

**GAO**

Report to the Ranking Member,  
Committee on Oversight and  
Government Reform, House of  
Representatives

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February 2012

# ELECTRONIC WASTE

## Actions Needed to Provide Assurance That Used Federal Electronics Are Disposed of in an Environmentally Responsible Manner



**G A O**

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Highlights of [GAO-12-74](#), a report to the Ranking Member, Committee on Oversight and Government Reform, House of Representatives

## Why GAO Did This Study

The Environmental Protection Agency (EPA) estimates that across the federal government 10,000 computers are discarded each week. Once these used electronics reach the end of their original useful lives, federal agencies have several options for disposing of them. Agencies generally can donate their reusable electronics to schools; give them to a recycler; exchange them with other federal, state, or local agencies; or sell them through selected public auctions, including auctions sponsored by the General Services Administration (GSA). As the world's largest purchaser of information technology, the U.S. government, through its disposition practices, has substantial leverage to influence domestic recycling and disposal practices. GAO was asked to examine (1) key initiatives aimed at improving the management of used federal electronics and (2) improvements resulting from these initiatives and challenges that impede progress, if any. To do this, GAO evaluated federal guidance and policy, as well as guidance and initiatives at five selected agencies. GAO selected agencies based on, among other things, the amount of electronics purchased.

## What GAO Recommends

GAO recommends, among other things, that the White House Council on Environmental Quality, the Office of Management and Budget, and GSA take actions to require consistent tracking and reporting of used electronics and ensure appropriate management of electronics sold at auction. Each agency concurred with GAO's recommendations but, in some instances, proposed alternatives for executing the recommendations.

View [GAO-12-74](#)

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February 2012

## ELECTRONIC WASTE

### Actions Needed to Provide Assurance That Used Federal Electronics Are Disposed of in an Environmentally Responsible Manner

## What GAO Found

Over the past decade, the executive branch has taken steps to improve the management of used federal electronics. Notably, in 2003, EPA helped to pilot the Federal Electronics Challenge (FEC)—a voluntary partnership program that encourages federal facilities and agencies to purchase environmentally friendly electronic products, reduce the impacts of these products during their use, and manage used electronics in an environmentally safe way. EPA also led an effort and provided initial funding to develop third-party certification so that electronics recyclers could show that they are voluntarily adhering to an adopted set of best practices for environmental protection, worker health and safety, and security practices. In 2006, GSA issued its *Personal Property Disposal Guide* to assist agencies in understanding the hierarchy for disposing of excess personal property, including used electronic products: reutilization, donation, sale, and abandonment or destruction. In 2007 and 2009, executive orders were issued that, among other things, established improvement goals and directed agencies to develop and implement improvement plans for the management of used electronics. The Office of Management and Budget, the Council on Environmental Quality, and the Office of the Federal Environmental Executive each play important roles in providing leadership, oversight, and guidance to assist federal agencies with implementing the requirements of these executive orders. To lay the groundwork for enhancing the federal government's management of used electronic products, an interagency task force issued the July 2011 *National Strategy for Electronics Stewardship*. The strategy, which describes goals, action items, and projects, assigns primary responsibility for overseeing or carrying out most of the projects to either EPA or GSA.

Federal agencies have made some progress to improve their management of used electronic products, as measured by greater participation in the FEC and an increase in certified electronics recyclers, but opportunities exist to expand their efforts. For instance, agency participation in the FEC represents only about one-third of the federal workforce. GAO identified challenges with the tracking and reporting on the disposition of federal electronic equipment. For the five agencies GAO reviewed (Departments of Defense, Energy, Education, and Housing and Urban Development and the National Aeronautics and Space Administration), data provided on the disposition of electronic products were inconsistent, which hampered GAO's efforts to accurately assess the extent to which electronic products procured by federal agencies are disposed of in an environmentally sound manner. Challenges associated with clarifying agencies' responsibility for used electronics sold through auctions also remain. Currently, neither the agency nor the auction entities are required to determine whether purchasers follow environmentally sound end-of-life practices. Not having controls over the ultimate disposition of electronics sold through these auctions creates opportunities for buyers to purchase federal electronics and export them to countries with less stringent environmental and health standards. Other challenges that may impede progress toward improving federal agencies' management of used electronics include defining key terms such as "electronic product" and "environmentally sound practices," as each agency uses its own definition of electronic products to report progress in implementing policies for electronics stewardship.

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### Abbreviations

CEQ	Council on Environmental Quality
DLA	Defense Logistics Agency
DOD	Department of Defense
DOE	Department of Energy
Education	Department of Education
EPA	Environmental Protection Agency
FEC	Federal Electronics Challenge
FMR	Federal Management Regulation
GSA	General Services Administration
HUD	Department of Housing and Urban Development
NASA	National Aeronautics and Space Administration
OFEE	Office of the Federal Environmental Executive
OMB	Office of Management and Budget
R2	Responsible Recycling

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United States Government Accountability Office  
Washington, DC 20548

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February 17, 2012

The Honorable Elijah E. Cummings  
Ranking Member  
Committee on Oversight  
and Government Reform  
House of Representatives

Dear Mr. Cummings:

Rapid advances in technology have led to increasing sales of new electronic products, such as computers, computer monitors, televisions, and cell phones. These electronic products have created new business opportunities, new ways to communicate, and a new way of conducting business in both the private and public sectors. These advances, however, have also created new environmental challenges. As we have previously reported, electronic products may contain toxic substances—such as cadmium, lead, and mercury—that can leach into soil or groundwater if improperly managed.<sup>1</sup> As the world’s largest purchaser of information technology—spending about \$80 billion in fiscal year 2010—the U.S. government, through its disposition practices, has substantial leverage to influence domestic recycling, reuse, and disposal practices. However, if the federal government’s used electronics are not appropriately managed, they could be disposed of in landfills domestically or exported to countries that have less strict environmental and safety protections.<sup>2</sup> Studies have shown that used electronic products exported from the United States to some countries are often dismantled under unsafe health conditions, using methods like acid baths to extract precious metals or open-air incineration. For example, we reported in 2008 that, while some exports of used electronic products can be handled responsibly in countries with effective regulatory regimes and by companies with advanced technologies, some used electronic products

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<sup>1</sup>GAO, *Electronic Waste: EPA Needs to Better Control Harmful U.S. Exports through Stronger Enforcement and More Comprehensive Regulation*, [GAO-08-1044](#) (Washington, D.C.: Aug. 28, 2008).

<sup>2</sup>For purposes of this report, we refer to all federal electronic products that may be reused, recycled, disposed of, or discarded as “used.” Federal agencies also use other terms, such as excess or surplus. See FMR, Subchapter B-Personal Property, 41 C.F.R. §102-35.20 (2011)

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owned by federal agencies have been sent to developing countries where disposal practices are unsafe to workers and dangerous to the environment.<sup>3</sup>

Over the past decade, the executive branch has taken steps to improve the management of used federal electronics. For example, in 2007 and 2009, executive orders were issued to strengthen federal agencies' overall environmental management practices, including environmentally sound management of federal electronic products, from procurement through disposal—often referred to as electronics stewardship.<sup>4</sup> Recently, we issued two reports that discussed elements of electronics stewardship outlined in the executive orders related to the use of federal electronics, including requirements to manage federal data centers in a more energy-efficient manner and implement power management policies for computers.<sup>5</sup>

You requested that we review the status of federal initiatives to appropriately manage the disposition of used electronic products—that is, selling, donating, recycling, and disposing of federal electronics. Our objectives were to examine (1) key initiatives aimed at improving the management of used federal electronics and (2) improvements resulting from these initiatives and challenges that impede progress, if any.

To address the first objective, we reviewed guidance and documents regarding improvement initiatives led by the Environmental Protection Agency (EPA); analyzed the electronics stewardship requirements contained in the applicable executive orders and implementing instructions; the Federal Acquisition Regulation, which governs the process through which the federal government acquires goods and services; the Federal Management Regulation (FMR), which, among

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<sup>3</sup>[GAO-08-1044](#).

<sup>4</sup>Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management," 72 Fed. Reg. 3,919 (Jan. 26, 2007); and Executive Order 13514, "Federal Leadership in Environmental Energy, and Economic Performance," 74 Fed. Reg. 52,117 (Oct. 8, 2009).

<sup>5</sup>GAO, *Data Center Consolidation: Agencies Need to Complete Inventories and Plans to Achieve Expected Savings*, [GAO-11-565](#) (Washington, D.C.: July 19, 2011) and *Green Information Technology: Agencies Have Taken Steps to Implement Requirements, but Additional Guidance on Measuring Performance Needed*, [GAO-11-638](#) (Washington D.C.: July 28, 2011).

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other things, regulates the disposal of federal personal property, including electronics;<sup>6</sup> the General Services Administration's (GSA) *Personal Property Disposal Guide*, which serves as an index and quick-reference guide to personal property management provisions in the FMR; and other relevant electronics stewardship guidance.

To address the second objective, we selected a nonprobability sample of five federal agencies—the Departments of Defense (DOD), Energy (DOE), Education (Education), and Housing and Urban Development (HUD); and the National Aeronautics and Space Administration (NASA)—to examine how the federal policy framework is carried out in those agencies. We selected DOD, DOE, and NASA because they each participated to some extent in EPA's Federal Electronics Challenge (FEC) program and purchased large amounts of electronic products—ranking first, eighth, and tenth, respectively, in terms of overall federal agency information technology spending in fiscal year 2010. We selected Education because, according to the FEC program manager, the agency actively participates in the FEC and centrally manages its electronics procurement and disposal functions. We selected HUD because the agency was not participating in the FEC. Because we based the selection of agencies on a nonprobability sample, the information we obtained is not generalizable to all federal agencies. However, since the nonprobability sample consists of a cross-section of agencies of different sizes and levels of participation in the FEC, the evaluation of these five agencies provides examples of different procurement and disposition methods for electronics. We also obtained data on GSA's federal excess personal property utilization, donation, and sales programs for fiscal year 2010 to determine, for agencies using these programs, the extent to which they utilized each disposition method for their used electronics. We also designed and implemented a data collection instrument to collect data from the five selected agencies on how they disposed of electronic products for fiscal years 2009 and 2010. We attempted to resolve inconsistencies in the data provided through these efforts, but we determined that the data were not sufficiently reliable for the purpose of reporting on amounts of electronics disposed of by the five agencies or the extent to which agencies reuse, donate, and sell used electronics

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<sup>6</sup>The Federal Management Regulation requires that executive agencies to the maximum extent practicable fill requirements for personal property by using existing agency property or by obtaining excess property from other federal agencies in lieu of new procurements. See FMR, Subchapter B-Personal Property, 41 C.F.R. Pt. 102-36, §102-36.65 (2011).

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through GSA's federal excess personal property programs. We discuss these data problems in our report. We also met with officials responsible for procuring and disposing of electronic products for the five federal agencies, and we conducted site visits to the Kennedy Space Center in Cape Canaveral, Florida, and Defense Logistics Agency (DLA) Aviation in Richmond, Virginia, to discuss the procurement and disposition of electronic products. We also visited three recycling facilities that have a role in electronics recycling at federal agencies and interviewed facility officials about recycling procedures. We examined key provisions of the July 2011 *National Strategy for Electronics Stewardship* and compared them with existing policies for electronics stewardship. We also obtained information from the FEC program's manager, officials within each of the five agencies, and seven champions for the FEC program regarding challenges that may affect agency participation in electronics stewardship initiatives. Details of our scope and methodology are in appendix I.

We conducted this performance audit from October 2010 to January 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

As we have reported previously, EPA estimates that across the federal government 10,000 computers are disposed of each week.<sup>7</sup> Once these used electronics reach the end of their original useful lives, federal agencies have several options for disposing of them. Agencies generally are to donate their used electronics to schools or other nonprofit educational institutions; exchange them with other federal, state, or local agencies; sometimes trade them with vendors to offset the costs of new equipment; sell them—generally through the GSA's surplus property program, which sells surplus federal government equipment, including used federal electronics, at public auctions; or give them to a recycler.

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<sup>7</sup>GAO, *Federal Electronics Management: Federal Agencies Could Improve Participation in EPA's Initiatives for Environmentally Preferable Electronic Products*, [GAO-10-196T](#) (Washington, D.C.: Oct. 27, 2009).

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Federal agencies, however, are not required to track the ultimate destination of their donated or recycled used electronic products. Instead, agency officials generally consider this to be the recipient organization's responsibility. Consequently, federal agencies often have little assurance that their used electronics are ultimately disposed of in an environmentally responsible manner. In our prior work, we found that little information exists, for example, on whether obsolete electronic products are reused, stored, or disposed of in landfills.<sup>8</sup> If discarded domestically with common trash, a number of adverse environmental impacts may result, including the potential for harmful substances such as cadmium, lead, and mercury to enter the environment. If donated or recycled, these products may eventually be irresponsibly exported to countries without modern landfills and with waste management systems that are less protective of human health and the environment than those in the United States. For example, in our prior work we found that some U.S. electronics recyclers—including ones that publicly tout their exemplary environmental practices—were apparently willing to circumvent U.S. hazardous waste export laws and export certain regulated used electronic products to developing countries.<sup>9</sup>

The federal government's approach to ensuring environmentally responsible management of used electronics has relied heavily on EPA's FEC initiative, which, among other things, encourages federal facilities and agencies to manage used electronics in an environmentally safe way. In addition, executive orders were issued to strengthen federal agencies' overall environmental management practices, including environmentally sound management of federal electronic products. The Office of Management and Budget (OMB), the White House Council on Environmental Quality (CEQ), and the Office of the Federal Environmental Executive (OFEE) each play important roles in providing leadership, oversight, and guidance to assist federal agencies with implementing the requirements of these executive orders.<sup>10</sup> More

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<sup>8</sup>GAO, *Electronic Waste: Strengthening the Role of the Federal Government in Encouraging Recycling and Reuse*, [GAO-06-47](#) (Washington, D.C.: Nov. 10, 2005).

<sup>9</sup>[GAO-08-1044](#).

<sup>10</sup>OFEE is responsible for promoting sustainability and environmental stewardship throughout federal government operations. It was created by executive order in 1993, is housed at the President's Council on Environmental Quality, is administered by EPA, and leads the interagency Steering Committee on Federal Sustainability.

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recently, an interagency task force issued the July 2011 *National Strategy for Electronics Stewardship*,<sup>11</sup> which is intended to lay the groundwork for enhancing the federal government's management of used electronics.

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## Key Initiatives to Improve Federal Agencies' Management of Used Electronic Products Have Been Launched over the Past 10 Years

Over the past decade, the executive branch has undertaken several initiatives to improve federal agencies' management of used electronics. Specifically, (1) EPA has led or coordinated several improvement initiatives and issued guidance aimed at improving the management of used federal electronic products, (2) GSA has issued personal property disposal guidance and instituted new requirements for electronics recyclers it has contracted with to dispose of federal electronic products, (3) the President has issued executive orders that established goals for improving the management of used federal electronics, and (4) an interagency task force issued the July 2011 *National Strategy for Electronics Stewardship*, which is intended to lay the groundwork for enhancing the federal government's management of used electronics.

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## EPA Has Led Initiatives Aimed at Improving the Management of Used Federal Electronics

EPA has led or coordinated several key improvement initiatives to assist agencies with the management of used federal electronics, including the FEC, the Federal Electronics Stewardship Working Group, and the establishment of electronics recycler standards for use in certification programs.

*Federal Electronics Challenge.* In 2003, EPA, along with several other agencies, piloted the FEC.<sup>12</sup> The FEC is a voluntary partnership program that encourages federal facilities and agencies to purchase environmentally friendly electronic products, reduce the impacts of these products during their use, and manage used electronics in an environmentally safe way. To participate, executive branch agencies or

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<sup>11</sup>White House Council on Environmental Quality, Environmental Protection Agency, General Services Administration, *National Strategy For Electronics Stewardship* (Washington, D.C.: July 20, 2011), [http://www.gsa.gov/graphics/admin/National\\_Strategy\\_Electronics\\_Stewardship\\_2011.pdf](http://www.gsa.gov/graphics/admin/National_Strategy_Electronics_Stewardship_2011.pdf)

<sup>12</sup>A memorandum of understanding signed by the Executive Office of the President and 11 agencies in November 2004 formally committed the agencies to join the FEC as agency partners and to actively sponsor participation of all facilities within each agency. The 11 agencies were the Departments of Agriculture, Defense, Energy, Health and Human Services, Homeland Security, the Interior, Justice, Transportation, and Veterans Affairs; and the Environmental Protection Agency and General Services Administration.

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their facilities must register and sign an agency pledge to become an agency or facility FEC partner, or both. In general, agency partners are responsible for supporting their facilities' efforts but do not have specific reporting requirements. Facility partners are required to submit a baseline survey of their electronics stewardship activities when they join the program. The survey is to include, among other things, a description of (1) what the entity does with electronic products that are no longer used; (2) which electronics recycling services it uses; and (3) what, if any, measures the entity has taken to ensure that the electronic products were recycled in an environmentally sound manner.<sup>13</sup> Facility partners are also expected to report progress annually, and apply for recognition through FEC awards.

FEC guidance directs participants to provide recipients of donated electronics with instructions on how to have the electronics recycled responsibly and how to verify that responsible recycling occurs—procedures known as “downstream auditing.” When donating used electronics, FEC instructs agencies and facilities to ensure that recipients contact local or state environmental or solid waste agencies to obtain a database of vendors who recycle used electronics once the equipment is no longer useful to the recipient organization. FEC also recommends that participating agencies and facilities instruct recipients to avoid arrangements with recyclers that are unable or unwilling to share references and cannot explain the final destination of the used electronics they collect. When recycling electronics, participants are to determine how much electronic equipment the recyclers actually recycle compared with the amount they sell to other parties. In addition, FEC instructs participants to physically inspect a potential recycler's facilities. Used electronics in trash containers, for example, may indicate that the facility is not recycling it, and the presence of shipping containers may indicate that the facility exports it.

To assist FEC partners, “FEC champions” are available to help regional federal facilities with their electronics management programs. FEC

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<sup>13</sup>The FEC Baseline Survey and Annual Reporting Form was developed to measure partners' progress against the FEC national program goals. The information collected may be translated into the partner's and program's environmental benefits using the Electronics Environmental Benefits Calculator, an EPA-developed online tool that estimates the environmental benefits of improving the purchasing, use, and disposal of computer products and electronic equipment.

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champions are EPA representatives who are selected based on geographic representation. Champions help federal facilities become FEC facility partners; access resources for managing electronic products, including FEC program information, fact sheets, and limited technical assistance; and receive recognition for improving electronics management programs.

*The Federal Electronics Stewardship Working Group.* This working group coordinates interagency efforts to promote federal electronics stewardship. It also acts as an advisory board for the FEC program. During the working group's monthly meetings, federal agencies have the opportunity to discuss best practices for implementing the FEC and other electronics stewardship initiatives within their respective agencies. The FEC Program Manager told us the working group meetings serve as a primary mechanism to facilitate communication with agency management regarding the FEC program. Most executive agencies have at least one representative serving with the working group.

*Standards for certification of recyclers.* EPA has worked with the recycling industry and other entities to promote partnership programs that address the environmentally sound management of used electronic products. As we reported in July 2010, EPA convened electronics manufacturers, recyclers, and other stakeholders and provided funding to develop Responsible Recycling (R2) practices, so that electronics recyclers could obtain certification to show that they are voluntarily adhering to the adopted set of best practices for environmental protection, worker health and safety, and security practices.<sup>14</sup> Certification for R2 practices became available in late 2009. The R2 practices identify "focus materials" in used electronic products, such as cathode-ray tubes or items containing mercury, that warrant greater care owing to their toxicity and associated risk if managed without the appropriate safeguards. Specifically, the practices require that recyclers and each vendor in the recycling chain (1) export products and components containing certain materials only to countries that can legally accept them, (2) document the legality of such exports, and (3) ensure that the material is being safely handled throughout the recycling chain. R2 practices also establish a "reuse, recover, dispose" hierarchy along the chain of custody for material

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<sup>14</sup>GAO, *Electronic Waste: Considerations for Promoting Environmentally Sound Reuse and Recycling*, [GAO-10-626](#) (Washington, D.C.: July 12, 2010).

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handling. These practices require recyclers to test electronics diverted for reuse, and confirm that key functions of the unit are working before it may be exported. Without such testing and confirmation, these used electronics must be treated as though they are going to recycling and may not be exported unless the R2 exporting provisions for recycling are satisfied. Recognizing that some clients would not want their used electronics remarketed or reused, R2 practices also require recyclers to have systems in place to ensure that all such electronics processed *can* be recycled, rather than recovered for reuse.

EPA encourages electronics recyclers to obtain certification to either R2 practices, or to e-Stewards, a separate voluntary certification program. e-Stewards was initiated by the Basel Action Network in 2008, and the first e-Stewards-certified facilities were announced in early 2010.<sup>15</sup> The length and cost of the e-Stewards certification process depends on a facility's size and whether it has a documented environmental management system in place.<sup>16</sup>

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### GSA Has Issued Personal Property Disposal Guidance and Instituted New Requirements for Electronics Recyclers Listed on GSA's Contract Schedule

In March 2006, to assist agencies in understanding the requirements associated with personal property disposal, GSA published the *Personal Property Disposal Guide*.<sup>17</sup> Federal law requires that executive agencies, as much as possible, obtain needed goods, including electronic products, by using existing agency property or by obtaining excess property from other federal agencies in lieu of new purchases.<sup>18</sup> According to the GSA guide, agencies should follow a hierarchy for disposing of excess personal property, including used electronic products: reutilization, donation, sale, and abandonment or destruction.

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<sup>15</sup>The Basel Action Network was founded in 1997 and named after the Basel Convention, the treaty under which parties have agreed to restrict trade in hazardous wastes and, among other things, prohibit export of toxic waste to developing nations deemed unable to manage the wastes in an environmentally sound manner.

<sup>16</sup>EPA recognizes both the R2 and e-Stewards programs, but does not audit or certify facilities for compliance with either of these certification programs.

<sup>17</sup>This guide is available online at [http://www.gsa.gov/graphics/fas/5-06-00389\\_R2-yWC-w\\_0Z5RDZ-i34K-pR.pdf](http://www.gsa.gov/graphics/fas/5-06-00389_R2-yWC-w_0Z5RDZ-i34K-pR.pdf).

<sup>18</sup>40 U.S.C. § 524(b); FMR Subchapter B-Personal Property, 41 C.F.R. § 102-36.65 (2011).

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- *Reutilization.* In general, all excess personal property,<sup>19</sup> including used electronic products, should be reported to GSA—preferably through the GSAXcess website. Personal property registered on the site is then available to other federal agencies and eligible state and nonprofit recipients who are seeking such property.
  - *Donation.* If computers and other electronic products cannot be reused internally or by another federal entity, an agency can also donate these products directly to a school or other eligible nonprofit organization through the Computers for Learning program.<sup>20,21</sup> If a school declines the offer, the products must be reported to GSA for possible donation through the Federal Surplus Personal Property Donation Program.<sup>22</sup>
  - *Sales.* If an agency's property is not transferred or donated, it can be sold through public auctions. For example, the GSA Auctions® website offers the general public the opportunity to bid electronically on a wide array of federal assets, including used federal electronic products. Registered participants may bid on a single item or multiple items (lots) within specified time frames. In addition, in some cases federal agencies can sell their used electronic products on other internet auction sites.
  - *Abandonment or destruction.* An agency is allowed to abandon or destroy property, including used electronics, if an agency official determines that (1) the property has no commercial value, either as an item or as scrap; or (2) the cost of care, handling, and preparation

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<sup>19</sup>Excess personal property is property under the control of any federal agency that is no longer required for that agency's needs, as determined by the agency head or designee.

<sup>20</sup>The authority for federal agencies to transfer research equipment, including computers, to educational institutions and nonprofit organizations was established in law in 1992. See 15 U.S.C. § 3710(i) (2011).

<sup>21</sup>The Computers for Learning program facilitates the transfer of excess federal computer equipment to schools and educational nonprofit organizations. The program implements Executive Order 12999, *Educational Technology: Ensuring Opportunity for All Children in the Next Century*, 61 Fed. Reg. 17,227 (Apr. 19, 1996).

<sup>22</sup>The Federal Surplus Personal Property Donation Program enables certain nonfederal organizations, such as public agencies, nonprofit educational and public health activities, public airports, and educational activities of special interest to the Armed Forces, to obtain personal property that the federal government no longer needs.

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of the property for sale would be greater than the expected sales proceeds.<sup>23</sup>

More recently, GSA has instituted new requirements for electronics recyclers listed on the GSA Schedule.<sup>24</sup> In February 2011, GSA began requiring proof of certification under either R2 or e-Stewards for new vendors seeking to provide recycling or disposal services for used electronic products under GSA's environmental services schedule.<sup>25</sup> According to GSA officials, they also identified 5 vendors, out of the 58 vendors on the schedule at that time, that were performing recycling or disposal services for used electronic products and provided these vendors with modified contract terms—making R2 or e-Stewards certification within 6 months a condition for performing these services under the GSA schedule.

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### Executive Orders Issued in 2007 and 2009 Established Goals for Improving the Management of Used Federal Electronics

In January 2007, Executive Order 13423 established goals for federal agencies to improve the management of their used electronic products. Among other things, the executive order required that agency heads (1) establish and implement policies to extend the useful life of agencies' electronic equipment and (2) ensure the agency uses environmentally sound practices with respect to the disposition of the agency's electronic equipment that has reached the end of its useful life. Furthermore, the instructions for implementing the executive order, issued on March 28, 2007, called for each agency to develop and submit to OFEE by May 1, 2007, an electronics stewardship plan to implement electronics stewardship practices for all eligible owned or leased electronic products. Among other things, the plans were to address how agencies will ensure

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<sup>23</sup>According to the GSA guidance, agencies are not to abandon or destroy property in a manner that is detrimental or dangerous to public health or safety. Specific requirements for the utilization and disposal of hazardous material are found in 41 C.F.R. Pt. 101-42 (2011). Hazardous material may include property that possesses special characteristics, which in the opinion of the holding agency could be hazardous to health, safety, or the environment if improperly handled, stored, transported, disposed of, or otherwise improperly used.

<sup>24</sup>Under the GSA Schedules program, GSA establishes long-term governmentwide contracts with commercial firms to provide access to millions of commercial supplies (products) and services at volume discount pricing.

<sup>25</sup>The purpose of GSA's Environmental Services Schedule for Materials and Waste Recycling and Disposal Services (899-5) is to assist federal agencies in choosing recyclers that GSA has determined meet certain requirements for various services.

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that all electronic products no longer needed by an agency are reused, donated, sold, or recycled using environmentally sound management practices at end of life. The implementing instructions called for agencies' plans to

- comply with GSA procedures for the transfer, donation, sale, and recycling of electronic products (discussed above), as well as any applicable federal, state, and local laws and regulations; and
- use national standards, best management practices, or a national certification program for electronics recyclers.

The implementing instructions for Executive Order 13423 also directed each agency and its facilities to participate in the FEC or to implement an equivalent electronics stewardship program that addresses the purchase, operation and maintenance, and end-of-life management strategies for electronic products consistent with the FEC's recommended practices and guidelines.

In October 2009, Executive Order 13514 built on the previous executive order but included slightly different goals for electronics stewardship. Executive Order 13514 calls for agencies to develop, implement, and annually update strategic sustainability performance plans to specify how they intend to achieve the goals of the order. Agencies were required to submit fiscal year 2010 plans to CEQ and OMB by June 2010. Executive Order 13514, however, did not supersede or revoke the earlier executive order, and that order's goals and requirements remain in effect.<sup>26</sup>

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<sup>26</sup>See Omnibus Appropriations Act, 2009, Pub. L. No. 111-8 § 748, 123 Stat. 693 (providing that Executive Order 13423 shall remain in effect hereafter except as otherwise provided by law).

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*The National Strategy for Electronics Stewardship*  
Aims to Improve the  
Federal Government's  
Management of Used  
Electronics

In July 2011, an interagency task force,<sup>27</sup> co-chaired by CEQ, EPA, and GSA, issued the *National Strategy for Electronics Stewardship*, which describes goals, action items, and projects that are intended to lay the groundwork for enhancing the federal government's management of used electronic products, among other things. The strategy assigns primary responsibility for overseeing or carrying out most of the projects to either EPA or GSA. Most of the projects are scheduled for completion from summer 2011 through spring 2013. Among other things, the strategy directs GSA to issue

- through interagency collaboration and with public input, a comprehensive and governmentwide policy on used federal electronic products that maximizes reuse, clears data and information stored on used equipment, and ensures that all federal electronic products are processed by certified recyclers; and
- revised reporting guidance to improve federal agencies' tracking of used federal electronic products throughout their life cycle and to post comprehensive data on Data.gov and other publicly accessible websites.<sup>28</sup>

The strategy also recommends that the federal government

- require and enable recipients of used federal equipment that has been sold, transferred, or donated for reuse to use certified recyclers and follow other environmentally sound practices to the greatest extent possible; and
- encourage electronics manufacturers to expand their product take-back programs, and use certified recyclers as a minimum standard in those programs by expanding the use of manufacturer take-back

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<sup>27</sup>The interagency task force is separate from the Federal Electronics Stewardship Working Group referenced earlier in the report.

<sup>28</sup>Data.gov was launched in 2009 and its purpose is to increase public access to high-value, machine-readable datasets generated by the executive branch of the federal government.

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agreements in federal electronics purchase, rental, and service contracts.<sup>29</sup>

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## The Management of Used Federal Electronics Has Improved and Opportunities Exist for Further Improvements, but Challenges Remain

According to our review of agency documents and discussions with agency officials, federal agencies have made some progress to improve their management of used electronic products, as measured by greater participation in the FEC and an increase in certified electronics recyclers, but opportunities exist to expand their efforts. In addition, challenges remain that may impede agencies' progress toward further improving their management of used federal electronics, including in the tracking and reporting of data on the disposition of used federal electronics, in clarifying agencies' responsibility for used electronics sold through auctions, and in clarifying definitions for key terms and reconciling differences between the executive orders.

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## FEC Participation Has Grown, and Opportunities Exist to Increase Participation

Since we first reported on the FEC in November 2005,<sup>30</sup> participation has grown from 12 agencies and 61 individual facilities to 19 agencies and 253 individual facilities, as of September 2011. However, participation still represents only about one-third of the federal workforce and, in some cases, participation means that an agency has identified its current practices for managing electronic products and set goals to improve them but has not reported on progress toward achieving these goals as required. Specifically, only a little more than half of the agencies and facilities that were registered as FEC partners submitted an annual accomplishment report in 2010 to demonstrate the agency or facility's progress in electronics stewardship; these reports are a key component of actively participating as a partner. Because FEC participation is voluntary, EPA officials said EPA has no authority to require agencies to report on their progress. As a result, the extent to which agencies that do not report progress are reaching their goals is unknown. However, the FEC program manager told us that with a recent change in policy, FEC

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<sup>29</sup>Some electronics manufacturers have created product take-back programs; in these programs, consumers return used equipment to the manufacturers, and the manufacturers manage the equipment's reuse, recycling, or disposal. Take-back programs are common among large electronic products manufacturers, such as Apple, Dell, and Hewlett-Packard.

<sup>30</sup>[GAO-06-47](#).

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facility partners that do not submit their fiscal year 2011 annual reporting form by January 31, 2012, will be considered inactive. An FEC official stated that despite increased efforts to market the program, some agencies find the FEC's reporting requirements to be time-consuming.

For the five agencies we reviewed, participation in FEC varied. Specifically:

- DOD participates in the FEC as an agency partner, but the majority of its installations or facilities do not participate. According to EPA data, 16 of DOD's approximately 5,000 installations participate in the FEC. DOD officials told us that they are conducting outreach to encourage installations to participate but that some installations may not participate because officials believe that the registration process is too rigorous and burdensome.
- NASA centers are allowed to participate in the FEC, but they are not required to do so because other agency initiatives accomplish the same goals, according to agency officials. Three of NASA's 10 centers participate in the FEC.
- HUD does not participate in the FEC. We found that agency officials did not understand the FEC participation requirements. HUD's electronics stewardship plan states that HUD participates in the FEC, but an EPA official, who is responsible for the FEC program, told us that HUD never registered to become a partner—which involves submitting a baseline survey of the agency's electronics stewardship activities. In our discussions with HUD officials, we found that they were not aware of the FEC registration or reporting requirements and continued to believe that the agency was participating.
- DOE officials promote FEC participation, submit annual accomplishment reports, and actively participate in the FEC awards program. According to agency officials, over a 6-year period, 23 DOE facilities have won FEC awards, with many winning multiple times. All but two DOE facilities participate.
- Education participates in the FEC as an agency and facility partner. However, because it centrally manages the purchasing and disposition of electronics, Education submits annual accomplishment reports for the agency as a whole.

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For those agencies or facilities that actively participate in the FEC, participation can provide federal officials with the information and resources<sup>31</sup> needed to provide greater assurance that their used electronics are disposed of in an environmentally responsible manner, according to EPA documents. For the five agencies we reviewed, officials at agencies or facilities that actively participated in the FEC said that the FEC provided invaluable support. For example, according to DOD officials at one installation, the information sharing that is facilitated through the FEC is one of the biggest benefits of participation—when faced with a problem, the FEC can provide information from other agencies that have faced comparable problems. Similarly, Education officials told us that membership in Federal Electronics Stewardship Working Group was very helpful. In addition, DOE officials said that they have had much success with the FEC program and that the FEC awards program has motivated many DOE facilities to participate in electronics recycling.

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### The Number of Certified Recyclers Has Grown and Opportunities Exist for Agencies to Increase Their Use

Since the R2 and e-Stewards certification processes were made available in 2009 and 2010, respectively, the number of certified recyclers in the United States has grown greatly. From September 2010 to September 2011, the number of electronics recycling facilities certified to the R2 standard increased from 15 to 122 and the number of facilities certified to the e-Stewards standard grew from 6 to 40. Figure 1 shows the locations of the electronics recycling facilities in the United States that have obtained third-party certification as of September 30, 2011.

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<sup>31</sup>Resources include instruction sheets, tips, and checklists, among other things, which participants can choose to use.

Figure 1: Electronics Recycling Facilities Certified to the R2 or e-Stewards Standard, as of September 30, 2011



Sources: GAO analysis of e-Stewards and R2 data; Map Resources (map).

The increased number of certified recyclers should make it easier for agencies to locate recyclers that will, among other things, ensure that any harmful materials are being safely handled throughout the recycling chain. For the five agencies we reviewed, almost no certified recyclers were used, and in most cases agency officials either misidentified a recycler's certification status or indicated that they did not know the recycler's certification status. According to our analysis of the disposition information these agencies provided, of the 25 electronics recycling companies that the five agencies reported using in fiscal year 2010, only one was certified by either R2 or e-Stewards for all locations where the agency used it as of September 30, 2010, and agencies were correct in

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identifying whether or not their recyclers were certified in only four cases.<sup>32</sup>

The confusion regarding electronics recyclers' certification status could stem in part from the absence of clear guidance. The implementing instructions for Executive Order 13423 direct agencies to use national standards, best management practices, or a national certification program for recyclers. To date, however, none of the oversight agencies—OMB, CEQ, and OFEE—have provided agencies with clear guidance specifying whether R2 or e-Stewards, the two existing certification programs, qualify as “national certification programs for recyclers” under the implementing instructions.<sup>33</sup>

In an effort to address this issue, according to the *National Strategy for Electronics Stewardship*, EPA and GSA are to take steps to address the need for well-defined requirements for those certification programs that federal agencies will rely upon. Specifically, EPA, in consultation with GSA and other relevant agencies, is to develop a baseline set of electronics recycling criteria to ensure, among other things, that all downstream handlers of used electronics manage these materials in a way that protects the environment, public health, and worker safety. EPA is also to initiate a study of the current electronics certification programs to evaluate the strength of their audits of downstream facilities. According to the national strategy, as part of its effort to establish a comprehensive and governmentwide policy on used federal electronic products, GSA will consider the baseline set of criteria, the results of the study of current certification programs, and other requirements and considerations in determining which certification programs satisfy the governmentwide requirement to use certified recyclers. Although the strategy calls for GSA to, with public input, issue a revised policy and propose changes to the FMR, it is unclear if GSA is on track to do this by February 2012, given that it has not issued a public draft, nor conducted a public comment or other public input process. Similarly it is unclear when, if, or how GSA's revised policy component regarding certified recyclers will be incorporated into the FMR. Moreover, it is unclear what mechanism GSA

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<sup>32</sup>Of the 25 electronics recyclers used by the five agencies in fiscal year 2010, four had obtained either R2 or e-Stewards certification as of September 30, 2011 for all locations used by the agencies.

<sup>33</sup>EPA has formally recognized these programs on its website.

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will use to issue the revised policy prior to its inclusion in the FMR, as the policy may not be in conformance with the current FMR. In addition, the national strategy does not specify if or how EPA and GSA will routinely update other federal agencies on the status of their efforts to implement the national strategy's recommendations.<sup>34</sup>

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### The Tracking and Reporting of Data on the Disposition of Used Electronics Presents Challenges

Currently, due to challenges associated with the tracking and reporting of used federal electronics, the ultimate disposition of these electronics is unknown—making it difficult to measure the effectiveness of Executive Orders 13423 and 13514, which were aimed at improving the management of used federal electronics and ensuring the proper disposal of electronics that have reached the end of their useful life. The *National Strategy for Electronics Stewardship* acknowledges the challenges associated with tracking and reporting the disposition of used federal electronics and proposes some solutions for improving the data that agencies report to GSA. Under the national strategy, GSA is to streamline and standardize reporting through the annual Report of Non-Federal Recipients<sup>35</sup> to gather data on the type, quantity, and intended use of electronic products leaving federal ownership, and the recipients of these products. It is unclear, however, what electronics the new reporting requirements will cover. The national strategy suggests that the annual Report of Non-Federal Recipients will be expanded to include the reporting of the disposition of electronic products to all recipients. Currently, the report includes only property donated to such nonfederal recipients as schools and state and local governments, and therefore does not include the disposition of significant quantities of electronics.

If GSA intends to use this report to capture agencies' data, it is unclear how the report will improve the quality of the limited data GSA currently receives. GSA officials told us that while the agency currently collects disposition data from agencies through its GSAXcess database, GSAXcess is not an accountable property system;<sup>36</sup> therefore, data

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<sup>34</sup>The benchmark document issued along with the national strategy states "As the National Strategy is implemented, the project benchmarks will be updated."

<sup>35</sup>Under 40 U.S.C. § 529, executive agencies must submit to GSA, following the close of each fiscal year, an annual report of personal property furnished to any nonfederal recipient during the previous fiscal year, known as the Report of Non-Federal Recipients.

<sup>36</sup>Accountable property systems are "systems of record" or systems that contain an agency's official property records, according to GSA officials.

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validation is limited.<sup>37</sup> According to a GSA bulletin, a number of executive agencies have not submitted reports to GSA on exchange/sale transactions and property furnished to nonfederal recipients, as currently required, or have not included all of the required information—thus presenting data challenges as GSA seeks to carry out its oversight and management responsibilities.

The data challenges are further complicated by the fact that individual agency procedures for tracking electronics are not consistent. Agencies typically record the acquisition of electronics as individual units, such as desktop or laptop computers, and continue to track these electronics as individual units while in use at the agency. However, when agencies dispose of these same electronics, they may use a different method for tracking them. For example, rather than tracking the disposition of used electronic products as individual units, agencies may aggregate a number of similar items into a single line item or they may report them by weight. In addition, a single agency may use different metrics for different types of disposition. For example, DLA, a DOD acquisition and disposition agency, tracks electronic products sent to recyclers in pounds and electronic products disposed of through other means—such as donated to schools or transferred to other agencies—by individual unit. Because some electronics are tracked and reported as line items and some are recorded in pounds, it is not possible to compare the extent to which the agency relies on one disposition method over another. For the five agencies we reviewed, data provided to us on the disposition of electronic products were similarly inconsistent, which hampered our efforts to accurately assess the extent to which electronic products procured by these federal agencies were disposed of in an environmentally sound manner.

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### Challenges Remain in Clarifying Agencies' Responsibility for Used Electronics Sold through Auctions

GSA's personal property disposition procedures do not clarify agency responsibilities for tracking or placing contract conditions on the ultimate disposition of used electronics if they are sold through auctions. As we reported in August 2008, some electronics recyclers in the United States—including those that have purchased government electronics sold

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<sup>37</sup>GSA has built edit checks into the system requiring agencies to confirm amounts that are over certain dollar amounts.

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through auction—appeared willing to export regulated electronics illegally.<sup>38</sup>

We identified two auction disposal methods—those used by GSA and by DOD—that could result in used federal electronics being handled in an environmentally risky manner. Specifically, under the GSA auction process, registered participants can bid electronically on items within specific time frames. To participate, potential buyers register with GSA by providing information about themselves, such as name, address, and payment information, before they can bid on items, according to GSA officials. However, GSA officials told us that they do not evaluate the information obtained from buyers to determine whether they are brokers or resellers who might potentially export these used products to other countries where they may not be handled in an environmentally sound or safe manner. Moreover, GSA officials stated that the agency does not have enforcement authority after these items are sold to the general public. They told us that if GSA is made aware of any inappropriate activity or violations of the terms of the sale, it will refer the information to the GSA Inspector General for further investigation. According to agency documentation, GSA’s online auction procedures include standard sales terms and conditions, special security notifications, and export control clauses. However, none of the terms, conditions, or clauses included in GSA’s auction procedures are aimed at ensuring that (1) electronics containing certain materials<sup>39</sup> are exported only to countries that can legally accept them,<sup>40</sup> (2) recyclers document the legality of such exports, and (3) the material is being safely handled throughout the recycling chain.

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<sup>38</sup>GAO-08-1044. EPA has issued regulations specifically addressing management of cathode ray tubes, and imposing requirements on their handling and export.

<sup>39</sup>For example, the R2 practices identify “focus materials,” which include items such as cathode-ray tubes or items containing mercury that warrant greater care owing to their toxicity and associated risk if managed without the appropriate safeguards.

<sup>40</sup>GSA’s general sales terms and conditions contain general conditions requiring, among other things, that bidders comply with all applicable federal, state, local, and multi-jurisdictional laws, ordinances, and regulations, in the transportation, transfer, export, use, or disposal of the property, and that purchasers represent, warrant, and certify that they will use and ultimately dispose of any hazardous property purchased under GSAAuctions.gov site as stipulated under applicable federal, state, local, and international laws and regulations. As previously noted, however, most electronics are not considered “hazardous” under U.S. law.

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Unlike GSA, DOD is not directly involved in the auction process but instead sells its used electronics to a private company, which then resells the used electronics through its web-based auction process. According to DOD officials, DOD's responsibility for tracking its used electronics ends once it passes to the contractor—Government Liquidation. DOD officials said that Government Liquidation has its own terms and conditions that bidders must adhere to once they purchase the used electronics. As with GSA auctions, the terms and conditions included in the Government Liquidation auctions are not aimed at ensuring that used federal electronics are exported only to countries that can legally accept them.<sup>41</sup> In our review of these auction websites, we found that the overwhelming majority of used electronic products are sold in bulk, which would indicate that they are being sold to brokers or resellers, not individual consumers.<sup>42</sup>

The *National Strategy for Electronics Stewardship* seeks to address the problems associated with used federal electronics sold through auction. According to the strategy, the electronics stewardship policy that GSA is to establish will prohibit the sale of nonfunctional electronics through public auction except to third-party certified recyclers and refurbishers. Functional electronics are to be directed through the existing hierarchy of transfer, donation, and sale. It is unclear, however, how this policy will work in practice. Currently, agencies sell electronics in mixed lots of potentially functional and nonfunctional equipment. For example, officials at one agency said that it was not cost effective to test items to ensure that they

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<sup>41</sup>Government Liquidation's terms and conditions contain the general requirement that the buyer agrees to comply with all applicable export laws and regulations. However, most electronics are not considered "hazardous" under U.S. law, thus are not subject to EPA's export rules for hazardous wastes. The terms also note that "[a]ny device which is damaged in transit or is found to be cracked, shattered or broken may subject the Buyer to regulations pertaining to the handling, storage, transportation, re-sale or disposal of electronic waste," and generally cautions—but does not require—buyers "to use and ultimately dispose of any hazardous components or constituents according to all applicable local, national or international laws and regulations in a manner safe for the public and the environment."

<sup>42</sup>Moreover, information on the potential for reuse of such equipment is unclear. These auctions are typically labeled as "scrap," defined by Government Liquidation as "property sold for its material content value, and for which it is not intended that the property or any of its parts or components be used for its originally intended purpose." Government Liquidation's terms and conditions, however, state that it sells only useable electronic devices, including repairable devices, but that the company makes no warranties or representations regarding the electronic devices it sells.

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are functional; therefore, items are sold through GSA “as is” with no implied warranty. These agency officials said that they combine items in sales lots that will bring the most return to the federal government. In addition, we found that electronics listed on the Government Liquidation and GSA auction websites are frequently marketed as “tested to power-up only,” or with disclaimers such as “condition of the property is not warranted.” Under the national strategy, it is unclear whether electronics characterized in this way would qualify as “functional.” In addition, the national strategy does not provide clear and detailed criteria to assist federal agencies in bundling functional and nonfunctional electronics for sale exclusively to certified recyclers or refurbishers, distinguishing between functional and nonfunctional electronics by conducting specific tests, and labeling electronic products. Moreover, if federal agencies sell used functional electronic products through auctions, neither the agency nor the auction entities are required to impose conditions or to perform due diligence by conducting auditing to determine whether all downstream reusers of such products follow environmentally sound end-of-life practices.

In contrast, the European Union has detailed guidance for determining the functionality of electrical and electronic equipment, as part of distinguishing whether the equipment is considered waste in the context of import-export rules. The guidance states that the tests required to determine functionality depend on the type of electronics, but generally, completion of a visual inspection without testing functionality is unlikely to be sufficient for most types of electronics; it also states that a functionality test of the key functions is sufficient. The guidance also identifies defects that materially affect functionality and would therefore cause an item to be considered “waste” if, for example, the equipment did not turn on, perform internal set-up routines, or conduct self-checks.<sup>43</sup> As discussed previously, R2 practices establish a similar “reuse, recover, dispose” hierarchy along the chain of custody for material handling and require recyclers to test electronics diverted for reuse, and confirm that key functions of the unit are working before it may be exported.<sup>44</sup>

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<sup>43</sup>Regulation (EC) No 1013/2006 Revised Correspondents’ Guidelines No. 1, *Shipments of Waste Electrical and Electronic Equipment (WEEE)* (June 2007).

<sup>44</sup>Similarly, WRAP, a government-backed private nonprofit organization in the United Kingdom, recently issued a protocol establishing minimum recommended tests that computers and related equipment must pass to be considered functional and fit for reuse.

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## Challenges Remain in Defining Key Terms and in Clarifying Differences between the Executive Orders

We found that key terms concerning electronics have not been defined and that differences between the executive orders have not been clarified. In particular:

- *Key terms not defined.* Key terms such as “electronic product” and “environmentally sound practices” are not explicitly defined in the executive orders, the guidance provided to agencies for implementing the executive orders, or the *National Strategy for Electronics Stewardship*. Consequently, each of the agencies we reviewed used its own definition of electronic products to report progress in implementing policies for electronics stewardship. For example, DOE defines electronic products as printers, desktop computers, notebook computers, and monitors; DOD, Education, HUD, and NASA use broader definitions that include servers, routers, and switches; cell phones and musical instruments; and refrigerators. Moreover, without a clear definition of what constitutes an environmentally sound practice, agencies are free to dispose of their used electronics through online auctions or other means that provide little assurance that (1) these electronics are exported only to countries that can legally accept them,<sup>45</sup> (2) recyclers document the legality of such exports, and (3) the material is being safely handled throughout the recycling chain.
- *Differences between the executive orders have not been clarified.* CEQ has not issued implementing instructions regarding electronics stewardship for Executive Order 13514, which was signed in 2009, and CEQ, OMB, and OFEE have not harmonized the electronics stewardship requirements contained in executive orders 13423 and 13514. For example, under Executive Order 13423, the requirement to use environmentally sound practices applies to electronic equipment that has “reached the end of its useful life,” whereas Executive Order 13514 includes “all agency excess or surplus electronic products,” and the difference between these terms has not been clarified. In addition, the implementing instructions for Executive

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<sup>45</sup>Under EPA regulations, used cathode-ray tubes are the only electronic device specifically regulated as hazardous waste and whose export is subject to controls. According to EPA statements, used electronic devices other than cathode-ray tubes do not generally qualify as hazardous waste under the Resource Conservation and Recovery Act of 1976 as amended, which is the statute governing hazardous waste handling and disposal. However, foreign countries may restrict the import of a wider range of used electronics.

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Order 13423 direct agencies to ensure that contracts for leased electronic equipment incorporate language that requires that at the end of the lease period, the equipment is reused, donated, sold, or recycled using environmentally sound management practices. This directive is not included in Executive Order 13514 nor in the guidance provided to agencies for preparing their strategic sustainability performance plan that is to be used under Executive Order 13514. Officials from these oversight agencies told us that they have informed federal agencies that electronics stewardship plans under Executive Order 13423 can be incorporated by reference into their strategic sustainability performance plans to satisfy certain requirements for Executive Order 13514. Or alternatively, strategic sustainability performance plans may be used in lieu of separate electronics stewardship plans. However, CEQ, OMB, and OFEE have not addressed differences or updated the implementing instructions for Executive Order 13423.

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## Conclusions

Federal initiatives to improve the management of agencies' used electronics—including the FEC, certification for recyclers, personal property disposal guidance, the executive orders, and the *National Strategy for Electronics Stewardship*—have sought to assist federal agencies in the handling of used electronic products. And progress has been made. More agencies and facilities are participating in the FEC, and a growing number of recyclers have received third-party certification. However, opportunities exist to increase the breadth and depth of agencies' participation in the FEC and to expand the use of certified electronics recyclers.

Federal agencies also face challenges that may impede their progress toward improving their management of used federal electronics. Specifically, 2 years have elapsed since Executive Order 13514 required CEQ to issue implementing instructions. In the absence of such instructions, agencies do not have definitions for key terms such as “electronic products” and “environmentally sound practices,” and the guidance for implementing the executive orders provides inconsistent information on what procedures an agency should follow when implementing environmentally sound practices. In addition, inconsistencies between Executive Orders 13514 and 13423 have yet to be addressed; without doing so, CEQ lacks assurance that agencies are meeting electronics stewardship requirements of both orders, given that CEQ and OMB permit agencies to comply using either an electronics stewardship plan under Executive Order 13423 or a strategic

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sustainability performance plan under Executive Order 13514. Furthermore, without consistent tracking and reporting of the disposition of used federal electronics, there is no mechanism to measure the effectiveness of federal policies aimed at ensuring the proper disposal of electronics that have reached the end of their useful life.

The recently issued *National Strategy for Electronics Stewardship* seeks to advance federal agencies' efforts to manage used electronics. However, it is unclear whether it will fully address challenges that impede environmentally sound management of used federal electronics. Furthermore, it is doubtful whether the strategy will be effective without a mechanism for routinely keeping agencies and the public apprised of its progress toward establishing a governmentwide policy on used federal electronics—particularly with respect to use of third-party national certification for electronics recyclers—so that agencies have a clear understanding of their responsibilities and other interested parties are apprised of agencies' progress toward completing actions identified in the strategy. Currently, the strategy does not state how agencies will be kept informed of implementation efforts. In addition, the strategy lays out an approach for ensuring that federal agencies dispose of nonfunctional electronics in a sound manner, but it does not provide clear and detailed criteria to assist federal agencies in bundling functional and nonfunctional equipment for sale exclusively to certified recyclers and refurbishers and distinguishing between functional and nonfunctional electronics by conducting specific tests and labeling electronic products. Finally, if federal agencies sell used functional electronic products through auctions, neither the agency nor the auction entities are required to perform due diligence by conducting auditing to determine whether all downstream reusers of such products follow environmentally sound end-of-life practices.

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## Recommendations for Executive Action

To improve federal electronics stewardship, we are making the following four recommendations.

To support federal agencies' efforts to improve electronics stewardship, we recommend that the Director of the White House Council on Environmental Quality, in collaboration with the Director of the Office of Management and Budget, and the Administrator of the General Services Administration collaborate on developing and issuing implementing instructions for Executive Order 13514 that

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- define key terms such as “electronic products” and “environmentally sound practices;” address inconsistencies between this executive order and Executive Order 13423; and as appropriate, provide clear direction on required agency actions under the national strategy; and
  - require consistent information tracking and reporting on the disposition of used electronics among agencies.

To provide transparency on progress toward completing the actions identified in the *National Strategy for Electronics Stewardship*, we recommend that the Director of the White House Council on Environmental Quality, the Administrator of EPA, and the Administrator of GSA provide quarterly status updates on a publicly accessible website.

To ensure that electronic products procured by federal agencies are appropriately managed, we recommend that GSA include measures in its policy to ensure that all electronics sold through auction are appropriately managed once they reach the end of their useful lives. Such measures could include

- bundling functional and nonfunctional equipment for sale exclusively to certified recyclers, who would be responsible for determining the best use of the equipment under the “reuse, recover, dispose” hierarchy of management; or
- if agencies or GSA are to be responsible for screening electronics for auction and distinguishing between functional and nonfunctional equipment,
  - providing clear and detailed criteria for doing so, such as specific testing and labeling; and
  - ensuring that purchasers or recipients of functional electronic products sold through government auctions use certified recyclers or perform due diligence and conduct downstream auditing.

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## Agency Comments and Our Evaluation

We provided a draft of this report to OMB, CEQ, GSA, and EPA for review and comment. In addition, we provided DOD, DOE, Education, HUD, and NASA with excerpts of the draft report that pertained to each agency and incorporated technical comments received as appropriate. In written comments, which are reproduced in appendix II, EPA generally concurred with our recommendations. OMB, CEQ, and GSA did not

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provide written comments to include in our report. Instead, in e-mails received on February 1, January 19, and January 17, 2012, from the agencies' respective liaisons, OMB, CEQ, and GSA generally concurred with our recommendations. Even with their general concurrences, in some instances, the agencies proposed alternative approaches for executing the recommendations. In the e-mail from its liaison, OMB concurred with the comments in the e-mail from CEQ's liaison but did not provide additional comments of its own.

In response to our recommendation that CEQ, in collaboration with OMB and GSA, issue implementing instructions for Executive Order 13514 that define key terms; require consistent information tracking and reporting; and provide clear direction on required agency actions under the national strategy, CEQ stated that it would reserve its decision regarding our recommendation until after GSA issues its comprehensive governmentwide policy on electronic stewardship. Specifically, CEQ stated that GSA's policy would address the issues we identified with regard to unclear definitions and inconsistent tracking and reporting of electronics but was silent on how it would provide clear direction on required agency actions under the national strategy. GAO believes it is imperative for CEQ to issue implementing instructions along with GSA's issuance of its policy. Without such instructions, agencies will lack clarity on required agency actions under the national strategy and whether adhering to the GSA policy is necessary and/or sufficient for implementing the executive order. Moreover, it remains unclear what mechanism GSA will use to issue its revised policy prior to its inclusion in the FMR, to the extent the current FMR does not conform with the new policy. Concerning this issue, GSA stated that it will publish guidance documents concurrent with proposing changes to the FMR. However, as GSA intends to issue guidance documents, which are not legally binding on agencies, as well as regulations, which are, it will be important for CEQ to issue implementing instructions that indicate which actions in the guidance documents, as well as any other actions beyond those in the FMR, are necessary to comply with the executive order.

In addition, as we recommended, CEQ, EPA, and GSA agreed that they would update a publicly accessible website on the status of progress toward completing the actions identified in the National Strategy for Electronics Stewardship. CEQ stated that progress reporting would be accomplished by GSA and GSA agreed to provide status updates at least quarterly. However, in its written comments, EPA requested that, instead of quarterly status updates, we revise our recommendation to require status updates as significant progress is made or key milestones are met.

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EPA stated that due to the nature of some of the work the agencies have committed to as part of the national strategy, it may not be appropriate to report to the general public on a routine basis. We did not revise the recommendation and are not recommending such disclosure. Instead, we are recommending that the agencies provide a quarterly status update that characterizes the progress made toward achieving each action item or project. For example, one action item in the national strategy directed the Federal Electronics Stewardship Working Group to recommend to CEQ by November 18, 2011, metrics and other reporting tools to measure agencies' progress in implementing the revised Federal Electronics Stewardship Policy. It would be helpful to have updated information on whether the working group has made its recommendation to CEQ and when CEQ will announce the new metrics and reporting tools. Currently, such information is not publicly available. In fact, as of February 8, 2012, more than 6 months after the policy and benchmarks were issued, no updates have been provided on publicly accessible websites.

With regard to our recommendation that GSA include measures in its electronic stewardship policy to ensure that all electronics sold through auction are appropriately managed once they reach the end of their useful lives, in the e-mail received from its liaison, GSA noted that the agency is working toward this goal. Specifically, GSA stated that it is working toward including measures to (1) bundle all equipment for sale to certified recyclers, who then determine proper reuse or recycling, or (2) provide agencies with clear, detailed criteria to distinguish between functional and nonfunctional electronics and ensure that purchasers or recipients of federal electronics use certified recyclers or perform downstream auditing, while also noting that GSA has limited authority to require recipients of used federal electronics to recycle them once ownership has transferred to those recipients.

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As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution for 30 days from the report date. At that time, we will send copies to the Secretaries of Defense, Education, Energy, and Housing and Urban Development; the Administrators of EPA, GSA, and NASA; the Director of OMB; the Chair of the White House CEQ; the Federal Environmental Executive; appropriate congressional committees; and other interested parties. The report also will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions concerning this report, please contact me at (202) 512-3841 or [ruscof@gao.gov](mailto:ruscof@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of the report. GAO staff who made major contributions to this report are listed in appendix III.

Sincerely yours,

A handwritten signature in black ink that reads "Frank Rusco". The signature is written in a cursive style with a long, sweeping horizontal line extending to the right.

Frank Rusco  
Director, Natural Resources  
and Environment

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# Appendix I: Objectives, Scope, and Methodology

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The objectives for this report were to examine (1) key initiatives aimed at improving the management of used federal electronics and (2) improvements resulting from these initiatives and challenges that impede progress toward improving the management of used federal electronics, if any.

To identify initiatives aimed at improving the management of used federal electronics, we reviewed guidance and other documents describing the Environmental Protection Agency (EPA) initiatives related to the Federal Electronics Challenge (FEC), the Federal Electronics Stewardship Working Group, and Responsible Recycling (R2) practices. We analyzed the requirements for electronic products contained in the applicable executive orders and implementing instructions that make up the federal policy framework; the Federal Acquisition Regulation, which governs the process through which the federal government acquires goods and services; the Federal Management Regulation (FMR), which, among other things, regulates the disposal of federal personal property, including electronics;<sup>1</sup> and the General Services Administration's (GSA) *Personal Property Disposal Guide*, which serves as an index and quick-reference guide as it relates to personal property management provisions in the FMR; and other relevant electronics stewardship guidance. We also reviewed the July 2011 *National Strategy for Electronics Stewardship*.

To identify improvements resulting from federal initiatives to improve management of used federal electronics and challenges that impede progress, we selected a nonprobability sample of five federal agencies—the departments of Defense (DOD), Energy (DOE), Education (Education), and Housing and Urban Development (HUD); and the National Aeronautics and Space Administration (NASA)—to examine how the federal policy framework is carried out in those agencies. We selected DOD, DOE, and NASA because they each participated to some extent in the FEC program and purchased large amounts of electronic products—ranking first, eighth, and tenth, respectively, in terms of overall federal agency information technology spending in fiscal year 2010. We selected Education because, according to the FEC program manager, the agency actively participates in the FEC and centrally manages its electronics

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<sup>1</sup>The FMR, Subchapter B-Personal Property. 41 C.F.R. Pt. 102-36, requires that executive agencies, to the maximum extent practicable, fill requirements for personal property by using existing agency property or by obtaining excess property from other federal agencies in lieu of new procurements.

procurement and disposal functions. We selected HUD because the agency was not participating in the FEC. We used FEC participation as a selection criterion because we hoped to include agencies with a range of experience with managing used electronics in an environmentally safe way. Because the selection of agencies was based on a nonprobability sample, the information we obtained is not generalizable to all federal agencies. However, because the nonprobability sample consists of a cross-section of agencies of different sizes and levels of participation in the FEC, the evaluation of these agencies provides relevant examples of different procurement and disposition methods for electronics. For these five agencies we also collected and reviewed fiscal year 2010 strategic sustainability performance plans. We also conducted semistructured interviews with officials from the Office of Management and Budget (OMB), the White House Council on Environmental Quality (CEQ), the Office of the Federal Environmental Executive (OFEE), and EPA to discuss their respective roles in assessing agency performance and managing the FEC and other federal initiatives for electronics stewardship. In some cases, we followed up the interviews with additional questions, and on two occasions, CEQ provided us with written responses to some of our questions on the roles of OMB, CEQ, and OFEE and other issues on federal electronics stewardship, such as how OMB and CEQ decide on whether an agency's program is equivalent to the FEC. In addition, at GSA, we conducted semistructured interviews with officials on the agency's policies and procedures for the transfer, donation, sale, and recycling of electronic products.

To determine the extent to which agencies used various disposition methods (i.e., reuse, donation, and sale) we analyzed governmentwide GSA data from GSAXCess, Exchange Sale, and Non-Federal Recipients reports for fiscal year 2010. We designed and implemented a data collection instrument to collect agency-specific disposition data for fiscal years 2009 and 2010 from the five agencies selected for our nonprobability sample. We encountered a number of limitations in obtaining reliable data. For example, GSA officials acknowledged that GSA does not verify the data that it collects from other agencies. The five selected agencies that we collected data from also did not have consistent definitions of electronics and sometimes reported inconsistent information or used inconsistent methods of tracking the disposition of used electronics. For example, DOD tracks some items by weight and other items by line item. We attempted to resolve inconsistencies in the data provided through this effort through follow-up efforts with the five agencies in which we discussed how they attempted to collect the data we requested and related challenges and limitations. Based on these

conversations, we determined that the data were not sufficiently reliable for the purposes of reporting on amounts of electronics disposed of by the five agencies and we did not use information collected in the data collection instrument on the extent to which agencies used various disposition methods.

We also visited the Kennedy Space Center, in Cape Canaveral, Florida, and Defense Logistics Agency (DLA) Aviation in Richmond, Virginia, to discuss the procurement and disposition of electronic products. We selected Kennedy Space Center because it is designated as NASA's Principal Center for Recycling and Sustainable Acquisition. We selected DLA Aviation in Richmond, Virginia, because of its role in disposing of excess property received from the military services through DLA Disposition. We also visited a UNICOR recycling facility located in Lewisburg, Pennsylvania, as well as two private electronics recycling facilities located in Tampa, Florida.<sup>2</sup> We selected these facilities because of their role in electronics recycling at federal agencies. At these facilities, we interviewed officials about the procedures involved in recycling used federal electronic products and observed the electronics recycling process to learn how electronics are safely disassembled and, in some cases, processed for reuse.

To assess the extent to which the July 2011 *National Strategy for Electronics Stewardship* addresses any challenges that may impede participation in electronics stewardship initiatives, we examined key provisions of the strategy, such as dividing functional and nonfunctional electronics, and compared these provisions with existing policies for electronics stewardship. In response to our request for information on electronics stewardship, FEC program's manager, officials within each of the five agencies, and seven champions for the FEC program provided information on the challenges that may affect agency participation in electronics stewardship initiatives.<sup>3</sup> In addition, we interviewed officials

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<sup>2</sup>UNICOR, Federal Prison Industries is a self-sustaining, self-funded corporation established in 1934 by executive order to create a voluntary real-world work program to train federal inmates.

<sup>3</sup>We obtained written information on the responsibilities, training, and challenges facing seven FEC champions. The FEC program manager currently serves as the champion for two of the EPA regions, and the FEC champion for one region did not respond to our request for information.

with the R2 and e-Stewards recycler certification programs,<sup>4,5</sup> the Electronics TakeBack Coalition, and an electronics recycler to determine the extent to which recyclers in the United States have obtained certification and to discuss their views about the capacity of certified electronics recyclers located in the United States.

We conducted this performance audit from October 2010 to January 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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<sup>4</sup>The Responsible Recycling (R2) Practices is a set of guidelines for accredited certification programs to assess electronics recyclers' environmental, worker health and safety, and security practices.

<sup>5</sup>The e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment was developed by the Basel Action Network and is the basis for electronics recycling companies to become certified e-Stewards recyclers.

# Appendix II: Comments from the Environmental Protection Agency



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JAN 12 2012

OFFICE OF  
SOLID WASTE AND  
EMERGENCY RESPONSE

Mr. Frank Rusco  
Director, Natural Resources and Environment  
Government Accountability Office  
Washington, DC 20548

Dear Mr. Rusco:

I am transmitting the Office of Solid Waste and Emergency Response's (OSWER) response to the Government Accountability Office (GAO) January 2012 draft report entitled, "Electronic Stewardship: Progress Made Toward Improving Agencies' Management of Used Electronics but Challenges Remain (GAO-12-74)".

This report, which outlines how the Federal Government manages its used electronics, reviews a number of programs EPA has been instrumental in developing and/or implementing: the Federal Electronics Challenge (FEC); the National Strategy for Electronics Stewardship; and Standards for Certification of Recyclers. EPA supports and will continue to push for further safe and protective recycling efforts and encourage improvements in best management practices for recyclers. There are existing recycling certification programs, such as Responsible Recycling (R2) Practices and e-Stewards that EPA believes advance environmentally safe practices and includes standards for use in third party certification of such efforts. We appreciate the chance to comment on this draft document.

We generally agree with the recommendations in the document and are requesting only one slight revision to the following recommendation: **"To provide transparency on progress toward completing the actions identified in the National Strategy for Electronics Stewardship, we recommend that the Director of CEQ, the Administrator of EPA, and the Administrator of GSA provide quarterly status updates on a publically accessible website."**

Each of the projects EPA has committed to implement under the National Strategy for Electronics Stewardship is important to ensuring that used electronics are managed in a sound and safe manner. We also believe that being transparent to the public on progress being made in implementing these projects is paramount. These beliefs were discussed between the three Agencies at length prior to the release of the document and the companion benchmark document, and resulted in the following language being included in the executive summary of the main document (page 3):

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Appendix II: Comments from the  
Environmental Protection Agency

"An on-line annex of benchmarks of projects, posted on the Web at [www.fedcenter.gov](http://www.fedcenter.gov), lists each of the projects, the primary agency responsible for the project and any agencies supporting the primary agency effort, and the target date for completion of the project.

As the National Strategy is developed in further detail by the departments and agencies and the Strategy is implemented, the annex will be updated. As appropriate, action items and projects under them may be realigned as efficiencies and opportunities for further improvements are identified." (Also see the footnote on the benchmark document which also includes similar language which also includes "within financial and staffing limitations.")

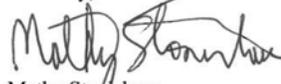
This language was carefully negotiated among the participating agencies to reflect that the goals were targets not deadlines due to resource considerations that confront each of the agencies and the need for continued public input on many of the action items.

Due to the nature of some of the work we have committed to (i.e., planning, information gathering, and tool development) it may not be appropriate to report to the general public on a routine basis. In addition, each project will arrive at a key milestone or a public announcement at different points. Many projects require input from stakeholders to ensure that the finished project results in a completely informed and robust effort. Furthermore, we are planning public events for some projects.

Based on these reasons, we would prefer that the recommendation suggest that the three Agencies update the publically available website "as we make significant progress" and/ or "as we meet key milestones" on the projects. This commits each Agency to updating the benchmark annex, but provides each Agency the necessary flexibility to determine the appropriate time to update the benchmark document.

Thank you for your assistance in the coordination of this response with GAO. If you have any questions on this response, please do not hesitate to contact Suzanne Rudzinski, Director, Office of Resource Conservation and Recovery, at 703-308-8895.

Sincerely,



Mathy Stanislaus  
Assistant Administrator

cc: Lisa Feldt, OSWER  
Barry Breen, OSWER  
Johnsie Webster, OSWER  
Suzanne Rudzinski, OSWER  
Sandra Connors, OSWER  
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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

Frank Rusco, (202) 512-3841 or [ruscof@gao.gov](mailto:ruscof@gao.gov)

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## Staff Acknowledgments

In addition to the contact named above, Diane LoFaro, Assistant Director; Elizabeth Beardsley; Pamela Davidson; Stephanie Gaines; Deborah Ortega; Ilga Semeiks; Carol Herrnstadt Shulman; and Vasiliki Theodoropoulos contributed to this report.

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# Related GAO Products

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*Green Information Technology: Agencies Have Taken Steps to Implement Requirements, but Additional Guidance on Measuring Performance Needed.* [GAO-11-638](#). Washington, D.C.: July 28, 2011.

*Data Center Consolidation: Agencies Need to Complete Inventories and Plans to Achieve Expected Savings.* [GAO-11-565](#). Washington, D.C.: July 19, 2011.

*Electronic Waste: Considerations for Promoting Environmentally Sound Reuse and Recycling.* [GAO-10-626](#). Washington, D.C.: July 12, 2010.

*Federal Electronics Management: Federal Agencies Could Improve Participation in EPA's Initiatives for Environmentally Preferable Electronic Products.* [GAO-10-196T](#). Washington, D.C.: October 27, 2009.

*Electronic Waste: EPA Needs to Better Control Harmful U.S. Exports through Stronger Enforcement and More Comprehensive Regulation.* [GAO-08-1044](#). Washington, D.C.: August 28, 2008.

*Electronic Waste: Strengthening the Role of the Federal Government in Encouraging Recycling and Reuse.* [GAO-06-47](#). Washington, D.C.: November 10, 2005.

*Electronic Waste: Observations on the Role of the Federal Government in Encouraging Recycling and Reuse.* [GAO-05-937T](#). Washington, D.C.: July 26, 2005.

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