

**GAO**

Testimony

Before the Subcommittee on  
Investigations and Oversight, Committee  
on Science and Technology, House of  
Representatives

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**AMERICAN RECOVERY  
AND REINVESTMENT ACT**

**GAO's Role in Helping to  
Ensure Accountability and  
Transparency for Science  
Funding**

Statement of Patricia Dalton, Managing Director  
Natural Resources and Environment



**GAO**

Accountability \* Integrity \* Reliability

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Highlights of [GAO-09-515T](#), a testimony to the Subcommittee on Investigations and Oversight, Committee on Science and Technology, House of Representatives

## Why GAO Did This Study

This testimony discusses GAO's role to help ensure accountability and transparency for science funding in the American Recovery and Reinvestment Act of 2009 (Recovery Act). The purposes of the Recovery Act funds include preserving and creating jobs and promoting economic recovery; assisting those most impacted by the recession; investing in transportation, environmental protection, and other infrastructure to provide long-term economic benefits; and stabilizing state and local government budgets.

The Recovery Act, estimated to cost \$787 billion, includes more than \$21 billion in spending at the Departments of Energy and Commerce, the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA) for research and development (R&D) related activities that support fundamental research, demonstrate and deploy advanced energy technologies, purchase scientific instrumentation and equipment, and construct or modernize research facilities.

This statement discusses (1) GAO's responsibilities under the Recovery Act related to science funding; (2) particular R&D funding areas that deserve special attention to ensure that funds are best used; and (3) GAO's plans for carrying out its responsibilities under the act.

View [GAO-09-515T](#) or key components. For more information, contact Patricia Dalton at (202) 512-3841 or [daltonp@gao.gov](mailto:daltonp@gao.gov).

# AMERICAN RECOVERY AND REINVESTMENT ACT

## GAO's Role in Helping to Ensure Accountability and Transparency for Science Funding

### What GAO Found

The Recovery Act directs GAO to provide bimonthly reviews and reporting on selected states' and localities' use of funds. GAO has initiated this work and will examine 16 states and the District of Columbia that contain about 65 percent of the U.S. population and are estimated to receive about two-thirds of the intergovernmental grants funds available through the Recovery Act. Because of the scope of this work, GAO has reached out to the broader accountability community to coordinate our respective roles, planned approaches, and timelines. On February 25, 2009, GAO hosted an initial coordination meeting with the Inspectors General (IG) or their representatives from 17 agencies. In carrying out its oversight roles related to science funding, GAO plans to work together with the IGs as they seek to ensure that Energy, Commerce, NSF, and NASA spend the Recovery Act's R&D-related monies promptly, effectively, and in compliance with applicable laws.

GAO's prior work has identified several Energy, Commerce, NSF, and NASA programs that deserve special attention from management and the IG's office to ensure that funds are put to best use. For example, the Recovery Act made \$6 billion available to Energy to support \$60 billion in new loan guarantees under its innovative technology loan guarantee program. However, in July 2008, GAO reported that DOE was not well positioned to manage the loan guarantee program effectively and maintain accountability because it had not completed a number of key management and internal control activities. GAO recommended, among other things, that DOE complete detailed internal loan selection policies and procedures that lay out roles and responsibilities and criteria and requirements for conducting and documenting analyses and decision making. The act also made \$3.5 billion available to Energy to fund R&D on renewable energy and fossil energy. In December 2008, GAO reported that DOE does not formally assess whether industry would undertake oil and gas R&D without federal funding, raising questions about the appropriate use of federal funds, and recommended that DOE assess the likelihood that the R&D would not occur without federal funding. The Recovery Act provided a total of \$1 billion to NASA, including \$400 million for exploration. In March 2009, GAO reported that 10 of 13 NASA projects with life-cycle costs exceeding \$250 million had experienced significant cost and/or schedule growth—on average, development costs had increased by 13 percent and launch had been delayed by 11 months.

To make the most effective and efficient use of resources, GAO plans to fulfill its Recovery Act responsibilities by working together with the IGs to leverage strengths and avoid duplication of effort wherever possible. In consultation with Congress as part of its general responsibilities, GAO also will target at-risk programs for review and expand its work on base programs to examine any related stimulus funding.

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Chairman Miller, Ranking Member Broun, and Members of the Subcommittee:

I am pleased to be here today to discuss our plans for carrying out our oversight roles related to science funding provided by the American Recovery and Reinvestment Act of 2009 (Recovery Act).<sup>1</sup> I will also provide an overview of prior GAO work that identifies several programs that deserve special attention from agency managers and from the Inspectors General (IG) at the Department of Energy, the Department of Commerce, the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA) to ensure that additional science funds these agencies will receive under the Recovery Act are put to the best uses. The Congress and the administration have fashioned a significant response to what is generally reported to be the Nation's most serious economic crisis since the Great Depression. The Recovery Act's combined spending and tax provisions are estimated to cost \$787 billion, including more than \$21 billion in additional spending at Energy, Commerce, NSF, and NASA for research and development (R&D) related activities, including supporting fundamental research, demonstrating and deploying of advanced energy technologies, purchasing scientific instrumentation and equipment, and constructing or modernizing research facilities. (See app. I.)

The accountability community will play an important role in reviewing the use of Recovery Act funds. In addition to GAO, the community includes the IGs, state auditors, local government auditors, and the Recovery Accountability and Transparency Board. The Recovery Act has identified the following specific responsibilities for GAO, the IGs, and the Recovery Accountability and Transparency Board:

- GAO is charged with reviewing the use of funds by selected states and localities and commenting on funding recipients' estimates of the number of jobs created and retained as a result of the funding. We also have several other reporting responsibilities.<sup>2</sup>
- IGs across government are expected to audit the efforts of federal agencies' operations and programs related to the Recovery Act, both

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<sup>1</sup>Pub. L. No. 111-5 (Feb. 17, 2009).

<sup>2</sup>See GAO, *American Recovery and Reinvestment Act: GAO's Role in Helping to Ensure Accountability and Transparency*, [GAO-09-453T](#) (Washington, D.C.: March 5, 2009).

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individually within their particular entities and collectively, as many of them are members of the Recovery Accountability and Transparency Board.

- The Recovery Accountability and Transparency Board is intended to help prevent waste, fraud, and abuse by reviewing contracts and grants to ensure they meet applicable standards, follow competition requirements, and are overseen by sufficient numbers of trained acquisition and grants personnel. The Board has a range of authorities and is charged with reporting to the President and the Congress any potential problems requiring immediate attention in addition to reporting quarterly and annually.

My statement today discusses (1) our responsibilities under the Recovery Act to provide bimonthly reviews of selected states' and localities' use of funds; (2) particular R&D funding areas that deserve special attention to ensure that funds are best used; and (3) our plans for carrying out our responsibilities under the Recovery Act.

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## Our Responsibilities under the Recovery Act and Our Plans to Evaluate At-Risk Programs

The Recovery Act directs GAO to provide bimonthly reviews and reporting on selected states' and localities' use of funds. We have initiated work on the first review, which will examine 16 states, the District of Columbia, and selected localities. Specifically, we are examining how these states and localities are using the act's funds and whether they are, among other things, (1) preserving and creating jobs and promoting economic recovery; (2) assisting those most impacted by the recession; (3) investing in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits; and (4) stabilizing state and local government budgets in order to minimize and avoid reductions in essential services and counterproductive state and local tax increases. We will track the following 16 states, and the District of Columbia, over the next few years to provide an ongoing longitudinal analysis of the use of funds under the Recovery Act: Arizona, California, Colorado, Florida, Georgia, Iowa, Illinois, Massachusetts, Michigan, Mississippi, New Jersey, New York, North Carolina, Ohio, Pennsylvania, and Texas. These states contain about 65 percent of the U.S. population and are estimated to receive about two-thirds of the intergovernmental grants funds available through the Recovery Act.

Because of the scope of this work, we have reached out to the broader accountability community to coordinate our respective roles, planned approaches, and timelines. Soon after the act was passed, the acting Comptroller General reached out to the IG community and, with Ms.

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Phyllis Fong, the Chair of the Council of Inspectors General on Integrity and Efficiency, hosted an initial coordination meeting on February 25, 2009, with the Inspectors General or their representatives from 17 agencies. It was a very productive discussion in which we outlined coordination approaches going forward. The acting Comptroller General also talked with Mr. Earl Devaney soon after the President appointed him as Chair of the Board on February 23, 2009, to ensure effective coordination of our respective efforts.

In consultation with the Congress in exercising our general statutory authority to evaluate the results of government programs and activities, we will target at-risk programs for review. We will also incorporate reviews of stimulus funding whenever we are examining base programs. There are many implementation challenges to ensuring adequate accountability and efficient and effective implementation of the Recovery Act. Experience tells us that the risk for fraud, waste, and abuse grows when billions of dollars are going out quickly, eligibility requirements are being established or changed, new programs are being created, or a mix of these characteristics. This suggests the need for a risk-based approach to target for attention on specific programs and funding structures early based on known strengths, vulnerabilities, and weaknesses, such as a track record of improper payments or contracting problems. We currently are assessing all of the programs receiving Recovery Act funds for key risk factors, including new programs, significant growth, new delivery mechanisms, and known problems. In recent years, the accountability community has produced a wide variety of best practice and related guides that can assist agencies in ensuring they have the needed internal controls in place from the outset. These best practices and related guides cover such areas as fraud prevention, contract management, and grants accountability.

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## R&D Funding Areas that Deserve Special Attention

Our prior work has identified several areas that deserve special attention from management and the IG's office to ensure that funds are put to best use. The following examples highlight problems associated with (1) a new program—Energy's innovative technology loan guarantee program—which does not have established management and internal control activities, (2) an existing program that cannot readily determine whether private entities would fund a project without the federal funds, (3) an existing program that awards a large amount of matching funds to demonstrate or deploy advanced technologies but cannot ensure that industrial partners will complete the project, and (4) an existing program

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with a history of cost overruns and schedule slippage for its major projects.

- The Recovery Act made \$6 billion available to Energy to support \$60 billion in new loan guarantees under its innovative technology loan guarantee program. However, our July 2008 report entitled *Department of Energy: New Loan Guarantee Program Should Complete Activities Necessary for Effective and Accountable Program Management* (GAO-08-750) found that DOE was not well positioned to manage the loan guarantee program effectively and maintain accountability because it had not completed a number of key management and internal control activities. To improve the implementation of the loan guarantee program and to help mitigate risk to the federal government and American taxpayers, we recommended that DOE take several steps, including (1) completing detailed internal loan selection policies and procedures that lay out roles and responsibilities and criteria and requirements for conducting and documenting analyses and decision making, (2) amending application guidance to include more specificity on the content of independent engineering reports and on the development of project cost estimates to provide the level of detail needed to better assess overall project feasibility, and (3) further developing and defining performance measures and metrics to monitor and evaluate program efficiency, effectiveness, and outcomes. We are currently engaged in an ongoing engagement to determine the current state of the loan guarantee program and what progress DOE has made since our last report.
- The Recovery Act made \$3.5 billion available to Energy to fund R&D on renewable energy and fossil energy. However our December 2008 report entitled *Research and Development: DOE Could Enhance the Project Selection Process for Government Oil and Natural Gas Research* (GAO-09-186) found that DOE does not formally assess whether industry would undertake oil and gas R&D without federal funding. To better ensure that DOE selects oil and gas R&D projects that industry is unlikely to pursue, we recommended that DOE's project selection process include a formal assessment of the likelihood that the R&D would not have occurred without federal funding. Our review of similar federal programs has found that agencies may be unable to ensure that their funding is not duplicating existing or planned research that would be conducted in the same period in the absence of federal financial assistance. In addition, our work has questioned a R&D program's ability to obligate a large influx of appropriations because the review, selection, and approval of individual project proposals from the private sector can be lengthy and requires

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substantially more scientific peer review panels to assess the technical merits of each proposal and staff with expertise in making grant awards.

- The Recovery Act made \$2.32 billion available to Energy to jointly fund private sector projects demonstrating clean coal and carbon capture and sequestration technologies. However, our June 2001 testimony entitled *Fossil Fuel R&D: Lessons Learned in the Clean Coal Technology Program* ([GAO-01-854T](#)) and a series of prior reports on the program found that many demonstration projects had experienced delays, cost overruns, bankruptcies, and performance problems. We identified several lessons learned for improving DOE's selection and oversight processes. As a result of the projects' problems, the Congress since 1995 has rescinded or reprogrammed almost \$900 million of the funds appropriated for the Clean Coal Technology Program. More recently, our February 2009 report entitled *Clean Coal: DOE's Decision to Restructure FutureGen Should Be Based on a Comprehensive Analysis of Costs, Benefits, and Risks* ([GAO-09-248](#)) found that DOE did not base its decision to restructure FutureGen on a comprehensive analysis of factors, such as the associated costs, benefits, and risks. We recommended that, before implementing significant changes to FutureGen or before obligating additional funds for such purposes, DOE prepare a comprehensive analysis that compares the relative costs, benefits, and risks of a range of options that includes (1) the original FutureGen program, (2) incremental changes to the original program, and (3) the restructured FutureGen program.
- The Recovery Act provided a total of \$1 billion to NASA, including \$400 million for exploration. However, our March 2009 report entitled *NASA: Assessments of Selected Large-Scale Projects* ([GAO-09-306SP](#)) noted that NASA plans to invest billions of dollars in the coming years in science and exploration space flight initiatives. Our examination of NASA projects with life-cycle costs exceeding \$250 million found that 10 of 13 that had entered the implementation phase had experienced significant cost and/or schedule growth—on average, development costs had increased by 13 percent and launch had been delayed by 11 months. NASA has acted to adopt practices that would better ensure that programs proceed based on a sound business case that addresses technology maturity, design stability, complexity of heritage technology, contractor performance and development partner performance. In particular, NASA has undertaken an array of initiatives aimed at improving program management, cost estimating, and contractor oversight. However, until these practices become integrated into NASA's culture, it is unclear monies will be well-spent and the achievement of NASA's mission will be maximized.

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## Our Plans for Carrying Out Our Oversight Responsibilities

To make the most effective and efficient use of our resources, we plan to fulfill our Recovery Act responsibilities related to science funding by working together with the IGs to leverage our strengths and avoid duplication of effort wherever possible. In consultation with the Congress, we will also target at-risk programs that receive Recovery Act science funding for review under our general audit authorities, and we will expand our work on base programs to examine any related stimulus funding.

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In summary, GAO welcomes the responsibility that the Congress has placed on us to assist it in the oversight, accountability, and transparency of the Recovery Act. We will continue to coordinate closely with the rest of the accountability community. We also are committed to completing our Recovery Act work on the timetable envisioned by the act and will keep the Congress fully informed as our plans evolve.

Mr. Chairman, Representative Broun, and Members of the Subcommittee this concludes my statement. I would be pleased to respond to any questions you may have.

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## Contact and Staff Acknowledgments

Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony. For further information about this testimony, please contact Patricia Dalton, Managing Director, Natural Resources and Environment (202) 512-3841 or [Daltonp@gao.gov](mailto:Daltonp@gao.gov). Key contributors to this testimony were Richard Cheston (Assistant Director), Karen Keegan, and Stuart Ryba.



# Appendix I: Recovery Act Funding for R&D-Related Activities

Dollars in millions	
	Appropriations
<b>Department of Energy</b>	
Energy Efficiency and Renewable Energy	<b>\$4,500</b>
Advanced Battery Manufacturing grants: to provide manufacturing facility funding awards for U.S.-produced advanced battery systems and vehicle batteries, including advanced lithium ion batteries, hybrid electrical systems, component manufacturers, and software designers.	\$2,000
Biomass research, development, demonstration, and deployment	\$800
Geothermal research, development, demonstration, and deployment	\$400
R&D to increase information and communications technology efficiency and improve standards	\$50
Other research, development, demonstration, and deployment	\$1,250
<b>Fossil Energy</b>	<b>\$3,400</b>
Fossil Energy R&D	\$1,000
Clean Coal Power Initiative: Round III competition	\$800
Competitive solicitation for industrial carbon capture and energy efficiency improvement projects, including a small allocation for innovative concepts for beneficial carbon dioxide reuse	\$1,520
Competitive solicitation for site characterization activities in geologic formations	\$50
Geologic sequestration training and research grants	\$20
Program direction	\$10
<b>Science</b>	<b>\$1,600</b>
<b>Advanced Research Projects Agency – Energy</b>	<b>\$400</b>
<b>Innovative Technology Loan Guarantee Program</b>	<b>\$6,000</b>
To pay the costs of guarantees made under section 1705 of the Energy Policy Act of 2005 for renewable technologies and transmission technologies. Funds are available until expended. Conferees expect that these funds will support more than \$60 billion in loans for these projects.	\$5,965
Administrative expenses in carrying out the guaranteed loan program	\$25
Funds transferred to and available for administrative expenses for the Advanced Technology Vehicles Manufacturing Loan Program.	\$10
<b>Department of Commerce</b>	
<b>National Institute of Standards and Technology</b>	<b>\$610</b>
Scientific and Technical Research and Services: to support research, competitive grants, additional research fellowships, advanced research and measurement equipment and supplies.	\$220
Construction of Research Facilities: to address the maintenance backlog and for construction of new facilities and laboratories. Specifically, \$180 million is for the competitive construction grant program for research science buildings, including fiscal years 2008 and 2009 competitions.	\$360
Transfer of Funds from Health Information Technology: to create and test standards related to health security and interoperability.	\$20
Collaborative efforts to develop a comprehensive framework for a national smart grid	\$10

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Dollars in millions

	<b>Appropriations</b>
<b>National Oceanic and Atmospheric Administration</b>	<b>\$830</b>
Operations, Research and Facilities: to address a backlog of research, restoration, navigation, conservation, and management activities. <sup>a</sup>	\$230
Procurement, Acquisition and Construction: for construction and repair of facilities, ships and equipment; to improve weather forecasting; and to support satellite development. Specifically, \$170 million is to address critical gaps in climate modeling and establish climate data records for continuing research into the cause, effects, and ways to mitigate climate change.	\$600
<b>National Science Foundation</b>	<b>\$3,000</b>
Research and Related Activities: Specifically, \$300 million is solely for the Major Research Instrumentation program and \$200 million is for academic research facilities modernization.	\$2,500
Education and Human Resources	\$100
Major Research Equipment and Facilities Construction	\$400
<b>National Aeronautics and Space Administration</b>	<b>\$1,000</b>
Science: Funds are included to accelerate the development of the tier 1 set of Earth science climate research missions and to increase NASA's supercomputing capabilities.	\$400
Aeronautics: Funds are available for system-level research, development, and demonstration activities related to aviation safety, environmental impact mitigation, and the Next Generation Air Transportation System.	\$150
Exploration	\$400
Cross agency support: NASA is to give highest priority to restore NASA-owned facilities damaged from hurricanes and other natural disasters that occurred in 2008.	50
<b>Total</b>	<b>\$21,340</b>

Source: Conference Report for the American Recovery and Reinvestment Act of 2009, House Report 111-16 (Washington, D.C., Feb. 12, 2009).

Note: R&D-related activities include demonstrating and deploying of advanced energy technologies, purchasing scientific instrumentation and equipment, and constructing or modernizing research facilities.

<sup>a</sup>Up to \$170 million of these funds may be available for coastal and marine habitat restoration, according to the National Oceanic and Atmospheric Administration.

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