

ICASS Participation Rates for 2011 and Potential Savings through Economies of Scale for Selected Administrative Services

Administrative service	Percentage of agencies obtaining service through ICASS	Estimated change in unit cost with 10 percent increase in workload
Property management ^a	70.6%	-9.1%
Furniture, furnishings, and appliance pools	57.5	-8.4
Pouch services	50.2	-7.0
Travel services	70.7	-6.2
Photocopying services	28.0	-6.2
Shipment and customs	66.2	-6.1
Administrative supply	56.5	-5.6
Procurement services	75.4	-5.6
Motor pool services	45.1	-4.8

Source: GAO analysis of ICASS data.

^aIncludes inventory management, warehousing, and issuance of office and residential furniture, furnishings, and appliances; does not include real property.

According to the results of GAO's survey of agency representatives, decisions to opt out of ICASS services are based on various factors, the most frequently cited of which were concerns about cost. GAO's survey results indicated that some agency representatives who obtained a specific service outside of ICASS believed that doing so was less expensive than obtaining this service through ICASS. However, several respondents indicated that their decisions to opt out of ICASS were not based on any formal cost analyses. Agencies also chose not to participate in ICASS for a variety of other reasons. In some cases, agency representatives said that they could obtain some services from their headquarters more efficiently than through ICASS. In other cases, officials indicated that they would be unable to fulfill their agency's mission if they relied on ICASS services. For example, some Department of Homeland Security officials said they needed to maintain their own vehicles to have immediate, 24 hours-a-day access for them to conduct investigations. Also, several USAID and Department of Agriculture officials noted that their missions require them to take extended trips to the field that the ICASS motor pool is sometimes not able to accommodate.

Another frequently cited reason for opting out of ICASS was concern about the quality of ICASS services. While results from the annual ICASS survey and GAO's survey of U.S. government agency representatives show overall satisfaction with the quality of ICASS services generally, some dissatisfaction with ICASS performance still exists, particularly among USAID staff. Officials from USAID and other agencies have indicated that performance problems could affect their ability to achieve their respective mission efficiently and effectively in some cases. In particular, USAID officials have cited the unavailability of ICASS motor pool vehicles for travel to distant project sites as a major impediment to its ability to monitor development programs. While agencies may have valid

justifications for not participating in ICASS services, they generally do not document their rationales or formally share them with ICASS service providers or other customer agencies. Nor do State or ICASS systematically request such analyses or document the reasons why agencies choose not to subscribe to an ICASS service.

The voluntary nature of ICASS has permitted the continuation of duplicative services, as agencies often make decisions about participating in ICASS based on their own costs and not the costs to the U.S. government as a whole. GAO recommended in September 2004 that the ICASS Executive Board encourage greater ICASS participation. The board agreed and has taken some steps to reduce duplication of administrative services, particularly between State and USAID. However, according to ICASS officials, experience has shown that board members do not necessarily have the incentive to require their agencies to participate in ICASS. In this context, congressional action may be necessary to increase participation in ICASS.

One of ICASS's primary goals is to contain or reduce administrative costs. Yet State, as the primary ICASS service provider, has made limited progress in containing costs by reducing the need for American administrative staff overseas. GAO recommended in September 2004 that, in addition to pursuing the elimination of duplicative administrative support structures, the ICASS Executive Board seek to contain ICASS cost by reengineering administrative processes and employing innovative managerial approaches through competitive sourcing, regionalization of services, improved technology, and adoption of other best practices developed by agencies and other posts. GAO further noted that State had undertaken several initiatives to increase the efficiency of ICASS services; primarily by reducing the need for administrative staff overseas.

However, according to ICASS management officials, State has discontinued these efforts without demonstrating significant progress in containing costs. For example, State did not fully implement a pilot effort to streamline services by requiring ICASS service providers and ICASS Councils to rationalize administrative staffing levels. Moreover, State did not execute its plans to relocate some administrative support activities from overseas to the Florida Regional Center in Fort Lauderdale, which State estimated in 2004 would save ICASS customers up to \$140 million over 5 years. According to State and ICASS management officials, State discontinued these efforts because it determined that the potential cost savings did not outweigh the administrative burden of fully implementing them. Furthermore, they indicated that State has not undertaken any other comparable streamlining efforts that would lower costs significantly.

State has implemented a wide variety of smaller scale innovations that have increased the efficiency of ICASS service delivery and reduced costs. For example, State established a "post support unit" to provide vouchering services to more than 90 posts worldwide from three central locations. State also implemented a global network energy management program, which has reportedly reduced energy costs by almost \$900,000

in its first 10 months. Other than this initiative, State has not identified the specific cost impacts of these innovations. State anticipates future cost savings from innovative approaches to procuring air freight pouch and mail services and information technology.

The ICASS Executive Board has had limited power to effectuate reengineering and innovation in administrative processes, as State maintains control over virtually all of these processes as both the primary provider and customer of ICASS services. Officials from nearly every agency GAO met with expressed concern about State's failure to contain the cost of the ICASS services it provides. In particular, agency officials in Washington and at the overseas posts GAO visited commonly complained that State employed too many American staff overseas to provide administrative services instead of relying on much less expensive locally employed staff or outsourcing to local firms.¹

Furthermore, State has not sought to maximize the cost-effectiveness of ICASS services by ensuring that the most appropriate agency deliver these services at all posts. In some instances of duplication GAO observed, GAO noted that USAID appeared to have more expertise in providing a particular service than the existing State ICASS provider, potentially making USAID a reasonable alternate ICASS service provider. For example, in Nairobi, USAID operates a copy center for its own staff inside the embassy compound, offering more specialized services, including digitization, than the ICASS copy center provides.

State's *Foreign Affairs Handbook* recognizes that an agency other than State may be better positioned to be the principal provider of specific services for themselves and other agencies at a given post. It allows for the use of these alternate service providers in cases where an agency has a sufficiently large administrative support capability at a location and agrees to provide services to other agencies at that post. However, in 2006, State and USAID, in the interest of simplifying and expediting the consolidation of their administrative operations overseas, adopted a policy effectively restricting the establishment of new alternate ICASS service providers.

As a result, in 2012, only seven posts had such a provider for one or more ICASS service, potentially limiting opportunities for ICASS to achieve greater efficiency and effectiveness. In 2010, Task Force 11, a joint State-USAID group supporting the development of the Quadrennial Diplomacy and Development Review,² recommended that posts consider

¹In 2004, we found that the per capita labor cost of an American direct hire staff was almost eight times higher than that of a local hire.

²Department of State and the U.S. Agency for International Development, *Leading Through Civilian Power: The First Quadrennial Diplomacy and Development Review* (Washington, D.C.: Dec. 15, 2010).

the use of alternate service providers in order to reduce costs. Task Force 11 also proposed that State and USAID establish a Joint Management Board and formulate a consolidation policy that considers the use of alternate providers. However, the Joint Management Board, created in August 2011, has not yet established such a policy.

Actions Needed and Potential Financial or Other Benefits

To contain costs and reduce duplication of administrative support services overseas, GAO recommended in January 2012 that Congress may wish to consider

- requiring agencies to participate in ICASS services unless they provide a business case to show that they can obtain these services outside of ICASS without increasing overall costs to the U.S. government or that their mission cannot be achieved within ICASS.

GAO also recommended in January 2012 that the Secretary of State should

- increase the cost-effectiveness of ICASS services by continuing to reengineer administrative processes and seek innovative managerial approaches, including those that would reduce the reliance on American officials overseas to provide these services.

Furthermore, where agencies are able to demonstrate, through a compelling business case, that they can provide a service more efficiently than the existing State ICASS provider without adverse effects on the overall government budget, GAO recommended in January 2012 that the Secretary of State and the Administrator of USAID should

- allow the creation of new ICASS service providers, in lieu of State, that could provide administrative services to the other agencies at individual posts.

Agency Comments and GAO's Evaluation

GAO provided a draft of its January 2012 report to State, USAID, and the Departments of Agriculture, Commerce, Defense, Health and Human Services, Homeland Security, and Justice for review and comment. State, USAID, and the Departments of Agriculture, Commerce, and Homeland Security provided written comments. The Departments of Defense, Health and Human Services, and Justice provided technical comments, which were incorporated as appropriate. State and USAID generally agreed with GAO's recommendations. However, while State agreed that continued efforts are needed to increase the cost-effectiveness of ICASS services, it did not agree that such actions have not been undertaken or that such efforts would substantially reduce the need for the American management staff abroad. GAO added information about State's other cost-reduction efforts to the draft, noting that they were of a smaller scale than those State had indicated in 2004 that it would undertake. Given the relatively high cost of posting American staff overseas compared to engaging staff locally, GAO believes that even minor modifications in staffing could have

significant cost implications and should be thoroughly explored, in close coordination with ICASS-participating agencies.

The Departments of Agriculture, Commerce, and Homeland Security took issue with GAO's finding that nonparticipation in ICASS services reflects potential duplication of administrative services overseas, and with GAO's suggestion that Congress consider requiring agencies to participate in ICASS services unless they provide a business case to justify opting out. In particular, these agencies noted that ICASS customers have a variety of valid reasons for not participating in ICASS services and expressed concern that developing business cases to justify nonparticipation would be overly burdensome. GAO believes that, while agencies may have valid reasons for not participating in some ICASS services, the voluntary nature of ICASS has permitted agencies to opt out of the system without conducting rigorous cost analyses. Without such analyses, agencies are making decisions about participating in ICASS based on their own costs—or perceptions of cost—and not necessarily the overall cost to the U.S. government. GAO believes that if conducted in close coordination with the ICASS Service Center and other participating agencies, preparing business cases need not be overly burdensome and could lead to significant, long-term savings for the U.S. government that would justify the additional effort. As part of its routine audit work, GAO will track the extent to which progress has been made to address the identified actions and report to Congress.

How GAO Conducted Its Work

The information contained in this analysis is based on findings from the products listed in the related GAO products section. GAO analyzed data and documentation on ICASS participation and costs from 2000 through 2011; interviewed cognizant staff at the 8 agencies with the largest overseas presence; and surveyed representatives from these agencies at posts around the world. GAO staff conducted fieldwork in Japan, Kenya, the Philippines, and Rwanda, where they observed administrative services, met with embassy management officials, and conducted focus groups of ICASS customers. GAO performed its work from August 2010 to January 2012.

Related GAO Products

Embassy Management: State Department and Other Agencies Should Further Explore Opportunities to Save Administrative Costs Overseas. GAO-12-317. Washington, D.C.: January 31, 2012.

New Embassy Compounds: State Faces Challenges in Sizing Facilities and Providing for Operations and Maintenance Requirements. GAO-10-689. Washington, D.C.: July 20, 2010.

Embassy Management: Actions Are Needed to Increase Efficiency and Improve Delivery of Administrative Services. GAO-04-511. Washington, D.C.: September 7, 2004.

Contact Information

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21. Training to Identify Fraudulent Travel Documents

Establishing a formal coordination mechanism could help reduce duplicative activities among seven different entities that are involved in training foreign officials to identify fraudulent travel documents.

Why This Area Is Important

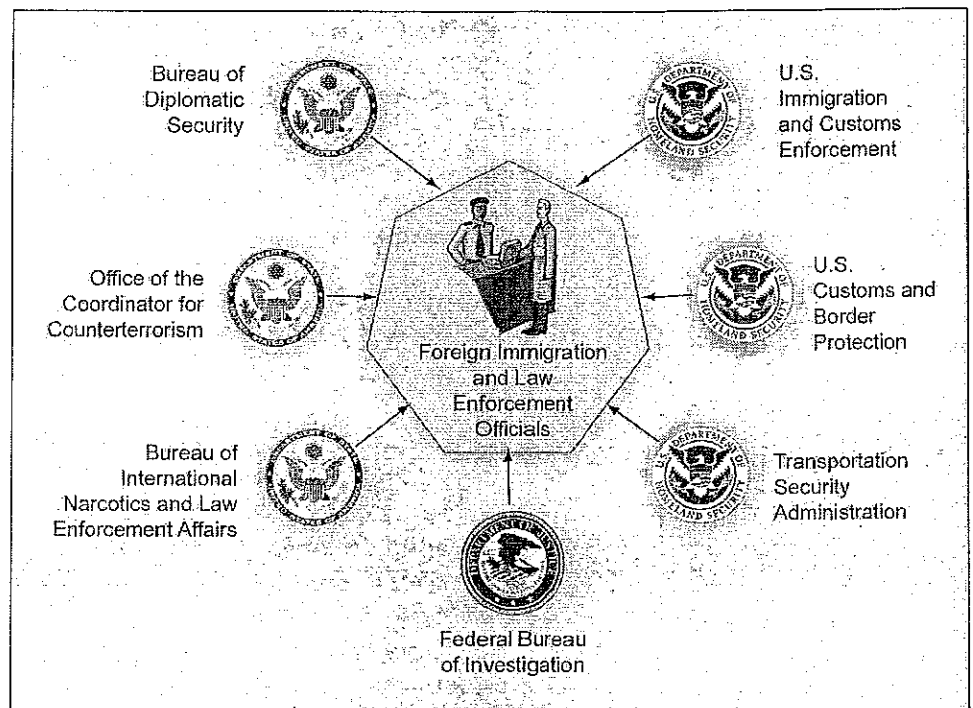
Eliminating the threat of terrorist attacks continues to be a primary U.S. national security focus. According to the 9/11 Commission, constraining the mobility of terrorists is one of the most effective weapons in fighting terrorism. The U.S. government has identified four key gaps in foreign countries' capacity to prevent terrorist travel overseas, including a key gap in our foreign partners' ability to address the use of fraudulent travel documents. As a result, U.S. agencies have undertaken a variety of efforts to enhance our foreign partners' capacity to identify and interdict fraudulent travel documents (i.e., passports and visas).

What GAO Found

As GAO reported in June 2011, seven different U.S. government entities across three federal agencies are involved in providing training to foreign government officials to detect fraudulent travel documents.¹ In delivering the training, agencies have similar objectives and often train the same populations (e.g., immigration officials and law enforcement officials) to develop their skills in recognizing the characteristics of altered, counterfeit, or other fraudulent travel documents, sometimes in the same country.

¹We were unable to determine the total amount of money spent on training foreign government officials to detect fraudulent travel documents because the agencies involved did not consistently track the cost of individual training sessions.

U.S. Agencies and Bureaus Involved in Providing Fraudulent Travel Document Recognition Training to Foreign Immigration and Law Enforcement Officials



Sources: GAO analysis of agency data and information; Corel and Art Explosion (clip art).

As GAO reported in June 2011, the federal entities in the above figure provided the following training to foreign officials in fraudulent travel document recognition:

- The Bureau of Diplomatic Security within the Department of State (State) provided 458 instructor-led courses on fraudulent travel documents through their staff posted overseas and, in collaboration with State's Bureau of Counterterrorism, provided an additional 12 courses in fraudulent travel document recognition through their Anti-Terrorism Assistance (ATA) program.
- Immigration and Customs Enforcement (ICE) within the Department of Homeland Security (DHS) provided 360 training courses, briefings, and outreach sessions through their attachés stationed overseas, and through their Office of International Affairs provided 4 additional courses instructed by officials traveling from Washington, D.C.
- State's Bureau of International Narcotics and Law Enforcement Affairs, through the International Law Enforcement Academies, provided two courses specifically on fraudulent travel document recognition and five courses that covered this topic as part of longer, general law enforcement training. In addition, this State bureau provided funding to the U.S. Customs and Border Protection (CBP) within DHS for one training course and to arrange six trips of foreign officials to the United States through the International Visitors Program for this purpose and to the Organization of American States

to deliver training in fraudulent document recognition throughout the Western Hemisphere.

- The Transportation Security Administration within DHS funded one fraudulent travel document training course, as part of its Aviation Security Sustainable International Standards Teams.
- CBP within DHS, through its Office of International Affairs, funded one course in fraudulent document recognition for law enforcement officials.
- The Federal Bureau of Investigation within the Department of Justice did not fund or implement any such training in fiscal year 2010; however, in March 2011, it organized one such training session.

Officials from State's Bureau of Counterterrorism—which coordinates and supports the development and implementation of all U.S. government policies and programs aimed at countering terrorism overseas—told GAO they had been unaware of how many agencies and subagencies are involved in providing fraudulent travel document training to foreign officials. They added that no mechanism existed to encourage coordination among all the parties involved. At the country level, during site visits in March 2011, GAO found that agency officials at two of the four posts it visited did not always collaborate on the delivery of fraudulent travel document recognition training. As a result, some planned training was duplicative and did not make an effective use of limited resources.

- In Pakistan, GAO identified two agencies, State and DHS, planning to provide fraudulent travel document recognition training courses in April 2011 to Pakistani officials from the same agency without coordinating with one another. An attaché from DHS/ICE planned one course, while State's ATA program was simultaneously planning to hold two other fraudulent travel document courses in the same month. Meanwhile, the ICE attaché had been certified to be an instructor for fraudulent travel document recognition courses through a train-the-trainer course provided by ICE's Forensic Document Laboratory. Since ATA program officials were unaware of the existence of this local resource, the ATA program was still attempting to find two instructors from ICE to travel to Pakistan to teach their planned courses.
- In Kenya, GAO found that representatives from two U.S. agencies, State and DHS, deliver fraudulent travel document training but do not collaborate. State provides such training through its ATA program and through an in-country representative of their Bureau of Diplomatic Security, while an in-country representative of DHS's CBP also provided many such training courses. Despite these three representatives providing this similar training, a representative from one of the agencies stated that although he coordinated with other countries providing similar training in Kenya, he did not do so with other U.S. agencies.

Actions Needed and Potential Financial or Other Benefits

GAO recommended in June 2011 that the Secretary of State should

- develop a mechanism to enhance coordination among the agencies involved in funding and implementing fraudulent travel document training overseas.

Agency Comments and GAO's Evaluation

GAO provided a draft of its June 2011 report to State for review and comment. State agreed with GAO's previous recommendation and reported that efforts to enhance such coordination have begun at the country level. As part of its routine audit work, GAO will track the extent to which progress has been made to address the identified actions and report to Congress.

How GAO Conducted Its Work

The information contained in this analysis is based on findings from the products listed in the related GAO products section. GAO reviewed the strategies and documentation of U.S. agencies funding and/or implementing foreign capacity-building efforts to prevent terrorist travel overseas, including those of State, DOD, DHS, the Department of Justice, and the U.S. Agency for International Development. GAO met with these agencies and conducted field work in Kenya, Pakistan, the Philippines, and Thailand.

Related GAO Product

Combating Terrorism: Additional Steps Needed to Enhance Foreign Partners' Capacity to Prevent Terrorist Travel. GAO-11-637. Washington, D.C.: June 30, 2011.

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22. Coordination of Space System Organizations

Fragmented leadership has led to program challenges and potential duplication in developing multibillion-dollar space systems.

Why This Area Is Important

U.S. government space systems provide a wide range of capabilities such as Global Positioning System, weather, climatology, meteorology, missile warning, and secure communications to a large number of users, including the Department of Defense (DOD), the intelligence community, civil agencies, U.S. businesses and citizens, and/or other countries. More than \$25 billion a year is appropriated to agencies for developing space systems. These systems typically take a long time to develop, and often consist of multiple components—including satellites, ground control stations, terminals, and user equipment—with different program offices that oftentimes separately plan, acquire, and deploy individual system components. Moreover, the nation's satellites are put into orbit by rockets that can cost more than of \$100 million per launch. Given these components, often costing billions of dollars to acquire, recent GAO studies have shown that costs of space programs tend to increase significantly from initial cost estimates. A May 2011 GAO testimony showed that estimated costs for the major Defense space acquisition programs have increased by about \$13.9 billion from initial estimates for fiscal years 2010 through 2015, almost a 286 percent increase. NASA space programs have also wrestled with excessive cost growth. While many of the programs have provided users with important and useful capabilities, GAO and others have reported for a number of years that, in some cases, problems with these systems have been so severe that acquisitions were either canceled or the needed capabilities were severely delayed, and that fragmented leadership has been a factor in some of these problems.

What GAO Found

Fragmented leadership and lack of a single authority in overseeing the acquisition of space programs have created challenges for optimally acquiring, developing, and deploying new space systems. This fragmentation is problematic not only because of a lack of coordination that has led to delays in fielding systems, but also because no one person or organization is held accountable for balancing governmentwide needs against wants, resolving conflicts and ensuring coordination among the many organizations involved with space acquisitions, and ensuring that resources are directed where they are most needed. Past studies and reviews examining the leadership, organization, and management of national security space have found that there is no single authority responsible below the President for integrating space programs, and responsibilities for acquiring space systems are diffused across various DOD organizations—including the military services and the Missile Defense Agency—as well as the intelligence community and the National Aeronautics and Space Administration (NASA). A variety of other

agencies, such as the Federal Aviation Administration, the National Oceanic and Atmospheric Administration (NOAA), and the Department of Homeland Security rely on government space systems to execute their missions. As indicated in these studies and reviews, each military service or agency that acquires space systems has its own lines of acquisition authority, even though many of the larger programs, such as the Global Positioning System and those to acquire imagery and environmental satellites, are integral to the execution of multiple agencies' missions. With multiagency space programs, success is often only possible with cooperation and coordination; however, successful and productive coordination appears to be the exception and not the rule.

GAO previously reported on how this fragmented leadership and lack of coordination has contributed to problems for the development, acquisition, and fielding of space programs. Examples of programs affected and their challenges are presented in the table below.

Selected Space Programs GAO Reviewed Where Fragmentation and Lack of Coordination Affected Development and Acquisition

Program name	Problems resulting from a lack of coordination
Global Positioning System (GPS)	The GPS program is currently being modernized to replace and update the aging satellite constellation with new GPS satellites, which will provide warfighters with a stronger and more secure military signal. Moreover, there is an interagency structure in place to help coordinate requirements and resolve issues related to GPS. However, modernized military user equipment that DOD is concurrently developing with the new satellites has suffered schedule delays and is not expected to be fully fielded to all of the military services until 2025—10 years after the new military signal from the satellites is expected to reach full operational capability. GAO previously reported in April 2009 that the coordination of the satellite and user equipment segments is not adequately synchronized due to funding shifts and diffuse leadership in the program, likely leading to numerous years of missed opportunities to utilize new capabilities. DOD has taken some steps to better coordinate the GPS segments. DOD created the Space and Intelligence Office within the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics to ensure that all three segments of GPS stay synchronized in the development and acquisition processes. However, that office does not have authority over all user equipment. DOD also conducted enterprise reviews of the program; however, it has not gone as far as GAO recommended to establish a single authority responsible for ensuring that all GPS segments, including user equipment, are synchronized to the maximum extent practicable.
The National Polar-orbiting Operational Environmental Satellite System (NPOESS)	NPOESS was an attempt to converge defense and civil environmental monitoring requirements and avoid duplication through a tri-agency program office, with each participating agency (DOD, NOAA, and NASA) having the lead on certain activities but no single authority to adjudicate conflicts or set priorities. Along with technical and design challenges that arose from decisions related to requirements, the lack of an effective leadership structure to prioritize requirements and resolve interagency conflicts contributed to restructuring of NPOESS. GAO previously reported in June 2009 that the interagency program structure did not effectively fulfill its responsibilities and did not have the ability to effectively or efficiently oversee and direct the NPOESS program. No authority at a level higher than the involved agencies was charged with coordinating the program to ensure resources were used for the greatest need, and this led to significant program delays. By the end of fiscal year 2010, the U.S. government had spent 16 years and over \$5 billion to develop NPOESS, but had not launched a single satellite, resulting in a potential capability gap for weather and environmental monitoring. Consequently, in February 2010, citing the program's cost overruns, schedule delays, and management problems, the White House Office of Science and Technology Policy announced that the NPOESS tri-agency structure would be eliminated and the program would be restructured by splitting procurements and responsibilities. ^a Given this restructuring, GAO recommended in May 2010 that NOAA and DOD establish plans to mitigate key risks in transitioning from NPOESS to the successor satellite programs, including ensuring effective oversight of program management, and addressing cost and schedule implications from contract and program changes. GAO reported that both agencies have acknowledged these risks, but have not yet established plans to mitigate these risks. For example, NOAA could not provide firm time frames for completing its management control plan and DOD never formally started its follow-on space weather satellite program, though it was attempting to pull together key acquisition documents. Moving forward, it will be important for the agencies to continue efforts to mitigate these risks in order to ensure the success of their respective environmental monitoring programs.

Program name	Problems resulting from a lack of coordination
Space Radar	<p>The Space Radar program faced significant affordability issues, along with leadership and management challenges that eventually contributed to the program's cancellation. Started in 2003, Space Radar was a collaborative effort between DOD and the intelligence community to provide global, all-weather, day and night intelligence, surveillance, and reconnaissance capabilities, particularly in denied areas. Space Radar was to consist of a constellation of satellites, a ground system, and a communications network that included ground-, air-, ship-, and space-based platforms. The initial cost estimate for Space Radar was between \$20 and \$25 billion, but the program did not have long-term funding agreements in place or an adjudication process for prioritizing and resolving the tasking from various users. GAO previously reported in August 2007 that cooperation between DOD and the intelligence community on the program could face challenges and an independent review found that the program lacked an effective way to resolve disagreements between the partners. Further, the program faced challenges including a potentially accelerated schedule, questions about system affordability, and difficulty defining key requirements. By 2008, DOD and the intelligence community decided to stop developing the Space Radar program, citing affordability issues, even though millions of dollars had already been spent and no immediate follow-on effort was continued to leverage this investment.</p>
Space Situational Awareness	<p>GAO previously reported in May 2011 that Space Situational Awareness acquisition efforts experienced challenges due to a lack of governmentwide authority. Space Situational Awareness efforts are designed to mitigate threats to U.S. space systems via a variety of space- and ground-based sensors and systems that detect, track, and characterize space objects and space-related events, and forecast which assets may be at risk. DOD has responsibility, with support from the Director of National Intelligence, for the development, acquisition, operation, maintenance, and modernization of Space Situational Awareness capabilities governmentwide. The Space Situational Awareness community consists of a diverse and large array of stakeholders, and while the National Space Policy assigns Space Situational Awareness responsibility to the Secretary of Defense, the Secretary cannot direct resources to the highest priority systems if they belong to an agency outside DOD, or ensure that agencies are setting aside funding needed for Space Situational Awareness over the long term. This complicates program oversight and operations and presents significant challenges to executing and overseeing the Space Situational Awareness mission. GAO has reported that development efforts have been hampered by cost, schedule, and performance challenges, and that in the past 5 fiscal years DOD has not delivered significant new Space Situational Awareness capabilities as originally expected. GAO also reported that the new National Space Policy increases the number of stakeholders that must participate in the development of planning documents that, among other things, identify the roles to manage national security space capabilities and develop specific measures for improving Space Situational Awareness capabilities. While identifying roles and having input from more Space Situational Awareness stakeholders are positive first steps and may result in more inclusive and robust planning efforts, it is too early to assess the effect of these provisions on managing and overseeing governmentwide Space Situational Awareness efforts.</p>

Source: GAO analysis of Department of Defense and GAO information.

^aThe announcement accompanied the release of the President's fiscal year 2011 budget request.

In addition, based on preliminary ongoing work, GAO has found the potential for duplication among satellite operations infrastructure within the federal government. This preliminary work indicates that there are multiple stove piped ground systems and duplication of facilities and hardware. This preliminary work also indicates the potential for duplication with satellites across the government in certain mission areas, such as for remote sensing. GAO plans to further examine these efforts in more detail in the near future.

Since late 2009, DOD has taken a number of initiatives to improve leadership over defense space acquisitions, but these actions have not been in place long enough to determine whether acquisition outcomes will improve. To improve leadership over space acquisitions, DOD has (1) established the Defense Space Council to serve as the principal advisory forum to inform, coordinate, and resolve all DOD space issues, to include implementation of the National Security Space Strategy; (2) designated the Under Secretary of Defense for Acquisition, Technology and Logistics

(USD AT&L) to serve as the Office of the Secretary of Defense focal point for space programs; (3) reaffirmed the Secretary of the Air Force as the DOD Executive Agent for Space, to integrate and assess DOD's overall space program, provide recommended adjustments to the space budget and facilitate increased cooperation with the Intelligence Community and (4) eliminated organizations believed to be redundant and/or ineffective. DOD officials also cite various changes at the Air Force level that better align and unify space acquisition. Further, the new National Space Policy that was issued in 2010 also takes some steps to clarifying responsibilities for space programs among government entities. These changes hold promise to strengthen unity of efforts across DOD's space portfolio as they seek to streamline authority for acquisitions, establish a process for prioritizing investments, and develop tools to ensure greater coordination. However, it is too early to determine if they resolve fragmentation that exists within DOD and between DOD and the intelligence community. Moreover, they do not extend to the space activities across the government.

In addition, according to OMB, the administration has taken several steps to enhance the coordination of space activities among and between civil and national security agencies including (1) conducting Interagency Policy Committee meetings on government-wide space-related issues; (2) creating and supporting agency-led coordination mechanisms for specific space topics or programs where appropriate; and (3) tasking agencies to develop joint plans and responses for addressing cross-sector space challenges, such as improving U.S. launch infrastructure or enhancing space situational awareness. While these steps may help increase coordination among agencies, they do not appear to set funding priorities and it is unclear whether they will help to resolve the conflicts between agencies that have lead to management and acquisition problems.

GAO has not made recommendations with regard to broader governmentwide leadership for space, but in previous reports GAO has recommended a number of changes to the leadership of specific sectors of the space community, including (1) assigning a single authority to oversee the development of the overall GPS capability, with authority to ensure DOD space, ground control, and user equipment are synchronized to the maximum extent practicable and (2) increasing coordination of launch vehicle acquisitions across federal agencies in order to increase efficiencies and cost savings. Several congressional commissions and other studies have also made recommendations for strengthening national security space authorities, including establishing a new Under Secretary of Defense for Space who would have authority over the planning and execution of the national security space program and a senior interagency group to focus on policy formulation and coordination of space activities. But these commissions did not look at the need for an authority that would also cover civilian agencies with space responsibilities.

Actions Needed and Potential Financial or Other Benefits

GAO and others have recommended a number of changes to the leadership of the space community and have consistently reported that a lack of strong, centralized leadership has led to inefficiencies and other problems. But the question still looms as to what office or leadership structure above the department level would be effective and appropriate for coordinating all U.S. government space programs and setting priorities. Working with the National Security Council, the Director of Office of Management and Budget should

- assess whether a construct analogous to the Defense Space Council could be applied government wide or if a separate organization should be established that would have greater authority for setting priorities than individual departments and agencies as well as responsibility for strategic planning. Given the complexity, diversity, and sensitivity of the many organizations involved in space and long-standing resistance to centralized leadership structures or even partnerships among agencies, we realize such an action could not be implemented quickly and would require a phased implementation approach.

Having a single authority responsible for ensuring coordination and setting priorities between U.S. space entities could have numerous benefits. It could reduce the fragmentation of authority and leadership in the space community and thereby help ensure coordination between multiple players, and improve synchronization of space program acquisitions to help avoid the past problems of interdependent capabilities coming online at different times. In addition, this authority would be in a better position than any one department or agency to determine the best use of limited funds and resources by more effectively prioritizing the most highly needed space programs, and would have the authority to reduce duplication across programs. While the Defense Space Council could fill the role as a single high level authority within DOD, this same construct could be used, such as a National Space Council, to coordinate and set priorities across the government.

Agency Comments and GAO's Evaluation

DOD has expressed mixed views on the need for clearer lines of authority for space. For example, DOD agreed with GAO's recommendation in April 2009 to appoint a single authority to oversee the development of the GPS system, including space, ground control, and user equipment assets, to ensure that the program is well executed, resourced, and that potential disruptions are minimized. But it asserted that GPS's current leadership structure was sufficient. Before GAO issued its May 2011 report on space situational awareness, the administration issued the new National Space Policy, which has the potential to resolve concerns GAO identified with leadership. In responding to this assessment, DOD acknowledged the need for a cleaner space and acquisition leadership structure. DOD officials believe that space acquisition programs have turned a corner and are successfully deploying far more capable systems in almost all major space mission areas. NASA and the National Reconnaissance Office did not have comments on this assessment.

The Office of Management and Budget agreed that coordinating space activities across the U.S. government has been and continues to be a major challenge, but is concerned that the GAO recommendation would add an extra layer of space bureaucracy on top of ongoing coordination efforts. OMB acknowledges the potential for improved coordination, but is concerned about additional costs and possible confusion regarding roles and authorities among the existing mechanisms. GAO believes that the recommendation is sufficiently flexible to allow for an implementation approach that would address these concerns. As part of GAO's routine audit work, GAO will continue to track agency actions to address these recommendations and report to Congress.

How GAO Conducted Its Work

The information contained in this analysis is based on findings from the products listed in the related GAO products section. In previous work to assess DOD's Space Situational Awareness efforts to determine the extent to which an integrated approach was being used to manage and oversee efforts to develop Space Situational Awareness capabilities, GAO analyzed documents and interviewed officials from 30 organizations within the Space Situational Awareness stakeholder community—users and providers of Space Situational Awareness information represented by DOD, the intelligence community, civil government agencies, and commercial industry—to examine (1) management and oversight efforts to develop, acquire, and manage Space Situational Awareness capabilities; and (2) planning activities for Space Situational Awareness architectures, investments, and requirements. GAO also analyzed documentation and interviewed officials from DOD and commercial industry to assess the benefits and challenges relating to DOD's implementation of its Space Situational Awareness-sharing program (formerly the Commercial and Foreign Entities program) under which Space Situational Awareness information is to be shared among DOD, industry, and foreign entities for collision avoidance purposes. In previous work to assess GPS coordination efforts, GAO reviewed recent documentation regarding the delivery of capabilities and equipment and assessed the level of synchronization among satellites, ground systems, and user equipment.

Related GAO Products

Space Acquisitions: Development and Oversight Challenges in Delivering Improved Space Situational Awareness Capabilities. GAO-11-545. Washington, D.C.: May 27, 2011.

Space Acquisitions: DOD Delivering New Generations of Satellites, but Space System Acquisition Challenges Remain. GAO-11-590T. Washington, D.C.: May 11, 2011.

Defense Acquisitions: Assessments of Selected Weapon Programs. GAO-11-233SP. Washington, D.C.: March 29, 2011.

Space Acquisitions: DOD Poised to Enhance Space Capabilities, but Persistent Challenges Remain in Developing Space Systems. GAO-10-447T. Washington, D.C.: March 10, 2010.

Global Positioning System: Challenges in Sustaining and Upgrading Capabilities Persist. GAO-10-636. Washington, D.C.: September 15, 2010.

Defense Acquisitions: Challenges in Aligning Space System Components. GAO-10-55. Washington, D.C.: October 29, 2009.

Polar-Orbiting Satellites: With Costs Increasing and Data Continuity at Risk, Improvements Needed in Tri-agency Decision Making. GAO-09-772T. Washington, D.C.: June 17, 2009.

Global Positioning System: Significant Challenges in Sustaining and Upgrading Widely Used Capabilities. GAO-09-325. Washington, D.C.: April 30, 2009.

DOD is Making progress in Adopting Best Practices for the Transformational Satellite Communications System and Space Radar but Still Faces Challenges. GAO-07-1029R. Washington, D.C.: August 2, 2007.

Contact Information

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23. Space Launch Contract Costs

Increased collaboration between the Department of Defense and National Aeronautics and Space Administration could reduce launch contracting duplication.

Why This Area Is Important

The Department of Defense (DOD), the intelligence community, the National Aeronautics and Space Administration (NASA), and other government agencies rely on commercial domestic launch service providers to place their satellites into orbit. National policy generally requires that U.S. government payloads, including satellites, be launched on U.S. manufactured launch vehicles. National security space payloads, comprised of DOD, including National Reconnaissance Office (NRO)¹ payloads, are primarily launched by the main U.S. launch provider, the United Launch Alliance (ULA), on its Delta IV and Atlas V vehicles. NASA payloads are launched on a variety of launch vehicles from multiple launch providers, including ULA. In fiscal year 2012, DOD plans to complete nine launches on Delta IV and Atlas V launch vehicles, at a cost of roughly about \$1.8 billion. Similarly, in fiscal year 2012, NASA plans to complete two launches on ULA's Atlas V launch vehicle, at a cost of about \$370 million. The government plans to spend about \$15 billion on ULA's launch services from fiscal year 2013 through 2017. In the past few years, ULA's launch costs have risen, but there are currently no alternative launch vehicles in the commercial sector that have been certified to launch the larger national security satellites. Meanwhile, NASA, which has more options for launch providers due to the greater diversity of its space programs, tolerance for launch risk, and cooperation with international partners, typically uses ULA to launch a few satellites each year—averaging about two annually in the past few years.

DOD is considering a new space launch acquisition strategy beginning in 2013 which will likely allow DOD to procure a set number of launch vehicles from ULA each year in an effort to control cost increases and stabilize the launch industrial base. However, awards of launch services from ULA by NASA—which are negotiated in a separate acquisition process with a different acquisition office—were not directly included in DOD's planned procurements.

What GAO Found

Space launch acquisition processes for NASA and DOD are not formally coordinated, duplicate one another, and may not fully leverage the government's investment because the government is not acting as a single buyer. As GAO reported in September 2008 and September 2011,

¹The NRO is responsible for research and development, acquisition, launch, deployment, and operation of overhead reconnaissance systems, and related data-processing facilities to collect intelligence and information to support national and DOD mission and other United States Government needs.

opportunities exist to reduce duplication in government contracting for launch services by jointly negotiating launch acquisitions, which could reduce the number of contracts and potentially save time and money. The U.S. National Space Policy² directs agencies to work jointly to acquire space launch services, and a recently signed memorandum of understanding may help facilitate communication on launch acquisitions. However, the National Space Policy does not specifically direct agencies to jointly negotiate for launch services, and the changes to coordination resulting from the memorandum of understanding do not appear to be significant enough to decrease the duplication in how DOD and NASA procure their launch services and to leverage the combined buying power of DOD and NASA.

Currently, the Air Force's Launch and Range Systems Directorate ensures DOD's access to space. The directorate develops and acquires expendable launch systems by awarding contracts to commercial firms; manages the launch integration, mission assurance, and launch campaigns; and provides range systems for space launch operations. In the past, launch services had been procured one at a time as needed. However, DOD is considering a new acquisition strategy, slated to begin in 2013, to provide ULA with a minimum order quantity for each year from DOD without the need to negotiate a new launch vehicle contract for each launch. This new strategy will cover DOD launches, but will not include NASA launches, which are negotiated separately by NASA under a different contract.

NASA's Launch Services II contract is an indefinite delivery, indefinite quantity³ contract with four launch service providers—Lockheed Martin, Orbital Sciences, Space Exploration Technologies, and ULA. When a NASA mission needs to acquire launch services, the NASA Launch Service Program issues orders for launch services and generally provides the companies a fair opportunity to compete for each order under NASA's Launch Services II contract. According to launch service program officials, competition between the launch service providers is intended to generate lower prices, but ULA is currently the only provider of intermediate class launch vehicles.

Since DOD and NASA negotiate for launch services separately, the current space launch acquisition environment may not leverage the government's overall negotiating power to get the best prices for launch services from ULA. There is also no current way to ensure that the government is not paying twice for launch overhead costs through the

²National Space Policy of the United States of America, 28 June 2010.

³An indefinite delivery, indefinite quantity contract is a type of contract that provides for an indefinite quantity, within stated limits, of supplies or services during a fixed period of time under which the government places orders for individual requirements. Federal Acquisition Regulation (FAR), § 16.504(a).

separate acquisition processes. Recently, DOD, the NRO, and NASA signed a memorandum of understanding outlining future cooperation in space launch acquisitions. In this agreement, DOD agreed to acquire five launch vehicle common booster cores⁴ per year for the next 5 years, and the NRO agreed to procure a minimum of three each year for the next 5 years. This large acquisition was intended to help control launch vehicle costs and stabilize production of launch vehicles. However, the agreement did not include a commitment from NASA to procure a minimum amount of boosters or services per year, though NASA will continue using its Launch Services II contract to procure launch services on the Atlas V launch vehicle from ULA separately from DOD's negotiated acquisition. NASA officials believe that they have been successful at awarding contracts for launch services through their separate acquisition process. Since NASA has a "most favored customer" contractual clause on its contracts with ULA to ensure that it does not pay a higher price for standard launch services than the lowest price charged to other ULA commercial or government customers, they do not have a strong incentive to cooperate in these procurements. Though this approach minimizes NASA's launch vehicle costs, it may not necessarily ensure the best price for the overall government nor does it eliminate the potential for redundant or unnecessary overhead costs.

Reducing duplication in awarding contracts for space launch services is further hindered, in part, due to the lack of a governmentwide policy for space launch services acquisitions. Currently, in addition to launch services procurements, numerous federal agencies have responsibility for space activities, including the Federal Aviation Administration's oversight of commercial space launches; NASA's scientific and exploration space activities; the DOD's national security space launches; the State Department's involvement in international trade issues; and the Department of Commerce's advocacy and promotion of the industry. Current National Space Policy broadly states a goal to energize the competitive domestic space industries, to include space launch, and to enhance capabilities for assured access to space. A governmentwide launch policy could more specifically clarify the overall government's priorities in developing and introducing new launch providers and could establish guidance for cooperation on launch services procurements between agencies. It could also identify and fill gaps in federal policy concerning the commercial space launch industry, according to senior Federal Aviation Administration and Department of Commerce officials.

According to the National Academy of Sciences, aligning the strategies of the various civil and national security space agencies will address many current issues arising from or exacerbated by the current uncoordinated, overlapping, and unilateral strategies. According to the academy, a

⁴The booster core is the main body of a launch vehicle. ULA uses common booster cores to build all of the Atlas V and Delta IV launch vehicles. Medium and intermediate launch vehicles use one core each, while the Delta IV Heavy launch vehicle requires three.

process of alignment offers the opportunity to leverage resources from various agencies to address such shared challenges as the diminished space industrial base, the dwindling technical workforce, and reduced funding levels. According to senior Federal Aviation Administration and Department of Commerce officials, the need for an overall U.S. space launch policy, which includes commercial space launches, was being discussed within the Department of Transportation and across other departments as part of the administration's review of national space activities, but the development of a national policy had not yet begun. Guidance on launch acquisitions will, however, be included in the updated National Space Transportation Policy which is currently under development.

Actions Needed and Potential Financial or Other Benefits

DOD, NRO, and NASA are taking steps to outline responsibilities on space launch services acquisitions through their recently signed memorandum of understanding. However, there are opportunities for the government to act as a single buyer to further reduce duplication in acquiring launch services. Specifically, the Office of Management and Budget should

- assess and adopt mechanisms to ensure formal coordination of the DOD and NASA acquisition processes for awarding launch services contracts with an eye toward leveraging the government's buying power and ensuring that launch prices are competitive for all U.S. government customers; and
- determine whether the government is paying twice for any overhead costs, and if duplication is found, develop a way to ensure that the government does not pay more than once for overhead costs through separate acquisition processes.

Agency Comments and GAO's Evaluation

In September 2011, GAO recommended that DOD examine how broader launch issues, such as greater coordination across federal agencies, can be factored into future launch acquisitions to increase efficiencies and cost savings. DOD concurred with this recommendation. In responding to this paper on duplication in launch contracting, NASA agreed that the goal of improving efficiency and maximizing the government's buying power for intermediate launch vehicles is worthy, but believes that it is currently working with DOD in such a way as to achieve this goal while still allowing each agency to perform its assigned space-related responsibilities. GAO would encourage NASA to continue its coordination with DOD. Technical comments from NASA have been incorporated as appropriate.

The Office of Management and Budget agrees that clear benefits can be gained from avoiding unnecessary contracting duplication, and points out that this and prior administrations have taken steps to consolidate launch services. OMB also cites this administration's current effort to develop an updated National Space Transportation Policy, which will include

guidance on launch acquisition. OMB believes that the flexibility of separate acquisition approaches can be beneficial and that the unique mission requirements of DOD and NASA may not be met most efficiently by a “one size fits all” contracting approach. In addressing OMB, DOD, and NASA comments, GAO modified its original suggestion that DOD and NASA consolidate their acquisition processes, to a suggestion where these agencies enhance their coordination of launch services. GAO continues to believe that greater coordination efforts could help to leverage the government’s buying power, in addition to the specific actions outlined above. For example, by acting as a single buyer, the government can better leverage its requirements for multi-year purchases of launch vehicles, and jointly negotiate launch acquisitions to reduce the number of awarded launch service contracts.

As part of its routine audit work, GAO will track the extent to which progress has been made to address the identified actions and report to Congress. All written comments are reprinted in appendix IV.

How GAO Conducted Its Work

The information contained in this analysis is based on findings from the products listed in the related GAO products section. In addition, GAO reviewed the March 2011 launch vehicle agreement by the Secretary of the Air Force, Director of the National Reconnaissance Office, and the Administrator of NASA. To identify important launch issues with potential bearing on current and future government launch acquisitions, GAO reviewed DOD launch studies and interviewed study leaders or participants in three of the five studies; GAO analyzed historical launch data and expected launch vehicle demand; reviewed other relevant government and industry reports; interviewed DOD, NASA, and contractor officials; and reviewed information from NRO.

Related GAO Products

Evolved Expendable Launch Vehicle: DOD Needs to Ensure New Acquisition Strategy is Based on Sufficient Information. GAO-11-641. Washington, D.C.: September 15, 2011.

Commercial Launch Vehicles: NASA Taking Measures to Manage Delays and Risks. GAO-11-692T. Washington, D.C.: May 26, 2011.

Commercial Space Transportation: Industry Trends and Key Issues Affecting Federal Oversight and International Competitiveness. GAO-11-629T. Washington, D.C.: May 5, 2011.

Space Acquisitions: Uncertainties in the Evolved Expendable Launch Vehicle Program Pose Management and Oversight Challenges. GAO-08-1039. Washington, D.C.: September 26, 2008.

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24. Diesel Emissions

Fourteen grant and loan programs at the Department of Energy, Department of Transportation, and the Environmental Protection Agency and three tax expenditures fund activities that have the effect of reducing mobile source diesel emissions; enhanced collaboration and performance measurement could improve these fragmented and overlapping programs.

Why This Area Is Important

Diesel engines play a vital role in public transportation, construction, agriculture, and shipping, largely because they are more durable and reliable than gasoline-powered engines, as well as 25 to 35 percent more energy efficient. However, exhaust from diesel engines is a pervasive and harmful form of air pollution. Diesel exhaust contains air pollutants such as nitrogen oxides and particulate matter, as well as other harmful substances that affect public health and the environment.¹ Since 1984, the Environmental Protection Agency (EPA) has implemented standards that have progressively lowered the maximum allowable amount of certain pollutants, including nitrogen oxides and particulate matter, from new diesel engines by more than 98 percent. However, the most stringent standards generally apply to diesel engines and vehicles built after 2007, and EPA estimates that over 20 million older mobile sources of diesel emissions—13 million on-highway vehicles, 7 million non-road engines, and 47,000 locomotive and marine engines—continue to emit higher amounts of harmful pollutants than newer engines.² Programs at the Department of Energy (Energy), the Department of Transportation (DOT), and EPA address mobile source diesel emissions from these older sources by providing grants and loans for projects that, among other things, retrofit, rebuild, or replace existing diesel engines or vehicles; install devices that reduce idling of diesel engines; and convert diesel engines and vehicles to use cleaner fuels, such as natural gas or propane. From fiscal years 2007 through 2011, these programs obligated at least \$1.4 billion for such projects.³ In addition, three tax expenditures, which resulted in at least \$510 million in forgone federal tax revenue in fiscal year 2010, provide incentives to reduce mobile source diesel emissions.

What GAO Found

As GAO reported in February 2012, federal grant and loan funding for activities that reduce mobile source diesel emissions is fragmented across 14 programs at Energy, DOT, and EPA. Thirteen of these programs provide grants, and 1 program—DOT's State Infrastructure Banks

¹Nitrogen oxides are regulated pollutants commonly known as NOx that, among other things, contribute to the formation of ozone. Particulate matter is an ubiquitous form of air pollution commonly referred to as soot.

²Non-road engines are those used in machines, such as construction equipment, agricultural equipment, and airport service vehicles.

³The American Recovery and Reinvestment Act of 2009 provided about \$870 million of this funding. All dollar amounts reported in this analysis are in nominal dollars.

program—provides loans.⁴ Of the 14 programs, 1—EPA's Diesel Emissions Reduction Act program—has a specific purpose of reducing mobile source diesel emissions. The remaining 13 programs focus on other goals or purposes, such as supporting energy efficiency projects or reducing petroleum use. In addition to fragmentation across three agencies, each of the 14 programs overlaps with at least 1 other program in the specific activities they fund, the program goals, or the eligible recipients of funding (see fig. below).

Overlapping Mobile Source Diesel Emissions Reduction Activities, Goals, and Eligible Recipients, by Agency and Program

Agency/Program	Activities					Goals				Eligible recipients					
	Retrofit vehicle or engine	Rebuild vehicle or engine	Replace vehicle or engine	Reduce vehicle idling	Use cleaner fuel	Reduce emissions	Reduce pollution in areas not meeting air quality standards	Increase energy efficiency	Reduce fuel use	State governments	Local governments	Land management agencies	Transit agencies	Federally recognized tribes	Private or non-profit organizations
Energy															
Clean Cities	•		•	•	•			•	•	•	•	•	•	•	•
Energy Efficiency and Conservation Block Grant	•	•	•	•	•	•		•		•	•			•	
State Energy Program	•	•	•	•	•			•	•	•					
DOT ^a															
Federal Aviation Administration															
Voluntary Airport Low Emissions	•		•		•	•	•			•	•				
Federal Highway Administration															
Congestion Mitigation and Air Quality Improvement	•	•	•	•	•		•			•	•		•		
Ferry Boat Discretionary	•	•	•		•					•	•				•
State Infrastructure Banks	•	•	•	•	•					•					
Federal Transit Administration															
Bus and Bus Facilities	•	•	•		•				•	•	•		•	•	
Clean Fuels Grant	•	•	•	•	•	•	•	•	•	•	•		•		
National Fuel Cell Bus Technology Development			•	•	•	•		•	•						•
Transit in Parks	•	•	•	•	•	•				•	•	•	•	•	•
Transit Investments in Greenhouse Gas and Energy Reduction ^b	•	•	•	•	•	•		•	•	•			•	•	
Urbanized Area Formula Grants	•	•	•	•	•				•	•	•		•		
EPA															
Diesel Emissions Reduction Act Program	•	•	•	•	•	•				•	•		•	•	•

Source: GAO analysis of Energy, DOT, and EPA documents and interviews.

^aIn 2011, GAO reported that fragmentation of surface transportation programs led to inefficiencies.

^bThe American Recovery and Reinvestment Act of 2009 authorized this program, and the program received funding through fiscal year 2011. The program did not receive funding for fiscal year 2012 in the relevant appropriations act.

⁴Under DOT's State Infrastructure Banks program, states may use allocated federal transportation funds to capitalize state infrastructure banks, which in turn provide loans and other nongrant financial assistance to eligible projects.

In addition, GAO identified three tax expenditures—biodiesel producer tax credits, a diesel fuel emulsion excise tax credit, and an excise tax exemption for idling reduction devices—that provide incentives for owners and operators of diesel engines and vehicles to reduce emissions.⁵ GAO found overlap among the qualifying activities for the excise tax exemption for certain vehicle idling reduction devices and programs that fund idling reduction activities because the excise tax exemption and these programs all provide incentives to use idle reduction devices to reduce diesel emissions. According to Department of the Treasury estimates, in fiscal year 2010, the biodiesel tax credits resulted in \$510 million in forgone federal tax revenue.⁶ The Department of the Treasury estimates did not include forgone revenue from the diesel fuel emulsion excise tax credit or the excise tax exemption for idling reduction devices because the department does not report estimates for tax provisions that result in forgone excise tax only.

GAO also identified several instances of duplication where more than one program provided grant or loan funding to the same recipient for the same type of activities.⁷ In one case, a state transportation agency received \$5.4 million from DOT's Transit Investments in Greenhouse Gas Emissions Reduction program to, among other things, upgrade 37 diesel buses to hybrid diesel-electric buses, \$3.5 million from DOT's Congestion Mitigation and Air Quality Improvement program to replace diesel buses with four hybrid diesel-electric buses, and \$2.3 million from DOT's Clean Fuels Grants program to replace four diesel buses with hybrid electric buses. In another case, a nonprofit organization received \$1.1 million from EPA's Diesel Emissions Reduction Act program to install emission reduction and idle reduction technologies on 1,700 trucks, as well as \$5.6 million from a state infrastructure bank established under DOT's program to equip trucks and truck fleets with emission control and idle reduction devices.

Even with duplication among the programs, several factors make it difficult to precisely determine whether unnecessary duplication exists. First, when different programs fund the same diesel emissions reduction activities, it is not necessarily wasteful. For example, a transit agency could use funds from two different programs to replace two separate fleets of aging diesel buses. Second, grant recipients may leverage funding from more than one program to support the full cost of diesel

⁵Biodiesel fuel is an alternative to petroleum-based transportation fuel. U.S. biodiesel is made from soybeans and other plant oils, such as cottonseed and canola; animal fats, such as beef tallow, pork lard, and poultry fat; and recycled cooking oils. A diesel fuel emulsion is a mixture of diesel, water, and additives.

⁶The biodiesel tax credits include an income tax credit, as well as an excise tax credit for the production and use of biodiesel.

⁷GAO did not determine whether the federal agencies that provided this funding were aware of each other's actions.

emissions reduction projects. In some cases, grant recipients have used funding from multiple agencies, in addition to local matching funds, to support the cost of large projects that include multiple diesel emissions reduction activities. GAO previously reported that leveraging is generally recognized favorably by public and private sector officials, but leveraging funds from multiple agencies can be inefficient because agencies may incur costs for duplicative administrative activities.⁸ Third, agencies were often unable to provide information necessary to determine whether and to what extent unnecessary duplication exists among the programs. For example, several agencies reported that they do not track costs for administrative functions at the program level.

The overall effectiveness of federal funding for activities that reduce mobile source diesel emissions may be limited because agencies generally do not collaborate. According to Energy, DOT, and EPA officials, the three agencies consult one another on broad issues such as available emissions reduction technology or emissions standards, but these efforts do not involve collaboration on diesel-related issues. This is partially due to the differing purposes and goals of each program, which often do not directly relate to reducing diesel emissions. However, GAO previously reported that, although federal programs have been designed for different purposes or targeted for different population groups, coordination among programs with related responsibilities is essential to efficiently and effectively meet national concerns.⁹

GAO also previously reported that uncoordinated program efforts can waste scarce funds, confuse and frustrate program customers, and limit the overall effectiveness of the federal effort. A focus on results as envisioned by the Government Performance and Results Act implies that federal programs contributing to the same or similar results should closely coordinate to ensure that goals are consistent, and, as appropriate, program efforts are mutually reinforcing.¹⁰ Also, the GPRA Modernization Act of 2010 established a new, cross-cutting, and integrated framework for achieving results and improving government performance.¹¹

In addition, few agencies collect performance information on their diesel emissions reduction activities. Specifically, EPA collects performance information on the amount and type of diesel emissions reductions each project achieves, Energy's three programs and three of DOT's programs collect some performance information related to diesel emissions

⁸GAO, *Leveraging Federal Funds for Housing, Community, and Economic Development*, GAO-07-768R (Washington, D.C.: May 25, 2007).

⁹GAO, *The Government Performance and Results Act: 1997 Governmentwide Implementation Will Be Uneven*, GAO/GGD-97-109 (Washington, D.C.: June 1997).

¹⁰The Government Performance and Results Act (GPRA) of 1993, Pub. L. No. 103-62 (1993).

¹¹Pub. L. No. 111-352 (2011).

reductions, and the remaining seven DOT programs do not collect performance information related to diesel emissions. This is partially because 13 of the 14 programs that fund these activities have purposes other than reducing diesel emissions. However, the information that would result from enhanced collaboration and outcome measurement is needed to determine if fragmentation, overlap, and duplication have resulted in ineffective or inefficient programs.

Actions Needed and Potential Financial or Other Benefits

To help ensure the effectiveness and accountability of federal funding that reduces diesel emissions, the Secretaries of Energy and DOT as well as the Administrator of EPA should

- consistent with existing law, establish a strategy for collaboration in reducing mobile source diesel emissions.

This strategy should help agencies (1) determine the performance measures needed, as appropriate, to assess the collective results of federal funding for activities that reduce diesel emissions and (2) identify and address any unnecessary duplication, including the effects of the relevant tax expenditures, among other things. In undertaking this effort, agencies could also assess opportunities for administrative cost savings. GAO will monitor the agencies' efforts on these issues.

Agency Comments and GAO's Evaluation

GAO provided a draft of this report section to Energy, DOT, and EPA.

Energy provided technical comments, which were incorporated as appropriate. In its comments, Energy questioned several of the findings but agreed with the action needed that GAO identified. Specifically, Energy stated that the findings mischaracterize the agency as having a statutory responsibility for diesel emissions reductions. The findings do not contain such a statement. Rather, they identify 14 programs, including 3 Energy programs, that fund activities with the effect of reducing diesel emissions and state that programs with related responsibilities should coordinate their efforts. Energy also stated that the findings mischaracterize Energy as not collaborating with other government agencies. The findings state that Energy collaborates with other agencies on broad issues but does not collaborate on diesel-related issues. In addition, Energy stated that the findings mischaracterize the agency as sharing redundant national goals with DOT and EPA. The findings do not discuss Energy's national goals, their relationship to those of other agencies, or whether they are redundant. Rather, the findings (1) focus on Energy programs that fund activities that result in diesel emissions reductions and (2) demonstrate that these programs share similar goals with DOT and EPA programs that fund the same activities. Specifically, each of these programs shares some goals, such as reducing emissions, increasing energy efficiency, and reducing fuel use.

DOT did not provide comments on the draft findings. In its comments on a draft of the February 2012 report, DOT questioned several of the report's

key findings and the report's recommendation that Energy, DOT, and EPA establish a strategy for collaboration among their programs that reduce mobile source diesel emissions. Specifically, DOT stated that GAO inaccurately described the Federal Transit Administration's programs as funding diesel emissions reduction activities. The report identifies Federal Transit Administration activities that reduce diesel emissions, including replacing existing diesel vehicles and installing devices that reduce idling of diesel engines, and identifies six Federal Transit Administration programs that fund these same activities. In addition, DOT questioned the evidence underlying our finding of fragmentation among the federal programs within our review. DOT stated that GAO identified independent programs with varying objectives that, in some cases, include similar activities. As GAO reported, fragmentation occurs when more than one federal agency, or more than one organization within an agency, is involved in the same broad area of national need. The report clearly identifies fragmentation, overlap, and duplication among the 14 federal programs that fund diesel emissions reduction activities. Consistent with our established definition of fragmentation and our evidence, GAO stands by its finding that federal grant and loan funding for activities that reduce diesel emissions is fragmented across 14 programs.

Regarding GAO's recommendation that Energy, DOT, and EPA establish a strategy for collaboration among their programs that reduce mobile source diesel emissions, DOT agreed that collaboration can be useful but questioned its usefulness in this context. As GAO reported, while the programs GAO reviewed have been designed for different purposes, coordination among programs with related responsibilities and that fund the same activities is essential to the efficient and effective use of resources. Further, uncoordinated programs can waste scarce funds and limit the overall effectiveness of federal spending. GAO therefore continues to believe that the recommendation is warranted. DOT also stated that the report does not effectively demonstrate that the recommended action will produce cost-effective investments appropriate for DOT that do not potentially duplicate efforts elsewhere in the government. GAO continues to believe that establishing a strategy for collaboration is an appropriate investment that would help ensure the effectiveness and accountability of federal funding for activities that reduce diesel emissions. As the report notes, such a strategy should help agencies identify and address any unnecessary duplication.

EPA did not provide specific comments on the draft findings. However, in commenting on a draft of our February 2012 report, EPA stated that it agreed with GAO's findings and relevant recommendation.

How GAO Conducted Its Work

The information contained in this analysis is based on findings from the report listed in the related GAO products section. To determine the total amount of federal funding for mobile source diesel emissions reduction activities in fiscal year 2010, GAO obtained and analyzed funding data from Energy, DOT, and EPA. Appendix III lists the programs GAO

identified that may have similar or overlapping objectives, provide similar services or be fragmented across government missions. Overlap and fragmentation may not necessarily lead to actual duplication, and some degree of overlap and duplication may be justified.

Related GAO Product

Diesel Pollution: Fragmented Federal Programs that Reduce Mobile Source Emissions Could Be Improved. GAO-12-261. Washington, D.C.: February 7, 2012.

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25. Environmental Laboratories

The Environmental Protection Agency needs to revise its overall approach to managing its 37 laboratories to address potential overlap and fragmentation and more fully leverage its limited resources.

Why This Area Is Important

From monitoring air quality and testing drinking water to responding to environmental disasters, the Environmental Protection Agency's (EPA) laboratory enterprise produces scientific research, technical support, and analytical services that underpin many of the policies and regulations the agency implements to protect human health and our nations' environment. In the present atmosphere of constrained budgets, EPA, along with its state partners, will need to more effectively use its scientific and laboratory resources and effectively integrate these activities to ensure the agency is best positioned to fulfill its core mission, including responsibilities for responding to a large-scale environmental incident. EPA's laboratory enterprise includes 37 laboratories that are housed in about 170 buildings and facilities located in 30 cities across the nation.

What GAO Found

As GAO reported in July 2011, EPA has an uncoordinated approach to managing its laboratory enterprise—including the scientific work, workforce, and facilities—and identified the potential for missed cost-savings opportunities, due in part to fragmentation and overlap of activities. However, GAO was not able to calculate the cost associated with this potential fragmentation and overlap—or the corresponding savings from reducing fragmentation and overlap—because EPA did not have sufficiently complete and reliable operating cost data for its laboratories. EPA also lacked information on the number of federal and contract employees working in its 37 laboratories and the related costs associated with its laboratory workforce. GAO's report found that EPA's uncoordinated approach is due in part to the lack of a top science official with the responsibility or authority to coordinate, oversee, and make management decisions regarding major scientific activities throughout the agency—including the work of all 37 laboratories.

EPA's laboratories operate under the direction of 15 different senior officials using 15 different organizational and management structures. EPA has also not fully addressed recommendations from a 1994 independent evaluation by the MITRE Corporation to consolidate and realign its laboratory facilities and workforce¹—even though this evaluation found that the geographic separation of laboratories hampered their efficiency and technical operations and that consolidation and realignment could improve planning and coordination issues that have

¹MITRE Corporation, Center for Environment, Resources, and Space, *Assessment of the Scientific and Technical Laboratories and Facilities of the U.S. Environmental Protection Agency* (McLean, Va.: May 1994).

hampered its science and technical community for decades. We found that these problems are evident today and MITRE's past recommendations may still be relevant.

Scientific work. EPA does not have a planning process that integrates and coordinates scientific work throughout the agency, including potentially overlapping functions performed by its 37 laboratories. Consequently, EPA has a limited ability to know if scientific activities are being unintentionally duplicated among the laboratories or if opportunities exist to collaborate and share scientific expertise, equipment, and facilities across EPA's fragmented laboratory enterprise. For example, many of EPA's 10 regional laboratories provide the same or similar types of analytical and technical support functions, such as routine and specialized testing of air samples. In addition, the agency's nine program laboratories provide their respective program offices² with research and analytical services that may overlap with research and development performed by the Office of Research and Development's (ORD) 18 laboratories. For example, an Office of Air and Radiation program laboratory located in Michigan does emissions testing, while a separate ORD laboratory located in North Carolina does emissions testing research.

In addition to potential overlap in the work performed by these two laboratories, the fragmentation across the laboratory enterprise may fail to provide the agency with opportunities for laboratories to share subject matter expertise and scientific equipment. For example, both the Office of Air and Radiation and ORD laboratories utilize the same kind of specialized equipment, called truck dynamometers, yet each separately requested funding in fiscal years 2010 and 2011 that totaled over \$4 million to expand or modify their facilities for emissions testing. While the agency funded only one of the two potentially duplicative requests, the net result is that the second laboratory's facility and equipment needs were not met. In addition to potential lost opportunities to share facilities and equipment, the agency may also be missing opportunities to share expertise, such as technical knowledge pertaining to the use of specialized equipment.

In addition, to support the implementation of both state and federal environmental statutes, various state agencies and public universities operate over 70 separate environmental laboratories (see fig. below) that may perform functions similar to those performed by EPA laboratories. Similar to the work of some EPA regional laboratories, state environmental laboratories conduct regular testing of air, water, soil, food, and other media for signs of contamination. State laboratories also perform analytical and method development functions that may be similar to those performed by ORD laboratories. EPA has partnered with some

²The four national program offices that operate laboratories are the Office of Air and Radiation, the Office of Enforcement and Compliance Assurance, the Office of Chemical Safety and Pollution Prevention, and the Office of Solid Waste and Emergency Response.

Potential Overlap among Federal and State Environmental Laboratories



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tissue, and hazardous waste—but each region independently determines and attempts to address its individual workforce needs. EPA also lacks basic demographic information needed to know how many scientific and technical employees it has working in its laboratories, where they are located, what functions they perform, or what specialized skills they may have. In addition, the agency does not have a workload analysis for the laboratories to help determine the optimal numbers and distribution of staff throughout the enterprise. GAO believes that such information is essential for EPA to prepare a comprehensive laboratory workforce plan to achieve the agency's mission with limited resources.

Facilities. EPA manages its laboratory facilities in a way that may fail to achieve operating efficiencies that could be gained by colocating laboratories with overlapping activities and facility needs. EPA manages laboratories on a site-by-site basis and does not make capital improvement or other decisions for each site in the context of all the agency's laboratory properties. Because decisions regarding laboratory facilities are made independently of one another, opportunities to improve operating efficiencies can be lost. For example, GAO found cases where laboratories that were previously colocated moved into separate space without considering the potential benefits of remaining colocated. In one case, GAO found that the relocation increased some operating costs because the laboratories then had two facility managers and two security contracts and associated personnel because of different requirements for the leased facility.

Moreover, EPA lacks sufficiently complete and reliable data to make informed decisions for managing its laboratory facilities. Among other things, EPA lacks reliable information on laboratory usage, which is needed to inform both capital investment and property disposal decisions. For example, EPA does not have reliable data on space utilization because its data are either out of date or not based on objective criteria such as public and commercial space usage benchmarks. Instead, EPA measures laboratory usage on the basis of subjective interviews with local laboratory officials.

Actions Needed and Potential Financial or Other Benefits

To improve cohesion and efficiency in the management and operation of EPA's laboratories, GAO recommended in July 2011 that the Administrator of EPA

- ensure that the agency includes alternative approaches for organizing the laboratories' workforce and infrastructure, including options for sharing and consolidation as part of any future studies of EPA laboratory enterprise, such as the long-term study requested in the President's fiscal year 2012 budget.

To address potentially overlapping laboratory activities and achieve efficiencies by sharing workforce expertise, GAO recommended in July 2011 that the Administrator of EPA

- establish a top-level science official with the authority and responsibility to coordinate, oversee, and make management decisions regarding major scientific activities throughout the agency, including the work of all program, regional, and Office of Research and Development laboratories;
- develop an overarching issue-based planning process that reflects the collective goals, objectives, and priorities of the laboratories' scientific activities; and
- develop a comprehensive workforce planning process for all laboratories that is based on reliable workforce data and reflects current and future agency needs in overall number of federal and contract employees, skills, and deployment across all laboratory facilities.

To identify opportunities to reduce costs associated with maintaining a footprint of 170 laboratory buildings and facilities that support organizations with potentially overlapping functions, facility, and equipment needs, GAO recommended in July 2011 that the Administrator of EPA

- improve physical infrastructure and real property planning and investment decisions by
 - managing individual laboratory facilities as part of an interrelated portfolio of facilities;
 - ensuring that master plans and other facility information are up-to-date and that analysis of the use of space is based on objective benchmarks; and
 - improving the completeness and reliability of operating cost and other data needed to manage EPA's real property and report to external parties.

Agency Comments and GAO's Evaluation

GAO provided a draft of its July 2011 report to EPA for review and comment. EPA generally agreed with GAO's recommendations. In November 2011, EPA noted that current efforts to reduce the federal budget deficit require EPA to more effectively use its laboratory enterprise to help ensure that its scientific activities respond to the agency's highest-priority needs. The agency also acknowledged the demand for sharing facilities and equipment, as well as expertise and human resources. EPA agreed that it should (1) include alternate approaches for organizing the laboratory workforce and infrastructure in any future studies of its laboratories, such as the long-term study for which the agency requested \$2 million in the President's fiscal year 2012 budget; (2) develop an overarching planning process that better reflects the collective goals, objectives, and priorities of its laboratories; (3) develop a comprehensive workforce-planning process for its laboratories; (4) improve physical

infrastructure and real property planning and investment decisions by managing laboratory facilities as part of an interrelated portfolio of facilities; (5) maintain up-to-date master plans that include objective benchmarks; and (6) improve the completeness and reliability of operating cost and other data needed to manage its real property.

In response to our recommendation to establish a top-level science official with the authority and responsibility to coordinate, oversee, and make management decisions regarding major scientific activities throughout the agency, EPA proposed to increase the responsibilities of its science advisor. However, it is not clear that this will fully address the issue and it may ultimately introduce additional challenges for EPA. We note that in 2000, the National Research Council reported "no single individual could reasonably be expected to direct a world-class research program in ORD while also trying to improve scientific practices and performance throughout the rest of the agency," stating that "these jobs are inherently different." The Council cautioned that "assigning agency-wide scientific authority to the assistant administrator for ORD might produce a conflict of responsibilities, because many decisions about science in the regulatory programs could affect ORD's budget or favor ORD's research over research done elsewhere." EPA managers need to ensure that there is sustained attention on these issues in order to assure its efforts are carried out and achieve the intended results.

GAO also provided a draft of new information included in this report section that was not previously reported in the July 2011 report, such as information pertaining to state environmental laboratories, to EPA for review and comment. EPA provided technical comments, which were incorporated as appropriate.

As part of its routine audit work, GAO will track the extent to which progress has been made to address the identified actions and report to Congress.

How GAO Conducted Its Work

The information contained in this analysis is based on findings from the products listed in the related GAO products section. Information regarding state environmental laboratories is based on an analysis of a May 2011 Environmental Council of States Green Report, a 2007 report on the capability and capacity of state environmental laboratories conducted by the Association of Public Health Laboratories, and information obtained from state environmental laboratory websites and EPA's Environmental Response Laboratory Network website.

Related GAO Product

Environmental Protection Agency: To Better Fulfill Its Mission, EPA Needs a More Coordinated Approach to Managing Its Laboratories. GAO-11-347. Washington, D.C.: July 25, 2011.

Contact Information

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26. Green Building

To evaluate the potential for overlap or fragmentation among federal green building initiatives, the Department of Housing and Urban Development, the Department of Energy, and the Environmental Protection Agency should lead other federal agencies in collaborating on assessing their investments in more than 90 initiatives to foster green building in the nonfederal sector.

Why This Area Is Important

Economic, environmental, and health concerns have spurred interest in “green building”—construction and maintenance practices designed to make efficient use of resources, reduce environmental problems, and provide long-term financial and health benefits through lower operating costs and better indoor air quality. These practices are intended to help address issues posed by traditional construction and maintenance practices for buildings. According to the Department of Energy (Energy), in 2008, buildings in the United States consumed almost 40 percent of the nation’s energy and emitted about 39 percent of its carbon dioxide, a greenhouse gas recognized as a major contributor to climate change. Also, Energy reports that the approximately 30 million to 35 million tons of construction, renovation, and demolition waste produced annually in the nation account for about 24 percent of municipal solid waste, although most of this waste could be recycled. Furthermore, according to the Environmental Protection Agency (EPA), exposure to indoor air pollutants, such as radon and formaldehyde, can lead to harmful health effects, from headaches to respiratory diseases.

In response to concerns about energy consumption, among other things, federal laws and executive orders have directed agencies to reduce energy consumption and meet other green building requirements in federally owned or leased buildings. For buildings not subject to these requirements because they are owned or leased by private, state, local, or tribal entities, laws have also directed federal agencies to foster green building. GAO refers to these entities and their buildings as the “nonfederal sector,” which accounts for most of the nation’s buildings.

What GAO Found

As GAO reported in November 2011, there are 94 federal initiatives GAO identified to foster green building in the nonfederal sector. In conducting its work, GAO sent questionnaires to the 11 agencies implementing the initiatives identified. As the table below indicates, 3 of the 11 agencies—the Department of Housing and Urban Development (HUD), EPA, and Energy—implement about two-thirds of these initiatives.