

**GAO**

Report to the Subcommittee on  
Financial Services and General  
Government, Committee on  
Appropriations, U.S. Senate

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June 2010

# FEDERAL ENERGY MANAGEMENT

GSA's Recovery Act  
Program Is on Track,  
but Opportunities  
Exist to Improve  
Transparency,  
Performance Criteria,  
and Risk Management



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Highlights of [GAO-10-630](#), a report to the Subcommittee on Financial Services and General Government, Committee on Appropriations, U.S. Senate

## Why GAO Did This Study

The American Recovery and Reinvestment Act of 2009 (Recovery Act) provided the General Services Administration (GSA) with \$5.55 billion to invest in federal buildings and promote economic recovery. This funding includes \$4.5 billion to convert buildings to high-performance green buildings (HPGB), which seek to reduce energy and water use, among other goals.

GAO was asked to address the (1) steps GSA has taken to implement the program and make its Recovery Act projects transparent to the public, (2) extent to which GSA's Recovery Act projects are helping the agency convert buildings to HPGB and addressing federal energy and water conservation requirements and goals, and (3) extent to which GSA has identified potential risks to its Recovery Act program and developed strategies to mitigate those risks. GAO reviewed GSA documents and relevant laws and executive orders, and interviewed GSA officials at headquarters and staff for 12 projects, which varied in type, size, and location.

## What GAO Recommends

GAO is recommending that the GSA Administrator should make more information publicly available on Recovery Act projects, include transportation improvements in GSA's criteria for projects, and do more to plan for project-level risks. On commenting on a draft of this report, the GSA Administrator agreed with the recommendations.

View [GAO-10-630](#) or [key components](#).

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# FEDERAL ENERGY MANAGEMENT

## GSA's Recovery Act Program Is on Track, but Opportunities Exist to Improve Transparency, Performance Criteria, and Risk Management

### What GAO Found

GSA has put an organizational structure in place to implement its Recovery Act program and, as of April 30, 2010, had obligated just over \$4 billion of its \$5.55 billion appropriation, and is on track to meet the act's obligation deadlines. GSA also has published information on its Recovery Act program, such as agencywide plans for spending funds and lists of projects, but this information does not identify the nature of the work being conducted or describe the 263 projects GSA has selected for Recovery Act funding. Without this information, the program is less than fully transparent—a key GSA Recovery Act goal—because the public cannot readily discern what individual projects entail or are expected to achieve with Recovery Act funding.

### GSA Recovery Act Obligation Milestones and Deadlines

Dollars in billions			Amount obligated (cumulative)
	Amount to be obligated	Time frame	
Milestone	Not less than a total of \$1 billion	Aug. 1, 2009	\$1.1
Milestone	Not less than a total of \$1.2 billion	Sept. 7, 2009	1.3
Milestone	Not less than a total of \$2 billion	Dec. 31, 2009	2.1
Milestone	Not less than a total of \$4 billion	Mar. 31, 2010	4.0
Deadline	Not less than a total of \$5 billion	Sept. 30, 2010	
Deadline	Not less than a total of \$5.55 billion	Sept. 30, 2011	

Source: GAO analysis of GSA data.

GSA's Recovery Act projects will enhance energy and water conservation performance in the 263 projects to varying degrees. GSA has begun collecting the data it would need to measure the likely extent of improvement. GSA set minimum performance criteria for its projects, which include reducing energy use by 30 percent. The criteria do not, however, include reducing the energy and environmental impacts of transportation through building location and site design, although this is part of the statutory definition of a HPGB. Under the Recovery Act, GSA is to use this definition when converting existing buildings. According to GSA, some managers are designing transportation-related improvements into their projects. However, because it is not part of GSA's criteria, other managers may not be systematically considering such improvements. According to GSA, the agency has begun to roll out a new centralized data system to collect and report on specific information for Recovery Act projects' green improvements and performance.

GSA has identified risks to its Recovery Act program, such as the risk that Recovery Act reporting is inaccurate or incomplete, and risk mitigation strategies. In addition, GSA's approach to risk management is generally consistent with best practices we have developed. However, GSA relies on informal communication to identify project-level risks and has not taken steps to ensure the completion of project-level risk planning documents required by GSA. GAO found that the required documents, which are intended to help plan for project-level risks, had not been fully completed for 9 of the 12 projects reviewed. Unidentified risks to GSA's Recovery Act projects could potentially limit GSA's ability to achieve Recovery Act goals.

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## Abbreviations

ADA	Americans with Disabilities Act
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
CPP	comprehensive project plan
EISA	Energy Independence and Security Act
E.O.	executive order
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
FEMP	Federal Energy Management Program
GSA	General Services Administration
HPGB	high-performance green building
HVAC	heating, ventilation, and air conditioning
IPC	International Plumbing Code
LCC	life-cycle costing
LEED	Leadership in Energy and Environmental Design
MOU	memorandum of understanding
MPC	minimum performance criteria
NIST	National Institute of Standards and Technology
OFHPGB	Office of Federal High-Performance Green Buildings
OIG	Office of Inspector General
OMB	Office of Management and Budget
PBS	Public Buildings Service
PDRI	project development rating index
PMO	Program Management Office
PV	photovoltaic
Recovery Act	American Recovery and Reinvestment Act of 2009
Recovery.gov	<a href="http://www.recovery.gov">www.recovery.gov</a>
SME	subject matter experts
UPC	Uniform Plumbing Code
USDA	U.S. Department of Agriculture

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United States Government Accountability Office  
Washington, DC 20548

June 16, 2010

The Honorable Richard J. Durbin  
Chairman  
The Honorable Susan M. Collins  
Ranking Member  
Subcommittee on Financial Services  
and General Government  
Committee on Appropriations  
United States Senate

In January 2003, we designated federal real property as a high-risk area, in part because of deteriorating facilities and unreliable real property data.<sup>1</sup> In addition, in 2007, we reported that addressing the needs of aging and deteriorating federal facilities remains a problem for major real property-holding agencies, and that, according to recent estimates, tens of billions of dollars will be needed to repair or restore these assets.<sup>2</sup> The American Recovery and Reinvestment Act of 2009 (Recovery Act)<sup>3</sup> provided the General Services Administration (GSA) with \$5.55 billion to invest in federal buildings, create jobs, and promote economic recovery. Of this \$5.55 billion, over \$1 billion is being used by GSA for new federal buildings, courthouses, border stations, and land ports of entry. Additionally, the Recovery Act provided that at least \$4.5 billion be used “for measures necessary to convert GSA facilities to high-performance green buildings” as defined by section 401 of the Energy Independence and Security Act of 2007 (EISA).<sup>4</sup> High-performance green buildings are designed to achieve a number of environmental goals, including reducing energy, water, and material resource use and the buildings’ impact on the environment and on building occupants, by means such as using recycled or nontoxic products in the buildings.

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<sup>1</sup>GAO, *High-Risk Series: Federal Real Property*, [GAO-03-122](#) (Washington, D.C.: January 2003).

<sup>2</sup>GAO, *Federal Real Property: Progress Made Toward Addressing Problems, but Underlying Obstacles Continue to Hamper Reform*, [GAO-07-349](#) (Washington, D.C.: Apr. 13, 2007).

<sup>3</sup>Pub. L. No. 111-5, Div. A, Title V, 123 Stat. 115, 149-150 (2009).

<sup>4</sup>For a definition of a “high-performance green building,” see the Energy Independence and Security Act of 2007, Pub. L. No. 110-140, Title IV, 121 Stat. 1492, 1598-1599 (2007).

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The federal government is the nation's single largest energy consumer, and federal buildings accounted for about 35 percent of the government's total energy use in fiscal year 2009.<sup>5</sup> Converting federal facilities to high-performance green buildings could help reduce the federal government's energy consumption and bring federal buildings more in line with federal energy and water conservation requirements and goals. Over the last several years, a number of laws and executive orders have established new requirements and direction for improving the energy and water conservation performance of federal facilities. For example, in December 2007, EISA established new requirements for reducing energy use at federal buildings, reducing fossil fuel use for certain federal buildings, and managing storm water runoff. GSA's Recovery Act funding, which is more than three times greater than the agency's 2009 funding for new construction and renovations, provides a unique opportunity for GSA to address the deterioration of some of its aging buildings while also improving their energy and water conservation performance. However, to obligate this funding within the time frame required by the Recovery Act,<sup>6</sup> GSA will have to implement hundreds of projects across the country at an accelerated pace.

Given the magnitude of GSA's Recovery Act program and the associated time frame, you asked us to review GSA's plans and efforts related to the use of Recovery Act funds. This report provides information and analysis on (1) the steps GSA has taken to implement the program and make its Recovery Act projects transparent to the public, (2) the extent to which GSA's Recovery Act projects are helping the agency convert buildings to high-performance green buildings and address energy and water conservation requirements and goals, and (3) the extent to which GSA has taken steps to identify potential risks to its Recovery Act program and developed strategies to mitigate those risks.

To address these questions, we reviewed key documents describing GSA's efforts to organize and implement the program, publicly available information about GSA's Recovery Act program, the scope of GSA's Recovery Act projects, and GSA's progress in obligating and spending funds. We compared criteria GSA established for Recovery Act projects

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<sup>5</sup>According to a U.S. Department of Energy official, this information is based on preliminary fiscal year 2009 data.

<sup>6</sup>The Recovery Act requires GSA to obligate \$5 billion by September 30, 2010, and to obligate the full Recovery Act funding amount, \$5.55 billion, by September 30, 2011.

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with selected legislation and executive orders relevant to the energy and water conservation performance of federal buildings. Also, we interviewed GSA officials in headquarters and regional offices, including project management staff for 12 full and partial building modernization projects we selected as case studies using a judgmental sample. Because the sample is judgmental, the information we obtained from those projects cannot be generalized to all of GSA's Recovery Act projects. Among the factors we considered in selecting the 12 projects was whether GSA had identified them as being far enough along in the design process to have information on their expected performance. In addition, we used the projects' type, size, and geographic location as selection criteria. We collected information from our 12 case studies on their expected energy and water conservation performance. Finally, we reviewed GSA's efforts to develop and implement a risk management plan, compared those efforts with accepted risk management best practices, and compared the project risk planning efforts from our 12 case studies with GSA policies and Office of Management and Budget (OMB) guidance on project-level risk planning. See appendix I for a more complete description of our scope and methodology.

We conducted this performance audit from June 2009 through June 2010 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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## Background

Of the \$5.55 billion the Recovery Act provided to GSA's Federal Buildings Fund,<sup>7</sup> \$750 million is being used by GSA for new federal buildings and U.S. courthouses, \$300 million is being used for new border stations and land ports of entry, and \$4.5 billion is being used for measures necessary

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<sup>7</sup>GSA's real property activities are financed through the Federal Buildings Fund, a revolving fund that includes the rent federal agencies pay for the space that GSA provides to them.



to convert existing GSA facilities to high-performance green buildings.<sup>8</sup> Overall, for its Recovery Act program, GSA selected 263 projects in all 50 states,<sup>9</sup> the District of Columbia, and 2 U.S. territories. As shown in table 1, GSA’s Recovery Act projects fall into the following four main categories: (1) new construction, (2) full and partial building modernizations, (3) limited scope projects, and (4) small projects.

**Table 1: GSA’s Recovery Act Program**

Dollars in millions		
Project category	Total projects	Recovery Act funding <sup>a</sup>
New construction		
Federal buildings and U.S. courthouses	11	\$750
Border stations and land ports of entry	7	300
Full and partial building modernizations		
Full building modernizations	32	2,708
Partial building modernizations	13	483
Limited scope projects	200	933
Small projects <sup>b</sup>	-	140
Other <sup>c</sup>	-	235

Source: GAO analysis of GSA data.

Note: Data are based on GSA’s original March 2010 project plan.

<sup>a</sup>Values may not add up to \$5.55 billion because of rounding.

<sup>b</sup>GSA does not specifically identify the number of small projects in its project plan. As of March 31, 2010, GSA had funded 140 small projects.

<sup>c</sup>Other refers to funds provided for rental of space, building operations, GSA’s Office of Federal High-Performance Green Buildings, and an apprenticeship program.

<sup>8</sup>According to EISA, the term “high-performance building” means a building that integrates and optimizes on a life-cycle basis all major high-performance attributes, including energy conservation, environment, safety, security, durability, accessibility, cost-benefit, productivity, sustainability, functionality, and operational considerations. See Pub. L. No. 110-140, Title IV, 121 Stat. 1492, 1598 (2007). The term “high-performance green building” means a high-performance building that, during its life cycle, as compared with similar buildings, incorporates the eight elements listed in table 3.

<sup>9</sup>GSA will continue to make revisions to its project plan over time.

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The following information describes the four main categories for GSA's Recovery Act projects:

- *New construction*: Projects associated with building entirely new structures or significant extensions to existing structures, including the construction of new federal buildings and courthouses, as well as border stations and land ports of entry.
- *Full and partial building modernizations*: Projects associated with the replacement or upgrade of multiple building systems and components (such as windows, roofs, and plumbing, electrical, and mechanical systems), which are intended to significantly increase the usable life of the buildings. Full modernizations are comprehensive renovations that replace or restore nearly all the major systems in a building. Partial modernizations are more limited and address one or a few systems in the building.
- *Limited scope projects*: Projects associated with a single building system—such as lighting or plumbing—that could include upgrading existing systems or installing energy and environmental improvements, such as installing energy-generating photovoltaic panels on the roof of a building.
- *Small projects*: Limited scope projects whose costs are below the prospectus level.<sup>10</sup>

GSA officials told us that in selecting Recovery Act projects, they gave priority to those projects that would help transform federal buildings into high-performance green buildings and obligate funds quickly. Obligating funds quickly was important because the Recovery Act requires GSA to obligate \$5 billion by September 30, 2010, and to obligate the full Recovery Act funding amount, \$5.55 billion, by September 30, 2011. To reflect these priorities, GSA developed selection criteria for full and partial building

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<sup>10</sup>Before Congress makes an appropriation, GSA submits to the Senate Committee on Environment and Public Works and the House Committee on Transportation and Infrastructure detailed project descriptions, called prospectuses, for authorization by these committees when the proposed construction, alteration, or acquisition of a building to be used as a public building exceeds a specified threshold. For fiscal year 2009, the threshold for construction, alteration, and lease projects was \$2.66 million (see 40 U.S.C. § 3307).

modernization projects, which are presented in table 2 in descending order of weight.<sup>11</sup>

**Table 2: GSA’s Recovery Act Project Selection Criteria for Full and Partial Building Modernizations**

<b>Criterion</b>	<b>Description</b>
Helping transform federal buildings into high-performance green buildings	Ability of a project to implement high-performance features—such as energy conservation and renewable energy generation.
Execution timing	Speed at which a contract for the project could be awarded.
Minimizing execution risk	Lower risk of facing schedule delays, such as a project where design work had already been completed.
Improving facility condition	Extent to which a project would improve the condition of the asset by addressing identified repair needs.
Improving asset utilization	Extent to which a project would increase asset utilization by reducing vacant space or increasing the intensity of asset use.
Return on investment	Expected time it would take GSA to recover the cost of the project through lower opportunity costs.
Lease cost avoidance	Degree to which lease costs would be avoided by completing the project.
Historical significance	Extent to which a building has been recognized as having historical significance.

Source: GAO analysis of GSA information.

Note: The execution timing and minimizing execution risk criteria were given equal weight.

GSA scored projects in accordance with the relative priority it assigned to each criterion and then ranked potential Recovery Act projects on the basis of these results. GSA assigned the highest priority to the first three criteria listed in table 2. The execution timing and minimizing execution risk criteria are designed to identify projects that could be started quickly, would create jobs as soon as possible, and would also have a low risk of not being completed within the Recovery Act’s deadlines. Recovery Act funds must be spent no later than 5 years after the end of the fiscal year in which the funds are required to be obligated. Typically, the funds for a large construction project are obligated throughout the life of the project, and the 5-year limitation on expenditures generally does not apply to funds made available to GSA for acquisition and construction. Therefore, the Recovery Act’s establishment of deadlines for obligating and spending funds differs from the typical time frames for GSA’s construction projects.

Many of the projects GSA selected for new construction and full and partial building modernizations had previously received partial funding for

<sup>11</sup>The execution timing and minimizing execution risk criteria were given equal weight.

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design or for early project phases. For example, 41 of the 63 new construction and full and partial building modernization projects had received funding from previous fiscal year appropriations. GSA officials said that they used Recovery Act funding to quickly start or expand construction on these projects, while also identifying ways to incorporate energy savings or environmental improvements into their design. Additionally, GSA funded cost escalation for some ongoing projects—that is, projects that needed additional funding to start or to complete construction. For example, according to GSA officials, the renovation of the Thurgood Marshall U.S. Courthouse in New York, a full building modernization, needed Recovery Act funding to address an increase in cost after bids from contractors came in higher than expected.

According to GSA officials, the other five criteria listed in table 2 are those GSA typically uses when selecting capital projects, such as improving facility condition. In GSA's supplemental information to its financial statements for fiscal year 2009, GSA reported an inventory of capital repairs and alterations estimated to cost approximately \$5.0 billion. The buildings GSA selected for its Recovery Act program account for about \$3.7 billion of this estimate, but the Recovery Act funding will not fully address the needs of each selected building, since reducing GSA's capital repairs and alterations inventory was not the intent of the Recovery Act, according to GSA officials. GSA officials also stated that they will use Recovery Act funds for projects or elements of projects that are not among the estimated capital improvement needs, such as projects to incorporate high-performance green building features. While improving facility condition was one of GSA's selection criteria, making facilities greener and obligating funds quickly received higher priority. GSA officials estimated that Recovery Act projects will reduce the agency's total capital repairs and alterations estimate by \$1.5 to \$2.0 billion.

According to the Web site, [www.recovery.gov](http://www.recovery.gov) (Recovery.gov), the Recovery Act has three immediate goals: (1) create new jobs and save existing ones, (2) spur economic activity and invest in long-term growth, and (3) foster "unprecedented" levels of accountability and transparency in government spending. In addition, GSA's Recovery Act program plan states that GSA will maintain an unprecedented level of openness and

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transparency in operations.<sup>12</sup> GSA has published information on its Recovery Act program on both its own Recovery Act Web site<sup>13</sup> and Recovery.gov. The information includes the following documents:

- The Agencywide Recovery Plan details GSA's broad Recovery Act goals for the entire agency, GSA programs funded by the Recovery Act, contracting operations, and agency accountability efforts. The agencywide plan also outlines the public benefits GSA expects from its investments, such as job creation and environmental benefits.
- The Federal Buildings Fund Program Plan contains a summary of the objectives and activities that GSA's Public Buildings Service (PBS)<sup>14</sup> plans to implement with the \$5.55 billion in Recovery Act funds. The plan also includes information on the projects' selection, delivery schedule, and performance measures. Additionally, the plan describes how GSA will address issues such as monitoring and evaluation, transparency, and accountability for its Recovery Act program.
- The PBS Project Plan details how GSA will spend its \$5.55 billion in Recovery Act funds. The project plan lists all of the GSA building projects that will receive Recovery Act funds and, for each project, includes the name, location (city and state), and estimated cost. GSA has the ability to shift funds from one project to another but must give the Senate and House Committees on Appropriations 15 days notice before doing so. Agency officials stated that they will continue to revise GSA's project plan in the future.
- The weekly financial and activity reports contain information on GSA's Recovery Act weekly appropriations, obligations, and disbursements, along with activities and planned actions.

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<sup>12</sup>We will soon publicly release a report on the extent to which recipient reports on Recovery.gov, including reports related to GSA's Federal Buildings Fund, provided a basic understanding of Recovery Act spending and outcomes. See GAO, *Recovery Act: Increasing the Public's Understanding of What Funds Are Being Spent on and What Outcomes Are Expected*, GAO-10-581 (Washington, D.C.: May 27, 2010).

<sup>13</sup>See the following Web address: <http://www.gsa.gov/recovery> (last accessed on June 4, 2010).

<sup>14</sup>PBS is the landlord for the civilian federal government, acquires space on behalf of the federal government through new construction and leasing, and acts as a caretaker for federal properties across the country. PBS is funded primarily through the Federal Buildings Fund, which is supported by rent from federal customer agencies.

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- The Federal Buildings Fund Investments Map shows where GSA is spending its Recovery Act funds and provides information on spending to date, measured in obligations and expenditures, for individual projects or states. GSA posted an interactive map on its Web site, which graphically depicts its Recovery Act obligations and expenditures by state and project.
  - Recipient reporting guidance for registration and reporting offers assistance for prime recipients of Recovery Act funds, who must register with the government and report on how Recovery Act funds were used. GSA posts its recipient reporting data on Recovery.gov, along with other participating agencies.

GSA also reports frequently to OMB and congressional committees on Recovery Act plans, progress, and accomplishments. For example, at the request of OMB and the White House, GSA produced a *100 Days Report*, which updated current Recovery Act obligations and reported planned obligations to the end of calendar year 2009. GSA also produces monthly reports on obligations versus expenditures for the House Committee on Transportation and Infrastructure.

Since the 1970s, federal statutes and executive orders have established and revised a number of requirements and goals for changing the way federal agencies use or obtain energy. For example, EISA established new energy management requirements and goals, such as energy-efficiency performance standards for new buildings and major renovations. In addition, EISA defined a high-performance green building, which includes eight elements, as shown in table 3.

**Table 3: Elements of a High-Performance Green Building**

Number	Element
1	Reduces energy, water, and material resource use.
2	Improves indoor environmental quality, including reducing indoor pollution, improving thermal comfort, and improving lighting and acoustic environments that affect occupant health and productivity.
3	Reduces negative impacts on the environment throughout the life cycle of the building, including air and water pollution and waste generation.
4	Increases the use of environmentally preferable products, including biobased, recycled content, and nontoxic products with lower life-cycle impacts.
5	Increases reuse and recycling opportunities.
6	Integrates systems in the building.
7	Reduces the environmental and energy impacts of transportation through building location and site design that supports a full range of transportation choices for users of the building.
8	Considers indoor and outdoor effects of the building on human health and the environment, including improvements in worker productivity, the life-cycle impacts of building materials and operations, and other factors that the Director of GSA's Office of Federal High-Performance Green Buildings considers to be appropriate.

Source: GAO analysis of EISA, 2007 (Pub. L. No. 110-140).

While the Recovery Act specifies that GSA should use Recovery Act funds for measures necessary to convert GSA facilities to high-performance green buildings, as defined in section 401 of EISA, GSA also has to follow federal energy and water conservation requirements and goals established in federal statutes and executive orders. The federal energy and water conservation requirements and goals which we refer to later in this report are summarized in table 4.

**Table 4: Selected Federal Energy and Water Conservation Requirements and Goals from Statutes and Executive Orders**

Statute or executive order	Issue	Building category	Energy and water conservation requirements and goals
EISA 2007 Sec. 431 (12/19/2007)	Energy intensity reduction <sup>a</sup>	Federal buildings	Each agency shall apply conservation measures to reduce energy consumption per gross square foot of the federal buildings of the agency by 15 percent by 2010 and 30 percent by 2015 compared with 2003.
EISA 2007 Sec. 433 (12/19/2007)	Fossil fuel energy reduction	New federal buildings and federal buildings undergoing major renovations	Reduce fossil fuel-generated energy consumption by 55 percent by 2010 and 65 percent by 2015 compared with 2003.
EISA 2007 Sec. 434 (12/19/2007)	Metering	All buildings	Each agency shall provide for equivalent metering of natural gas and steam by 2016.

Statute or executive order	Issue	Building category	Energy and water conservation requirements and goals
EISA 2007 Sec. 438 (12/19/2007)	Storm water runoff	Federal facility with a footprint that exceeds 5,000 square feet	Maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.
EISA 2007 Sec. 523 (12/19/2007)	Solar hot water heaters	New federal buildings or federal buildings undergoing major renovations	Not less than 30 percent of the hot water demand must be met through the installation and use of solar hot water heaters, provided such heaters are life-cycle cost-effective.
E.O. 13423 <sup>b</sup> (1/24/2007)	Water consumption intensity <sup>c</sup>	All buildings	Reduce the agency's water consumption intensity by 2 percent annually through the end of 2015 or 16 percent by 2015 compared with 2008.
Energy Policy Act of 2005 (8/8/2005)	Energy-efficiency performance standards	New federal buildings	Achieve energy consumption levels that are at least 30 percent below the levels established in the standard established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, if life-cycle cost-effective.
Guiding principles <sup>d</sup> (12/1/2008)	Energy use reduction	New construction	Reduce energy use by 30 percent compared with 2007.
Guiding principles (12/1/2008)	Energy use reduction	Major renovations	Reduce energy use by 20 percent compared with 2003.
Guiding principles (12/1/2008)	Indoor potable water	New construction and major renovations	Use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building.
Guiding principles (12/1/2008)	Outdoor potable water	New construction and major renovations	Reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means, such as plant species.

Source: GAO analysis of EISA, 2007; the Energy Policy Act of 2005; Executive Order 13423; and high-performance and sustainable buildings guidance.

<sup>a</sup>Energy intensity is defined as energy consumption, measured in British thermal units, per gross square foot.

<sup>b</sup>Executive Order 13514, issued in October 2009, strengthened this water intensity consumption goal by extending the fiscal year-end date to 2020. For example, the executive order says to "reduce potable water consumption intensity by 2 percent annually through 2020 or 26 percent by 2020."

<sup>c</sup>Water consumption intensity is defined as gallons per gross square foot of facility space.

<sup>d</sup>The Interagency Sustainability Working Group, as a subcommittee of the Steering Committee established by Executive Order 13423, initiated development of the guidance for the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* to assist agencies in meeting the high-performance and sustainable building goals of Executive Order 13423.



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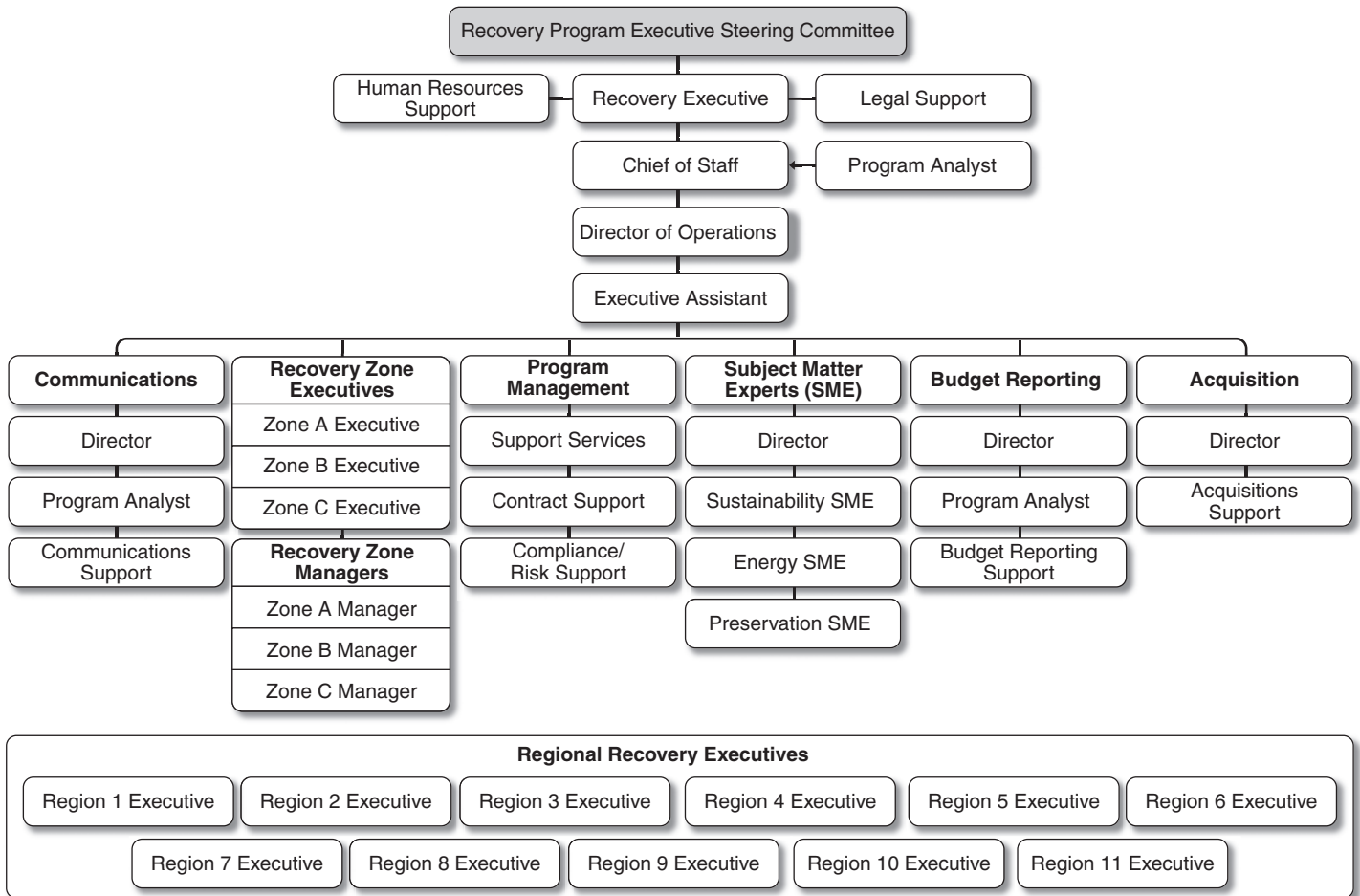
**GSA Has Processes to Manage Its Program and Meet Obligation Deadlines but Has Not Provided Key Information about Its Projects to the Public**

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**GSA Has Processes in Place to Manage Its Program and Is on Track to Meet Recovery Act Obligation Deadlines**

In March 2009, GSA created a national program management office (PMO) to oversee its Recovery Act program and established interim obligation milestones to help it achieve its Recovery Act obligation deadlines. The PMO is supported by the Recovery Program Executive Steering Committee headed by the PBS Deputy Commissioner. The Executive Steering Committee has developed a nationwide program strategy and priorities for the program. Figure 1 illustrates the organization of the PMO. A program management recovery executive heads the PMO and is supported by zone and regional recovery executives, who are responsible for monitoring and reviewing the performance of Recovery Act projects and managing risks at the regional level. In addition, subject matter experts support the regional teams in delivering projects, and two contractors are responsible for project tracking and for reporting and communication. The PMO uses data from projects to look for trends in cost and schedule performance for the program.

**Figure 1: Organization Chart for GSA's Program Management Office**



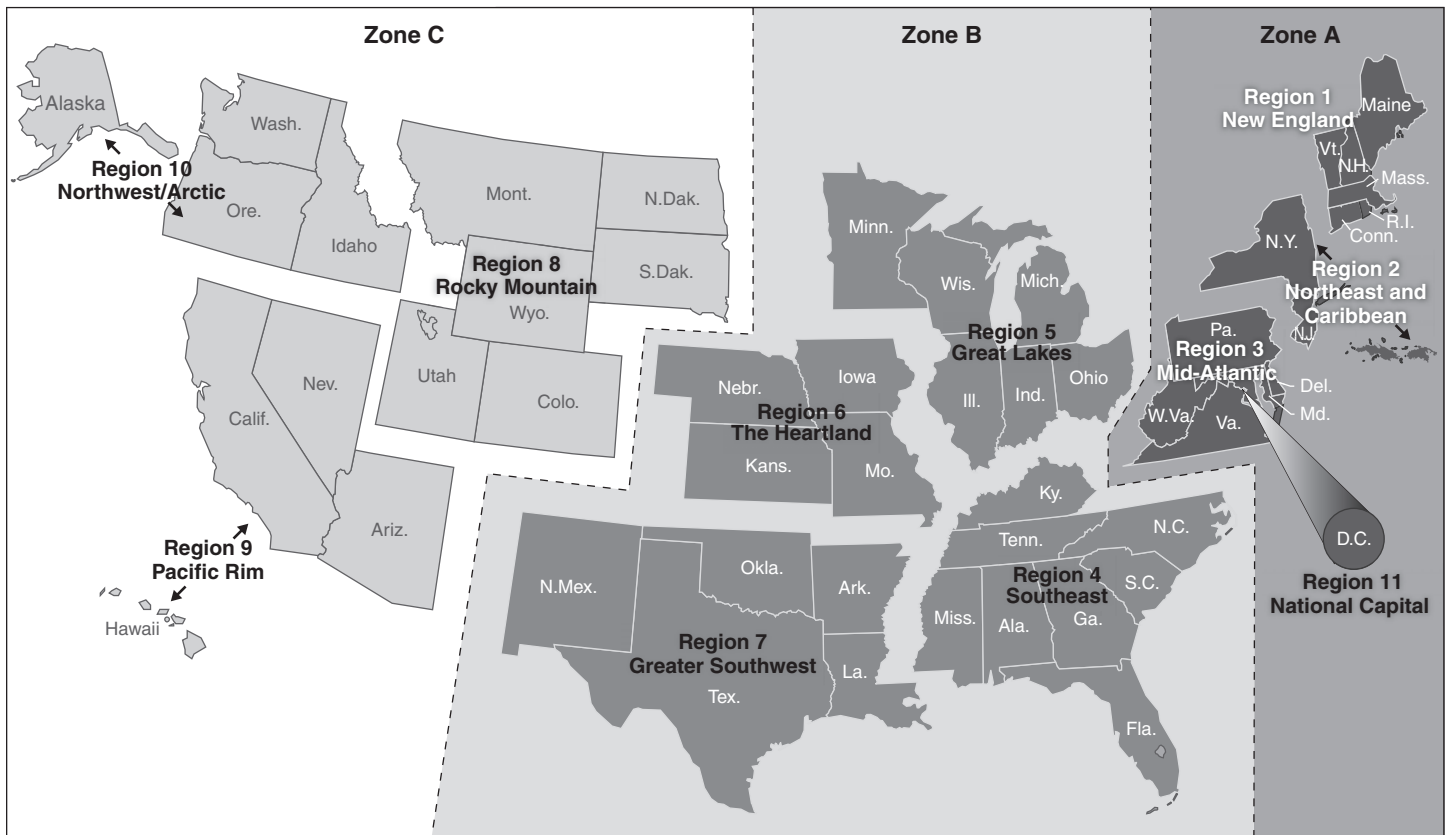
Source: GAO presentation of GSA information.

As shown in figure 2, GSA has grouped its 11 regions into three Recovery Act zones.<sup>15</sup> GSA officials stated that the objectives of the zone structure are to create and foster the sharing of ideas and resources and to provide project oversight. Also, the zone structure provides a link between the project leadership and the PMO. According to GSA officials, the PMO's

<sup>15</sup>Recovery Act Zone A includes GSA regions 1, 2, 3, and 11 (New England, Northeast and Caribbean, Mid-Atlantic, and National Capital). Recovery Act Zone B includes GSA regions 4, 5, 6, and 7 (Southeast, Great Lakes, Heartland, and Greater Southwest). Recovery Act Zone C includes GSA regions 8, 9, and 10 (Rocky Mountain, Pacific Rim, and Northwest/Arctic).

efforts and success have also contributed to improvements in GSA’s other operations. For example, GSA is reorganizing PBS’s internal structure to create more national coherence by having all 11 regions work together, as under the Recovery Act zone structure, rather than independently. Furthermore, GSA is realigning its Office of Design and Construction<sup>16</sup> to directly coordinate with the PMO, which will allow the two offices to share ideas.

**Figure 2: GSA’s Recovery Act Zones and Regions**



Sources: GSA; Map Resources (map).

<sup>16</sup>The Office of Design and Construction is responsible for providing national leadership and policy direction in the areas of architecture, engineering, urban development, construction services, and project management.

The PMO established interim milestones to help GSA achieve the two Recovery Act obligation deadlines. As we have previously noted, the Recovery Act requires GSA to obligate \$5.0 billion by September 30, 2010, and to obligate the full Recovery Act funding amount, \$5.55 billion, by September 30, 2011. Table 5 shows the four interim milestones that the PMO set and the cumulative amount that GSA obligated by each of the milestones. As of April 30, 2010, GSA had obligated just over \$4.0 billion. According to GSA officials, GSA remains on track to achieve its overall Recovery Act obligation deadlines.

**Table 5: GSA’s Recovery Act Obligation Milestones and Deadlines**

Dollars in billions

	<b>Amount to be obligated</b>	<b>Time frame</b>	<b>Amount obligated (cumulative)</b>
Milestone	Not less than a total of \$1 billion	August 1, 2009	\$1.1
Milestone	Not less than a total of \$1.2 billion	September 7, 2009	1.3
Milestone	Not less than a total of \$2 billion	December 31, 2009	2.1
Milestone	Not less than a total of \$4 billion	March 31, 2010	4.0
Deadline	Not less than a total of \$5 billion	September 30, 2010	
Deadline	Not less than a total of \$5.55 billion	September 30, 2011	

Source: GAO analysis of GSA data.

Note: Data for the amount obligated (cumulative) column are rounded.

According to GSA’s Agencywide Recovery Plan, GSA’s goal is to award 99 percent of Recovery Act dollars through competitive awards. GSA has identified approximately 1 percent of Recovery Act funds that may be awarded through other-than-fully-competitive means.<sup>17</sup> To help achieve this goal, GSA plans to add Recovery Act projects to existing, competitively awarded contracts when they are within the scope of work, award ceiling, and terms of the agreement. In March 2010, the GSA Office of Inspector General (OIG) reported that GSA incorrectly executed the construction portion of the contract to which a Recovery Act project was added—a federal courthouse in Austin, Texas— and concluded that the

<sup>17</sup>These were primarily for sole-source HUBZone or 8(a) awards.

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award was not competitive.<sup>18</sup> PBS disagreed with the OIG's findings. GSA has awarded additional work to this project using Recovery Act funding and considered it to be competitively awarded because it considers the initial contract to have been competitively awarded.<sup>19</sup>

GSA's \$5.55 billion in Recovery Act funding, which must be obligated over 2 fiscal years, is over three times the agency's 2009 funding for new construction and renovations. To address this increase in its workload, GSA determined that it would need to add over 200 full-time-equivalent personnel, including contracting officers. Additionally, GSA officials said they have transferred experienced personnel from other work to Recovery Act projects. GSA is also hiring temporary federal personnel and contractors, both to address the increased workload and to fill the gaps created by transferring experienced staff to Recovery Act work. As of April 23, 2010, GSA had hired 96 full-time-equivalent personnel and 38 contractors, and it plans to hire an estimated 68 additional personnel by the end of fiscal year 2010.

The Recovery Act requires recipients to report data on jobs funded each calendar quarter. GSA established an outreach and call center to assist recipients in meeting their reporting requirements. According to GSA officials, 99.0 percent of GSA's prime recipients have reported during the April 2010 reporting period, which represents 99.8 percent of GSA's Recovery Act obligations for PBS. For the most recent reporting period—January 1, 2010, to March 31, 2010,—GSA recipients reported 2,847 jobs funded. GSA officials stated that the requirement for recipient reporting, including jobs data, is a contractual obligation, and if recipients do not report it is considered a breach of contract.

The GSA OIG received \$7 million from the Recovery Act for oversight and audit of programs, grants, and projects. To promote accountability and

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<sup>18</sup>Specifically, the GSA OIG found that the contracting approach was incorrectly executed and resulted in the construction portion of the contract being awarded as an unpriced option for \$102 million without justification for using other than full and open competition. According to PBS officials, the construction phase was not an unpriced option and proper evaluation and competition occurred. See General Services Administration, Office of Inspector General, *Recovery Act Report—Austin Courthouse Project Review of PBS's Major Construction and Modernization Projects Funded by the American Reinvestment and Recovery Act of 2009*, A090172/P/R/R10001 (Washington, D.C.: March 2010).

<sup>19</sup>We did not evaluate the courthouse project in Austin, Texas, or its contract as part of our review.

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transparency on the use of Recovery Act funds, the Recovery Accountability and Transparency Board worked with Federal Inspectors General to establish a multiphased approach for reviewing agencies' oversight of recipients' Recovery Act data. The first phase, conducted before the start of the first recipient reporting cycle, provided a snapshot of agencies' data review processes.<sup>20</sup> The second phase, conducted after the first reporting cycle ended, reviewed data oversight at seven agencies, including GSA, by their respective OIG.<sup>21</sup> The GSA OIG is currently examining the effectiveness of GSA's review process, comparing GSA and OMB guidance to determine whether any conflict exists, and will issue a report no later than June 2010. We did not evaluate recipient-reported data as part of this review. However, we have reported on problems with data reported by recipients of Recovery Act funds administered by federal agencies generally, though not by GSA specifically. For example, in November 2009, we reported that although the job data reported by recipients provided some insight into their use of Recovery Act funding, a range of significant reporting and quality issues needed to be addressed.<sup>22</sup> In December 2009, OMB issued guidance to further improve the quality of the data that Recovery Act recipients submit.<sup>23</sup> Furthermore, in March 2010, we reported that while progress was achieved in addressing some data quality and reporting issues identified in the first round of recipient reporting, data errors, reporting inconsistencies, and decisions made by some recipients not to use the new job reporting guidance for the second round compromised data quality and the ability to aggregate the data.<sup>24</sup> Overall, while significant issues remain, the second round of reporting

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<sup>20</sup>Department of Health and Human Services, *Summary of Inspectors General Reports on Federal Agencies' Data-Quality Review Processes*, OIG Report No. A-09-10-01002 (Washington, D.C.: Nov. 2009).

<sup>21</sup>U.S. Department of Transportation, Office of Inspector General, *Recovery Act Data Quality: Errors in Recipients' Reports Obscure Transparency* (Washington, D.C.: Feb. 23, 2010).

<sup>22</sup>GAO, *Recovery Act: Recipient Reported Jobs Data Provide Some Insight into Use of Recovery Act Funding, but Data Quality and Reporting Issues Need Attention*, [GAO-10-223](#) (Washington, D.C.: Nov. 19, 2009).

<sup>23</sup>Office of Management and Budget, *Updated Guidance on the American Recovery and Reinvestment Act—Data Quality, Non-Reporting Recipients, and Reporting of Job Estimates*, M-10-08 (Washington, D.C.: Dec. 18, 2009).

<sup>24</sup>GAO, *Recovery Act: One Year Later, States' and Localities' Uses of Funds and Opportunities to Strengthen Accountability*, [GAO-10-437](#) (Washington, D.C.: Mar. 3, 2010).

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appears to have gone more smoothly as recipients have become more familiar with the reporting system and requirements.

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**GSA Makes Overall Information on Its Recovery Act Program Publicly Available but Has Not Provided Key Information about Its Projects to the Public**

While GSA has provided information on the goals of its Recovery Act program, the projects selected to receive Recovery Act funding, and its own progress in obligating and expending Recovery Act funding, it has not included details on the nature of the work being conducted on individual projects or clearly identified or explained why it has added or removed projects from its program in GSA's project plan revisions. According to Recovery.gov, one of the goals of the Recovery Act is to foster "unprecedented" levels of accountability and transparency in government spending. In addition, GSA states in its Federal Buildings Fund program plan that it will maintain an unprecedented level of openness and transparency in operations. As we have previously discussed, GSA posted information on its program plans, project plan, funding activities, and recipient-reported data on its Web site and Recovery.gov.

The lack of information on the nature of work being conducted on individual projects and their expected outcomes makes it difficult for the public to determine what improvements are being funded by the Recovery Act, such as which building systems are being upgraded or what types of building improvements are being made. Project scopes can cover a range of activities, including improvements to lighting, mechanical/electrical system upgrades, water use, roof repair, or window work. Individual projects can also address multiple areas and can be designed to achieve renewable energy targets. Such information on the nature of the work being conducted, while not required, could provide context for the public to understand how Recovery Act funds are being used to meet these goals. GSA's project plan, which is available on the agency's Web site and Recovery.gov, contains information for each GSA Recovery Act project, such as its name, location (city and state), and estimated cost. Descriptive information about the projects is limited to their category—new construction, full and partial building modernization, and limited scope. Additionally, full and partial building modernizations are listed together, without information on which project falls under which category, thereby making it difficult to distinguish between the two types. This distinction is important because a full building modernization, which is a complete renovation of an entire building, would be expected to incorporate more green features than a partial building modernization. Moreover, without this distinction, the public lacks context for evaluating GSA's efforts to convert existing federal facilities to high-performance green buildings, as provided in the Recovery Act.

OMB reviewed GSA’s project plan, and on March 31, 2009, GSA submitted the plan, with the list of selected projects, to the Senate and House Committees on Appropriations as required by the Recovery Act. GSA later published project plan revisions—dated November 2009, January 2010, and March 2010—which reflected adjustments to the original project plan’s allocations for existing projects. GSA officials said they made these adjustments, in part, to take advantage of cost savings that they realized when bids came in lower than expected, partly because of current economic conditions.<sup>25</sup> These adjustments led to changes in the amounts of funds allocated for certain project categories, primarily affecting small projects, as shown in table 6.

**Table 6: Revisions to GSA’s Recovery Act Project Plan**

Dollars in thousands

Project type	Allocations		Change from initial
	Initial (March 2009)	Current (March 2010)	
New construction: federal buildings and U.S. courthouses	\$733,703	\$750,000	\$16,297
New construction: border stations and land ports of entry	300,000	300,000	0
Full and partial building modernizations	3,168,844	3,191,463	22,619
Limited scope projects	806,877	933,225	126,348
Small projects	298,576	140,463	(158,113)

Source: GAO analysis of GSA data.

While the revisions to GSA’s project plan to date track the changes in project cost estimates, they do not fully explain the addition or removal of projects, nor do they address the lack of information on project scope. For example, in the November 2009 revised project plan, GSA states that it removed a project because it was no longer appropriate to go forward. GSA did not clearly highlight or mention which project it removed or the type of project. The removed project can be identified only by looking

<sup>25</sup> GSA officials also stated that adjustments were made because they changed how the \$16 million operating budget for Recovery Act activities was allocated. Specifically, the operating budget is now its own line item. In the March 2009 project plan, the operating budget was funded from the new construction category—resulting in GSA allocating \$734 million to new construction projects, instead of \$750 million as stated by the Recovery Act. In the March 2010 project plan, GSA fully funded the \$750 million to new construction projects.



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through the entire list of all Recovery Act projects and comparing the previous and new project cost totals. In the January 2010 revision, GSA added nine new projects to its program—one new construction project, two projects in the full and partial building modernization category, and six limited scope projects. These nine projects are expected to cost a total of approximately \$86 million, but the project plan did not clearly highlight which projects were new additions to the plan. GSA has an opportunity to further meet its Recovery Act transparency goals by clearly identifying projects that have been added to or deleted from its program.

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## Projects Could Result in Greener Buildings, but GSA's Data Are Not Yet Available to Measure the Extent of Progress

GSA has developed minimum performance criteria that will help it convert buildings to high-performance green buildings and address energy and water conservation requirements and goals, although these criteria do not align completely with federal requirements. The resulting modernized buildings will likely vary greatly in the extent of their green improvements, for several reasons. Finally, GSA does not yet have sufficient data on the progress of its Recovery Act improvements, but it is implementing a system to track this.

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## GSA's Minimum Performance Criteria for Recovery Act Projects Align with Federal Requirements, with Two Exceptions

GSA has developed minimum performance criteria (MPC) to help ensure that Recovery Act funding results in improvements to buildings' energy and water conservation performance. The MPC are to be incorporated into the project designs and cover the areas of energy, water, indoor environmental quality, materials, and building design. The following are examples of the MPC that are expected to be incorporated in GSA's Recovery Act projects:

- install advanced meters that measure the building's consumption of electricity, natural gas, steam, and other sources of energy;
- use high-efficiency water fixtures to help reduce water consumption;
- use occupancy sensors on lighting to help conserve energy in areas of the building that are unoccupied; and
- salvage, recycle, or reuse at least 50 percent of construction and demolition waste generated on a project.

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Each Recovery Act project is required to meet all MPC that are applicable to its scope of work, unless it receives a waiver from the Regional Recovery Executive and the PMO. Meeting the MPC for reducing water consumption by 20 percent could be waived for projects that do not include significant plumbing system upgrades, for example. As we have noted previously, federal energy and water conservation requirements and goals differ for different building categories. Therefore, GSA has established two sets of MPC, one for new construction and full building modernization projects and a second, less stringent set for partial building modernizations and limited scope projects. (App. II provides more detailed information on the two sets of MPC.)

We found that both sets of MPC generally align with most of the elements of a high-performance green building, as established by EISA, and with key federal energy and water conservation requirements and goals (see tables 3 and 4). However, the MPC do not address one statutory high-performance green building element—to reduce the environmental and energy impacts of transportation through building location and site design. For example, a project could address this element by installing the infrastructure necessary for alternative fuel vehicles or giving priority parking to carpool and van-share participants. According to GSA officials, they did not include this element in the MPC because the MPC are based on the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*,<sup>26</sup> which does not specifically address transportation. GSA officials noted that a number of the GSA Recovery Act projects are making transportation-related improvements as part of their efforts to obtain a Leadership in Energy and Environmental Design (LEED) Silver rating.<sup>27</sup> However, because the MPC do not require such improvements, project managers may not be systematically determining whether transportation-related improvements can be included in projects, as they are for energy and water conservation improvements, thereby

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<sup>26</sup>The *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* emanated from a 2006 memorandum of understanding (MOU) between 19 federal agencies. Under the MOU, the signatory agencies committed to federal leadership in the design, construction, and operation of high-performance and sustainable buildings. A major component of the MOU is for agencies to develop common strategies for planning, acquiring, siting, designing, building, operating, and maintaining high-performance and sustainable buildings.

<sup>27</sup>LEED is a third-party certification program and a national benchmark for the design, construction, and operation of high-performance green buildings, according to the U.S. Green Building Council. LEED Silver is the second level on the four-tier rating scale, followed by Gold and preceded by Platinum.

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missing opportunities to incorporate that high-performance green building element. Furthermore, because GSA has not given transportation-related improvements the MPC designation, GSA will not be collecting data on those improvements that are being done as part of Recovery Act projects.

We also found that the MPC are expected to contribute toward meeting the federal conservation requirements and goals to reduce energy and water intensity, although they do not explicitly address these objectives. The MPC do not mention the specific percentages and dates set out in law and executive order for reducing energy and water intensity. GSA officials said that this is because the objectives apply to GSA's building inventory as a whole, rather than to individual buildings. Nevertheless, the officials stated that they expect Recovery Act projects to contribute significantly toward meeting the agency's inventorywide federal requirements and goals for both energy and water. According to the officials, new construction and full building modernization projects should exceed these requirements and goals because they must meet other, more stringent, MPC for energy and water conservation. For example, they explained, the MPC require new construction and full modernization projects to exceed ASHRAE Standard 90.1-2007<sup>28</sup> by 30 percent, which is a higher energy conservation standard than the federal requirement to decrease energy intensity by 3 percent per year. GSA officials said they expect partial building modernizations and limited scope projects to make a more modest contribution toward meeting these requirements due to their reduced scope.

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### **GSA Recovery Act Projects Are Likely to Vary Greatly in the Extent of Their Energy and Water Conservation Improvements**

According to GSA officials, all buildings receiving Recovery Act funds are expected to move toward becoming high-performance green buildings. The officials stated they have not developed an exact number of projects that could result in a high-performance green building because the definition from EISA is too broad and is a relative measure. For example, two projects that reduce water consumption by 1 percent and 10 percent, respectively, both meet the high-performance green buildings element of reducing water usage. In addition, GSA officials said that the high-performance green building criteria in EISA can sometime be at odds. Applying high-performance green building criteria by increasing the

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<sup>28</sup> ASHRAE 90.1-2007 is a standard developed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers. The purpose of the standard is to provide minimum requirements for the energy efficient design of buildings, except low-rise residential buildings.

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amount of space for tenants in an effort to improve worker productivity, for example, can actually result in an increase in the building's energy use as opposed to a decrease. Consequently, GSA officials said that they developed the MPC in an attempt to provide a better structure for gauging the expected energy and water conservation performance of Recovery Act projects.

Furthermore, the buildings are likely to vary greatly in the extent of their energy and water conservation improvements because of a variety of factors. Some Recovery Act projects, for example, are broad in scope and are being used to modernize multiple building systems—such as electrical; water; and heating, ventilation, and air conditioning systems (HVAC)—while others are modernizing relatively few systems or a specific component of a building. Additionally, existing infrastructure may affect the extent of energy and environmental improvements for certain buildings. For example, it will likely be more difficult to make certain green improvements to historic federal buildings because of the need to preserve features of the buildings, such as historic windows or ornate wall coverings. Finally, some projects were designed prior to the Recovery Act and may only have included a small number of green improvements. To include more green improvements at this juncture may mean that the projects would have to undergo significant redesign. Finally, the number of green improvements employed for a project may also be affected because of unanticipated problems discovered during the modernization. The discovery of asbestos on a project, for example, may result in the need to shift project funds originally slated for green improvements to asbestos abatement. In general, according to GSA officials, the new construction and full modernization projects are expected to significantly improve their energy and water conservation performance and exceed some federal energy and water conservation requirements and goals, especially those related to energy and water reduction. Conversely, GSA officials expect smaller projects to have less significant green improvements and to address only those federal energy and water conservation requirements and goals that fall within their scope of work. For example, a project primarily involving plumbing upgrades might only address the federal water conservation goal concerning reductions in water intensity.

The 12 GSA Recovery Act projects (8 full and 4 partial modernizations) we examined differed significantly in their planned green improvements. (App. III provides more detailed information on the 12 projects we examined.) For 3 of the projects, GSA is either implementing or planning to implement a broad array of green improvements that will touch on multiple systems throughout the buildings. These full building

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modernizations will principally focus on replacing older, less efficient mechanical, electrical, and plumbing systems with newer, high-efficiency systems. While these projects had already been receiving agency funding for some time, Recovery Act funding, according to some project managers, has enabled them to add features that will enhance buildings' energy and water conservation performance. Many of these features were not originally planned. Examples of full building modernization projects that are expected to result in extensive improvements include the following:

- *Edith Green-Wendell Wyatt Federal Building in Portland, Oregon.* GSA plans to transform the deteriorating 30-year-old federal building into a high-performance green building by replacing the building's electrical, plumbing, and HVAC systems. GSA also plans to upgrade the building's life safety, mechanical, elevator, and security systems as well as install photovoltaic panels and rain harvesting features on the building's roof. The project management staff said that Recovery Act funding gave them the opportunity to vacate the entire building during the renovation, rather than proceeding two floors at a time, a key decision that allowed them to expand the scope of the project and add significant green improvements to the building. GSA is exploring the option of adding wire mesh or a perforated metal screen up the side of the building to shade the facade from the sun, thus helping to reduce the amount of energy needed for cooling the building.
- *Mary Switzer Building in Washington, D.C.* GSA is also planning extensive green improvements for the Switzer building. The project includes new HVAC, plumbing, and emergency power systems; replacement of aged plumbing; asbestos abatement; and restoration work performed on the building's historic windows. According to project management staff, the Recovery Act allowed them to accelerate the modernization of the building by 1 year. It also allowed them to exceed some of the MPC issued by GSA, including an estimated 55 percent reduction in water use—above the 20 percent called for in the MPC for water use. In addition, the project estimates that it will address 30 percent of its hot water demand using solar hot water equipment. GSA also expects that approximately 70 to 75 percent of all the materials from the demolition phases of the project will be recycled.

In five of the full building modernization projects we examined, GSA is planning to implement green improvements that are less extensive but that still address major systems or building components. These projects will generally focus on upgrades to current building components, but some building systems will also be replaced. Two projects contain historical elements that will have to be addressed as well. Several of the project

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managers stated that many of the green improvements slated for their projects would not have been funded without the Recovery Act. Examples of these projects include the following:

- *John W. Peck Federal Building in Cincinnati, Ohio.* The modernization of the 44-year-old John W. Peck Federal Building in Cincinnati, Ohio, includes extensive exterior upgrades, such as installing insulated, dual-glass windows to decrease the heating and cooling loads for the entire building. GSA estimates the improved windows alone will reduce energy consumption for heating and cooling by about 24 percent compared with the industry standard. The project also includes extensive interior work that will save energy—for example, new lighting fixtures and controls. The lighting improvements are expected to reduce energy consumption for lighting by about 50 percent, according to the project manager. This reduction would be significant since lighting consumes about 30 percent of the building's energy.
- *Birch Bayh U.S. Courthouse in Indianapolis, Indiana.* The project involves numerous system upgrades while preserving the historical character of the 1905 courthouse. For example, the project will upgrade the courthouse's HVAC system, where most of the air handling units and associated controls and equipment will be replaced. This change will allow the building managers to keep a more constant temperature and humidity in the historic courtrooms, while conserving energy in other areas of the building when they are not in use. Another green improvement will be the installation of a vegetative roof and a 10,000 gallon rainwater collection system. The system will allow the building to meet the federal requirement for storm water control, according to the project manager, and reduce indoor potable water use by using the collected rainwater for toilets. The project manager anticipates a 20 to 30 percent reduction in indoor potable water use.

Finally, four partial modernization projects we examined plan to implement relatively few green improvements. The focus of each project was primarily to improve the efficiency of individual building components, as opposed to replacing or upgrading an entire building system. In general, project managers stated that these projects would have been slow to receive funding or would probably not have received funding at all if had it not been for the Recovery Act. Examples of these projects include the following:

- *Denver Federal Center in Lakewood, Colorado.* The Lakewood project will upgrade an approximately 70-year-old utility system that provides both water and sewer services to the center. According to the project

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manager, the current system leaks profusely. Since 2001, there have been 90 water line breaks exceeding \$1 million in repair costs. GSA officials further stated that although the project is not specifically building-related, it is an important project to GSA and its tenants because the federal center houses approximately 6,000 federal employees from 30 agencies. Failure of this system could force the center to close, with associated lost wages of about \$1.5 million per day, according to the GSA manager for the project.

- *26 Federal Plaza in New York City.* The project will address severe water damage to the plaza's underground parking garage caused by leaks in the plaza. The project's green improvements include photovoltaic lighting and security cameras that will work with lower-intensity lighting, a new chiller, and lighting controls on several floors of the building.

Table 7 shows details of the 12 GSA Recovery Act projects we examined.

**Table 7: Twelve GSA Recovery Act Projects That We Selected as Case Studies**

Dollars in thousands

Building	Location	Recovery Act funding	Year built	Type of modernization	Historic elements	Expected completion date
Edith Green-Wendell Wyatt Federal Building	Portland, OR	\$133,098	1975	Full	No	Dec. 20, 2013
Prince Jonah Kuhio Kanaianaole Federal Building and U.S. Courthouse	Honolulu, HI	121,000	1977	Full	No	Dec. 30, 2014
G.T. Leland Federal Building	Houston, TX	109,053	1983	Full	No	May 15, 2014
Birch Bayh Federal Building and U.S. Courthouse	Indianapolis, IN	73,994	1905	Full	Yes	June 1, 2012
Mary Switzer Building	Washington, DC	66,194	1940	Full	Yes	Dec.15, 2011
Thurgood Marshall U.S. Courthouse	New York, NY	64,000	1936	Full	Yes	Oct. 30, 2011
Minton-Capehart Federal Building	Indianapolis, IN	49,776	1974	Full	No	Apr. 1, 2012
John W. Peck Federal Building	Cincinnati, OH	42,571	1964	Full	No	Sept. 1, 2011
Denver Federal Center Infrastructure	Lakewood, CO	65,380	Varies	Partial	No	Nov. 1, 2011
26 Federal Plaza	New York, NY	22,207	1968	Partial	No	Sept. 30, 2015
Federal building	Huntington, WV	20,752	1958	Partial	No	Apr. 15, 2015
Federal building	Hilo, HI	7,247	1917	Partial	Yes	June 30, 2011

Source: GAO analysis of GSA data.

**GSA Does Not Have Sufficient Data to Measure Progress but Is Taking Steps to Improve Data Collection**

In adhering to the MPC that include both high-performance green building and energy and water conservation requirements and goals, GSA's Recovery Act projects are making the buildings greener and addressing the requirements and goals. However, GSA cannot measure the extent of progress because it does not have sufficient data on improvements resulting from the projects. In October 2009, GSA began collecting energy and performance information on Recovery Act projects through a "data call" that asked project managers to categorize the status of each of a project's MPC as either "not started," "in progress," "complete," "not applicable," or "waiver." However, GSA officials said their guidance was not detailed enough to clearly define the response categories, thereby making it difficult for project managers to determine when each status



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should be selected. In December 2009, GSA reported<sup>29</sup> that the data collected through this effort were, in some instances, incomplete and unreliable. GSA concluded that it needed to revise future data calls to gather more specific information on how projects would address their MPCs and to facilitate the tracking and reporting of the data. Furthermore, the data were limited to about 28 percent of the Recovery Act projects because those were the only projects that had progressed far enough to have such data. Several of the project managers from the 12 Recovery Act projects we examined reported problems in responding to the data call. For example, two project managers stated that they initially misinterpreted the appropriate response category for their projects and consequently inadvertently completed the incorrect MPC checklist. However, these mistakes were corrected in subsequent updates to the MPC checklists for the projects.

To obtain more complete and reliable data, GSA is rolling out a new centralized system for collecting data on Recovery Act projects' energy and water conservation performance. GSA officials told us the goals of the system are to (1) collect information on the MPC for each project and to aggregate that information, thereby allowing GSA to know the extent to which projects are collectively addressing MPC; (2) provide subject matter experts with a means of reviewing projects' progress in achieving the MPC and suggesting changes as appropriate; and (3) generate customized reports upon request. GSA officials said the agency began using the system in April 2010 and expects it to be available online to all project managers soon.

According to GSA officials, the new system will include more detailed information on each project's MPC, such as the types of green improvements that will be installed, as well as supporting documentation that demonstrates exactly how the MPC will be accomplished. Moreover, the system will include supporting documentation for cases in which a project was scheduled to meet a MPC, like using renewable energy, but was unable to do so. Supporting documentation could include such things as projections, calculations, milestones, constraints, and associated cost-benefit analyses. GSA officials cautioned, however, that energy and environmental performance is difficult to project accurately and can be

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<sup>29</sup>General Services Administration Public Building Service Recovery PMO, *Short-Term Report on High Performance Green Buildings (HPGB) Initiatives for Recovery Act Projects* (Washington, D.C.: December 2009).

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affected by a number of variables beyond GSA's control, such as tenants' behavior and changes in a tenant agency's mission. For example, GSA's estimate of energy savings for a building could be based on a tenant's expected 13-hour workday, while the tenant's actual workday might be longer. Similarly, an agency may need to hire additional staff in order to respond to an emergency, which would unexpectedly increase energy use. According to the GSA officials, a design-phase estimate that falls within about 20 percent of actual performance would be considered "pretty good." GSA officials stated that the system will be used to track the progress of Recovery Act projects until their completion.

According to GSA officials, they have nearly finished developing guidance for project staff who will use the system. GSA has also begun to train staff, starting with those with new construction or full and partial building modernization projects that are far enough along in the design process to have information on how they will achieve the MPC. To date, six project managers have been trained in using the system, according to GSA officials. GSA plans to use a separate training module for managers of limited-scope projects because less information is required for them than for new construction and full and partial building modernization projects. GSA officials have not estimated when all project managers would be trained. However, these officials said they expect to have preliminary or high-level data in the system for all projects by the end of July 2010.

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## GSA Identifies Risks to Its Program and Risk Mitigation Strategies, but Some Project-Level Risk Plans Are Not Complete

GSA has identified risks to its Recovery Act program and risk mitigation strategies. GSA's approach to risk management is generally consistent with best practices we have developed.<sup>30</sup> GSA focuses on broad risks that could affect GSA's ability to address objectives for the agency as a whole, such as ensuring program goals are achieved and fraud, waste, and abuse are minimized; stimulating the economy; and improving the environmental performance of federal buildings. Broadly defined, risk management is a strategic process for helping policymakers make decisions about assessing risk and typically involves appraising and evaluating risks to a program or project and selecting mitigation strategies. In April 2009, GSA developed a plan to guide risk management efforts for agencywide risks to its Recovery Act program and developed an initial inventory of those risks. In March

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<sup>30</sup>GAO developed these best practices to use in assessing risk management practices in the absence of statutory or other authoritative guidance. The best practices are based on existing criteria for management, previous GAO reports, and external sources.

2010, PMO developed a Recovery Risk Mitigation Plan specific to PBS. This plan identified 48 risks to PBS's program, 14 of which were considered key risks, shown in table 8.

**Table 8: Fourteen Key Risks Identified for PBS's Recovery Act Program**

<b>Risk</b>	<b>Risk description</b>
<b>Project management</b>	
Ineffective or untimely project selection	Recovery Act deadlines may not be met if project selection is untimely.
Funds not used for authorized purposes	GSA may not fulfill the accountability objectives of the Recovery Act and may lose the confidence of the public.
Untimely or inaccurate outlays	Projects may fail to meet job creation and construction objectives in the expedited time frame.
Untimely or ineffective management of project contingencies	Cost overruns may occur, schedule delays may occur, and contingency funding may not be used before the expiration of Recovery Act funding.
Untimely or ineffective project management of savings	Savings may not be used before the expiration of Recovery Act funding.
Inadequate, inefficient, or untimely project planning and design	Cost overruns may occur, schedule delays may occur, and construction projects may not meet customer requirements.
<b>Reporting</b>	
Inaccurate and incomplete external Recovery Act reporting	Benefits of and use of Recovery Act funding may not be fully tracked, may not be fully reported, or may not be transparent to the public, or the perception of GSA or a GSA project may be negatively affected.
Untimely external Recovery Act reporting	Benefits of and use of Recovery Act funding may not be fully tracked, may not be fully reported, or may not be transparent to the public, or the perception of GSA or a GSA project may be negatively affected.
Incomplete, inaccurate, or untimely recipient reporting	Benefits of and use of Recovery Act funding may not be transparent to the public.
<b>High-performance green buildings</b>	
Incorporation of performance requirements for green buildings in Recovery Act contracts	Completed projects may not include green building elements.
Absence of green building elements in project design	Construction may not be executed with green building elements.
<b>Acquisitions</b>	
Untimely contract awards	Recovery Act deadlines may not be met or schedule delays may occur.
Incorporation of Recovery Act requirements into Recovery Act contracts	Construction and management of construction may not comply with Recovery Act requirements, including but not limited to expedited time frames and recipient reporting.
<b>Reimbursable work authorizations<sup>a</sup></b>	
Ineffective financial oversight of reimbursable work authorizations	GSA and the customer agencies may face cost overruns, project delays, and expiration of Recovery Act funding

Source: GSA.

<sup>a</sup>The Reimbursable Work Authorization program allows GSA to capture and bill the costs of altering, renovating, repairing, or providing services in space managed by GSA over and above the costs of basic operations financed through rent.

This plan also contains assessments of the likelihood and potential impact of the key risks, identifies mitigation strategies, and establishes mechanisms for monitoring the risks and mitigation actions. The key risks are associated with areas such as financial tracking and reporting, acquisitions, and project management. For example, as indicated in table 8, GSA identified a risk that Recovery Act funds could be used for unauthorized purposes, limiting GSA’s ability to meet Recovery Act accountability goals. To mitigate this risk, GSA identified various internal processes, including national and regional approval of a project’s scope, multiple levels of review of project expenditures, and a process for reviewing contractor invoices to ensure services are valid and authorized. Agency officials told us that internal auditors, as part of GSA’s existing internal audit program, will test the mitigation actions put in place for the 14 key risks. In addition, they plan to assess and update the key risks on a monthly basis.

We assessed GSA’s risk management approach against best practices that we developed in the areas of strategic planning, risk assessment, evaluation and selection of alternatives for addressing risks, and implementation and monitoring of risk-mitigation strategies (see table 9).

**Table 9: Risk Management Best Practices Used to Assess GSA’s Risk Management Approach**

Area	Best practices
Strategic planning	Encourages the use of a strategic plan or risk planning documents to address risk-related issues.
	Risk-based information informs efforts to align the agency’s activities, core processes, workforce, and other resources to support its mission-related outcomes.
	Encourages monitoring of external factors and identification of actions to reduce the impact of such factors.
	Encourages monitoring of internal factors and identification of actions to reduce the impact of such factors.
Risk assessment	Encourages the use of reliable information during the risk assessment process.
	Requires documentation of the risk assessment process.
	Allows for updates of information.
Alternative evaluation and management selection	The result of the risk assessment is a quantitative or qualitative characterization of the probability of an outcome that has a consequence related to the agency’s mission or the program.
	Encourages that potential mitigation alternatives are assessed to determine the extent to which the actions reduce risks.
	Considers benefits and costs when selecting alternative mitigation strategies.
	Establishes a formal review and approval process for selecting from alternative mitigation strategies.

Area	Best practices
Implementing and monitoring risk responses	Encourages documentation to prove management decisions were reached using risk-based information.
	Considers the communication of risk issues to stakeholders. <sup>a</sup>
	Requires ongoing monitoring and evaluation of mitigation strategies.
	Steps taken to identify and deal with risks affected by changing circumstances or new information.
	Mitigation strategies include time frames and are implemented in a timely fashion.

Source: Best practices developed by GAO.

<sup>a</sup>The best practices GAO developed identified risk communication as a critical component in high-level risk management strategies that involve communication to stakeholders. Monitoring may take place in several time periods that involve frequent operational information for management and broader, periodic evaluations.

We found that GSA’s approach generally reflected the best practices in all four areas noted in table 9. In the area of strategic planning, GSA clearly identifies Recovery Act goals and objectives as well as GSA program goals when considering potential risks to the program, such as stimulating the economy by spending Recovery Act funds quickly and improving the environmental performance of federal facilities. In addition, in the area of assessing risks, GSA established a process for documenting its assessment of risks that allows for updates and results in a qualitative assessment of the likelihood and potential impact of the risks on its Recovery Act goals and strategic objectives. Also, for monitoring the implementation of risk responses, GSA officials said the risk management team holds monthly meetings with senior officials to review key risks, identify any new risks, and ensure that proper controls are in place. However, there were areas where GSA could improve its risk management efforts. For example, in the area of evaluating and selecting alternatives for addressing risks, GSA had limited information in its plan and other risk management documents about its process for evaluating and selecting alternative mitigation strategies. GSA officials said that many of the mitigation strategies were put in place before the formal risk assessment was completed as part of GSA’s planning to implement the program and during ongoing discussions about risks facing the program. Therefore, a full analysis of potential risk mitigation alternatives was not completed.

During our review of 12 Recovery Act case study projects, project management staff told us about some of the key project-level risks that could affect the success of the projects. Staff at 5 of the 12 case study projects we examined cited risks associated with the accelerated timelines imposed by the Recovery Act. Project management staff with whom we

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spoke at one case study said the tight timeline imposed by the Recovery Act was the most serious risk to their project. They said the project faces a challenge to complete all of the work necessary to achieve its environmental and energy goals, including completing a study of the building to identify potential energy-reducing upgrades, working through the study recommendations for upgrading the building with all of the stakeholders on the project, and completing the additional design work related to the selected upgrades. This study must be completed at an accelerated pace to enable the additional work to be awarded and the associated funding to be obligated within the Recovery Act's time frames. In addition, 8 of the 12 case study project staff with whom we spoke said that they faced the more typical project risks associated with uncertainty about aspects of a building that is slated to receive upgrades, such as the degree of contamination with hazardous material, the absence of building system and structural drawings, or questions about the drawings' accuracy. For example, project management staff for one project said that they had concerns about the accuracy of the as-built drawings—the plans that detail the construction of the building and other work performed on the building. These staff noted that if the building needs more structural work than originally planned, the project's cost could increase and less funding might be available for green improvements to the building.

Although GSA has developed a systematic process for identifying and planning for risks for its Recovery Act program, GSA officials said that to address project-level risks, such as those we have previously discussed, they rely on informal communication between headquarters and project management staff in the regions. Specifically, regional staff discuss project-level risks or challenges during weekly telephone calls with the PMO. In addition, GSA officials said they track whether projects are on budget and on schedule so they can identify when projects are encountering problems. GSA officials said that because so many projects are being implemented, it would be difficult for GSA to systematically assess and respond to individual project risks at the PMO level. In addition, because of the accelerated pace necessary to implement the program within Recovery Act deadlines and the additional responsibilities for regional staff associated with Recovery Act funding, such as new reporting requirements, GSA officials said they were reluctant to add new risk management reporting requirements for project management staff.

GSA officials said they rely on project management staff in the regions to manage project risks and complete risk planning documents that are required by GSA's *Project Management Guide for the Public Buildings Service*. The guide, issued by the PBS Office of the Chief Architect, is

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GSA's road map for project management and details what project management staff should do to manage risks at the project level. The guide discusses two planning documents for projects, the Comprehensive Project Plan (CPP) and the Project Definition Rating Index (PDRI), both of which GSA project management staff identified as related to risk planning. The guide says the CPP ensures efficient and effective project delivery by articulating project goals and implementation strategies and should be updated throughout a project to evaluate the success of the plan to date and to adapt it to changing circumstances. In addition, the guide says the PDRI provides an objective evaluation of the project at various stages of its development and its benefits include a more refined definition of the scope of a project and an assessment of risk. Instructions for filling out the PDRI say the tool should be updated during the development of the project, from the preliminary stages to the start of construction. Finally, OMB's *Capital Programming Guide*<sup>31</sup> cites the need for developing and documenting a systematic plan to address project risk and calls for risk planning to continue throughout the life of the project.

In September 2009, GSA's OIG found that the PMO was not requiring full CPPs for Recovery Act projects and raised concerns about the adequacy of risk planning at the project level. During our review, we found that 9 of our 12 case study projects had not fully completed the required risk planning documents. For example, for 1 project we visited, the CPP had not been updated since before Recovery Act funding was received and did not list Recovery Act funding in the section detailing project funding sources. For 1 project we visited, staff said that although they did not complete a PDRI, they continually work to identify potential risks and develop risk mitigation strategies as needed. Some of the project management staff with whom we spoke for our 12 case studies said they have regular meetings with regional management about their projects to discuss potential risks or challenges facing the project. Staff from 1 project that had not completed GSA's risk planning documents said they had completed other documents that were similar.<sup>32</sup> Finally, some project staff told us that they considered the PDRI a requirement for projects that go

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<sup>31</sup>Office of Management and Budget, Supplement to Circular No. A-11, Part 7, *Capital Programming Guide* (Washington, D.C.: June 2006). The guide provides a single, integrated capital programming process for agencies to follow to ensure that capital assets successfully contribute to the achievement of agency strategic goals and objectives.

<sup>32</sup>We did not assess whether these documents were sufficient for identifying and addressing project-level risks.

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through GSA's normal project approval process, but that GSA's Recovery Act-funded projects were unique and they did not think it was required. GSA officials said that the PDRI is typically completed during the approval process for prospectus-level projects, but that Recovery Act projects did not go through this process to get funding. However, GSA officials from the PMO said that a CPP was required for all full and partial modernizations, adding that Recovery Act projects should complete the risk planning documents called for in the guide. In addition, project management staff in the regions said that Recovery Act projects are being implemented at an accelerated pace and that this presents challenges to the agency. Finally, as we have previously mentioned, OMB's *Capital Programming Guide* calls for risk planning at the project level. OMB's guide calls for project managers to develop and document a systematic approach to risk planning that continuously identifies, assesses, responds to, and monitors project-level risks, adding that risk management is an integral part of project management. It is important for GSA to ensure that risk planning at the project-level meets the agency's standards, as laid out in GSA's guide or other guidance, such as OMB's *Capital Programming Guide*. GSA's reliance on informal communication channels for overseeing project-level risks, without ensuring that project-level risks are being identified and planned for, could result in some vulnerabilities going unidentified and increase the potential for risks to negatively affect GSA's program as projects move from preliminary stages to construction.

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## Conclusions

The Recovery Act has provided GSA with an unprecedented opportunity to repair or restore aging, deteriorating federal buildings and, in so doing, to enhance their energy and environmental performance. With this opportunity comes a responsibility to be accountable for how the funds are spent and to ensure that the projects are successful and the buildings progress toward becoming high-performance green buildings. GSA has the opportunity to enhance its accountability by making publicly available information about the nature of work being performed through its Recovery Act projects. In addition to knowing which buildings are receiving funding, this will enable the public to understand how Recovery Act funding is being used to improve GSA's buildings. While GSA has made progress in moving buildings modernized under the Recovery Act toward high-performance green buildings, by not including criteria for reducing transportation's energy and environmental impacts for Recovery Act projects, GSA's minimum performance criteria for projects are not in alignment with the definition of a high-performance green building called for by the Recovery Act. GSA may also be missing opportunities to include transportation-related improvements in the projects, where appropriate,



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and to track those improvements. Finally, given the accelerated pace at which many projects are being implemented, taking steps to ensure that project management staff are systematically addressing risks to the projects could decrease the potential for risks to negatively affect GSA's program as projects move from preliminary stages to construction.

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## Recommendations for Executive Action

We recommend that the GSA Administrator take the following three actions:

- Consistent with GSA's Recovery Act transparency goal of providing the public with an understanding of how its tax dollars are being spent, make information on the nature of the work being conducted and its expected outcome publicly available for each Recovery Act project.
- To reduce the environmental and energy impacts of transportation through site designs that support a full range of transportation choices for users of buildings, revise the MPC to require that project managers consider transportation-related improvements for Recovery Act projects, as appropriate.
- To ensure that steps are being taken to identify and plan for project-level risks, require Recovery Act project management staff to complete risk planning documents.

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## Agency Comments and Our Evaluation

The GSA Administrator provided written comments on a draft of this report, which are reproduced in appendix IV. The Administrator agreed with our recommendations and noted that GSA has begun to take action to implement them. GSA officials also provided technical comments, which we incorporated as appropriate.

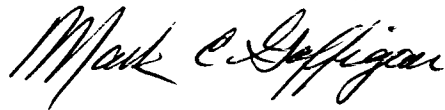
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We are sending copies of this report to the appropriate congressional committees, the GSA Administrator, and other interested parties. In addition, the report will be available at no charge on GAO's Web site at <http://www.gao.gov>.

If you or your staffs have questions about this report, please contact Terrell Dorn at (202) 512-2834 or [dornt@gao.gov](mailto:dornt@gao.gov) or Mark Gaffigan at (202) 512-3841 or [gaffiganm@gao.gov](mailto:gaffiganm@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.



Terrell G. Dorn  
Director, Physical Infrastructure



Mark Gaffigan  
Director, Natural Resources and Environment

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# Appendix I: Scope and Methodology

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To examine the steps the General Services Administration (GSA) has taken to implement the program and make its Recovery Act projects transparent to the public, we collected publicly available supporting documentation, including GSA's Recovery Act program plans, spending plans, weekly financial activity reports, and recipient reported data on the number of jobs created or retained and funded. In addition, we collected documentation of GSA's hiring resources and competitive contract awards. Furthermore, we collected information on individual project scopes, master schedules, the factors considered when selecting projects, and estimates of needed capital improvements in buildings receiving Recovery Act funds. We also interviewed senior staff from GSA's Recovery Act Program Management Office (PMO), including the Recovery Executive, Directors, Zone Executives, Zone Managers, and subject matter experts. In addition, we interviewed senior staff from GSA's Office of Federal High-Performance Green Buildings (OFHPGB). Specifically, we discussed GSA's goals for its Recovery Act program, efforts to identify and select projects, progress in meeting Recovery Act goals for obligating funds, and efforts to collect data and report on the program. We also interviewed and coordinated with officials from the GSA Office of Inspector General and collected their reports identifying GSA's Recovery Act implementation challenges and reviewing specific Recovery Act projects. Furthermore, we collected a report examining the data quality of recipient reported data for GSA and several other agencies, which was the result of coordinated efforts of various Federal Inspectors General and the Recovery Accountability and Transparency Board.

To determine the extent to which GSA's Recovery Act projects will help the agency convert buildings to high-performance green buildings and meet federal energy and water conservation requirements and goals from statutes and executive orders, we compared GSA's minimum performance criteria with the elements of a high-performance green building as set forth in the Energy Independence and Security Act (EISA) of 2007. We also compared GSA's minimum performance criteria with federal energy and water conservation requirements and goals from statutes and executive orders. These include EISA, the Energy Policy Act of 2005, Executive Orders 13423 and 13514, and the Interagency Sustainability Working

Group's<sup>1</sup> Guiding Principles for Sustainable New Construction and Major Renovations. Also, we interviewed senior staff and subject matter experts from the PMO and OFHPGB to determine what information GSA was collecting with regards to energy and water conservation performance and what type of system GSA used for gathering this type of information. We interviewed senior staff and subject matter experts from the PMO and OFHPGB. Furthermore, we selected 12 GSA Recovery Act projects as case studies and collected information on the types of improvements being made to help convert the buildings to high-performance green buildings and the extent to which the projects are expected to meet future energy and environmental performance requirements. We selected 12 full and partial modernizations—since GSA allocated the majority of its Recovery Act funds to these project categories—on the basis of a number of factors, including whether the project had been identified by GSA as having information on its expected performance. In addition, we selected a range of project types and sizes and projects from various geographic locations. We did not select any projects from the new construction, limited scope, or small project categories for our case studies. Because the sample is judgmental, the information we obtained from them cannot be generalized to all of GSA's Recovery Act projects.

We visited 5 of our case study projects, including the following:

- 26 Federal Plaza, New York, New York;
- Birch Bayh U.S. Courthouse, Indianapolis, Indiana;
- Mary Switzer Building, Washington, D.C.;
- Minton-Capehart Federal Building, Indianapolis, Indiana; and
- Thurgood Marshall U.S. Courthouse, New York, New York.

At the remaining 7 case study projects, we spoke with senior staff from the regions and project managers:

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<sup>1</sup>The Interagency Sustainability Working Group, as a subcommittee of the Steering Committee established by Executive Order 13423, initiated development of the guidance for the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* to assist agencies in meeting high performance and sustainable building goals of the order.

- Denver Federal Center Infrastructure, Lakewood, Colorado;
- Edith Green-Wyndell Wyatt Federal Building, Portland, Oregon;
- Federal Building, Huntington, West Virginia;
- Federal Building, Hilo, Hawaii;
- G.T. Leland Federal Building, Houston, Texas;
- John W. Peck Federal Building, Cincinnati, Ohio; and
- Prince Jonah Kuhio Kalanianaʻole Federal Building Courthouse, Honolulu, Hawaii.

To determine the extent to which GSA has taken steps to identify potential risks to its Recovery Act program and developed strategies to mitigate those risks, we reviewed supporting documentation, including GSA's risk management plan, risk mitigation plan, assessments of identified risks and mitigation strategies, and GSA's project management guide for the Public Buildings Service. We also assessed GSA's risk management documents against GAO-developed best practices. Furthermore, we collected documentation of project-level risk planning efforts from our case study projects and compared them with the risk planning efforts called for in GSA's project management guidance. In addition, we interviewed senior staff from the Office of the Chief of Financial Officer and the PMO. Finally, we interviewed managers from our 12 case study projects to discuss project-specific risks and GSA's efforts to mitigate them.

We conducted this performance audit from June 2009 to June 2010 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.

# Appendix II: GSA's Minimum Performance Criteria for Recovery Act Projects

Criteria	Elements
<b>Minimum Performance Criteria for New Construction and Full Modernizations</b>	
Integrated design	<ul style="list-style-type: none"> <li>• Use an integrated design process to establish performance goals for sustainable design principles and develop a plan to ensure implementation of high-performance green building goals throughout the project.</li> <li>• Hire a qualified, independent commissioning agent working for GSA at the beginning of design.</li> <li>• Include commissioning tailored to the size and complexity of the project, including an experienced commissioning provider from the project initiation through the project closeout.</li> </ul>
Energy	<ul style="list-style-type: none"> <li>• Use Energy Star Target Finder to set an energy goal that achieves a fossil-fuel reduction of 55 percent for 2010 design starts.</li> <li>• Achieve at least 30 percent reduction in energy use compared with an American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2007 baseline building.</li> <li>• Install advanced meters. Include meters for electricity, natural gas, steam, and water.</li> <li>• Use Energy Star or Federal Energy Management Program (FEMP)-designated Energy Efficient Products.</li> <li>• Install solar thermal systems to meet at least 30 percent of the hot water demand. If not life-cycle cost-effective, provide an engineering study and letter of explanation signed by the Regional Recovery Executive.</li> <li>• Plan for on-site renewable energy systems (photovoltaic, wind, geothermal, and solar thermal/hot water). If no on-site renewable energy systems are included, provide a letter of explanation signed by the Regional Recovery Executive.</li> <li>• Assess the effects of solar heat gain based on site conditions and building orientation.</li> <li>• Provide a complete envelope design to include thermal breaks, insulation, continuous air barriers, external sun control devices, and green roof potential.</li> <li>• Choose glazing systems, including frames, glass, films, and gasses based on visual needs, elevation, orientation, heat loss, and solar load.</li> <li>• Cooling and heating plants will use a Life Cycle Cost (LCC) methodology (e.g., National Institute of Standards and Technology Handbook 135) for equipment selection to include lifetime operating costs based on efficiency, reliability, and maintainability of equipment.</li> <li>• Evaluate the use of               <ul style="list-style-type: none"> <li>• variable frequency drives, high-efficiency chillers and boilers with modular design for part load efficient operations in HVAC design;</li> <li>• radiant space conditioning and thermal storage systems;</li> <li>• natural ventilation;</li> <li>• energy recovery ventilators to recover heat from exhaust to preheat outdoor air;</li> <li>• separate HVAC for 24x7 spaces; and</li> <li>• evaporative cooling (direct or indirect) strategies, in suitable climates.</li> </ul> </li> </ul>

**Appendix II: GSA's Minimum Performance  
Criteria for Recovery Act Projects**

<b>Criteria</b>	<b>Elements</b>
Water	<ul style="list-style-type: none"> <li>• Reduce indoor potable water use by at least 20 percent compared with EPA's 1992, Uniform Plumbing Code (UPC) 2006, and International Plumbing Code (IPC) 2006.</li> <li>• Reduce outdoor potable water use for irrigation by at least 50 percent compared with conventional baseline for the building. Smart controllers using evapotranspiration and weather data are required for irrigation systems.</li> <li>• Evaluate strategies to capture rainwater for nonpotable uses, including flushing fixtures, cooling tower, and irrigation. Consider harvesting condensation from all cooling coils for nonpotable use. (See GSA Recovery Act Program Management Office Design Build Guidance Criteria—Water Efficiency Requirements issued 5/29/2009.)</li> <li>• Evaluate alternative strategies to reduce cooling tower use of potable water. Strategies include the use of captured rainwater and HVAC condensate recovery.</li> <li>• Manage the 95th percentile rain event on-site through infiltration, reuse, or evapotranspiration. Strategies include permeable paving, vegetated roofs, or other low-impact development techniques. Environmental Protection Agency (EPA) guidance is under development.</li> <li>• Where available, use EPA's WaterSense labeled products—faucets, toilets, urinals, showerheads, and irrigation controls.</li> <li>• Use high-efficiency fixtures in accordance with new GSA water guidance.</li> <li>• Meter cooling tower water makeup.</li> </ul>
Indoor environmental quality	<ul style="list-style-type: none"> <li>• Provide occupant lighting controls in accordance with new GSA lighting specifications.</li> <li>• Provide occupancy sensors.</li> <li>• Provide daylight sensors for fixtures within 15 feet of windows.</li> <li>• At a minimum, comply with ASHRAE Standard 55-2004 and ASHRAE Standard 62.1-2007.</li> <li>• Consider moisture control strategies to reduce risk for mold and damaging moisture.</li> <li>• Use demand control ventilation to control indoor air quality.</li> <li>• Use low-emitting building materials.</li> <li>• Follow Sheet Metal and Air Conditioning Contractors' National Association Indoor Air Quality Guidelines for Occupied Buildings under Construction.</li> <li>• Flush out space for a minimum of 72 hours.</li> </ul>
Materials	<ul style="list-style-type: none"> <li>• Select products with lesser or reduced effect on human health and the environment. See <a href="http://www.epa.gov/epp">http://www.epa.gov/epp</a>.</li> <li>• Use products with recycled content according to the Comprehensive Procurement Guidelines. See <a href="http://www.epa.gov/cpg/products">http://www.epa.gov/cpg/products</a>.</li> <li>• Use products with biobased content according to U.S. Department of Agriculture's (USDA) BioPreferred program. See <a href="http://www.biopreferred.gov/DesignationItemList.aspx">http://www.biopreferred.gov/DesignationItemList.aspx</a>.</li> <li>• Salvage, recycle, or reuse at least 50 percent of construction and demolition waste generated on a project. Develop a construction waste management plan to quantify material diversion goals and maximize the materials to be salvaged, recycled, or reused.</li> <li>• Eliminate the use of ozone-depleting compounds where alternative environmentally preferable products are available.</li> </ul>

**Appendix II: GSA's Minimum Performance  
Criteria for Recovery Act Projects**

<b>Criteria</b>	<b>Elements</b>
<b>Minimum Performance Criteria for Partial Modernizations and Limited Scope Projects</b>	
Integrated design	<ul style="list-style-type: none"> <li>• Use an integrated team to assess conditions, identify areas for improvement, establish performance goals for sustainable design principles, and develop a plan to ensure implementation of high-performance green building objectives.</li> <li>• Hire a qualified, independent commissioning agent working for GSA at the beginning of design.</li> <li>• Include commissioning tailored to the size and complexity of the project, including an experienced commissioning provider from the project initiation through 1 year after occupancy.</li> </ul> <p align="center">-or-</p> <p>Recommission the building to determine performance improvement goals.</p>
Energy	<ul style="list-style-type: none"> <li>• Target an Energy Star score of 80 or higher.</li> </ul> <p align="center">-and-</p> <p>Achieve at least 20 percent reduction in energy use from the 2003 baseline for the building.</p> <p align="center">-or-</p> <p>Achieve at least 20 percent reduction in energy use compared with an ASHRAE Standard 90.1-2007 baseline building.</p> <ul style="list-style-type: none"> <li>• Use Energy Star or FEMP-designated Energy Efficient Products.</li> <li>• Consider renewable energy generation through photovoltaic, building integrated photovoltaic, solar thermal, and building integrated wind power, when life-cycle cost-effective.</li> <li>• Evaluate lighting in office areas, stairwells, parking garages, exterior parking lots, and mechanical spaces for redesign in accordance with new GSA lighting specifications.</li> <li>• HVAC retrofits must consider the use of             <ul style="list-style-type: none"> <li>• an LCC methodology (e.g., National Institute of Standards and Technology Handbook 135) for cooling and heating plant equipment selection to include lifetime operating costs based on efficiency, reliability, and maintainability of equipment;</li> <li>• variable frequency drives, high efficiency chillers and boilers with modular design for part load efficient operations;</li> <li>• radiant space conditioning and thermal storage systems;</li> <li>• natural ventilation;</li> <li>• energy recovery ventilators to recover heat from exhaust to preheat outdoor air;</li> <li>• separate HVAC systems for 24x7 spaces; and</li> <li>• evaporative cooling (direct or indirect) strategies, in suitable climates.</li> </ul> </li> </ul>



**Appendix II: GSA's Minimum Performance  
Criteria for Recovery Act Projects**

<b>Criteria</b>	<b>Elements</b>
Water	<ul style="list-style-type: none"> <li>• Reduce indoor potable water use by at least 20 percent from the 2003 baseline for the building.</li> <li>-or-</li> <li>Reduce water use by 20 percent compared with 120 percent of UPC 2006 or IPC 2006 for fixtures installed after 1994 or 160 percent for fixtures installed before 1994.</li> <li>• Reduce outdoor potable water use for irrigation by at least 50 percent compared with conventional baseline or compared with 2003 measured baseline for the building. Smart controllers using evapotranspiration and weather data are required for irrigation systems.</li> <li>• Consider harvesting condensation from cooling coils for nonpotable use.</li> <li>• Evaluate alternative strategies to reduce cooling tower use of potable water. Strategies include increased cycles of concentration, use of captured rainwater, and systems that treat the water for a longer use without chemicals.</li> <li>• Manage the 95th percentile rain event on-site through infiltration, reuse or evapotranspiration. Strategies include permeable paving, vegetated roofs or other low impact development techniques. EPA guidance is under development.</li> <li>• Where available, use EPA's WaterSense labeled products - faucets, toilets, urinals, showerheads and irrigation controls.</li> <li>• Consider fixture retrofits in accordance with new GSA water guidance, including high-efficiency single or dual flush handles or the installation of automatic flush valves.</li> <li>• Meter cooling tower water makeup.</li> </ul>
Indoor environmental quality	<ul style="list-style-type: none"> <li>• Provide occupant lighting controls in accordance with new GSA lighting specifications.</li> <li>-and-</li> <li>Provide occupancy sensors.</li> <li>and-</li> <li>Provide daylight sensors for fixtures within 15 feet of windows.</li> <li>• At a minimum, comply with ASHRAE Standard 55-2004 and ASHRAE Standard 62.1-2007.</li> <li>• Use demand control ventilation to enhance indoor air quality.</li> <li>• Consider moisture control strategies to reduce risk for mold and damaging moisture.</li> <li>• Use low-emitting building materials.</li> </ul>
Materials	<ul style="list-style-type: none"> <li>• Select products with lesser or reduced effect on human health and the environment. See <a href="http://www.epa.gov/epp">http://www.epa.gov/epp</a>.</li> <li>• Use products with recycled content according to the Comprehensive Procurement Guidelines. See <a href="http://www.epa.gov/cpg/products">http://www.epa.gov/cpg/products</a>.</li> <li>• Use products with bio-based content according to USDA's BioPreferred program. See <a href="http://www.biopreferred.gov/DesignationItemList.aspx">http://www.biopreferred.gov/DesignationItemList.aspx</a>.</li> <li>• Salvage, recycle or reuse at least 50 percent of construction and demolition waste generated on the project. Develop a construction waste management plan to quantify material diversion goals and maximize the materials to be salvaged, recycled or reused.</li> <li>• Eliminate the use of ozone depleting compounds where alternative environmentally preferable products are available.</li> </ul>

Source: GSA.

# Appendix III: Descriptions for 12 Case Studies

Case study	Project description	Recovery Act funding scope of work
Edith Green – Wendell Wyatt Federal Building Portland, OR	The 18-story building contains 510,659 gross square feet, including 199 inside parking spaces, and houses approximately 1,200 federal employees. A comprehensive modernization is planned for the project.	The modernization will include the replacement and upgrades to building systems, including the exterior façade, accessibility, life safety, mechanical, electrical, elevator, and security.
Mary Switzer Washington, DC	The overall objective of this project is to provide a full building modernization of the Federal Building located at 330 C Street, SW, in Washington, D.C. This two-phase major modernization will replace all major building systems and includes historic restoration.	The American Recovery and Reinvestment Act (ARRA) project comprises Phase II of the modernization of the Mary E. Switzer building. Work items include new HVAC systems, automatic sprinkler systems where not currently in place, new emergency generator, new emergency power distribution system, replacement of electric branch circuit wiring and selected panel boards, replacement of aged plumbing equipment and piping, new Americans with Disabilities Act (ADA)/Uniform Federal Accessibility Standards water coolers, toilet room finish restoration and modification, minor exterior repairs and lighting, selective asbestos abatement, modifications to C and D Street lobbies, security modifications, forced pressure (blast) resistance upgrades, and an additional floor and new telecommunications backbone.
Prince Jonah Kuhio Kalaniana'ole Federal Building and U.S. Courthouse Honolulu, HI	The Prince Jonah Kuhio Kalaniana'ole Federal Building and Courthouse consists of a nine-story and a five-story concrete and glass complex built in 1977. A two-phased, full modernization and renovation is scheduled for the building.	ARRA funding will be used to fund Phase I of the project, which includes design for both the courthouse and federal building and construction for the courthouse. The building's HVAC systems will be upgraded to meet required energy performance standards, the building's plumbing and electrical systems will be upgraded, the building will be renovated to meet ADA requirements, the building's elevators will be improved, the building's life safety systems will be improved, the building's hazardous materials will be abated, and the interior spaces will be altered to result in a more modern and efficient facility.
Birch Bayh Federal Building & U.S. Courthouse Indianapolis, IN	The proposed project is focused on transforming the Federal Building into a high-performance green building through upgrades to the building's infrastructure.	The project includes upgrades to the HVAC, plumbing, electrical service, and fire protection systems. New energy-efficient lighting will be installed. The roof will be replaced, and windows will be replaced or restored as needed, resulting in energy savings. The HVAC improvements will result in improved air quality, temperature control, and energy efficiency.
John W. Peck Federal Building Cincinnati, OH	The project proposes to transform the building into a high-performance green building through improvements to the building envelope as well as interior upgrades to the building infrastructure.	The project includes window replacements, energy-efficient HVAC and electrical system upgrades, security enhancements, fire alarm system replacement, and sprinkler protection improvements.

**Appendix III: Descriptions for 12 Case Studies**

<b>Case study</b>	<b>Project description</b>	<b>Recovery Act funding scope of work</b>
Minton-Capehart Federal Building Indianapolis, IN	The Minton-Capehart Federal Building is a 636,000 gross square feet office building that was constructed in 1974. The scope of this project includes upgrades to the HVAC system to align with high-performance green building goals.	The HVAC upgrades will improve air quality and temperature control and will significantly reduce energy consumption. This project will also provide a new fire alarm system, sprinkler system installation and other fire protection improvements. Lighting and ceiling in the building will be upgraded with energy-efficient light fixtures and occupancy sensors. In addition, electrical upgrades will be accomplished in support of the HVAC and fire and life safety upgrades.
Thurgood Marshall U.S. Courthouse New York, NY	The project will upgrade the infrastructure of the Thurgood Marshall U.S. Courthouse and extend the useful life of the asset. The project will also address life safety and accessibility issues. The project is a two-phased modernization. Phase I work includes bulk demolition and exterior facade work. Phase II work is discussed in the next column.	ARRA funding will be used for Phase II work, which includes selective interior demolition and new mechanical, electrical, plumbing, and architectural work associated with the mechanical work.
G.T. Leland Federal Building Houston, TX	The window system at the 22-story Leland Federal Building has been leaking for several years. There are also air infiltration issues, which make the facility expensive to heat and cool. The modernization is two-phased and is intended to remedy those issues and create a more comfortable environment for the building's tenants. Major tenants of the building include the Internal Revenue Service, U.S. Department of State, Equal Employment Opportunity Commission, and Social Security Administration.	Phase I for the project will include some or all of the following: replacing and upgrading the window systems; improving and upgrading the outdoor plaza; installing a new breezeway; making garage improvements, including a new elevator from tunnel to breezeway; building exterior repairs and interior upgrades to public spaces inclusive of finish, ceilings, lighting fixtures, ADA upgrades, and first-floor upgrades; and will include an option for significant improvements to the HVAC system. Phase II of this project includes full HVAC modernization and advanced lighting controls in the window zone of the building.
Federal Building Huntington, WV	The Federal Building in Huntington is a seven-story office building containing 94,307 usable square feet, 125,246 rentable square feet, and 138,588 gross square feet with no parking spaces on a 1.33 acre lot. This seven-story building was constructed in 1956 and is made of brick with a polished granite base. The ARRA project for this building will reduce energy consumption.	Work on the project will include installing a new high-performance HVAC system, replacing windows, facade replacement, and installing solar panels on the roof to generate electricity.
Hilo Federal Building Hilo, HI	The Hilo Federal Building and Post Office was built in 1917 and is a two-story Classical Revival style building. The building is scheduled to receive a partial modernization.	Major work to be performed includes a seismic upgrade. The building's plumbing and electrical systems will be upgraded, the building will be altered to meet ADA requirements; the building's security and life safety systems will be improved; and the building's hazardous materials will be abated.

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**Appendix III: Descriptions for 12 Case Studies**

<b>Case study</b>	<b>Project description</b>	<b>Recovery Act funding scope of work</b>
Denver Federal Center Infrastructure Lakewood, CO	The Denver Federal Center in Lakewood, CO, contains 52 buildings on a 670-acre site, housing 6,000 employees from 30 federal agencies. The utilities include 13.4 miles of underground fire lines, 11.3 miles of domestic water and drain lines, 8.3 miles of sanitary sewer lines, 25 miles of sidewalks, and 9 miles of roads. The primary goal of the project is to provide a reliable utility infrastructure to service tenant agencies for the next 50 years.	Work on the project will include replacement of the water systems and sanitary sewer lines, removal of an inactive gauging station, installation of storm drainage, and repair of site drainage.
26 Federal Plaza (Plaza Repair) New York, NY	This project will repair and upgrade the grand plaza on the Lafayette Street side of 26 Federal Plaza above the underground parking garage, which is leaking.	Work on the project will include waterproofing and replacing the plaza.

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Source: GSA.

# Appendix IV: Comments from the General Services Administration



GSA Administrator

June 9, 2010

The Honorable Gene L. Dodaro  
Acting Comptroller General of the United States  
U.S. Government Accountability Office  
Washington, DC 20548

Dear Mr. Dodaro:

The U.S. General Services Administration (GSA) appreciates the opportunity to comment on the draft U.S. Government Accountability Office (GAO) report titled, *Federal Energy Management: GSA's Recovery Act Program Is on Track, but Opportunities Exist to Improve Transparency, Performance Criteria, and Risk Management (GAO-10-630)*. The report proposes the following three recommendations:

1. GSA make information on the scope of the work and the expected outcome of each Recovery Act project publicly available;
2. GSA revise the Recovery Act Minimum Performance Criteria to require project managers to consider transportation-related improvements for Recovery Act projects as appropriate; and,
3. GSA require completed risk planning documents from Recovery Act project management staff.

We are already taking appropriate action to implement these recommendations. In addition, enclosed are technical comments that update and clarify statements in the draft report.

Should you have any questions, please contact me or Mr. Robert A. Peck, Commissioner, Public Buildings Service at (202) 501-1100. Staff inquiries may be directed to Mr. William J. Guerin, Recovery Executive, National Recovery Program Management Office, at (202) 219-0837.

Sincerely,

A handwritten signature in cursive script that reads "Martha Johnson".

Martha Johnson  
Administrator

Enclosure

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1800 F Street, NW  
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Telephone: (202) 501-0800  
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[www.gsa.gov](http://www.gsa.gov)

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# Appendix V: GAO Contacts and Staff Acknowledgments

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## GAO Contacts

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## Staff Acknowledgments

In addition to the contacts named above, Maria Edelstein, Assistant Director; Karla Springer, Assistant Director; Daniel Cain; Elizabeth Eisenstadt; Brandon Haller; John Johnson; Susan Michal-Smith; Ben Shouse; and Adam Yu made significant contributions to this report.

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