is the nation's single largest energy consumer, spending approximately \$17 billion in fiscal year 2007. A number of statutes and executive orders have established and revised goals directing agencies to reduce energy consumption and greenhouse gas emissions—such as carbon dioxide, which results from combustion of fossil fuels and natural processes, among other things—and increase renewable energy use. GAO was asked to determine the extent to which (1) federal agencies met energy efficiency, greenhouse gas emission, and renewable energy goals in fiscal year 2007; (2) federal agencies have made progress in each of these areas in the recent past; and (3) six selected agencies are poised to meet energy goals into the future. For this review, GAO, among other things, conducted site visits for six agencies and reviewed the Department of Energy's (DOE) annual reports to Congress on federal energy management.

## What GAO Recommends

GAO recommends that DOE (1) reevaluate the current measure for greenhouse gas emissions and establish one that more accurately reflects agencies' performance in reducing these emissions, and (2) finalize and issue guidance for agencies' use in developing long-term plans that contains key elements for meeting current and future energy goals. GSA, NASA, and USPS concurred; VA neither agreed nor disagreed; and the other agencies did not comment.

To view the full product, including the scope and methodology, click on [GAO-08-977](#). For more information, contact J Mark Gaffigan at (202) 512-3841 or [gaffiganm@gao.gov](mailto:gaffiganm@gao.gov), or Terrell G. Dorn at (202) 512-2834 or [dort@gao.gov](mailto:dort@gao.gov).

## FEDERAL ENERGY MANAGEMENT

### Addressing Challenges through Better Plans and Clarifying the Greenhouse Gas Emissions Measure Will Help Meet Long-term Goals for Buildings

#### What GAO Found

Based on draft DOE data, most of the 22 agencies reporting to DOE for fiscal year 2007 met energy goals for energy efficiency, greenhouse gas emissions, and renewable energy. Specifically, all but one agency met the energy efficiency goal. Three of these agencies would not have met the goal through reductions in energy intensity—the amount of energy consumed per gross square foot—alone; they also used credits for the purchase of renewable energy or source energy to help meet the goal. Because the greenhouse gas emission goal is tied to the energy efficiency goal, the same number of agencies met the greenhouse gas emission goal, while 17 of the 22 agencies met the renewable energy goal.

Determining the extent to which agencies have made progress over time toward the goals is problematic due to key changes in the goals—as specified in statute and executive order—and how progress is measured. For example, the energy efficiency goal changed the types of buildings included and the baseline year against which progress was measured. The greenhouse gas emissions goal also changed, from a measure of greenhouse gas emissions to a measure of energy intensity; this change makes it problematic to compare performance before and after the change. Moreover, GAO found that a goal based on energy intensity is not a good proxy for emissions because a reduction in energy intensity does not always result in lower greenhouse gas emissions. Although there is no consensus on a best measure at present, alternative measures are in use that may better track agencies' greenhouse gas emissions than the current measure based on energy intensity.

Agencies' prospects for meeting energy goals into the future depend on overcoming four key challenges. First, the six agencies GAO reviewed—the departments of Defense (DOD), Energy (DOE), and Veterans Affairs (VA); the General Services Administration (GSA); the National Aeronautics and Space Administration (NASA); and the U.S. Postal Service (USPS)—had long-term plans for achieving energy goals that lacked key elements, such as plans that outline agencies' strategies that are linked to goals and provide a framework for aligning activities, processes, and resources to attain the goals of the plan. Second, investment in energy projects competes with other budget priorities, causing agency officials to increasingly rely on alternative financing mechanisms—contracts with private companies that pay for energy improvements. However, as past GAO work has shown, agencies entering into these contracts could not always verify whether money saved from using less energy was greater than projected costs and may yield lower savings than if timely, full, and upfront appropriations had been used. Third, agencies face challenges in obtaining reliable energy consumption data but are taking steps to collect more reliable data. Finally, facilities may lack staff dedicated to energy management and may find it difficult to retain staff with sufficient energy expertise; however, agency officials are participating in training and implementing initiatives for energy management personnel.

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## Abbreviations

ASE	Alliance to Save Energy
Btu	British thermal unit
DOD	Department of Defense
DOE	Department of Energy
EISA 2007	Energy Independence and Security Act of 2007
E.O. 13123	Executive Order 13123
E.O. 13423	Executive Order 13423
EPA	Environmental Protection Agency
EPAct 2005	Energy Policy Act of 2005
ESPC	energy savings performance contract
GSA	General Services Administration
NASA	National Aeronautics and Space Administration
OFEE	Office of the Federal Environmental Executive
OMB	Office of Management and Budget
REC	renewable energy certificate
UESC	utility energy savings contract
USPS	U.S. Postal Service
VA	Department of Veterans Affairs

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United States Government Accountability Office  
Washington, DC 20548

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September 30, 2008

The Honorable Joseph I. Lieberman  
Chairman  
Committee on Homeland Security and  
Governmental Affairs  
United States Senate

The Honorable Mark Pryor  
United States Senate

The Honorable John Warner  
United States Senate

The federal government is the nation's single largest energy consumer, spending approximately \$17 billion in fiscal year 2007 on energy for buildings and vehicles, according to the most recent available data. This total represents almost 1 percent of all federal expenditures for 2007. And these costs have been rising in recent years. According to the Department of Energy (DOE), from 2003 to 2007, the cost per unit of energy increased by 59 percent in constant 2007 dollars. In light of these energy price increases, congressional interest in making the federal government more energy efficient has grown as well.

Since the 1970s, federal statutes and executive orders have set and revised a number of goals for changing the way federal agencies use or obtain energy. Most recently, the Energy Policy Act of 2005 (EPAct 2005) and two executive orders set energy goals for federal agencies. As figure 1 shows, the goals address such areas as improving energy efficiency, reducing greenhouse gas emissions,<sup>1</sup> and increasing the use of renewable energy sources.<sup>2</sup> For greenhouse gas emissions, Executive Order 13423 (E.O. 13423) lays out a direction linked to the energy efficiency goal rather than

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<sup>1</sup>Carbon dioxide is overwhelmingly the largest component of greenhouse gas emissions from energy use. Most carbon dioxide emissions in the United States result from the combustion of fossil fuels, the source of most of the electricity consumed in the United States.

<sup>2</sup>Renewable energy is produced from sources that cannot be depleted; such energy includes solar, wind, biomass, and geothermal.

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a numerical goal specific to emissions.<sup>3</sup> These goals apply to a range of buildings, from standard office buildings to more energy-intensive buildings, such as industrial or laboratory buildings.<sup>4</sup> In January 2007, E.O. 13423 revoked Executive Order 13123 (E.O. 13123), which had guided agencies in energy conservation efforts since June 1999 and added energy goals to those in EAct 2005.<sup>5,6</sup> In addition, the statute and E.O. 13423 set goals for agencies to reduce petroleum consumption and increase the use of alternative fuels in vehicle fleets. Some types of federal buildings are excluded from these goals, such as buildings for which national security is overwhelmingly the primary function and prevents the implementation of energy efficiency measures or prohibits reporting of energy data because it would pose a demonstrated security risk.

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<sup>3</sup>For ease of presentation, we refer to the greenhouse gas emission direction as an energy goal.

<sup>4</sup>Using DOE-determined criteria, certain sites and equipment may be exempted or excluded from having to meet the energy efficiency goals.

<sup>5</sup>Congress passed the Energy Independence and Security Act of 2007 (Pub. L. No. 110-140) in December 2007, which expanded the energy efficiency goal of EAct 2005 and ultimately matched the goal of E.O. 13423 through fiscal year 2015. However, it was silent on specific greenhouse gas emission and renewable energy goals for federal agencies. We did not include the new law in the scope of our study because the law was passed in fiscal year 2008, which is beyond the time frame covered in our report.

<sup>6</sup>According to the U.S. Postal Service, while the agency is subject to the energy efficiency goal as laid out in EAct 2005, it is neither subject to the act's renewable energy goal, nor is it subject to the energy goals laid out in the executive orders. However, it tries to comply with the spirit and intent of the energy goals.

**Figure 1: Changes to Energy Efficiency, Greenhouse Gas Emissions, and Renewable Energy Goals, Fiscal Years 1999–2007**

Statute or executive order	Building categories	Energy efficiency	Greenhouse gas emissions	Renewable energy
				
E.O. 13123 (June 3, 1999)	Standard buildings	Each agency is to reduce energy consumption per gross square foot of its facilities by 30% by 2005 and 35% by 2010, compared to 1985	Each agency is to reduce greenhouse gas emissions attributed to building energy use by 30% by 2010 compared with such emissions levels in 1990	By 2005, 2.5% of building electricity consumption shall come from renewable energy projects (electric or thermal/gas) built after 1990 <sup>a</sup>
	Industrial/laboratory buildings	Each agency is to reduce energy consumption per square foot, per unit of production, or per other unit as applicable by 20% by 2005 and 25% by 2010, relative to 1990	Same as for standard buildings	Same as for standard buildings
EPAAct 2005 (August 8, 2005)	All buildings	Reduce energy consumption per gross square foot by 2% annually in fiscal years 2006 through 2015, relative to a 2003 baseline		Of the total amount of electric energy an agency consumes, the following amounts are to be from renewable electric energy: not less than: 3% in FY 2007-2009, 5% in FY 2010-2012, 7.5% in FY 2013 and beyond (no new source requirement – i.e., projects built after a certain date)
E.O. 13423 (January 24, 2007)	All buildings	Reduce energy intensity by (i) 3% annually through the end of FY 2015 or (ii) 30% by the end of FY 2015, relative to the baseline of the agency's energy use in 2003	Reduce greenhouse gas emissions through a reduction of energy intensity of (i) 3% annually through the end of FY 2015 or (ii) 30% by the end of FY 2015, relative to the agency's energy use in 2003	At least half of the renewable energy required in EPAAct 2005 consumed by an agency in a fiscal year should come from new renewable resources (those placed in service after January 1, 1999)

Sources: GAO analysis of EPAAct 2005 and EOs 13123 and 13423; Art Explosion (clip art).

Note: Buildings meeting certain criteria—such as those with a national security function—may be excluded from meeting the energy goals.

<sup>a</sup>Section 503 of E.O. 13123 directed the Secretary of Energy, in collaboration with the heads of other agencies, to develop goals for the amount of energy generated at federal facilities from renewable energy technologies. In July 2000, the Secretary approved the goal specifying that 2.5 percent of building electricity consumption shall come from renewable energy projects built after 1990.



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As figure 1 shows, EAct 2005 changed the energy efficiency goal in E.O. 13123. Further, the most recent executive order, E.O. 13423, increased the reduction in energy intensity called for in EAct 2005. Energy intensity is the amount of energy consumed—measured in British thermal units (Btu)—per gross square foot. The energy goals in place for the agencies in fiscal year 2007 are the following:

- *Energy efficiency.* Reduce energy intensity by 6 percent, from a 2003 baseline. EAct 2005 required a 2 percent annual reduction in energy intensity starting in 2006, which would have resulted in a total of 4 percent for 2007. However, the new executive order was implemented mid-fiscal year 2007, and the implementation instructions for the new order directed agencies to reduce energy intensity by 6 percent for fiscal year 2007, from a 2003 baseline. After 2007, E.O. 13423 directs agencies to reduce energy intensity by 3 percent annually, or a total of 30 percent by the end of fiscal year 2015, relative to a 2003 baseline. Agencies could count two types of credits toward their energy efficiency goal in fiscal year 2007: credits for purchasing renewable energy and source energy credits. To calculate credits for purchasing renewable energy, DOE subtracts a purchase from the amount of energy the agency consumes in measuring its progress toward the goal.<sup>7</sup> This credit will be phased out completely by fiscal year 2012. Source energy credits take into account the use of site energy—energy used only at a particular site—and source energy—the energy consumed in producing and delivering energy to the site. For example, an agency can obtain source credits if it generates electricity on-site using natural gas and recovers the heat used to generate the electricity. While the agency may use more site energy, it reduces its electricity purchases and the use of associated fuels at the power plant, thereby decreasing total energy use. According to DOE, these credits are expected to continue as a necessary adjustment for the site-delivered Btu-per-gross-square-foot performance measure.
- *Greenhouse gas emissions.* Reduce greenhouse gas emissions by reducing energy intensity by 6 percent by 2007, from a 2003 baseline. After 2007, agencies are to reduce greenhouse gas emissions by reducing energy intensity by 3 percent annually, or a total of 30 percent by the end of fiscal year 2015, relative to a 2003 baseline.

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<sup>7</sup>Small on-site, renewable energy generation projects that do not incur fuel costs, are unmetered, and are located on the customer side of a site's energy meter energy conservation project are not included in the total Btu-per-gross-square-foot calculations used for energy efficiency goals.

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- *Renewable energy.* Of the total amount of electricity consumed, at least 3 percent must be from a renewable energy source, with at least half of that amount from a renewable energy source put into service after January 1, 1999. This goal is in place through 2009. After 2009, the percentage of electricity from a renewable energy source increases incrementally, but at least half of the amount must still be from renewable energy sources put into service after January 1, 1999.<sup>8</sup> Under EPLA 2005, agencies also get a 100 percent bonus for renewable electric energy generated on federal or Indian land. Under E.O. 13423, this energy must be defined as “new” to qualify for the bonus.

DOE, the Office of the Federal Environmental Executive (OFEE), and the Office of Management and Budget (OMB) play a role in ensuring that agencies comply with the goals. DOE is responsible primarily for coordinating the implementation of the energy efficiency and renewable energy goals for agencies set forth in EPLA 2005, while OFEE is responsible primarily for overseeing the implementation of E.O. 13423. In practice, OFEE has delegated much of its responsibility for achieving federal energy goals to DOE. OMB is responsible for, among other things, issuing semiannual scorecards that track agencies’ energy performance for a number of indicators.

DOE develops and issues guidance on how to meet the energy goals. It also chairs the Interagency Energy Management Task Force, a group of agency headquarters-level energy managers who, among other things, address energy issues affecting federal buildings and operations and comment on guidance. DOE also reports annually to Congress on agencies’ energy use and progress toward meeting energy goals. Not all agencies report every year, and the agencies reporting may vary from year to year; however, the majority of federal agencies report each year. In some cases, when control of a building is delegated from the General Services Administration (GSA) to an agency, the agency will then be required to report to DOE, which may influence the number of agencies included in the annual report.

To achieve the energy goals, agencies may take a range of actions, from switching to more energy-efficient lighting and encouraging staff to conserve energy, to ensuring that all new building construction meets

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<sup>8</sup>Our work focused on the energy components of these goals, not on cost components. Although agencies are directed to achieve these goals with cost-effective or economically sound measures, cost savings is not the objective of these goals.

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higher energy efficiency standards. Agencies pay for these improvements in several ways; for example, they may use upfront funding to pay for the improvements outright or they may rely on alternative financing mechanisms, such as contracts with private companies that pay for energy improvements to begin with and then receive compensation from the agencies over time from the monetary savings they realize from these projects.

In this context, you asked us to determine the extent to which (1) federal agencies met energy efficiency, greenhouse gas emission, and renewable energy goals in fiscal year 2007; (2) federal agencies have made progress in each of these areas in the recent past; and (3) selected agencies are poised to meet energy goals into the future. We plan to report in fall 2008 on energy efforts related to the federal government's vehicle fleets.

To determine the extent to which agencies met energy efficiency, greenhouse gas, and renewable energy goals, we analyzed data on agencies' performance, as reported in DOE's annual reports to Congress for fiscal year 2005, and draft data from fiscal years 2006 and 2007. We determined these data to be sufficiently reliable for our purpose, which was to convey what the agencies reported to DOE about the status of meeting the energy goals. To assess the agencies' progress in each of these areas in recent years, we reviewed energy efficiency, greenhouse gas, and renewable energy goals in current and previous statutes and executive orders. We also met with officials from DOE, OFEE, and OMB to gain their perspective on the goals. To determine the extent to which the agencies are poised to meet future energy goals, we selected six agencies on the basis of several factors, such as the agencies' combined energy consumption as a percentage of the federal government's consumption (nearly 94 percent in fiscal year 2005). Because these six agencies accounted for nearly 94 percent of the energy consumed in standard buildings in fiscal year 2005, our findings for these agencies may have great implications for the federal government as a whole. The selected agencies are the Departments of Defense (DOD)—Air Force, Army, and the Department of Navy—Energy, and Veterans Affairs (VA); GSA; the National Aeronautics and Space Administration (NASA); and the U.S. Postal Service (USPS). We obtained documentation and met with headquarters officials from these six agencies. We visited a minimum of two sites per agency to determine their efforts toward meeting energy goals at the local level. We also met with officials from the Alliance to Save Energy (ASE), a nonprofit organization recognized for its work on energy issues. Appendix I contains a more detailed discussion of our scope and methodology. We conducted this performance audit from May 2007

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through September 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Results in Brief

Most of the 22 agencies reporting to DOE for fiscal year 2007 met their energy-related goals, according to draft data supplied by the agencies. All but 1 agency met the energy efficiency goal of a 6 percent reduction in energy intensity from a 2003 baseline. Because the greenhouse gas emission direction is tied to the energy efficiency goal, all but 1 agency also met the greenhouse gas emissions goal of a 6 percent reduction in energy intensity from a 2003 baseline. Three agencies used renewable energy purchase or source energy credits to meet the goals and would not have met the goals through reductions in energy intensity alone. Seventeen of the 22 agencies met the renewable energy goal of having 3 percent of their electricity consumption from renewable resources, with at least half of this amount from renewable sources placed into service after January 1, 1999.

Assessing the extent to which agencies have made progress over time toward the goals of increasing energy efficiency, reducing greenhouse gas emissions, or increasing the use of renewable energy is problematic due to key changes in the energy goals and how the goals are measured—as specified in statute and executive order. For example, before 2006, buildings subject to the energy efficiency goal were divided into two categories—one for standard buildings measured against a 1985 baseline and one for industrial and laboratory buildings measured against a 1990 baseline—but the goal for 2006 onward is based only on one building category measured against a 2003 baseline. As a result, comparing agency performance in meeting the goal before and after 2006 is problematic and does not meaningfully describe energy efficiency progress toward the goal over time. In the case of greenhouse gas emissions, measurement is even more complex. The 2007 executive order not only changed the baseline year but also fundamentally changed what is being measured. Before 2007, the greenhouse gas emissions goal, set in 1999 by executive order, was to reduce the amount of emissions, which is significantly different from the energy-intensity-based goal for 2007 onward. In fact, the goal the administration established in the executive order may not accurately reflect progress toward the goal of reducing greenhouse gas emissions. That is, energy intensity is not always a good proxy for emissions

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depending on, among other things, the energy sources used. For example, if an agency's square footage and energy consumption remain constant while the agency switches to sources with greater greenhouse gas emissions, its energy intensity remains constant while the greenhouse gas emissions increase. In fact, we found instances in which agencies' energy intensity decreased while their greenhouse gas emissions increased. While an energy-intensity-based goal, such as the current goal under the 2007 executive order, does not always indicate progress toward the goal of reducing greenhouse gas emissions, there is no consensus on a best measure at present; however, there are alternative measures that may better track agencies' greenhouse gas emissions than the current measure based on energy intensity.

The prospects for meeting energy goals into the future for the six agencies we examined depend largely on addressing four key challenges: (1) lack of key elements in long-term plans that would help provide agency direction, (2) budget constraints for energy projects, (3) measurement and data reliability issues, and (4) lack of expertise and dedicated energy management staff. However, agencies are planning to meet energy goals by undertaking several activities to address these four challenges.

- *Long-term plans lack key elements.* Long-term plans can help clarify organizational priorities and unify agency staff in the pursuit of shared goals. As previous GAO work has shown, such plans should, among other things, outline agency strategies that are linked to goals and provide a framework for aligning agency activities, processes, and resources to attain the goals of the plan; identify the resources needed; and provide for reliable performance data needed to set goals, evaluate results, and improve performance.<sup>9</sup> The long-term plans for the six agencies we reviewed lack many of these key elements. Furthermore, four of the six agencies have not updated their plans to reflect the goals set out by E.O. 13423. DOE has drafted guidance for agencies on developing long-term plans that addresses most of the key elements we identified. This guidance will be published in final form upon completion of DOE internal review and reconciliation with new planning requirements in the Energy Independence and Security Act of 2007 (EISA 2007). In the absence of long-term plans, agency officials reported using several tools to meet energy goals, including short-term plans for energy improvements, as well as energy audits to identify and plan future energy projects. However,

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<sup>9</sup>GAO, *Agencies' Strategic Plans Under GPR: Key Questions to Facilitate Congressional Review*, GAO/GGD-10.1.16 (Washington, D.C.: May 1997).

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these tools do not focus on efforts to meet the energy goals through fiscal year 2015 and may not ensure that agencies will meet these goals.

- *Constrained budgets limit energy projects.* According to agency officials, meeting long-term energy goals will require major initial capital investment, but such investments must compete with other budget priorities. To overcome budget constraints, and, partly in response to administration guidance, officials are increasingly turning to alternative financing mechanisms that primarily rely on third parties to fund projects, with the promise that the agency will repay the third parties from energy savings. This approach offers benefits and presents challenges. For example, according to DOD officials, the department needs these mechanisms to achieve long-term energy goals, but these mechanisms can take a long time to implement and require contracting and oversight expertise not always available on-site. In addition, as previous GAO work has shown, agencies entering into these contracts could not always verify whether money saved from using less energy was greater than projected costs and may yield lower savings than if timely, full, and upfront appropriations had been used.<sup>10</sup> Some agencies are undertaking initiatives, such as centralizing the contracting process for energy projects, to overcome challenges associated with alternative financing.
- *Measurement and data reliability issues.* Reliable data are essential to making decisions. Currently, however, some agencies estimate energy use from monthly bills, handwritten ledgers, or other sources that may not be reliable. To address this challenge, agencies have and are pursuing some mechanisms to improve data reliability. For example, all of the six agencies we met with plan to install advanced electrical meters on buildings by 2012, as required by EPC Act 2005.
- *Some sites lack expertise and dedicated energy management staff.* Complex energy projects may require high levels of expertise and dedicated energy management staff. However, according to officials at several of the sites we visited, they do not have a full-time energy manager and lack staff with expertise in negotiating and overseeing alternative financing mechanisms, both of which hinder their efforts to meet energy goals. In addition, several sites have had difficulty retaining qualified and experienced personnel to manage energy efficiency projects. To make up for this loss of expertise, agency officials reported taking steps such as

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<sup>10</sup>GAO, *Energy Savings: Performance Contracts Offer Benefits, but Vigilance Is Needed to Protect Government Interests*, [GAO-05-340](#) (Washington, D.C.: June 22, 2005).

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having staff attend training courses to learn about a variety of energy topics, including alternative financing contracts.

Because the change to an energy-intensity-based metric does not always accurately reflect greenhouse gas emissions, we are recommending that the Secretary of Energy, in conjunction with the Federal Environmental Executive and the Director of the Office of Management and Budget, re-evaluate the current measure for greenhouse gas emissions and establish one that more accurately reflects agencies' performance in reducing these emissions. We also are recommending that the Secretary of Energy finalize and issue guidance for agencies' use in developing long-term plans that contains key elements for meeting current and future energy goals.

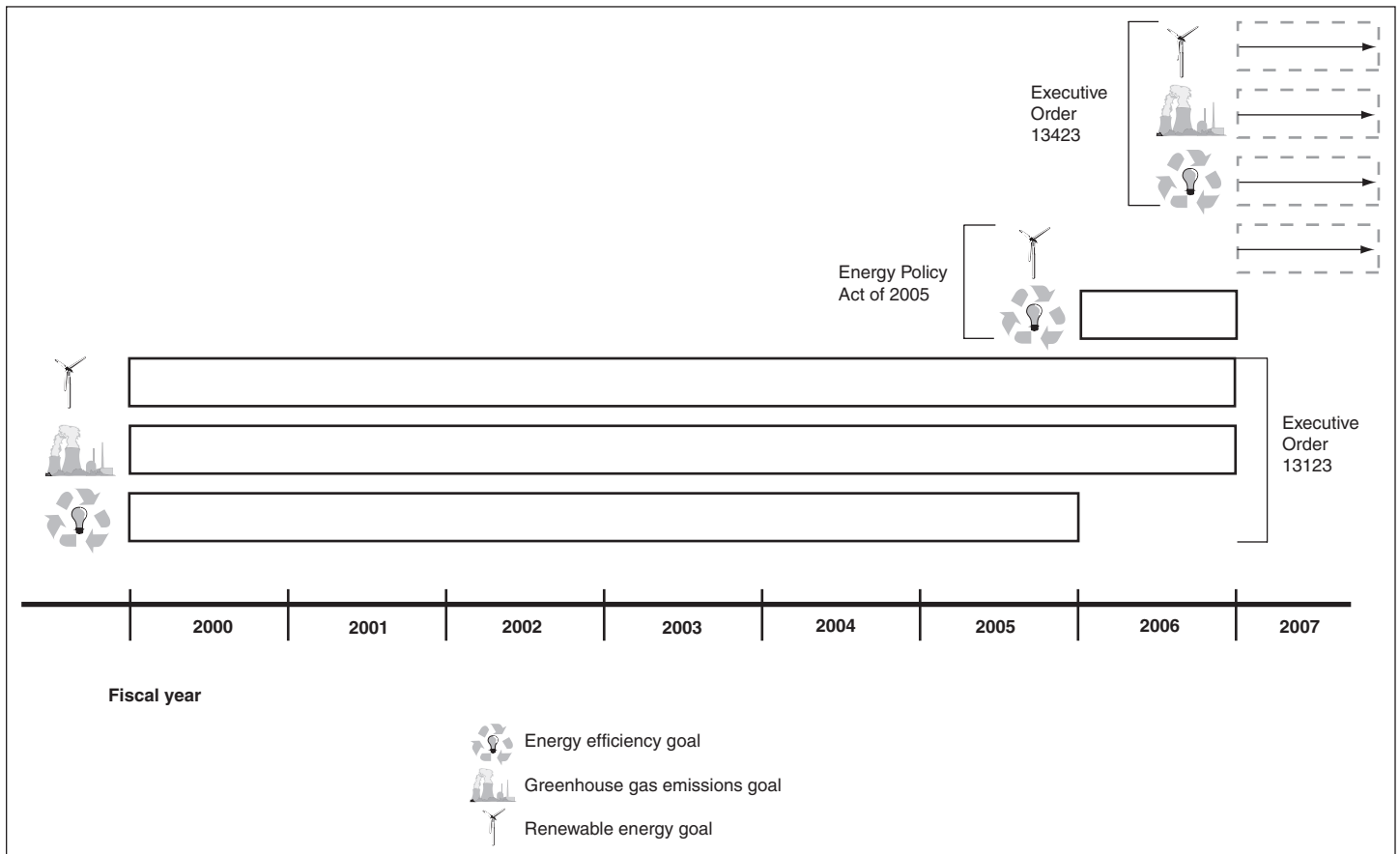
In commenting on a draft of this report, NASA and USPS generally agreed with our findings, conclusions, and recommendations and provided written comments included as appendixes II and III, respectively. GSA responded by e-mail on September 8, 2008, stating that it concurred with our report. VA neither agreed nor disagreed with our report and provided written comments included as appendix IV. The Council on Environmental Quality, DOD, DOE, and OMB did not provide any comments on our draft. For those agencies who submitted technical and clarifying comments, we incorporated those as appropriate.

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## Background

From fiscal year 2000 to fiscal year 2007, agencies were to meet the energy goals established by two executive orders and a statute as shown in figure 2.

**Figure 2: Timeline of Statute and Executive Orders with Energy Goals, Fiscal Years 2000–2007**



Sources: GAO analysis of EPAct 2005 and EOs 13123 and 13423 addressing federal energy conservation and uses; Art Explosion (clip art).

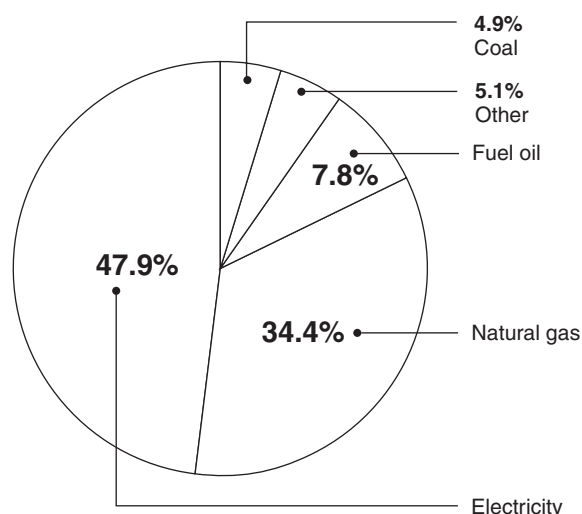
Note: The figure displays the energy goals that the agencies were to meet for a particular fiscal year. The dotted lines represent goals that are currently still in effect.

Using energy data that agencies submit, DOE reports to Congress on agencies' performance toward meeting these energy goals. According to DOE, for fiscal year 2007, the buildings subject to these energy goals consumed approximately one-third of the energy consumed by the federal



government as a whole.<sup>11</sup> Federal buildings obtain this energy from a number of different energy types, as shown in figure 3.

**Figure 3: Energy Consumed in Federal Buildings by Energy Type, Fiscal Year 2007**



Source: DOE draft data.

Notes: This information is for federal buildings subject to the energy goals in EAct 2005 and E.O. 13423 and does not factor in renewable or source energy credits agencies received.

According to 2007 national data from DOE's Energy Information Administration, electricity generation consists of coal (49 percent), natural gas (21 percent), nuclear electric power (19 percent), hydroelectric power (6 percent), and other (5 percent).

Carbon dioxide and certain other gases trap some of the sun's heat in the earth's atmosphere and prevent it from returning to space. The trapped heat warms the earth's climate, much like the process that occurs in a greenhouse. Hence, the gases that cause this effect are often referred to as greenhouse gases. Fuel types vary in the amount of greenhouse gases that they emit. For example, the burning of coal and oil emits greater quantities of greenhouse gases during energy use than other fossil fuels, such as natural gas. Renewable energy is produced from sources that cannot be

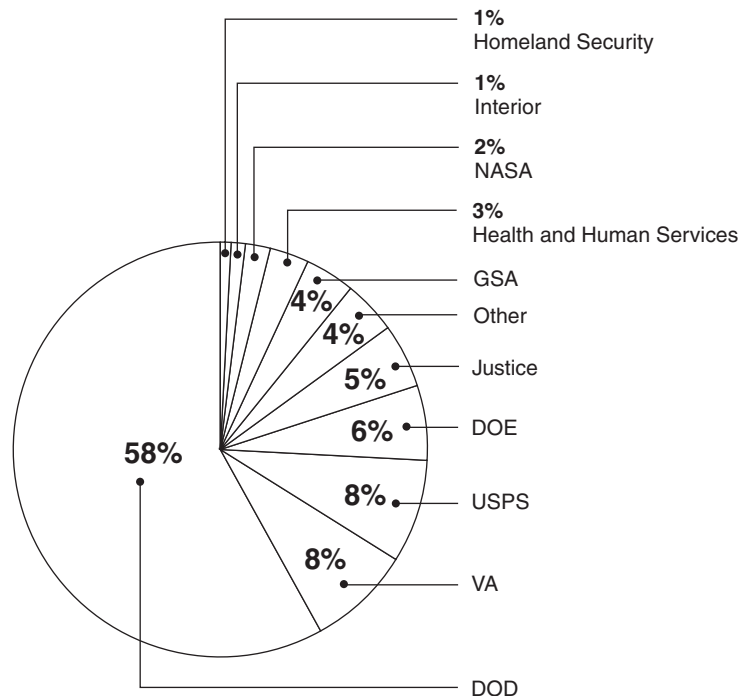
<sup>11</sup>Vehicles/equipment and sites not subject to the statute and executive orders account for approximately 64 percent and 4 percent, respectively, of the energy used in fiscal year 2007.

depleted and, unlike fossil fuels, most renewable sources do not directly emit greenhouse gases.

## DOE Reports That Most Federal Agencies Met Fiscal Year 2007 Energy Goals

According to draft data agencies provide to DOE, most of the 22 federal agencies reporting in fiscal year 2007 met the energy efficiency, greenhouse gas emission, and renewable energy goals. Some agencies used credits to meet the goals and would not have met the goals through reductions in energy intensity alone. Figure 4 shows the energy consumed, measured at the site where it is consumed rather than the source of the energy, in buildings that are subject to the energy goals, for 10 agencies with the highest energy consumption, in addition to the other 12 agencies reporting to DOE in fiscal year 2007. The other 12 agencies consumed a combined total of only about 4 percent of total site-delivered energy.

**Figure 4: Site Energy Consumed in Buildings Not Excluded from Energy Goals, Fiscal Year 2007**

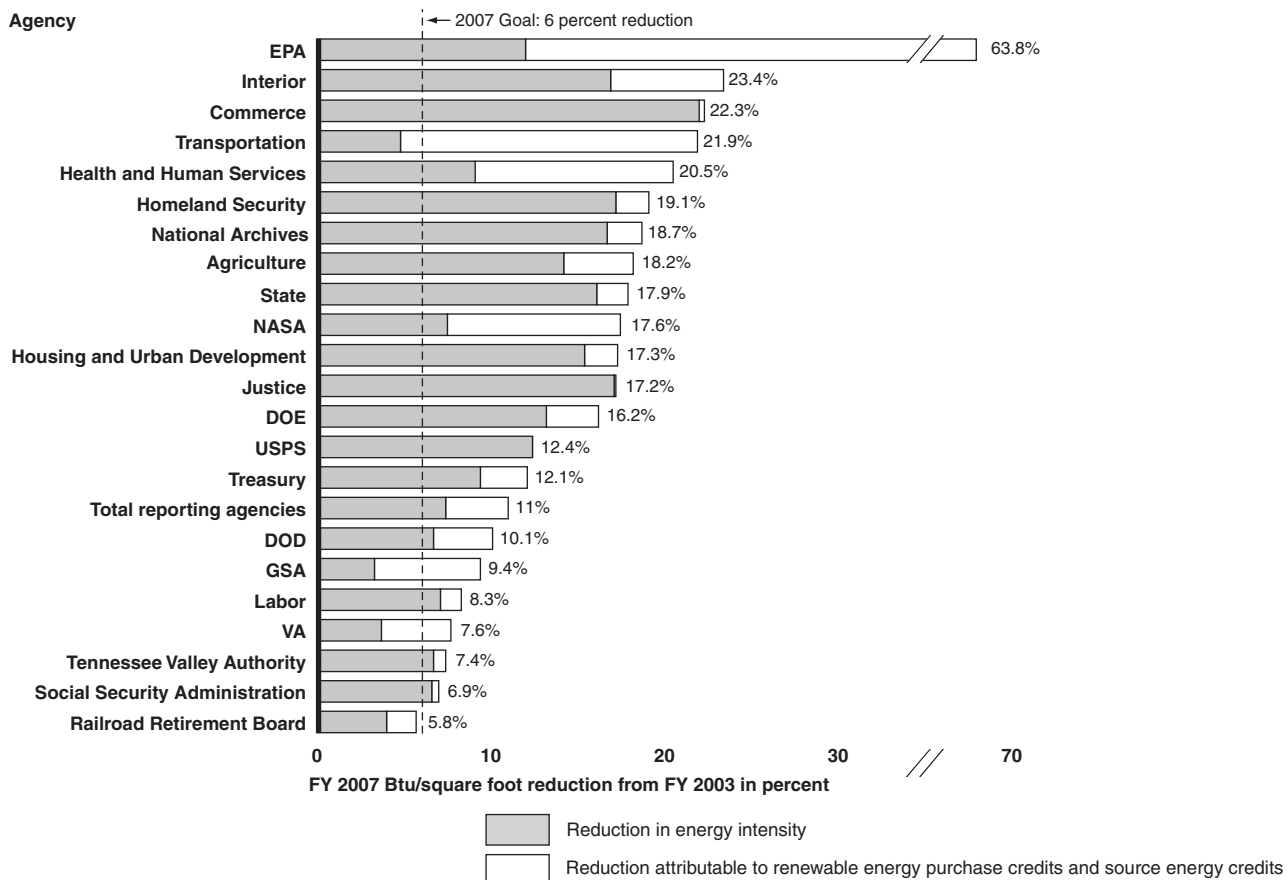


Source: DOE draft data.

*Energy efficiency.* As figure 5 shows, all but one agency met the 2007 energy efficiency goal laid out in E.O. 13423, which calls for a 6 percent reduction in energy intensity from a 2003 baseline. Among the agencies

held to the goal, only the Railroad Retirement Board missed it, reducing energy intensity by 5.8 percent from its 2003 baseline. The Environmental Protection Agency (EPA) reduced energy intensity by 63.8 percent from a 2003 baseline, which was the largest reduction among the agencies. As a whole, the 22 agencies met the energy efficiency goal, with agencies cumulatively reducing energy intensity by 11 percent from 2003 levels.

**Figure 5: Reduction in Energy Intensity from a Fiscal Year 2003 Baseline, Fiscal Year 2007**



Source: DOE draft data.

Use of credits for the purchase of renewable energy and source energy was common among agencies in 2007. USPS was the only agency that did not use any credits. Of the 21 agencies that used credits, 3 that met the energy efficiency goal with the credits would not have met the goal without them. EPA achieved the greatest percentage of its energy intensity reduction using credits—81.2 percent of its overall reduction in energy

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intensity came from the use of credits—representing about 5 percent of the total credits the federal government used. In contrast, about a third of DOD’s reduction in energy intensity came from credits, but this reduction accounted for over half of all the credits the federal government used because DOD is overwhelmingly the largest consumer of energy in the government. Almost one-third of the total reduction in energy intensity reported by agencies is attributable to the use of credits.

Most agencies—21 of 22—used renewable energy purchase credits in fiscal year 2007. Five agencies also used source energy credits. For all agencies, renewable energy purchase credits accounted for about two-thirds of all credits used. Both types of credits were established under E.O. 13123. Source credits were aimed at helping the federal government reduce total energy use at the source of generation. According to DOE, renewable energy purchase credits were established to support the renewable energy industry. Although the credits were established to support federal energy policies, they do not reflect actual decreases in energy intensity.

*Greenhouse gas emissions.* The same 21 of 22 agencies met the 2007 greenhouse gas emissions goal under E.O. 13423, which holds agencies to the same standard as the energy efficiency goal—a 6 percent reduction in energy intensity from a 2003 baseline. The same renewable energy purchase and source energy credits that count toward the energy efficiency goal also count toward the greenhouse gas emissions goal.

*Renewable energy.* Seventeen of the 22 agencies met the fiscal year 2007 renewable energy goal, as figure 6 shows. This goal requires that at least 3 percent of total electric energy consumption come from renewable energy sources, with at least half of the required renewable energy an agency consumes coming from resources put into service after January 1, 1999. The departments of Health and Human Services, Justice, and State; the Social Security Administration; and USPS missed the goal.<sup>12</sup> EPA achieved the greatest percentage of total electric consumption from renewable sources, with 153.5 percent. EPA was able to count more than 100 percent of its electricity consumption as renewable because it bought renewable energy certificates that exceeded the electricity it used, and because it received a small bonus for renewable energy generated on federal or

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<sup>12</sup>According to USPS, the agency is not subject to EPAct 2005’s renewable energy goal. However, it tries to comply with the spirit and intent of the goal.

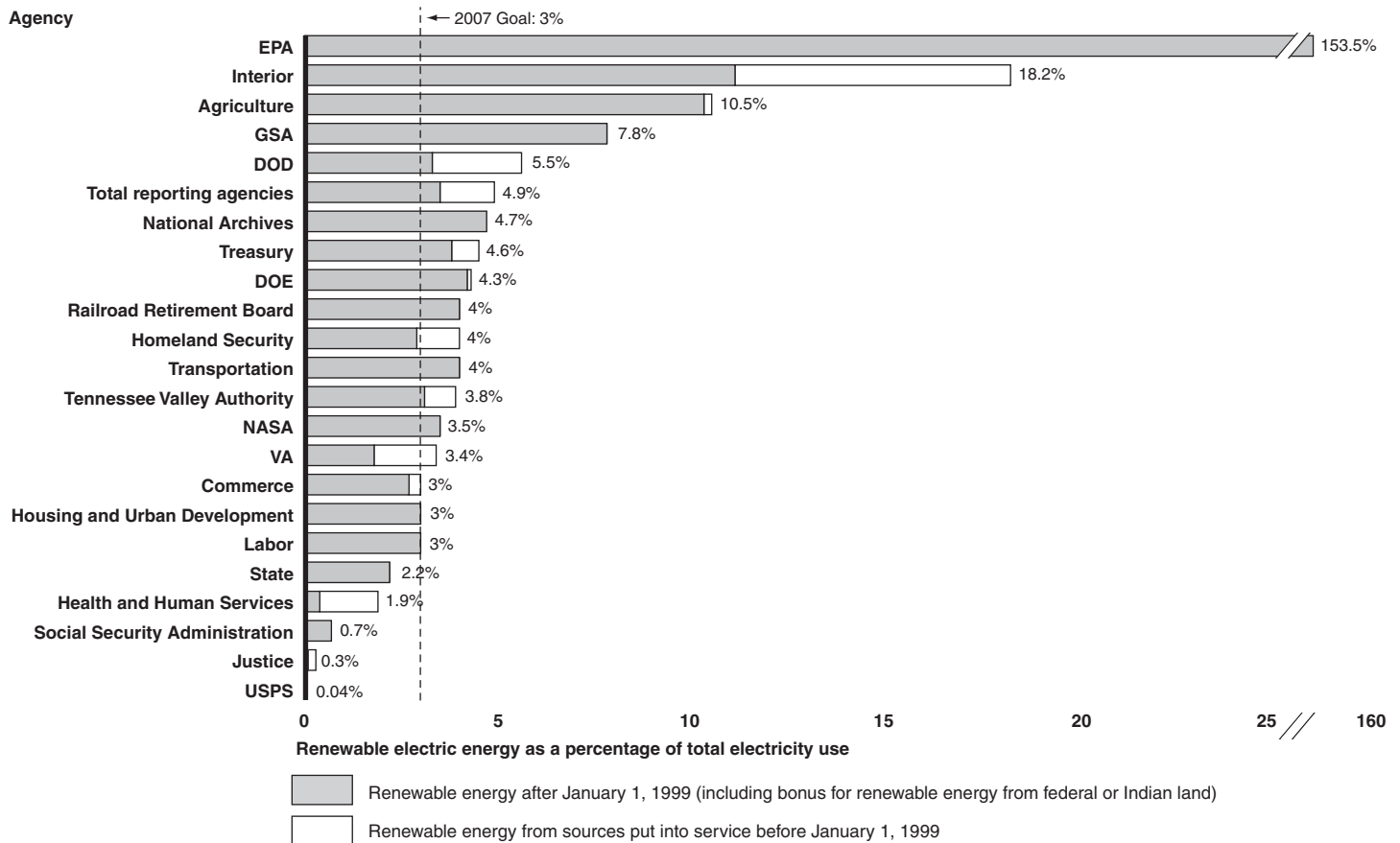
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Indian land.<sup>13</sup> As a whole, the federal government met the renewable energy goal, with 4.9 percent of its electricity use coming from renewable sources and at least half of this energy coming from newer renewable sources; only about 3 percent of the renewable energy total is attributable to bonuses.

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<sup>13</sup>Renewable energy can be purchased as renewable energy certificates (REC), which provide credit for the technological and environmental benefits of using electricity generated from renewable sources. A certificate can be sold separately from the underlying electricity with which it is associated. Once the REC is sold separately from the underlying electricity, the electricity is no longer considered renewable. Buyers of RECs can claim the credit for the renewable energy and may offset a percentage of their annual electricity use when green power products may not be available locally.

**Figure 6: Renewable Electric Energy Use as a Percentage of Total Electricity Use, Fiscal Year 2007**




Source: DOE draft data.

## Assessing Progress Toward the Goals Over Time Is Problematic Due to Key Changes in the Goals and How Performance Is Measured

Determining the extent to which agencies have made progress toward the goals over time is problematic due to key changes in the goals—as specified in statute and executive order—and how performance is measured. Performance can be compared across years when the way a goal is measured remains unchanged. After substantial change, however, there is no consistent measure against which to compare long-term progress toward the goals.

*Energy efficiency.* Key changes in the energy efficiency goal since 2005 illustrate the difficulty in making comparisons. As figure 7 shows, EPAct 2005 made key changes in both building categories and baseline years, and also changed the percentage reduction and the year by which agencies should have reduced energy intensity by that percentage.

**Figure 7: Changes in How the Energy Efficiency Goal Is Measured**

	Building categories	Baseline fiscal year <sup>a</sup>	Energy intensity reduction percentage	Final fiscal year by which agencies must meet goal
E.O. 13123	Standard	1985	35	2010
	Industrial and laboratory	1990	25	2010
EPAAct 2005	All buildings	2003	20	2015
E.O. 13423	All buildings	2003	30	2015

Sources: GAO analysis of EPAAct 2005 and EOs 13123 and 13423; Art Explosion (clip art).

Note: Buildings meeting certain criteria—such as those with a national security function—may be excluded from meeting the energy goals.

<sup>a</sup>Progress is determined by comparing the most recent data with the data for the baseline year.

These key changes make it problematic to compare agency performance against the goal before and after EPAAct 2005 took effect. Although all but 1 of 22 agencies met the single energy efficiency goal in 2007 for buildings subject to the goal, according to draft DOE data, this performance cannot be directly compared with performance in 2005. In that year, only 8 of 17 agencies met the goal for standard buildings and 8 of 12 agencies met the goal for industrial and laboratory buildings.<sup>14</sup> Difficulty in comparing agency performance against the goal mainly resulted because of the key changes in building categories and baselines. The change from two building categories—standard and industrial and laboratory—to only one category changed the total square footage included in the energy intensity calculation.<sup>15</sup>

Data on NASA’s performance against the energy efficiency goal in 2005 and 2007 show the difficulty in gauging progress after a key change to a goal. In 2005, the agency met the standard building goal by reducing

<sup>14</sup>Not all agencies have industrial and laboratory buildings.


<sup>15</sup>Agencies may apply to DOE for exclusion of certain buildings from the energy efficiency goal for a number of reasons, such as if a building is crucial to an agency’s national security function. With the change from E.O. 13123 to EPAAct 2005, the criteria for exclusions changed; as a result, the number of buildings meeting these new criteria and therefore eligible to be excluded also changed, resulting in corresponding changes to the buildings included in the energy intensity calculation.

energy intensity for those buildings by 30.4 percent against a 1985 baseline, exceeding the goal of 30 percent. It missed the industrial and laboratory building goal, reducing energy intensity for those buildings by 16.1 percent against a 1990 baseline, short of the goal of 20 percent. In 2007, NASA exceeded the goal for all buildings subject to the goal by reducing energy intensity by 17.6 percent against a 2003 baseline, well over the goal of a 6 percent reduction. However, because of changes in the baseline year and building categories, NASA's performance against the goal in 2007 cannot be directly compared with its performance in 2005 or earlier.

While we focused on how changes to measurement of the energy efficiency goal make assessing progress toward meeting the goal problematic, DOE also maintains actual energy intensity data for reporting agencies dating back to 1985. According to the data, agencies decreased energy intensity in all their buildings from 1985 to 2007 by approximately 14.3 percent. However, these data do not reflect the evolution of the energy efficiency goal during that period. For example, buildings that are excluded under the executive orders and EAct 2005 are included in these totals.

*Greenhouse gas emissions.* Similar comparative difficulties show up in examining progress toward the goal of reducing greenhouse gas emissions. Before 2007, under E.O. 13123, the goal called for reducing the amount of emissions by 30 percent by 2010 compared to a 1990 baseline. E.O. 13423 significantly changed how the federal government measures progress toward this goal. Now, the greenhouse gas emissions direction is measured using energy intensity against a 2003 baseline. Figure 8 shows the details of these changes.

**Figure 8: Changes in How the Greenhouse Gas Emissions Goal Is Measured**

	Measure	Baseline fiscal year <sup>a</sup>	Reduction percentage	Final fiscal year by which agencies must meet goal
E.O. 13123	Greenhouse gas emissions	1990	30	2010
E.O. 13423	Energy intensity	2003	30	2015

Sources: GAO analysis of EOs 13123 and 13423; Art Explosion (clip art).

<sup>a</sup>Progress is determined by comparing the most recent data with the data for the baseline year.



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Performance against the greenhouse gas emissions goal may be compared from 2000 to 2006, when E.O. 13123 remained in place and the goal was measured in the same way. However, the key change in E.O. 13423 from greenhouse gas emissions to energy intensity means that it is problematic to compare agency performance in 2007—when all but 1 agency met the greenhouse gas emissions goal—with performance in 2005—when only 7 of 21 agencies were on track to meet the goal. For example, VA actually increased its greenhouse gas emissions in 2005 by 20.3 percent from its 1990 level, and was far from meeting the greenhouse gas emissions goal of a 30 percent reduction by 2010. In 2007, however, it met the emissions goal because it exceeded the energy efficiency goal.

E.O. 13423 states that agencies are to reduce greenhouse gas emissions by reducing energy intensity. However, a reduction in energy intensity does not track directly with lower greenhouse gas emissions for two reasons. First, if an agency's energy consumption increases but square footage increases at a greater rate, then energy intensity is reduced while greenhouse gas emissions will increase, assuming all else remains unchanged. Second, the level of greenhouse gas emissions depends on the type of fuel used to generate energy. However, energy intensity does not account for different fuel types. Rates of carbon intensity vary by energy type per Btu delivered, especially for electricity, depending on whether it is generated from a fossil fuel, nuclear, or renewable source. Consequently, if an agency's square footage and energy consumption remain constant but the agency switches to sources that emit more greenhouse gases, such as switching from natural gas to coal, its energy intensity remains constant while greenhouse gas emissions increase. Conversely, switching from fossil-generated electricity to renewable electricity virtually eliminates greenhouse gas emissions. Although E.O. 13423 changed the measure for greenhouse gas emissions, DOE still estimates and reports greenhouse gas emissions by considering the sources used to produce energy and agency energy consumption.

The imperfect relationship between energy intensity and greenhouse gas emissions shows up in DOE data: we found cases in which energy intensity decreased over time, but greenhouse gas emissions increased. According to draft DOE data, at the Department of Commerce, for example, from 2003 to 2007, energy intensity decreased by 22.3 percent while greenhouse gas emissions increased by 2.4 percent. Similarly, the National Archives and Records Administration's energy intensity decreased by 18.7 percent over the period but greenhouse gas emissions increased by 21.5 percent. Although the National Archives and Records Administration's and the Department of Commerce's greenhouse gas

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emissions increased while energy intensity decreased, mostly attributable to increases in square footage of their building inventories, for the government as a whole greenhouse gas emissions decreased by 9.4 percent from 2003 to 2007 while energy intensity decreased by 11 percent.

It is not clear why the administration changed from an absolute emissions measure to one tied to energy intensity. When we asked about using energy intensity as a proxy for greenhouse gases, an official with OFEE told us that it is the administration's policy not to tie greenhouse gas emissions to a specific measure. Rather, it is the administration's policy to encourage agencies to voluntarily partner with other groups to reduce emissions, and the administration believes emissions will decline without a quantifiable goal.

Although energy intensity is an imperfect measure of greenhouse gas emissions, there is no scientific consensus on the best measure. Some organizations, such as the Energy Information Administration, a statistical agency of DOE which provides data, forecasts, and analyses, and the World Resources Institute,<sup>16</sup> have used or proposed several alternatives for measuring greenhouse gas emissions. Such measures include reporting total emissions, as was the case for the previous greenhouse gas emissions goal under E.O. 13123, and using greenhouse gas intensity measures. Some greenhouse gas measures, like the current energy intensity measure based on square footage, attempt to account for expanding or shrinking production or mission. Other proposed measures have included calculating greenhouse gas intensity by dividing total greenhouse gas emissions by building square footage or by units of performance or output, such as million dollars of gross domestic product or economic output, kilowatt hour, customer, or dollar of revenue. DOE, in its annual reports to Congress, estimates emissions from energy use in buildings that are subject to the goal, and presents annual emissions in metric tons of carbon dioxide equivalent, and in terms of metric tons of carbon dioxide equivalent per gross square foot.

None of the measures is perfect. For example, one agency official noted that an absolute emissions goal—as was used to measure emissions prior to the current measure—does not account for the fact that an agency may change its energy consumption or square footage to support its expanded

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<sup>16</sup>The World Resources Institute is an environmental think tank whose stated goal is to find practical ways to protect the earth and improve people's lives.

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or contracted work resulting from a change in mission. However, this absolute emissions measure allowed agencies to more easily track progress in reducing their total emissions. Imperfect metrics also are an issue at the international level. For example, one measure currently used by the Energy Information Administration is “emissions intensity,” measured in emissions in a given year divided by the economic output for that year, which accounts for changes in national output. As past GAO work has shown, a decrease in this intensity-based measure may result in increased greenhouse gas emissions.<sup>17</sup>

*Renewable energy.* Key changes in the renewable energy goal since 2005 also make comparisons over time problematic. While both E.P.A. 2005 and E.O. 13423 specified different ages of renewable sources counted toward meeting the energy goal, E.O. 13423 did not change the percentage required or time frames required of the agencies, as figure 9 shows. Further, forms of nonelectric renewable energy such as solar thermal, geothermal, and biomass gas do not count toward the E.P.A. 2005 goal. E.O. 13123 did count these forms of renewable energy toward its goal.

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<sup>17</sup>GAO, *Climate Change: Trends in Greenhouse Gas Emissions and Emissions Intensity in the United States and Other High-Emitting Nations*, [GAO-04-146R](#) (Washington, D.C.: Oct. 28, 2003).

**Figure 9: Changes in How the Renewable Energy Goal Is Measured**

	Percent renewable use required	Final fiscal year by which agencies must meet goal	Age of source to be counted
E.O. 13123	2.5	2005	All electric energy must come from projects built after 1990
EPAAct 2005	3	2007-2009	Sources may have been placed in service in any year
	5	2010-2012	
	7.5	2013-and beyond	
E.O. 13423	3	2007-2009	One half of required renewable energy must come from sources placed in service from 1999 or later
	5	2010-2012	
	7.5	2013-and beyond	

Sources: GAO analysis of EPAAct 2005 and EOs 13123 and 13423; Art Explosion (clip art).

Performance against the renewable energy goal may be compared from 2000 to 2006, when the goal remained unchanged. But the change in the age requirement for renewable sources makes it problematic to compare performance in 2007 with previous years. For example, although 17 of 22 agencies met the goal in 2007 and 10 of 20 met the goal in 2005, comparing performance in these 2 years is problematic because, with the 2007 goal, half of renewable energy came from sources in service from 1999 or later, but there is no source age specification for the other half. However, with the 2005 goal, all of the renewable energy came from energy sources in service in 1990 or later. Also, thermal renewable energy used in 2005 was not eligible to be counted toward the 2007 goal.

Data on VA's performance illustrate the difficulty in making comparisons when the age requirement for renewable energy sources has changed. In 2005, VA exceeded the goal of having 2.5 percent of its electricity consumption from renewable sources put into service since January 1, 1990, with 2.9 percent of its electricity consumption from these sources. In 2007, VA exceeded the new 3 percent goal, with 3.4 percent of its electricity from renewable sources, 1.8 percent from new sources put into service since 1999, and 1.6 percent from older eligible sources. Although VA increased its total renewable energy use, it is not clear whether its use from sources put into service since January 1, 1990, has increased or decreased, thereby making comparisons across the goals problematic.

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## Agencies' Prospects for Meeting Energy Goals in the Future Depend on Addressing Four Challenges

The prospects for meeting the energy goals in the future for the agencies we reviewed depend largely on overcoming four key challenges.<sup>18</sup> First, long-term plans can help clarify priorities and help agency staff pursue shared goals, but the six agencies we reviewed had long-term plans for achieving energy goals that lacked several of the key elements that we have identified in our prior work that make such plans effective. Second, achieving long-term energy goals will require major initial capital investments, but it is difficult for such investments to compete with other budget priorities. To address this problem, federal officials increasingly rely on alternative financing mechanisms; while these mechanisms provide benefits, they also present challenges. Third, agencies we reviewed face challenges in obtaining sufficiently reliable data on energy consumption; however, most agencies have tools for ensuring data are reliable and have plans to more accurately capture energy data. Finally, sites may lack staff dedicated to energy management, and also may find it difficult to retain staff with sufficient energy expertise;<sup>19</sup> lack of expertise could make it difficult to undertake alternative financing projects. Federal officials are participating in energy-related training courses and undertaking initiatives to hire, support, and reward energy management personnel.

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## Agencies' Planning Documents We Reviewed Lack Key Elements Needed to Guide Achievement of Long-term Energy Goals

Long-term plans can help clarify organizational priorities and unify agency staff in the pursuit of shared goals. These plans also must be updated to reflect changing circumstances, and according to our previous work, plans should include a number of key elements, including (1) approaches or strategies for achieving long-term goals; (2) strategies that are linked to goals and provide a framework for aligning agency activities, processes, and resources to attain the goals of the plan; (3) identification of the resources needed; (4) strategies that properly reflect and address external factors; and (5) reliable performance data needed to set goals, evaluate results, and improve performance.<sup>20</sup> Long-term plans with these elements help an agency define what it seeks to accomplish, identify the strategies it

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<sup>18</sup>While EISA 2007 is outside the scope of our engagement, it may help agencies address some of the challenges we identified. For example, the act requires agencies to have an energy manager responsible for overseeing energy efficiency criteria that covers, at a minimum, federal sites constituting at least 75 percent of site energy use at each agency.

<sup>19</sup>Sites may include more than one building.

<sup>20</sup>GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, [GAO/GGD-96-118](#) (Washington, D.C.: June 1996); [GAO/GGD-10.1.16](#).

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will use to achieve results, and determine how well it succeeds in achieving results and objectives.

While none of the six agencies we reviewed could provide us with what we considered to be a comprehensive, long-term energy plan, agency officials did provide numerous planning documents, including budget documents, strategies for improving energy efficiency, energy program guidance, and agencywide energy policies for sites. For the purposes of our review, we considered any of these planning documents, if they discussed actions to be taken beyond 12 months, as long-term energy plans. However, we determined that the long-term energy plans for one or more of the six agencies lacked some of the following key elements for effective long-term energy planning:

- approaches or strategies for achieving long-term energy goals;
- strategies that linked energy goals and provide a framework for aligning agency activities, processes, and resources to attain the goals of the plan;
- identification of the required resources needed to achieve long-term energy goals;
- strategies that properly reflect and address external factors; and
- provisions for obtaining reliable performance data needed to set goals, evaluate results, and improve performance.

Moreover, four of the six agencies' long-term plans were not updated to reflect E.O. 13423, although two of these agencies noted that they are in the process of updating these plans. In addition, in April 2008, the USPS Inspector General's office reported on the value of long-term energy plans and determined that USPS does not have a long-term energy management plan, and that without one USPS cannot effectively maximize its energy conservation efforts. The USPS Inspector General recommended the Postal Service develop and publish a National Energy Management Plan. This plan is expected to be published in early fiscal year 2009.

While long-term planning generally is recognized as an important tool in achieving goals, federal agencies have not been required to have long-term plans for energy goals. To close this gap, DOE is drafting guidance for agencies to follow as they develop multiyear plans and long-term strategies for assessing the level of investment necessary to meet energy goals, their progress in meeting these goals, and the likelihood that they

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will achieve these goals by 2015. Our preliminary review of the draft guidance found that it appears to address all of the key elements we identified. According to DOE officials, this guidance will be published in final form upon completion of DOE internal review, as well as analysis and reconciliation with new planning requirements in the EISA 2007.

In the interim, the six agencies are addressing long-term energy planning deficiencies in two ways. First, in recent years officials in agencies' headquarters have used short-term plans to achieve energy goals in the near term. All of the agencies that reported to DOE were required to provide annual plans under E.O. 13123 that included guidance on energy requirements and strategies each agency is taking over the next year to meet these requirements. However, E.O. 13423 does not require agencies to provide these annual plans. Agencies also used other planning tools to achieve energy goals in the short term. For example, GSA sets annual regional targets and requires each region to submit plans on how it will achieve these targets.<sup>21</sup> Agencies also submit budgetary documents requesting funds for specific energy projects.

Officials at the sites we visited had used a number of short-term plans to achieve energy improvements, but did not know how they would meet long-term energy goals. In several cases, these officials stated, they are planning to meet future energy goals by completing individual projects in the near term. For example, officials at one GSA site reported that they typically plan energy projects on a year-to-year basis, depending on the available funds, and did not have a long-term energy plan. At one USPS site, officials said they have not yet documented a comprehensive, long-term plan highlighting the steps they have taken or intend to take to ensure they reach energy goals. In addition, officials at a DOE site stated that it is difficult to plan a long-term approach for achieving energy goals because the site's mission is constantly evolving. Moreover, most military installations we visited did not have a long-term plan to achieve energy savings into the future and were instead developing individual projects to improve the energy efficiency in existing structures.

Second, agencies are using energy audits as a way to identify potential energy savings and meet long-term goals. In the past, we have reported that energy audits are a key strategy for identifying and evaluating future

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<sup>21</sup>GSA is responsible for meeting the energy goals for those buildings for which it pays utilities.

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energy projects,<sup>22</sup> and officials at all the agencies we spoke with reported undertaking energy audits as a tool to identify and plan future energy projects.

- Since 1998, NASA has conducted reviews at each of its centers every 3 years to assess their energy and water management programs. The review requires center staff to participate in a self-assessment by responding to a set list of questions, confer with headquarters officials during a week-long site visit, and discuss review findings including recommendations.
- USPS currently is conducting energy audits for 60 million square feet of its 310 million square feet of facility space, which will identify close to 2 trillion Btus of potential savings upon completion.
- In 2007, VA conducted energy and water audits covering six regions and a total of 64 sites, or a total of 20 percent of its sites. During 2008, VA officials expect to audit 30 percent of its sites, which include 116 sites in seven regions.
- Energy audits are part of the Air Force's energy program and were undertaken to identify additional energy-related projects, and act as measures of how to reduce energy consumption.

While short-term planning and energy audits help guide agencies' efforts toward meeting their goals in the near term, they do not address how the agencies will meet the goals through 2015.

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<sup>22</sup>GAO, *Legislative Branch: Energy Audits Are Key to Strategy for Reducing Greenhouse Gas Emissions*, [GAO-07-516](#) (Washington, D.C.: Apr. 25, 2007).



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**Constrained Budgets Limit Agencies' Ability to Undertake Energy Projects, and Agencies Are Turning to Alternative Financing**

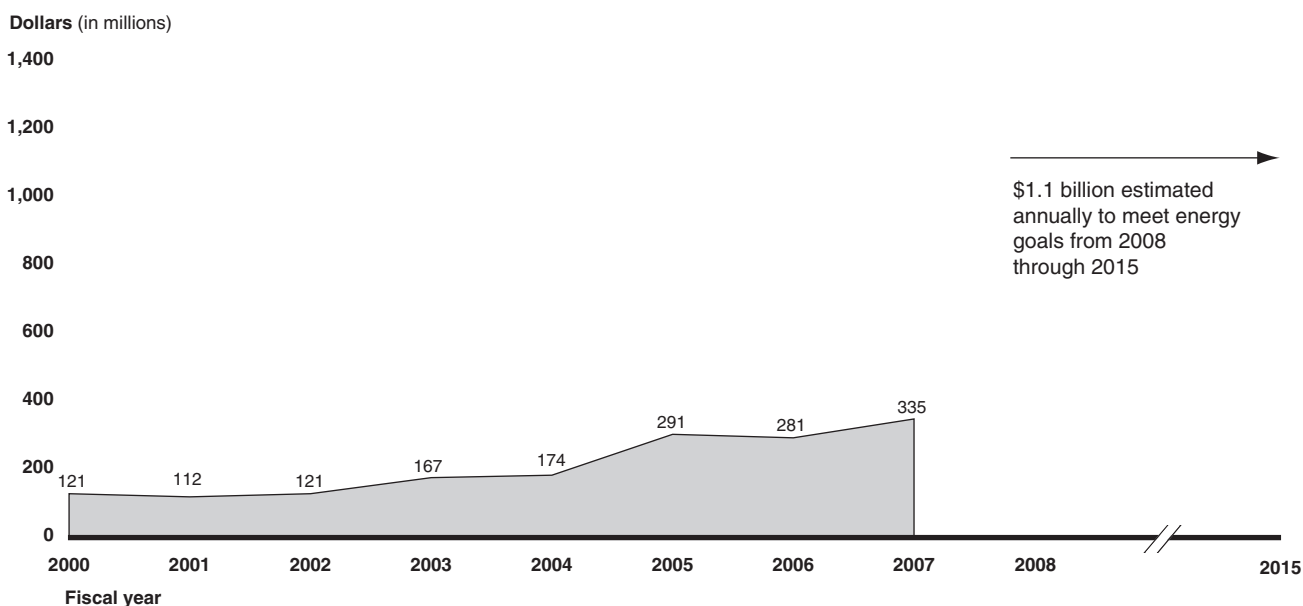
Meeting long-term energy goals will require major initial capital investment. According to DOE, to meet the energy goals under E.O. 13423, the federal government would have to invest approximately \$1.1 billion annually (beginning in fiscal year 2008, based on fiscal year 2007 performance) through 2015 on energy-related projects. In addition, in June 2007, ASE reported that meeting federal energy goals will require an investment of approximately \$11 billion from 2009 through 2015, or \$1.5 billion annually.<sup>23</sup>

Paying for this investment up front with appropriated funds may be difficult for agencies because energy projects compete with other budget priorities. As figure 10 shows, from fiscal years 2000 through 2007, upfront funding ranged from approximately \$121 million to \$335 million annually—well below the \$1.1 billion level of investment needed annually to meet future energy goals, according to DOE's estimate. Furthermore, according to draft DOE data for fiscal year 2007, federal agencies will face an estimated \$5.3 billion gap in appropriated funding for energy investment from fiscal year 2008 through 2015.

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<sup>23</sup>Loper, Joe; Capanna, Steve; and Harris, Jeffrey, *Reducing Greenhouse Gas Emissions In Federal Buildings, Facilities and Vehicles*, Alliance to Save Energy (June 2007). The \$1.5 billion annual figure is based on the average cost of savings for super Energy Savings Performance Contracts – contracts for which DOE has negotiated with energy services companies that have been prequalified via a competitive process – that the federal government has awarded since 1998. The figure assumes there is no inflation in cost per energy unit saved through 2015.

**Figure 10: Approximate Upfront Funding for Energy Projects, Fiscal Years 2000–2007**



Source: GAO analysis of DOE data for 2000-2005 and draft data for 2006 and 2007.

Officials from all six agencies we reviewed cited budget constraints as a challenge to meeting future energy goals. For example, only 4 of the 10 military installations we visited have received upfront funding from DOD’s Energy Conservation Investment Program since 2003.<sup>24</sup> Furthermore, several DOD installation officials told us that they no longer request funding for energy improvements because they do not believe upfront funding will be made available. In our previous work we similarly noted that agency officials had stopped requesting such funding. We also noted that paying for energy efficiency improvements with upfront funding is generally the most cost-effective means of acquiring them.<sup>25</sup>

<sup>24</sup>The Energy Conservation Investment Program is a centrally managed, project-oriented, DOD-wide account which is programmed annually and represents the only direct DOD investment in conservation. The program is funded strictly through appropriations and requires congressional notification prior to project execution and periodic update of execution status.

<sup>25</sup>GAO, *Capital Financing: Partnerships and Energy Savings Performance Contracts Raise Budgeting and Monitoring Concerns*, GAO-05-55 (Washington, D.C.: Dec. 16, 2004).

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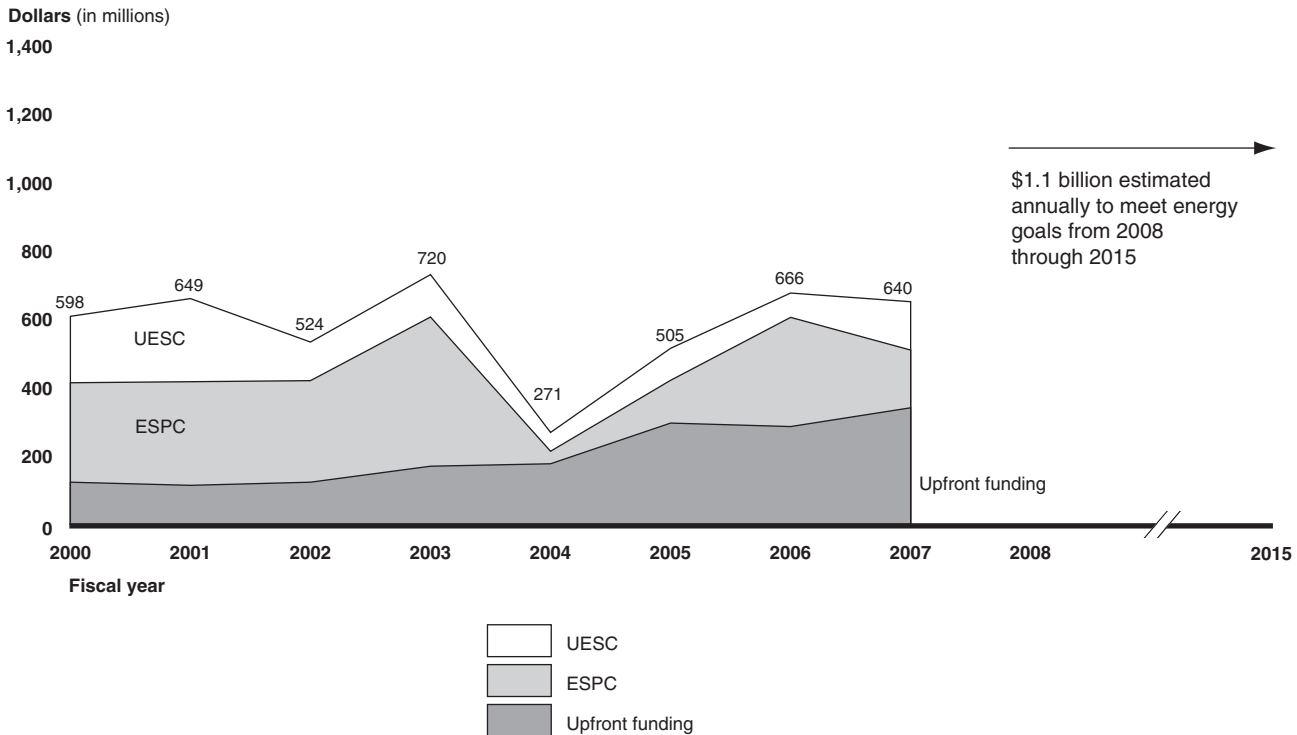
Because the total amount of upfront funding is limited, federal officials increasingly rely on alternative financing mechanisms—such as contracts with private companies that initially pay for energy improvements and then receive compensation from the agencies over time from the monetary savings they realize from these projects—to meet energy goals. Seven of the 11 civilian sites and 9 of the 10 military installations we visited have used, are currently using, or are planning to use alternative financing to implement energy projects. Furthermore, in an August 2007 memo, the White House Council on Environmental Quality directed agency heads to enter into energy savings performance contracts (ESPC) and utility energy savings contracts (UESC) for at least 10 percent of annual energy costs to accomplish energy-related goals.<sup>26</sup> It further directed them to report on progress toward finding and developing alternatively financed projects.<sup>27</sup> Figure 11 shows the total amount of funding agencies received from upfront funding and alternative financing for UESCs and for ESPCs. As discussed earlier, most agencies met their fiscal year 2007 goals. However, for 2008 onward, if funding stays at the current level, there is an apparent gap between the amount received and the amount estimated to meet energy goals.

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<sup>26</sup>ESPCs differ from UESCs in that ESPCs are contracts with private energy savings companies whereas UESCs are contracts with a utility provider. While there are other alternative financing mechanisms available to agencies, ESPCs and UESCs are the primary mechanisms the agencies use.

<sup>27</sup>The Council on Environmental Quality coordinates federal environmental efforts and works with agencies and other White House offices in the development of environmental policies and initiatives. The Council reports annually to the President on the state of the environment, oversees federal agency implementation of the environmental impact assessment process, and acts as a referee when agencies disagree over the adequacy of such assessments. James L. Connaughton, Chairman, Council on Environmental Quality, *Substantially Increasing Federal Agency Use of Energy Savings Performance Contracting* (Aug. 3, 2007).

**Figure 11: Total Funding for Energy Projects by Funding Mechanism, Fiscal Years 2000–2007**



Source: GAO analysis of DOE data for 2000-2005, and draft data for 2006 and 2007.

Note: This figure shows the primary sources of funding. Agencies also may use other funding sources, such as operating and maintenance funding. ESPC authority lapsed on October 1, 2003, and was reinstated in October 2004.

According to agency officials, alternative financing mechanisms offer benefits but also present challenges. In terms of benefits, these mechanisms can be used to complete energy projects and meet federal energy reduction goals when upfront funding is not available. For example, DOD officials stated that alternative financing mechanisms are necessary for DOD to meet future energy goals and, in March 2008 testimony before the Subcommittee on Readiness, House Committee on Armed Services, the Deputy Under Secretary of Defense for Installations and Environment stated that ESPCs typically account for more than half of all site energy savings.<sup>28</sup> Furthermore, according to DOD, the agency fell

<sup>28</sup>Statement of Mr. Wayne Army, Deputy Under Secretary of Defense (Installations and Environment), House Armed Services Committee, Readiness Subcommittee (Mar. 13, 2008).

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short of meeting past energy efficiency goals owing to a lapse in ESPC authority from October 2003 to October 2004. In addition, DOE officials noted that alternative financing mechanisms provide large energy savings per dollar spent and estimated that ESPC project savings generally exceed guaranteed energy savings by about 10 percent. In 2005, we reported that agencies cited other benefits from alternatively financed projects, such as improved reliability of the newer equipment over the aging equipment it replaced, environmental improvements, and additional energy and financial savings once the contracts have been paid for.<sup>29</sup>

Agency officials also noted several challenges associated with such projects. For example, VA officials noted that development, execution, and ongoing administration of alternative financing contracts add overhead costs that increase the total cost of the contract. Furthermore, according to DOD officials, overseeing these contracts requires a level of expertise not always available at individual installations, and such contracts often take a long time to implement. In addition, officials at a number of civilian sites commented that developing alternatively financed projects requires a steep learning curve and the process for developing a contract can be time consuming. Finally, officials at a few agencies noted that in using these alternative financing mechanisms, it is difficult to measure and verify energy savings and to manage contracts with lengthy payback periods. Our June 2005 report also showed that agencies entering into these alternative finance contracts could not always verify whether energy savings were greater than project costs and may yield lower dollar savings than if timely, full, and upfront appropriations had been used. In addition, in our December 2004 report, DOD officials commented that the costs of using such contracts was 25 percent to 35 percent above what costs would have been in using upfront funds for certain energy projects.

Some agencies are undertaking initiatives to overcome the challenges associated with alternative financing.

- VA has created a central contracting center for energy projects, including alternatively financed projects. VA officials believe the center will offer a number of benefits, including the development of alternative financing expertise, increased accountability, greater agencywide awareness of

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<sup>29</sup>GAO, *Energy Savings: Performance Contracts Offer Benefits, but Vigilance Is Needed to Protect Government Interests*, [GAO-05-340](#) (Washington, D.C.: June 22, 2005).

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these financing mechanisms, and standardization of the alternative financing process across VA.

- The Air Force, Army, and the Department of Navy have already centralized some functions in the process. The Air Force is working to further centralize these activities in order to decrease the number of staff needed to implement these contracts, and to review and approve all parts of the process in one location.

Furthermore, DOE's Federal Energy Management Program provides technical and design assistance to support the implementation of energy projects, including project facilitators who can guide site officials through the process of developing, awarding, and verifying savings from alternatively financed projects.

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### Agencies Face Measurement and Data Reliability Challenges but Are Taking Steps to Address Them

Collecting and reporting reliable energy data is critical for agencies to assess their progress toward their goals and identify opportunities for improvement. According to DOE officials responsible for overseeing the collection and reporting of energy information for the federal government, there are no federal energy measurement or data collection standards, and each agency gathers information differently, using its financial systems data and estimating data when necessary through other means. For example, NASA and USPS officials reported that their agencies use utility payment information to measure and report energy use.<sup>30</sup> Moreover, DOE officials stated that each site manager may use different means to measure and collect energy consumption, conservation, and cost data, including handwritten ledger sheets, software, cost averaging, and estimation techniques.

Measuring data at federal buildings is difficult if individual buildings do not have meters. Sometimes an entire site is metered by the local utility for usage and billing purposes, but not all of the buildings on the site are metered individually. Accordingly, energy managers cannot always reliably determine the usage in a specific building or group of buildings. Without

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<sup>30</sup>USPS is in the process of developing and implementing two new systems that will allow officials to collect and track actual consumption data. According to USPS officials, the Enterprise Energy Management System will enable USPS to locally and remotely monitor energy usage and demand, as well as consolidate energy-related data from existing applications and facilities into a centralized location. The Utility Management System will uniformly collect actual utility energy cost and consumption data.

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meters, energy teams may be unable to pinpoint buildings or areas that need to be improved or identify which energy projects have effectively achieved energy savings.

In some instances, agencies' federal energy data have not been reliable. DOE officials responsible for annually reporting to Congress on agencies' progress toward energy goals acknowledge as much but stated that past year data are updated to correct inaccuracies discovered by the agencies.

- In April 2008, the USPS Office of Inspector General reported that USPS may be inaccurately reporting energy consumption data to DOE, and therefore cannot accurately determine its progress toward meeting the energy goals. Among other things, the Inspector General reported that USPS did not have a clear process for reporting data on sites' square footage and was calculating energy consumption by dividing billed cost by an estimated or average cost per kilowatt-hour, which can differ significantly from actual consumption.
- In 2006, a NASA energy management review reported that one of its sites had in some cases entered incomplete and erroneous data into the database the agency uses to track its progress toward energy goals.<sup>31</sup>
- A 2005 report from the VA Office of the Inspector General stated that the agency's energy data were not reliable because staff inaccurately reported sites' energy consumption and square footage. According to VA officials, VA implemented all of the recommendations in the report, including those addressing data reliability and, in September 2007, the VA Office of the Inspector General closed the report.
- Air Force officials stated that a thorough data review revealed data entry errors at approximately 5 percent of installations.

Agencies use a variety of mechanisms to verify energy data. For example, according to the DOE official who compiles agency data for the annual report to Congress, agency data reports are checked for any obvious problems by comparing the agency's energy information with their data from previous years to identify outliers. He also communicates with energy coordinators and compares unit price information with a site's recorded energy costs to determine if the reported costs appear

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<sup>31</sup>NASA headquarters conducts reviews of each of its sites' energy management programs every 3 years.

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reasonable. Beyond these checks, DOE relies on agencies' headquarters officials and the energy coordinators at sites to enter energy information for the sites and verify its accuracy. Many officials reported using quality control mechanisms to verify that current data match up with past records. These mechanisms include automatic database alerts, which notify officials of data that are outside specific ranges and thus could be errors.

Under EPCA 2005, agencies are required to install advanced electrical meters by 2012, whenever practical, to help ensure more reliable information. Advanced meters are capable of providing real-time data that feed directly into an agency's metering database, verifying savings from energy projects, and helping site officials to identify potential energy savings opportunities. According to the most recent OMB energy management scorecards, all six agencies we met with are meeting the milestones toward metering all appropriate sites by 2012.<sup>32</sup>

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**Some Sites Lack Expertise and Dedicated Energy Management Staff to Ensure Adherence to Goals, but Officials Are Taking Steps to Address These Challenges**

To advance energy goals, it is important to have dedicated, knowledgeable, energy efficiency staff to plan and carry out energy projects. Moreover, according to a June 2007 ASE report, such staff can focus on identifying and implementing efficiency projects. However, some sites we visited did not have a full-time energy manager. Instead, staff members were often assigned part-time responsibility for performing energy-related duties in addition to duties unrelated to energy management, such as managing site maintenance and providing technical support and mechanical design assistance for a site. For example, at one DOE site, six to seven different officials have part-time energy management responsibilities. At other sites, a GSA building manager stated that he spends approximately 15 percent to 20 percent of his time on energy goals, and a NASA energy manager reported devoting approximately one-third of his time. Finally, officials at a Navy installation reported that there is no on-site, dedicated energy manager and that the installation needs one if it intends to meet the energy goals. In visiting military installations, we found that full-time energy managers tended to engage in multiple energy reduction activities, while other installations

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<sup>32</sup>OMB reports progress toward creating a results-oriented government through scorecards, which are used to track how well departments and agencies are performing and where they stand at a given point in time against the overall standards for success.



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without full-time or experienced energy managers tended not to have robust energy reduction programs.

Furthermore, lack of expertise in energy management and high staff turnover may create challenges for negotiating and overseeing alternative financing mechanisms. Energy projects funded through alternative financing often require a high level of expertise in complex areas such as procurement, energy efficiency technology, and federal contracting rules. Many agencies told us that without experienced personnel, they face challenges in undertaking contracts that are necessary to meet energy goals. Officials from multiple agencies commented that high turnover rates exacerbate the difficulties associated with alternative financing.

To address these challenges, VA officials stated that they recently hired almost 90 permanent facility-level energy managers who will cover all VA facilities and focus solely on energy issues. DOD officials also reported using resource efficiency managers—contractors that work on-site at federal facilities to meet resource efficiency objectives with the goal of meeting or exceeding their salaries in energy savings. In addition, federal officials are taking part in energy-related training courses and undertaking initiatives to reward and support energy management personnel. Many agencies reported receiving training on ways to improve energy efficiency from a variety of sources, including agency-offered internal training, training provided by DOE's Federal Energy Management Program, and energy conferences. From fiscal years 2002 to 2006, agencies reported spending approximately \$12.5 million to train more than 27,000 personnel in energy efficiency, renewable energy, and water conservation. In addition to training, the Federal Energy Management Program also recognizes outstanding accomplishments in energy efficiency and water conservation in the federal sector through an annual awards program. Furthermore, the White House annually honors federal agency energy management teams through the Presidential Awards for Leadership in Energy Management. Since 2000, these awards have recognized such teams for their efforts to promote and improve federal energy management and conservation and demonstrate leadership.

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## Conclusions

The current metric for greenhouse gas emissions—one based on energy intensity—is not a satisfactory proxy for assessing agencies' progress toward reducing these emissions. There is no consensus on a best measure at present; however, there are alternative measures that may better track agencies' greenhouse gas emissions than the current measure based on energy intensity. Although the previous metric—one based on emissions—

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had limitations, it was more clearly linked to emissions and made it easier to assess progress toward reducing those emissions. The closer a metric is to approximating the level of emissions, the better agencies will be able to determine their progress in reducing greenhouse gas emissions. In addition, although the ability of agencies to use renewable energy purchase and source energy credits towards the goals may further certain federal energy policy objectives, it also may enable agencies to achieve compliance with the energy goals without actually changing agencies' on-site energy use.

Although most agencies were able to meet their energy goals for 2007, without a strong plan of action agencies may not be well positioned to continue to achieve energy goals over the long term, especially in light of budget constraints and the \$1.1 billion that DOE has estimated that agencies will need each year to achieve future energy goals. Furthermore, they face challenges with having reliable data and retaining dedicated and experienced energy personnel and have not adequately planned how to address these challenges in the long term. Without guidance from DOE that clearly outlines the key elements for effective, long-term energy planning identified in this report that could address these challenges, agencies do not have the foundation they need to develop plans that will continually adapt to a changing energy environment. As a result, agencies are likely to find it increasingly difficult to ensure that they will meet energy goals in the future.

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## Recommendations for Executive Action

We recommend that the Secretary of Energy take the following two actions.

- In conjunction with the Federal Environmental Executive and the Director of the Office of Management and Budget, re-evaluate the current measure for greenhouse gas emissions and establish one that more accurately reflects agencies' performance in reducing these emissions to help determine whether agencies are making progress over time.
- To help agencies address the challenges they face in meeting energy goals into the future, finalize and issue guidance that instructs agencies in developing long-term energy plans that consider the key elements of effective plans identified in this report.

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## Agency Comments and Our Evaluation

We provided a draft of this report to the CEQ, DOD, DOE, GSA, NASA, OMB, USPS, and VA for their review and comment. In commenting on a draft of this report, NASA and USPS generally agreed with our findings, conclusions, and recommendations and provided written comments included as appendixes II and III, respectively. GSA responded by e-mail on September 8, 2008, stating that it concurred with our report. VA neither agreed nor disagreed with our report and provided written comments included as appendix IV. The Council on Environmental Quality, DOD, DOE, and OMB did not provide any comments on our draft. For those agencies who submitted technical and clarifying comments, we incorporated those as appropriate.

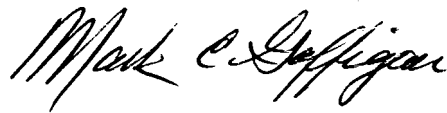
In addition, VA expressed concern that it was not afforded the opportunity for an exit conference. However, we note that we offered the opportunity for such a meeting to the Office of Asset Enterprise Management, the office within VA responsible for energy management and designated by VA at the outset of our engagement as the main point of contact. Furthermore, the Office of Asset Enterprise Management provided written comments on a preliminary draft that we incorporated into the subsequent draft, as appropriate.

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We are sending copies of this report to interested congressional committees and Members of Congress and the Chairman of CEQ; the Administrators of GSA and NASA; the Director of OMB; the Postmaster General and Chief Executive Officer of USPS; and the Secretaries of Defense, Energy, and VA. We also will make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

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If you or your staffs have questions about this report, please contact Mark Gaffigan at (202) 512-3841 or [gaffiganm@gao.gov](mailto:gaffiganm@gao.gov), or Terrell Dorn at (202) 512-2834 or [dornt@gao.gov](mailto:dornt@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix V.



Mark Gaffigan  
Director, Natural Resources  
and Environment



Terrell G. Dorn  
Director, Physical Infrastructure

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# Appendix I: Scope and Methodology

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To determine the extent to which agencies met energy efficiency, greenhouse gas emission, and renewable energy goals, we analyzed data on agencies' performance in meeting these goals using draft agency energy data, as of July 2008, for fiscal year 2007, which were reported by the agencies to the Department of Energy (DOE) for use in DOE's Annual Report to Congress on Federal Government Energy Management and Conservation Programs. We considered agencies to have met the energy efficiency goal for fiscal year 2007 if they reduced energy intensity by at least 6 percent from the 2003 baseline. We also met with officials from DOE to understand how the data are developed.

To assess the agencies' progress in each of these areas in recent years, we reviewed energy efficiency, greenhouse gas emission, and renewable energy goals, as established in current and previous statute and executive orders—the Energy Policy Act of 2005, Executive Order 13123, and Executive Order 13423. We also analyzed data on agencies' performance in meeting the goals, as reported in DOE's annual report to Congress for fiscal year 2005. Furthermore, we analyzed draft data from these annual reports for fiscal years 2006 and 2007. In addition, we met with officials from DOE, the Office of the Federal Environmental Executive, and the Office of Management and Budget to gain their perspective on the goals and an understanding of their roles in overseeing the statute and executive orders. In assessing agencies' performance for 2007 and progress in recent years, we determined these data from DOE's annual reports to be sufficiently reliable for our purpose, which was to convey what the agencies reported to DOE about the status of meeting the energy goals.

To determine the extent to which the agencies are poised to meet future energy goals, we selected six agencies on the basis of several criteria, including the following: (1) energy consumed: of the agencies reporting energy data to DOE, these six agencies together accounted for nearly 94 percent of the energy consumed in standard buildings in fiscal year 2005; (2) level of investment in energy and utility savings performance contracts; (3) amount of renewable energy purchased, and self-generated; and (4) estimated carbon emissions. Because these six agencies accounted for nearly 94 percent of the energy consumed in standard buildings in fiscal year 2005, our findings for these agencies may have great implications for the federal government as a whole. We visited a minimum of two sites per agency to understand efforts toward meeting energy goals at the local level.

To ensure that we had a variety of sites, we selected the sites on the basis of both high and low reductions in energy intensity from 2003 to 2006,

geographic location, site size, and agency recommendation, among other criteria. The six agencies and the sites we visited are listed in table 1.

**Table 1: Agencies and Site Visits Included within Scope of Engagement**

Agency and service, as applicable	Site visit and location
<b>Department of Defense</b>	
Air Force	Fairchild Air Force Base, Wash. McChord Air Force Base, Wash. Offutt Air Force Base, Neb.
Army	Fort Benning, Ga. Fort Lewis, Wash. Fort McPherson, Ga. Fort Stewart, Ga.
Department of Navy	Naval Submarine Base Bangor, Wash. Naval Submarine Base Kings Bay, Ga. Naval Submarine Base New London, Conn.
Department of Energy	Forrestal and Germantown Buildings, Washington, D.C., and Germantown, Md. Sandia National Laboratories, Albuquerque, N.Mex.
Department of Veterans Affairs	VA Long Beach Healthcare System, Long Beach, Calif. Perry Point VA Medical Center, Perry Point, Md.
General Services Administration	Lafayette Building, Washington, D.C. Department of Veterans Affairs Administration Building, Washington, D.C.
National Aeronautics and Space Administration	Dryden Flight Research Center, Calif. Goddard Space Flight Center, Greenbelt, Md. Langley Research Center, Hampton, Va.
U.S. Postal Service	Curseen-Morris Processing and Distribution Center, Washington, D.C. Columbia Processing and Distribution Center, Columbia, S.C.

Source: GAO.

We obtained and analyzed documentation and met with headquarters officials and officials responsible for energy management at the sites from the six agencies. In addition, we systematically reviewed these interviews to determine what primary challenges agencies face and the tools they use to meet energy goals. We used general modifiers (i.e., most, several, some, and a few) to characterize the extent to which agencies were facing and addressing the challenges we found. We used the following method to assign these modifiers to our statements: “most” and “many” represents four to five agencies, “several” and “some” represents three agencies, and “a few” represents two agencies. We also systematically reviewed

documents and interviews to determine whether agencies' long-term plans contained key elements as identified by our past work.<sup>1</sup> For our review of agencies' long-term energy plans, we reviewed planning documents obtained from agency officials that laid out agencies' efforts to achieve the energy goals beyond 1 year. We also met with officials from the Alliance to Save Energy to get their perspective on challenges facing the federal government. Finally, we participated in DOE's Webcast training on energy savings performance contracts offered by DOE and attended GovEnergy, an energy training workshop and exposition for federal agencies.

We conducted this performance audit from May 2007 through September 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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<sup>1</sup>GAO, *Agencies' Strategic Plans Under GPRA: Key Questions to Facilitate Congressional Review*, [GAO/GGD-10.1.16](#) (Washington, D.C.: May 1997).

# Appendix II: Comments from the National Aeronautics and Space Administration

National Aeronautics and Space Administration

Headquarters  
Washington, DC 20546-0001

September 11, 2008



Reply to Attn of: Office of Infrastructure and Administration

Mr. Mark Gaffigan  
Director, Natural Resources Division  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Mr. Terrell G. Dorn  
Director, Physical Infrastructure  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Dear Messrs. Gaffigan and Dorn:

The National Aeronautics and Space Administration (NASA) appreciates the opportunity to comment on your draft report entitled, *Federal Energy Management: Addressing Challenges Through Better Plans and Clarifying the Greenhouse Gas Emissions Measure Will Help Meet Long-term Goals for Buildings (GAO-08-977)*.

Overall, NASA finds the draft report to be thorough, objective, and helpful in addressing one of our top Agency activities, energy management. We are pleased with your recognition of our positive steps and progress in this area, and we generally support the conclusion you have reached. If you have any question or require additional information, please contact Mr. James Leatherwood, Director of the Environmental Management Division, at 202-358-3608 or Mr. Wayne Thalasin, NASA's Energy Manager, at 202-358-3811.

Sincerely,

A handwritten signature in black ink, appearing to read "Olga M. Dominguez".

Olga M. Dominguez  
Assistant Administrator  
Office of Infrastructure and Administration



# Appendix III: Comments from the United States Postal Service

SAMUEL M. PULCRANO  
VICE PRESIDENT, SUSTAINABILITY



September 12, 2008

Mr. Mark Gaffigan  
Director, Natural Resources and Environment  
United States Government Accountability Office  
441 G Street, NW  
Washington, DC 20548-0001

Mr. Terry Dorn  
Director, Physical Infrastructure Issues  
441 G Street, NW  
United States Government Accountability Office  
Washington, DC 20548-0001

Dear Mr. Gaffigan and Mr. Dorn:

The U.S. Postal Service would like to take this opportunity to formally comment on the findings in the draft report entitled, [FEDERAL ENERGY MANAGEMENT: Addressing Challenges Through Better Plans and Clarifying the Greenhouse Gas Emissions Measure Will Help Meet Long-term Goals for Buildings](#) (GAO-08-977).

We generally agree with the findings contained in the draft report about the Postal Service efforts to reduce energy consumption and increase renewable energy use, however, we need to re-emphasize our position on specific issues. The Postal Service is reducing its energy consumption by focusing on those opportunities that provide a strong return on investment (ROI). Our objective is to be as energy efficient as is life cycle cost effective for both new construction and our existing buildings. In regard to renewable energy, given the current economics associated with the technologies, energy conservation is quite often a far better investment of financial resources. We are continuing to install and evaluate renewable technologies and will implement in those applications that are most financially viable.

By focusing on energy conservation and those opportunities that provide a strong ROI, the Postal Service is on target to meet the federal energy reduction objectives in its portfolio of 34,000 buildings without the use of outside financing or the purchase of credits. In addition, a national energy management plan is being reviewed by Postal Service leadership, identifying goals and standards for energy reduction and consumption for facility energy management, fleet management, fuel use and energy consumption. This plan will be released in the next 30 days.

If you or your staff wishes to discuss any of these comments further, I am available at your convenience.

Sincerely,

A handwritten signature in black ink that reads "SM Pulcrano".

Samuel M. Pulcrano

475 L'ENFANT PLAZA SW ROOM 10647  
WASHINGTON DC 20260-4232  
(202) 268-2067

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# Appendix IV: Comments from the Department of Veterans Affairs

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THE DEPUTY SECRETARY OF VETERANS AFFAIRS  
WASHINGTON

September 16, 2008

Mr. Mark Gaffigan  
Director  
Natural Resources and Environment  
U. S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Dear Mr. Gaffigan:

The Department of Veterans Affairs has reviewed your draft report, ***FEDERAL ENERGY MANAGEMENT: Addressing Challenges Through Better Plans and Clarifying the Greenhouse Gas Emissions Measure Will Help Meet Long-term Goals for Buildings*** (GAO-08-977). While we appreciate the opportunity to comment on the draft report, we were surprised that the Department was not afforded the opportunity of an exit conference with GAO.

Although the recommendations were not directed to the Secretary of Veterans Affairs, we have provided comments in the enclosure.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Gordon H. Mansfield".

Gordon H. Mansfield

Enclosure

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# Appendix V: GAO Contact and Staff Acknowledgments

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## GAO Contact

Mark Gaffigan, (202) 512-3841 or [gaffiganm@gao.gov](mailto:gaffiganm@gao.gov)  
Terrell Dorn, (202) 512-2834 or [dornt@gao.gov](mailto:dornt@gao.gov)

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## Staff Acknowledgments

In addition to the contact named above, Karla Springer, Assistant Director; Alisha Chugh; Matt Cook; Elizabeth Curda; Kasea Hamar; Carol Henn; Michael Kennedy; Brian Lepore; Marietta Mayfield; Jim Melton; Mehrzad Nadji; Ellery Scott; Jeremy Sebest; Rebecca Shea; Ben Shouse; Carol Herrnsstadt Shulman; Barbara Timmerman; and Lisa Vojta made significant contributions to this report.

We also would like to pay special tribute to our much-missed friend, colleague, and the analyst-in-charge of this engagement, Marcia Brouns McWreath, who passed away after a long illness. Even when not at full strength, Marcia continued to lead her team throughout the course of the job. While we miss Marcia for her leadership, kindness, selflessness, and sharp wit, we continue to be thankful that we had her with us during her more than 30-year career at GAO.

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