United States Government Accountability Office

GAO

Report to Congressional Requesters

December 2006

RECYCLING

Additional Efforts Could Increase Municipal Recycling

GAO-07-37

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GAO Accountability · Integrity · Reliability

Highlights

Highlights of GAO-07-37, a report to congressional requesters

Why GAO Did This Study

Although recycling can generate environmental and economic benefits, the national recycling rate has increased only slightly since 2000, according to the Environmental Protection Agency (EPA). While local governments have the primary role in operating recycling programs, EPA and the Department of Commerce (Commerce) have some legal responsibilities for encouraging recycling. GAO was asked to (1) identify key practices cities are using to increase recycling, (2) describe what EPA and Commerce are doing to encourage recycling, and (3) identify federal policy options that could help increase recycling. GAO interviewed recycling coordinators in 11 large cities about key practices and 13 additional recycling stakeholders about policy options. GAO selected both groups based on geographic representation and recycling expertise, among other factors.

What GAO Recommends

To better evaluate the impact of EPA's recycling programs, GAO recommends that EPA establish performance measures and gather performance data on those measures. GAO also recommends that Commerce develop and implement a strategy to help stimulate the development of markets for recycled materials in the United States. In commenting on the draft report, EPA agreed with the recommendation and Commerce did not directly address the recommendation.

www.gao.gov/cgi-bin/getrpt?GAO-07-37.

To view the full product, including the scope and methodology, click on the link above. For more information, contact John B. Stephenson, (202) 512-3841, stephensonj@gao.gov.

What GAO Found

Recycling coordinators with whom we spoke in selected cities across the country identified several key practices they are using to increase recycling in their cities. The three practices they cited most frequently were (1) making recycling convenient and easy for their residents, (2) offering financial incentives for recycling, such as allowing residents who produce less waste through recycling to use smaller garbage cans and pay lower fees, and (3) conducting public education and outreach. In addition, both recycling coordinators and the recycling literature identified other ways to increase recycling, such as targeting a wide range of materials for recycling and extending recycling programs to the commercial sector.

As a part of its Resource Conservation Challenge strategy, EPA operates several national and regional programs that are designed to increase recycling and help EPA achieve its national municipal solid waste recycling goal of 35 percent by 2008. One of EPA's principal national recycling programs, WasteWise, creates voluntary partnerships with groups, such as universities, states, and businesses, to help them increase their recycling. EPA also provides competitive grants to support projects designed to increase recycling. The impact of EPA's programs is unknown, however, because the programs lack performance measures and comprehensive data on program performance. Although Commerce is required under the Resource Conservation and Recovery Act to stimulate the development of markets for recycled materials, the agency is not currently taking any actions to do so in the United States. For example, Commerce is not identifying the location of markets for recycled materials, identifying economic and technical barriers to recycling, or encouraging the development of new uses for recycled materials in the United States. However, agency officials told GAO that Commerce supports increased international trade in recycled and recyclable materials as part of its general trade promotion responsibilities.

The recycling stakeholders we interviewed identified various federal policy options that they believe could help municipalities increase their recycling rates. The three federal policy options cited most frequently were to (1) establish a nationwide campaign to educate the public about recycling, (2) enact a national "bottle bill" in which beverage containers may be returned for money, and (3) require manufacturers to establish systems that consumers can use to recycle their products. Other identified policy options included facilitating the sharing of recycling best practices among municipalities, expanding EPA research on the economic and environmental benefits of recycling, and providing additional grant money for recycling projects.

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Abbreviations

DOE	Department of Energy
EPA	Environmental Protection Agency
IRS	Internal Revenue Service
RCC	Resource Conservation Challenge
RCRA	Resource Conservation and Recovery Act

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Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

December 29, 2006

The Honorable James M. Jeffords
Ranking Minority Member
Committee on Environment and Public Works
United States Senate

The Honorable Thomas R. Carper
The Honorable Barack Obama
The Honorable Olympia Snowe
The Honorable Ron Wyden
United States Senate

In 2005, the United States generated about 246 million tons of municipal solid waste, or over 1,600 pounds per person, according to the most current Environmental Protection Agency (EPA) estimates.[1] EPA reported that 79 million tons of this waste were recycled, while the remaining 166.7 million tons were combusted, went to landfills, or were otherwise disposed of.[2] Recycling can lower the amount of waste that is incinerated or sent to landfills, reduce cities' waste disposal costs, and has potentially significant environmental benefits, such as decreasing water and air pollution and greenhouse gas emissions. In addition, manufacturing products from recycled material can provide economic benefits to the extent that it requires less electricity, fuel, and water, which can result in lower production costs.

In 1976, the Congress sought to reduce solid waste and encourage recycling as part of the Resource Conservation and Recovery Act (RCRA). Through RCRA, the Congress directed EPA to foster a cooperative effort among federal, state, local, and private entities in order to, among other things, promote recycling through public education. Under RCRA, EPA established solid waste management guidelines for municipalities that

[1]According to EPA, municipal solid waste is trash or garbage consisting of everyday items such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, and batteries. Not included are construction and demolition debris, municipal wastewater treatment sludge, hazardous wastes, and nonhazardous industrial wastes.

[2]EPA, *Municipal Solid Waste in the United States: 2005 Facts and Figures*, EPA-530-R-06-011 (Washington, D.C., Oct. 2006).

encouraged recycling, including composting food and yard waste. While the national recycling rate for municipal solid waste increased from approximately 16 percent in 1990 to about 29 percent in 2000, it has increased only slightly to 32 percent since then, according to EPA estimates.[3] Under its Resource Conservation Challenge (RCC), EPA operates several national and regional programs to support public and private sector efforts to increase recycling and to help EPA reach its goal of recycling 35 percent of national municipal solid waste by 2008.[4] Subtitle E of RCRA assigns responsibilities to the Department of Commerce (Commerce) to take actions that stimulate the development of markets for recycled materials.[5]

Local and state governments have the key responsibility for recycling programs. In particular, local governments often have primary responsibility for designing and implementing programs to recycle municipal solid waste. Municipalities typically decide what recyclable materials to collect, how to collect them, who collects them, who processes them, and how to conduct education and outreach programs. Depending on the municipality, funding for a recycling program can come from local taxes, garbage collection fees, sales of recyclable materials, or a combination of these sources. State governments also play a role in recycling efforts. For example, some states require municipalities to offer recycling programs; 11 states have laws requiring deposits on beverage cans and bottles known as "bottle bills"; and several states have passed electronic waste legislation, such as "extended producer responsibility laws" that require manufacturers to offer "take back" programs under which consumers may return computers and other electronic equipment for recycling.

You asked us to (1) identify the key practices that selected U.S. cities are using to increase recycling, (2) describe what EPA and Commerce are doing to encourage recycling nationwide, and (3) identify federal policy options that stakeholders with recycling expertise believe could help increase recycling.

[3]EPA-530-R-06-011.

[4]EPA, *2003-2008 EPA Strategic Plan: Direction for the Future*, EPA-190-R-03-003, (Washington, D.C., Sept. 2003).

[5]Pub. L. No. 94-580.

To conduct this work, we interviewed recycling coordinators in 11 cities across the United States.[6] These cities were selected because they are geographically dispersed and are among the 50 most populous cities in the country. All of the cities have functioning curbside recycling programs, and some of their programs are among the leading ones in the country. In addition, we reviewed laws and regulations, examined EPA-sponsored programs that encourage or facilitate recycling, and interviewed officials from both EPA and Commerce. We also interviewed 13 stakeholders who have professional expertise in recycling issues to help us prioritize federal policy options that could help increase recycling. Finally, we reviewed studies and reports from government agencies, nonprofit organizations, industry associations, and academia, and interviewed officials from federal, state, and local government; industry; and nonprofits, as well as academics and consultants. We conducted our work from January 2006 to December 2006 in accordance with generally accepted government auditing standards.

Results in Brief

Recycling coordinators in selected U.S. cities identified several key practices they use to increase recycling. The three practices they most frequently cited were making recycling convenient and easy for their residents, offering financial incentives for recycling, and conducting public education and outreach. According to most of the coordinators, a convenient, easy-to-use recycling program, which may feature both curbside collection and drop-off locations, weekly service, and free curbside recycling bins, can lead to increased resident participation and higher recycling rates. In addition, several recycling coordinators with whom we spoke believe that providing a financial incentive to recycle is one of the most important features of their recycling programs. For example, in Austin, Texas, residential garbage collection fees are based on the size of the garbage can used. Through recycling, residents can produce less waste, use smaller garbage cans, and thus lower their garbage collection bills. Several recycling coordinators also commented that their public education and outreach programs were important in their efforts to increase recycling. New York City, for example, educates its residents about its recycling program through its Web site, mailings, television commercials, and advertisements on public transportation. In addition to

[6]We interviewed recycling coordinators from Atlanta, Georgia; Austin, Texas; Chicago, Illinois; Denver, Colorado; Jacksonville, Florida; Minneapolis, Minnesota; New York, New York; Philadelphia, Pennsylvania; Portland, Oregon; San Francisco, California; and Seattle, Washington.

these key practices, the recycling coordinators and the recycling literature suggested other practices that could help increase recycling, including (1) targeting a wide range of materials for recycling, such as food scraps and yard trimmings, and (2) extending recycling programs to the commercial sector, such as food establishments and office buildings. According to EPA, food scraps and yard trimmings make up almost a quarter of the municipal solid waste generated in the United States. In addition, a significant portion of the nation's waste is produced by the commercial sector. Although EPA has no recent national data on the proportion of waste generated by the commercial sector as compared with the residential sector, the agency has estimated that 35 to 45 percent of the nation's municipal solid waste was generated by the commercial sector in 1997.

At the national level, EPA administers several programs that develop partnerships or provide grants to help increase recycling, but the agency has not established performance measures or collected comprehensive performance data to help determine what impact these programs are having. Under one of EPA's principal programs—WasteWise—the agency partners with groups such as businesses, nonprofit organizations, and government agencies to help them increase their recycling. For example, EPA promoted a recycling competition on college and university campuses in 2005. However, fiscal year 2007 funding for the WasteWise program will be reduced by about 81 percent based on EPA's fiscal year 2006 budget figures. EPA's Resource Conservation Challenge also operates a grants program that budgeted $500,000 in fiscal year 2006 to support, in part, the efforts of public and nonprofit organizations to increase recycling. In addition to these national efforts, EPA's regional offices conduct various activities, such as hosting forums on recycling best practices, that are designed to augment headquarters' programs. While EPA receives information about the accomplishments of some of its recycling programs, the agency has not established performance measures to help determine the extent to which its programs are contributing to meeting the national recycling goal of 35 percent by 2008. Consequently, it is difficult to know what impact severe budget cuts in fiscal year 2007 to the WasteWise program will have on meeting the national recycling goal. We are recommending that EPA establish performance measures and gather comprehensive performance data on those measures to evaluate the impact of its recycling programs.

For its part, Commerce is conducting limited recycling efforts. According to Commerce officials, the agency currently supports increased international trade in recycled and recyclable materials as part of its

general trade promotion responsibilities. However, Commerce is falling short of meeting its requirements under RCRA to stimulate the development of markets for recycled materials in the United States. For example, Commerce is not identifying the geographical location of existing or potential markets for recycled materials, identifying the economic and technical barriers to the use of recycled materials, or implementing specific measures to encourage the development of new uses for recycled materials in the United States. To fully meet its requirement under RCRA, we are recommending that Commerce develop and implement a strategy to stimulate the development of markets for recycled materials in the United States.

Finally, recycling stakeholders we interviewed identified a variety of federal policy options they believe could help municipalities increase their recycling rates. The federal action most frequently identified as a priority by stakeholders was to establish a nationwide campaign to educate the public about recycling. Some stakeholders commented that such a campaign would help to reinvigorate the recycling movement, and others noted that it might include media advertising as well as in-school education. According to EPA officials, in 2006 the agency selected the National Recycling Coalition to undertake such an effort. The second most cited option was for the Congress to enact a federal bottle bill in which beverage containers could be returned for money. One stakeholder pointed out, for example, that the 11 states that currently have bottle bills report higher recycling rates for beverage containers than states without them. The third most frequently identified policy option was for the federal government to require manufacturers to establish a system that consumers can use to recycle their products, also known as producer "take back" programs. One stakeholder noted that producer take back programs would make it easier for consumers to recycle certain products, and others said that such programs would also help to shift some of the waste disposal burden from local governments to producers and consumers. In addition to these three proposals, interviews with recycling stakeholders and a review of relevant recycling literature revealed other potentially useful policy options. For example, the federal government could facilitate the sharing of recycling best practices among municipalities. Specifically, one stakeholder said that EPA could create and maintain a searchable database or clearinghouse with information on the recycling programs of various communities across the United States. Another option identified by stakeholders would be for the federal government to provide additional grant money for recycling projects. One stakeholder noted that insufficient funding is one of the major obstacles cities face in initiating recycling programs or upgrading existing programs.

We provided draft copies of this report to EPA and Commerce for their review and comment. EPA agreed with our recommendation regarding performance measures and provided technical and editorial comments, which we incorporated as appropriate into the report. Commerce did not directly address our recommendation regarding developing a strategy to stimulate markets for recycled materials in the United States. Rather, Commerce provided a list of ongoing activities that support the agency's mission to promote international trade in goods and services produced in the United States, including trade in recycled and recyclable materials. EPA's comments appear in appendix IV, and Commerce's comments appear in appendix V.

Background

Several states have laws to encourage recycling. For example, 11 states currently encourage the recycling of beverage containers through deposit laws, or bottle bills—California, Connecticut, Delaware, Hawaii, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, and Vermont. Most of these states impose 5-cent deposits on all beverage containers covered by their program; other states impose varying amounts depending on the type of container. Bottle bill states differ in the way that they treat unredeemed deposits. In four states, unredeemed deposits are retained by the state, and in some cases these funds are used to bolster recycling efforts. In six other states, unredeemed deposits are kept by beverage distributors and bottlers, while in Michigan, 75 percent of unredeemed deposits are allocated to the state, with the remaining 25 percent provided to beverage retailers to defray the costs of administering the program. Redemption systems for used beverage containers vary from state to state, but in general, most states allow consumers to return used beverage containers to either retailers or participating redemption centers. In addition to beverage container deposit laws, several states have laws related to the disposal of electronic waste, such as extended producer responsibility laws that require manufacturers to accept used electronic equipment for recycling.

Currently, there are two main sources of information on recycling rates and trends in the United States—EPA and *BioCycle* magazine—both of which publish periodic reports on the subject.[7] In 2004, the most recent

[7]EPA contracts with a private firm, Franklin Associates, Ltd., to produce its report, "Municipal Solid Waste in the United States: Facts and Figures." *BioCycle* publishes "The State of Garbage," a review of nationwide municipal solid waste management in the United States.

year for which EPA and *BioCycle* both produced national recycling estimates, EPA estimated that 31 percent of municipal solid waste was recycled in the United States, while *BioCycle*'s estimate was 29 percent.[8] EPA and *BioCycle* report different rates because of differences in estimation methodologies. EPA's contractor, Franklin Associates, collects data from industry associations, the U.S. Census Bureau, the Department of Commerce, and the glass industry to derive recycling rates for different types of materials. EPA estimates that in 2005, the most recent year estimates are available, 50 percent of paper and paperboard, 22 percent of aluminum, 22 percent of glass, and 6 percent of plastic were recycled in the United States. *BioCycle* estimates state and national recycling rates by surveying each state on the amount of municipal solid waste it generates, recycles, combusts, and sends to landfills; it does not provide estimates of recycling rates of individual materials. Although the EPA and *BioCycle* reports are considered the best available estimates of recycling rates, both have limitations. According to Franklin Associates officials, the industry association data they use may vary in quality and completeness. In addition, *BioCycle*'s study relies on the accuracy of the states' municipal solid waste data, and a *BioCycle* representative noted that the states that choose to submit data have their own methods for collecting this information and that data quality varies.

Municipalities Use a Variety of Practices to Increase Recycling

Recycling coordinators with whom we spoke identified several key practices being used to increase recycling in their cities. The three practices they cited most frequently were making recycling convenient and easy for their residents, offering financial incentives for recycling, and conducting public education and outreach. In addition to these three key practices, recycling coordinators and the recycling literature identified other ways to increase recycling, such as targeting a wide range of materials for recycling, extending recycling programs to the commercial sector, mandating that residents recycle, and targeting multiunit dwellings for recycling.

[8]EPA-530-R-06-011 and Phil Simmons, Nora Goldstein, Scott M. Kaufman, Nickolas J. Themelis, and James Thompson, Jr., "The State of Garbage in America," *BioCycle*, vol. 47, no. 4 (Apr. 2006).

Recycling Coordinators Identified Three Key Practices to Increase Recycling

Most of the local recycling coordinators with whom we spoke said that a convenient, easy-to-use recycling program was the most important recycling practice they use in their efforts to increase recycling. Several of the city recycling programs we examined provide both curbside collection (see fig. 1) and drop-off locations, weekly service on the same day as trash collection, and free curbside recycling bins. An EPA study found that offering curbside and drop-off collection contributed to high recycling rates because the ease of recycling made residents more likely to recycle.[9] In addition, academic studies we reviewed identified curbside collection as a key to increasing the amount of material recycled because of its convenience.[10]

[9]EPA, *Waste Prevention, Recycling and Composting Options: Lessons from 30 Communities*, EPA-530-R-92-015 (Feb. 1994).

[10]David H. Folz, "Municipal Recycling Performance: A Public Sector Environmental Success Story," *Public Administration Review*, vol. 59, no. 4 (July-Aug. 1999) and Morton Barlaz and Daniel Loughlin, "Strengthening Markets for Recyclables: A Worldwide Perspective, Part 1. Policies for Strengthening Recycling in the U.S.," *Environmental Research and Education Foundation* (Raleigh, North Carolina: Nov. 2001).

Figure 1: Curbside Recycling in San Jose, California

Source: Photo by Larry Strong, courtesy of Norcal Waste Systems, Inc.

Further, several of the recycling coordinators with whom we spoke believe that providing a financial incentive to recycle is one of the most important features of their recycling programs. In cities such as Austin, Portland, San Francisco, and Seattle, residential garbage collection fees are based on the size of the garbage can used. Through recycling, residents can produce less waste, use smaller garbage cans, and thus lower their garbage collection bills. Cities such as Minneapolis and Philadelphia offer different types of financial incentives to recycle. Minneapolis residents who actively participate in the city's recycling program through processing, sorting, separating, and bagging their recyclables receive a $7 credit in their monthly garbage bill. In Philadelphia, households selected to participate in a pilot program called "Recycle Bank" can receive up to $25 per month in coupons—based on the weight of their recyclable materials—that can be redeemed at major retailers. Academic studies we reviewed found that charging residents a waste disposal fee based on the

size of their trash container could positively affect the amount of material being recycled.[11]

Recycling coordinators also commented that public education and outreach programs were important in their efforts to increase recycling. All of the recycling coordinators that we interviewed commented that they use mass media to educate the public about recycling. For example, according to its recycling coordinator, New York City provides information about its recycling program through its Web site, mailings, television commercials, and advertisements on public transportation. In addition to outreach activities through mass media, recycling coordinators in Atlanta, Austin, Jacksonville, and Philadelphia said that they offer recycling education programs in their school systems. San Francisco reaches out to its diverse population by distributing instructional recycling brochures written in three languages with pictures of recyclable materials. Academic and EPA studies we reviewed said that public education is correlated with higher recycling rates. For example, an EPA study found that communities with strong recycling programs all used education, publicity, and outreach to promote recycling.[12] In addition, an academic study found that cities that held meetings with neighborhood or community groups on how, when, and where to recycle had higher levels of recycling participation than cities that did not.[13]

Other Practices That Could Increase Recycling

In addition to the three key practices, recycling coordinators and the recycling literature identified other practices that could increase recycling. One such practice is targeting a wide range of materials for recycling. Food scraps and yard trimmings made up almost a quarter of the municipal solid waste generated in the United States in 2005, according to an EPA study.[14] Another EPA study found that collecting and composting

[11]David H. Folz and Jacqueline Giles, "Municipal Experience with Pay as You Throw Policies: Findings from a National Survey," *State and Local Government Review*, vol. 34, no. 2 (2002) and Barlaz and Loughlin, "Strengthening Markets for Recyclables: A Worldwide Perspective, Part 1. Policies for Strengthening Recycling in the U.S."

[12]EPA, *Cutting the Waste Stream in Half: Community Record-Setters Show How*, EPA-530-R-99-013 (June 1999).

[13]David H. Folz and Joseph M. Hazlett, "Public Participation and Recycling Performance: Explaining Program Success," *Public Administration Review*, vol. 51, no. 6 (Nov.-Dec. 1991).

[14]EPA-530-R-06-011.

yard trimmings were key to reaching 50 percent and higher waste reduction levels and doing so cost-effectively.[15] While all of the recycling coordinators with whom we spoke said that their cities collected aluminum, glass, and paper for recycling, and all but one collected plastic, some said that they did not regularly collect biodegradable materials. However, San Francisco's and Seattle's recycling coordinators commented that their cities' programs collect and compost biodegradable materials, such as food discards, yard waste, soiled paper, and wood. The compost made from San Francisco's biodegradable materials is sold to California farms and vineyards. San Francisco's recycling coordinator estimates that the composting program increased the city's recycling rate by 14 percent in 2004. Seattle estimates that composting contributed to increasing its recycling rate by 13 percent in 2003. In addition, recycling coordinators in Atlanta, Austin, and Portland commented that their cities collect residential yard wastes for composting. The advantages of composting include reducing the amount of waste sent to landfills and reducing pollution because less methane gas is produced, according to EPA. EPA has also found that compost can be used to enrich soil, suppress plant diseases and pests, reduce or eliminate the need for chemical fertilizers, and promote higher yields of agricultural crops.

Although EPA has no recent national data on the proportion of waste generated by the commercial sector compared with the residential sector, an EPA report estimated that 35 to 45 percent of the nation's municipal solid waste was generated by the commercial sector in 1997.[16] In addition, the California Integrated Waste Management Board estimated that in 2003 over 60 percent of California's waste disposal came from the commercial sector. An EPA study found that since commercial waste can often constitute a significant portion of municipal solid waste, recycling commercial waste plays an important role in helping communities meet their recycling goals.[17] Some of the recycling coordinators with whom we spoke commented that their cities have made efforts to increase their overall recycling rates by increasing their commercial recycling rates. For example, Portland, Oregon, distributes recycling containers to businesses and, since 1996, requires all businesses to recycle at least 50 percent of

[15]EPA-530-R-99-013.

[16]EPA, *Characterization of Municipal Solid Waste in the United States 1998 Update*, (July 1999).

[17]EPA-530-R-92-015.

their total wastes. A Portland recycling official told us that he believes that this mandatory commercial recycling has helped increase Portland's commercial recycling rate by 4 to 5 percent. New York City requires all businesses to separate recyclable materials from trash and has different recycling requirements for different types of businesses. For example, people in office buildings are required to recycle office paper, newspapers, magazines, and corrugated cardboard, and people in food or beverage establishments are required to recycle metal cans, glass bottles and jars, plastic bottles and jugs, aluminum foil products, and corrugated cardboard.

Mandating residential and commercial recycling is another practice that some cities use in an effort to increase their recycling rates. For example, Seattle and New York City have laws that require residents to recycle. Seattle's haulers are instructed not to collect trash cans that contain 10 percent or more recyclable materials. According to Seattle officials, their city's ordinance mandating recycling has had a positive effect. Six months after Seattle began enforcing this ordinance, city officials announced that approximately 95 percent of the apartments and businesses inspected were recycling correctly and less than 1 percent of household garbage cans were not collected because they contained more than 10 percent of recyclable materials. In addition, New York City officials can fine residents and businesses that mix recyclable materials with their trash. Some of the academic and EPA literature we reviewed also supports the use of mandatory recycling. For example, one academic study found that municipalities with mandatory recycling programs had substantially higher rates of recycling participation than those with voluntary programs.[18] In addition, an EPA report found that encouraging or requiring recycling participation was a key strategy for communities to achieve high residential recycling rates.[19]

Finally, targeting multiunit residential buildings for recycling has potential for increasing recycling. Several of the recycling coordinators said that their cities do not provide curbside recycling services to large, multiunit residential buildings. According to an EPA study, collecting recyclables in multiunit residential buildings poses many challenges.[20] For example,

[18]Barlaz and Loughlin, "Strengthening Markets for Recyclables: A Worldwide Perspective, Part 1. Policies for Strengthening Recycling in the U.S."

[19]EPA-530-R-99-013.

[20]EPA-530-R-92-015.

instead of picking up recyclables from bins on the curbside, the recyclables are often located in the building, which makes it difficult for the haulers to access the recyclable materials. These buildings also may house residents who are more transient than single-unit household residents and thus may be less familiar with the community's recycling program. Despite these difficulties, recycling coordinators in some cities, including Minneapolis, New York City, San Francisco, and Seattle, commented that recycling services are offered to all residential buildings. One study, by a research and consulting firm, found several strategies that could increase recycling in multiunit residential buildings.[21] These strategies include providing economic incentives, requiring recycling plans, and making recycling as convenient as garbage disposal through techniques such as retrofitting building garbage chutes to be recycling compatible. According to an EPA study, cities with a large proportion of residents living in multiunit buildings will have difficulty attaining high recycling rates without targeting these buildings in their recycling programs.[22]

EPA Has Several Recycling Programs, but They Lack Performance Measures; Commerce Is Not Fully Meeting Its RCRA Recycling Requirement

Several EPA programs are designed to increase recycling and help the agency achieve its 2008 national municipal solid waste recycling goal; however, the programs lack performance measures and comprehensive performance data to help determine their impact. Although Commerce is required under RCRA to stimulate the development of markets for recycled materials, it is not taking any actions to do so in the United States. However, the agency supports increased international trade in recycled and recyclable materials as part of its general trade promotion responsibilities.

[21]Lisa A. Skumatz and John Green, "Movin' on Up – Strategies for Increasing Multi-family Recycling," *Skumatz Economic Research Associates*, Research Paper 9989, (Seattle, Washington: Sept. 1999).

[22]EPA-530-R-92-015.

Several EPA Programs Are Designed to Increase Recycling, but They Lack Performance Measures and Comprehensive Performance Data That Would Help Determine Their Impact

To meet RCRA requirements, EPA has established several programs to encourage recycling of municipal solid waste. In 1994, EPA launched WasteWise, one of the agency's primary recycling programs. Under the program, EPA forms voluntary partnerships with businesses, nonprofit organizations, and government agencies to develop plans to prevent waste, increase recycling, and buy or manufacture more recycled-content products. Through WasteWise, EPA has formed partnerships with over 1,600 organizations to reduce and recycle municipal solid waste and certain industrial waste. These partners recycled one million tons of paper in 2004, according to EPA. In 2005, EPA promoted a recycling competition through its WasteWise College and University Campaign. As a result, 47 colleges and universities recycled more than 5,200 tons of materials during a 10-week period. However, fiscal year 2007 funding for WasteWise will be reduced by about 81 percent based on EPA's fiscal year 2006 budget figures.

In 2002, EPA developed an institutional strategy called the Resource Conservation Challenge (RCC) through which it implements WasteWise and its other recycling programs. One of the goals of the RCC is to promote recycling by focusing on three municipal solid waste streams: paper, organic materials, and packaging and containers. The RCC's competitive grants program, launched in fiscal year 2006, budgeted $500,000, in part, for innovative projects that support EPA's efforts to achieve the 35 percent national recycling goal by 2008. For example, in June 2006, the competitive grants program selected the National Recycling Coalition, a nonprofit recycling organization, to help create a national marketing campaign to encourage consumers to recycle.

In addition to EPA headquarters' programs, EPA's regions support the national effort to achieve the municipal solid waste recycling goal. For example, in fiscal years 2003 and 2004, Region 1 provided funds to initiate a food waste collection program in partnership with 54 supermarkets. According to a Region 1 official, 9,000 tons of organic material and 27,000 tons of cardboard are recycled from these supermarkets annually. In fiscal year 2006, Region 3 provided grant funding to the Mid-Atlantic Consortium of Recycling and Economic Development Officials, a nonprofit organization composed of recycling and economic development officials, and to the Institute for Local Self-Reliance, a nonprofit research and educational organization, to promote recycling of two key municipal solid waste streams. Specifically, these organizations developed a workshop on food waste recycling and organized and led stakeholder meetings with paper industry representatives, property owners and managers, and consortium officials to develop a strategy to increase paper recycling. In

fiscal years 2003 and 2005, Region 5 hosted urban recycling forums—to share recycling best practices—for recycling coordinators from large urban areas in Regions 5 and 7.

The Government Performance and Results Act of 1993 established a framework for monitoring and reporting on the performance of federal agencies, including the use of program performance goals and measures. Establishing performance measures and gathering objective information on performance allows organizations to track the progress they are making toward their goals and gives managers crucial information upon which to base decisions, thereby improving program effectiveness. While EPA receives information about the accomplishments of some of its recycling programs, the agency has not established performance measures to help determine the extent to which its programs are contributing to meeting the national recycling goal of 35 percent by 2008. Consequently, it is difficult to know what impact severe budget cuts in fiscal year 2007 to the WasteWise program will have on meeting the national recycling goal. Similarly, EPA's regional offices have implemented recycling programs that support the agency's efforts to increase the national recycling rate. Although officials from headquarters and the regions periodically discuss key accomplishments, EPA does not consistently collect and analyze comprehensive information about the regional programs, such as the types of programs, their funding levels, and their results.

EPA officials told us they use the municipal solid waste characterization report by Franklin Associates—EPA's contractor—to help assess the impact WasteWise and other recycling programs have on the national recycling rate. If the national recycling rate increases, EPA assumes that WasteWise and the agency's other recycling programs are contributing to the increases. We do not believe it is appropriate to make this assumption. Franklin Associates does not have quality control over most of the data it uses in its recycling rate estimates because it must rely on data collected by intermediate sources, such as industry associations. Therefore, changes in the national recycling rate may be attributable to variations in the data collection process. Furthermore, a multitude of factors, such as the actions of state and local governments or the influence of economic forces, may affect national recycling rates. Therefore, under its current assumptions, EPA cannot reliably determine whether changes in the national recycling rate are the result of the agency's programs or the result of other factors. EPA officials told us that they were aware of the limitations of the national recycling rate data and acknowledged that they need to establish performance measures for their recycling programs and then systematically gather data to assess program performance.

Commerce Is Taking No Actions to Stimulate the Development of Markets for Recycled Materials in the United States

While Commerce is taking some actions to stimulate international markets for recycled materials, the agency is not taking any actions to stimulate domestic markets and, therefore, is not fully meeting its responsibilities under RCRA subtitle E. For example, Commerce is not identifying the geographical location of existing or potential markets for recycled materials or the economic and technical barriers to the use of recycled materials in the United States. Moreover, Commerce is not implementing activities to stimulate the development of new uses for recycled materials in the United States.

Nonetheless, according to Commerce officials, the agency supports increased international trade in recycled and recyclable materials as part of its general trade promotion responsibilities. Moreover, Commerce's Director of the Office of Materials and Machinery told us that the agency supports recycling in other ways as well. For example, in 2004, China began requiring scrap metal exporters to obtain a license before shipping their materials to China. Commerce officials intervened with the Chinese government on behalf of the Institute of Scrap Recycling Industries to resolve some of the issues that had surfaced as a result of the licensing requirement.[23]

Stakeholders Identified a Number of Federal Policy Options That Could Help Municipalities Increase Recycling

Recycling stakeholders we interviewed identified various federal policy options that they believe could help municipalities increase their recycling rates. The three policy options cited most frequently as top priorities were to establish a nationwide campaign to educate the public about recycling, enact a federal bottle bill in which beverage containers may be returned for money, and require producers to establish a system that consumers can use to recycle their products. Other policy options for helping municipalities to increase recycling include facilitating the sharing of recycling best practices, expanding EPA research on the economic and environmental benefits of recycling, providing additional grant money for recycling projects, reducing or removing subsidies to industries that extract virgin materials, and providing subsidies to the recycling industry.

[23]The Institute of Scrap Recycling Industries represents over 1,200 companies that process, broker, and consume scrap commodities, including metals, paper, plastics, glass, rubber, electronics, and textiles. It provides education, advocacy, and compliance training, and promotes public awareness of the value and importance of recycling.

Recycling Stakeholders Cited Three Policy Options as Top Priorities for Federal Action

The policy option most frequently identified by stakeholders as a top priority for helping municipalities increase their recycling rates was to establish a nationwide campaign to educate the public about recycling.[24] Some stakeholders who cited this option as a top priority commented that public interest in recycling had waned and a national campaign was needed to reinvigorate the public and help increase the supply of recyclable materials. Furthermore, one stakeholder pointed out that the federal government was best equipped to implement such a campaign given the limited resources of individual states and localities. Another stakeholder, however, doubted the effectiveness of a national recycling campaign. He explained that the information communicated through a national campaign would be too general and said that local educational campaigns would be more effective.

Stakeholders who cited a national recycling campaign as a top priority offered different ideas on how to carry out the campaign. Some stakeholders said that a national recycling campaign should include a widely-visible media component to promote recycling and raise awareness about its benefits. Others noted that an effective campaign might also focus on in-school education for children. Regardless of the campaign's strategy, several stakeholders pointed out that it should communicate a consistent and sustained message to be effective. Most noted that the principal challenge to implementing a successful campaign would be securing funding for this effort.

According to EPA officials, in 2006 the agency selected the National Recycling Coalition (Coalition) to undertake a national recycling education campaign. The goals of the campaign are to substantially increase recycling participation in the United States and increase the national recycling rate to 35 percent by 2008. To develop the campaign, the Coalition intends to match EPA's funding with approximately $380,000 from the private sector. Once the campaign is developed, the Coalition plans to finance it with $5 million per year in funds raised from a diverse group of environmental organizations, commodity trade associations, foundations, government agencies, and consumer-product companies and their trade associations.

[24]See appendix III for a full list of proposals identified by recycling coordinators and evaluated by recycling stakeholders.

The policy option cited second most frequently by stakeholders as a top priority for federal action was to enact a federal bottle bill in which beverage containers may be returned for money. Several stakeholders noted that bottle bills have been effective in the states where they have been implemented. To illustrate this point, one stakeholder cited a 2002 study on beverage container recycling by Businesses and Environmentalists Allied for Recycling,[25] which found that states with deposit laws achieved a beverage container recovery rate of about 72 percent, while states without deposit legislation achieved recovery rates of approximately 28 percent.[26] Another stakeholder cited research indicating that the 11 states with container deposit laws accounted for 55 percent of the national recovery rate for beverage containers with only 29 percent of the population.[27] One stakeholder also observed that bottle bills may complement residential recycling programs by providing an incentive to recycle beverage containers, which may be discarded outside the home, where there are fewer receptacles for recycling. A city recycling coordinator we interviewed argued that by providing a national standard, a federal bottle bill would also help to address the current problem of fraudulent redemption, where containers are transported across state lines from a nondeposit state to a deposit state for redemption.

Stakeholders offered various ideas on how to implement a federal bottle bill. Some explained that the federal government would need to set its deposit amount sufficiently high to provide a measurable incentive for recycling; three individuals specified that 10 cents would be the minimum amount necessary to accomplish this goal. Two of the stakeholders we interviewed emphasized that all unredeemed deposits should be retained by the federal government and be used to fund continued recycling efforts. Stakeholders also noted the potential implications of implementing a retailer-based redemption system. They pointed out that retailers would likely oppose any redemption system that imposed significant additional costs on their operations. To address these concerns, one stakeholder

[25]Businesses and Environmentalists Allied for Recycling, "Understanding Beverage Container Recycling: A Value Chain Assessment prepared for the Multi-Stakeholder Recovery Project," Jan. 2002.

[26]Since the Businesses and Environmentalists Allied for Recycling study was conducted, Hawaii became the 11th U.S. state to pass deposit legislation. Hawaii's law was enacted on June 25, 2002 and was fully implemented on January 1, 2005.

[27]Morris, Jeffrey, "Economic & Environmental Benefits of a Deposit System for Beverage Containers in the State of Washington," Olympia, Washington, Apr. 2005.

suggested that the federal government consider an alternative redemption system. Another recommended some kind of reimbursement system to help defray operational costs incurred by retailers. For example, states with bottle bills generally allow consumers to return their used beverage containers to certified redemption centers in lieu of retailers. In addition, one state sets aside 25 percent of its unredeemed deposits for beverage retailers to defray the operational costs associated with accepting deposits.

Recycling stakeholders we interviewed and literature we reviewed also cited reasons why some oppose bottle bills. One stakeholder said that a bottle bill would not be very effective at helping municipalities to increase their recycling rates because it would only address a small percentage of municipal solid waste—less than 6 percent, according to EPA data—and because communities with curbside programs already collect the same materials covered by a bottle bill.[28] Moreover, some opponents of bottle bills argue that they are more expensive to administer than comprehensive curbside recycling programs, despite often targeting the same materials. The beverage industry and retailers oppose bottle bills because they generate additional administrative costs that they must either absorb or pass on to consumers through higher beverage prices. Higher prices may, in turn, reduce demand for beverages. Opponents of bottle bills also believe that deposit laws penalize city-run curbside recycling programs by siphoning off valuable materials, such as aluminum cans, whose scrap value would help to defray the cost of running a curbside program. In 1990, we reported that while bottle bills impose an additional cost on the beverage industry, they also benefit the environment by reducing litter, conserving energy and natural resources, and diverting solid waste from landfills. We also noted that states with deposit legislation generally found that local curbside systems could coexist with deposit systems.[29]

The policy option identified third most frequently by recycling stakeholders as a top priority was to require manufacturers to establish a system that consumers can use to recycle their products, also known as

[28]EPA-530-R-06-011.

[29]GAO, *Solid Waste: Trade-offs Involved in Beverage Container Deposit Legislation*, GAO/RCED-91-25 (Washington, D.C.: Nov. 14, 1990).

producer "take back" programs.[30] Stakeholders commented that producer take back programs would be most useful for certain products, such as electronics, paint, and carpet, that are difficult to recycle or may contain a high level of toxicity. Those stakeholders that selected producer take back programs as a top priority cited several reasons for their choice. One stakeholder said that take back programs would make it easier for the public to recycle certain products. Others asserted that requiring producers to provide take back programs for their products would motivate them to design products and packaging that can be more easily recycled. Two stakeholders we interviewed noted that requiring producers to provide a system for recycling their products would also ease the financial burden on municipalities by shifting some of the responsibility for waste disposal from local governments to consumers and manufacturers. Moreover, solid waste officials from one state we visited highlighted the importance of establishing a federal standard. Specifically, they pointed out that having a federal standard for electronic waste was preferable to leaving it up to the states, which could result in 50 different standards. We reported a similar conclusion with respect to electronic waste in 2005, when we noted that, in the absence of a federal standard, an emerging patchwork of state policies may place a substantial burden on manufacturers, retailers, and recyclers.[31] Government officials and industry representatives suggested that some oppose mandatory producer take back programs because they can be logistically complicated and may impose additional costs on producers and retailers, which are often passed on to consumers through higher prices.

Several U.S. states have enacted legislation requiring take back programs for certain products. For example, in 2004, Maine passed a law requiring industry to take back and recycle the discarded computer monitors and televisions that municipalities collect.[32] In addition, as of July 2006, California requires that retailers of cell phones collect used products for

[30]Producer take back programs are specific tools for recycling within the broader framework of extended producer responsibility efforts. Extended producer responsibility has been described by the Product Policy Institute as a principle which extends the responsibilities of the manufacturer of the product to various parts of the entire life cycle of the product, and especially to the take back, recycling, and final disposal of the product.

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

[32]2004 Me. Laws 661 (codified at Me. Rev. Stat. Ann. tit. 38, § 1610).

reuse, recycling, or proper disposal.[33] Moreover, according to the Battery Council International, a lead-acid battery trade organization, 37 states currently have laws requiring retailers to take back lead-acid batteries that were used in cars and trucks. Specific companies have also established take back programs for their products. For example, Dell Inc., a manufacturer of personal computers, offers consumers free recycling of Dell products.

EPA is promoting voluntary extended product responsibility programs,[34] such as take back programs, and has identified a number of priority products, including electronics, batteries, and carpet, for which some kind of extended product responsibility action is warranted. EPA has participated in negotiations among government and industry officials to establish extended product responsibility agreements for priority product categories. For example, in 2001, EPA participated in multistakeholder negotiations with state governments, non-governmental organizations, and the carpet industry that resulted in a Memorandum of Understanding for Carpet Stewardship. This agreement established carpet recycling targets and has produced design innovations to make carpets more recyclable. EPA also sponsors the Plug-In To eCycling campaign, which fosters partnerships with industry and state and local governments to make recycling used electronics less expensive and more convenient for consumers. In 2004, Plug-In To eCycling sponsored four pilot projects, all of which involved holding collection events at retailers such as Best Buy, Good Guys, Office Depot, Staples, and Target. Through the Plug-In To eCycling campaign, over 45 million pounds of used consumer electronics have been collected in the United States since 2003. In addition to its national programs, EPA regional offices have also helped to negotiate local take back programs and collection events for electronics.

[33]Cell Phone Recycling Act of 2004, 2004 Cal. Stat. 891 (codified at Cal. Pub. Resources Code §§ 42490-42499).

[34]According to EPA, extended product responsibility calls on all those in the product life cycle—manufacturers, retailers, and disposers—to share responsibility for the environmental impact of products. Extended producer responsibility assigns responsibility to the producer alone.

Several Other Federal Policy Options Could Help Municipalities Increase Recycling

In addition to the top three proposals identified by recycling stakeholders, our interviews with other individuals with recycling expertise, as well as a review of relevant literature, revealed a variety of other federal policy options that could help municipalities increase recycling. One such policy option is for the federal government to develop a mechanism for facilitating the sharing of recycling best practices. One municipal recycling coordinator we interviewed said that his city would benefit from learning about best practices gleaned from other cities' experiences. He suggested that one way of accomplishing this might be through recycling conferences. Another recycling stakeholder recommended that the federal government create and maintain a searchable database or clearinghouse that communities can use to learn about other recycling programs. He noted that, in his capacity as an academic studying local recycling programs, the most common request he receives from local recycling officials is for information on recycling best practices in other communities with like characteristics. To address this need, he said the database could include information on the size of each community; specific details on the features of the community's recycling program; and data associated with each recycling program, such as recycling rates. He also suggested that the database include contact information for each community so that they could follow up with each other and develop extended partnerships. EPA officials acknowledged that the agency has not conducted a comprehensive survey of cities and municipalities to collect information on recycling best practices. However, EPA has identified the need for an online tool kit that communities will be able to access to gather information on recycling best practices. EPA officials said that the tool kit is currently under development and will be reviewed by EPA's local government advisory committee.

Another policy option to help municipalities increase recycling would be to expand federal research on the economic and environmental benefits of recycling. One stakeholder we interviewed said that a study sponsored by EPA has helped cities make a convincing economic argument for starting or expanding recycling programs. However, she explained that the biggest weakness of this research is that it is outdated and needs to be revised to reflect current conditions. According to the same stakeholder, models developed by EPA have also served as useful tools for localities that wish to calculate the environmental benefits accrued by their communities as a result of recycling. In particular, officials from one city noted that EPA's Waste Reduction Model had been helpful to solid waste planners and organizations seeking to estimate greenhouse gas emissions resulting from various solid waste management strategies.

The federal government might also help municipalities increase their recycling rates by providing additional grant funding for recycling projects. In recent years, EPA has provided limited grant funding for recycling pilot projects through selected regional offices. For example, in 2005, EPA's Region 9 awarded the city of Modesto, California, $50,000 to help fund a commercial food composting program. In addition, in 2006, EPA's Region 3 awarded approximately $10,000 to the Central Virginia Waste Management Authority to start recycling programs in 18 schools in the Richmond, Virginia, area. Nonetheless, one stakeholder noted that a lack of funds for staff, equipment, education, and enforcement can prevent or limit local recycling programs. Another stakeholder suggested that the federal government provide states with grant packages that include incentives for meeting certain recycling rates. He noted that the federal government should try to target funds to cities that would not have undertaken recycling programs if not for federal assistance. However, he noted that the principal challenge in implementing this suggestion would be establishing criteria for the distribution of funds, ensuring that the results of the recycling programs are measurable, and making sure that federal funds are not simply substituted for local funds.

Some of the recycling stakeholders and city recycling coordinators we interviewed also suggested that the federal government could help municipalities increase their recycling rates by reducing or removing federal subsidies to industries that extract virgin materials. One stakeholder said that these subsidies cause virgin materials to be cheaper than they would be if the full cost of their extraction was taken into account, and recycled materials struggle to compete as a result. Another stakeholder cited a study published in 1999 by the GrassRoots Recycling Network, a recycling advocacy organization, which found that industries involved in the extraction of virgin materials receive significant annual direct subsidies from the federal government.[35] On the other hand, another stakeholder said that removing subsidies would likely have little measurable impact on the relative prices of virgin versus recycled materials. Therefore, he argued that while removing federal subsidies would provide a greater level of fairness between the recycled materials and virgin materials markets, it would likely have only a minimal impact on the overall demand for recycled materials. Another stakeholder opined

[35]GrassRoots Recycling Network, "Wasting and Recycling in the United States 2000," Apr. 1999.

that reducing or removing federal subsidies was simply politically impractical.

Some recycling stakeholders and city recycling coordinators also identified various forms of federal subsidies or tax incentives as possible policy options for helping municipalities increase their recycling rates. One stakeholder said that the federal government should provide subsidies to industries that process recyclable materials. She explained that subsidies would provide the necessary financial incentive to drive recyclable materials out of the waste stream and increase the supply of these materials available to manufacturers. Another stakeholder said that the federal government should provide incentives to manufacturers who use recycled materials in their products and suggested that such incentives could take the form of a tax credit or accelerated depreciation for recycling equipment. According to EPA, 25 U.S. states currently use some kind of tax incentive or credit to promote recycling market development, with the specific features varying from state to state. However, evidence is mixed as to how effective these incentives have been in increasing recycling. One group of solid waste professionals noted that it is extremely difficult to design these incentives so that they induce new recycling. Instead, the incentives may serve as a windfall for businesses that were already recycling or would have recycled even in the absence of an incentive. As stipulated in the Energy Policy Act of 2005, the Secretary of the Treasury is required to work with the Secretary of Energy to, among other things, identify tax incentives that would encourage the recycling of glass, paper, plastic, steel, aluminum, and electronic devices.[36] The statute requires that the Department of the Treasury and the Department of Energy (DOE) report their findings by August 2006, but, according to Treasury officials, as of November 2006, the agency was just beginning its work and had yet to coordinate with DOE. Treasury officials could not give us a projected date for the study's completion.

One recycling coordinator also noted that the federal government could provide an incentive for recycling simply by clarifying a section of the U.S. tax code that permits municipalities to issue tax-exempt bonds to finance construction of solid waste disposal facilities. Historically, municipalities have often been unable to apply this provision to the construction of materials recovery facilities, where recycled materials are sorted and processed, or other recycling facilities, because recyclable materials

[36]Pub. L. No. 109-58, § 1353 (2005).

generally did not meet the Internal Revenue Service's (IRS) definition of solid waste. In May 2004, the IRS issued a proposed rule to amend the tax code regarding the eligibility of recycling facilities for tax-exempt bond financing. According to an IRS official, the agency hopes to finalize the proposed rule by June 2007.

Conclusions

Despite the ongoing efforts of communities and EPA to increase the amount of materials recycled, the national recycling rate has increased only slightly since 2000. Although EPA has implemented several programs at the national and regional levels to encourage recycling, their effectiveness is unknown. Without performance information to guide its efforts, EPA has no way of knowing the extent to which its resources are being directed toward activities that are of the greatest benefit in helping to achieve the national recycling goal. Additionally, without a commitment by Commerce to actively encourage recycling by stimulating the development of markets for recycled materials in the United States, municipalities may have little incentive to recycle certain materials.

Recommendations for Executive Action

We recommend that the Administrator, EPA, establish performance measures and gather comprehensive performance data to evaluate the impact of EPA's recycling programs to ensure that the agency's available resources are utilized in the most effective and efficient manner.

We also recommend that the Secretary of Commerce develop and implement a strategy to stimulate the development of markets for recycled materials in the United States to fully meet its responsibilities under RCRA subtitle E.

Agency Comments and Our Evaluation

We provided draft copies of this report to EPA and Commerce for their review and comment. Overall, EPA stated that the report was very well written, carefully researched, and clearly argued. EPA agreed with our recommendation to establish performance measures and gather comprehensive performance data to evaluate the impact of its recycling programs. Moreover, EPA stated that during fiscal years 2007 and 2008, the agency intends to develop performance measures for key aspects of its municipal waste reduction program. EPA provided technical and editorial comments, which we incorporated as appropriate into the report. EPA's comments are presented in appendix IV.

According to Commerce, the report properly recognizes the agency's efforts in support of increased international trade in recycled and recyclable materials. However, Commerce did not directly address our recommendation that it develop and implement a strategy to help stimulate the development of markets for recycled materials in the United States. Rather, Commerce submitted a list of ongoing activities that support the agency's mission to promote international trade in goods and services produced in the United States, including trade in recycled and recyclable materials. According to Commerce, promoting international trade in these materials is stimulating the demand for domestic recycling markets to supply foreign buyers. While Commerce is taking some actions to stimulate international markets for recycled materials, the agency is not taking any actions to stimulate domestic markets and, therefore, is not fully meeting its responsibilities under RCRA subtitle E. Commerce's comments are presented in appendix V.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the Administrator of the Environmental Protection Agency, the Secretary of Commerce, appropriate congressional committees, and other interested parties. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov. If you or your staffs have any questions about this report, please contact me at (202) 512-3841 or stephensonj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix VI.

John B. Stephenson
Director, Natural Resources
and Environment

Appendix I: Objectives, Scope, and Methodology

The objectives of this report were to (1) identify the key practices that selected U.S. cities are using to increase recycling, (2) describe what the Environmental Protection Agency (EPA) and the Department of Commerce (Commerce) are doing to encourage recycling nationwide, and (3) identify federal policy options that stakeholders with recycling expertise believe could help increase recycling. For all three objectives, we reviewed recycling studies and reports; visited materials recovery facilities in California, Oregon, and Washington where recycled materials are sorted and processed; and interviewed various recycling stakeholders.

To identify the key practices selected U.S. cities are using to increase recycling, we reviewed studies and reports from government agencies, nonprofit organizations, industry associations, and academia. We identified studies on municipal recycling practices by searching electronic journal databases, including ProQuest and JSTOR, for studies published within the past 20 years using the key term of "recycling." We also obtained references from experts and EPA. In addition, we interviewed officials from federal, state, and local government; industry; and nonprofits, as well as academics and consultants. We conducted structured interviews with recycling coordinators in 11 cities across the United States: Atlanta, Georgia; Austin, Texas; Chicago, Illinois; Denver, Colorado; Jacksonville, Florida; Minneapolis, Minnesota; New York, New York; Philadelphia, Pennsylvania; Portland, Oregon; San Francisco, California; and Seattle, Washington. To ensure that our list of cities included (1) sufficient geographic representation, (2) only cities with functioning curbside recycling programs, and (3) a sample of leading recycling programs, we gathered information on the various U.S. recycling programs during preliminary interviews with various recycling stakeholders and reviewed the recycling literature and EPA reports. In addition to meeting the criteria above, the 11 cities we selected were among the 50 most populous cities in the United States. To help ensure the validity of information obtained from our interviews with city recycling coordinators, we conducted pretests of the interview questions and modified some questions in response to those results. During the structured interviews with the recycling coordinators from the 11 cities, we asked for detailed information about the characteristics of their cities' residential and commercial recycling programs, including the planning processes used to design their recycling program, legal requirements for their recycling programs, and economic and financial incentives their residents and businesses have to recycle. In addition, we asked the coordinators about the types of public outreach used to promote their recycling program, types of recyclable materials collected, and information on who processes their recyclable materials. Finally, we asked

the coordinators what they considered to be the most important program characteristics for increasing recycling and what specific actions the federal government could take to help their cities increase their recycling rates.

To describe what EPA and Commerce are doing to encourage recycling, we reviewed the laws and regulations that establish their responsibilities related to recycling. We also examined EPA-sponsored programs that encourage or facilitate recycling, reviewed agency documentation of their efforts, and interviewed officials from both agencies.

To identify federal policy options that stakeholders believe could help increase recycling, we conducted a second set of structured interviews with 13 stakeholders that have professional expertise in recycling issues. We selected these stakeholders because of their expertise in municipal solid waste or recycling issues at the national, state or local level; to provide broad representation across academia, government, and the private and nonprofit sectors; and to provide broad geographic representation throughout the United States. To ensure that our initial list of stakeholders included individuals with expertise in recycling and represented a range of perspectives on recycling, we first asked two noted recycling experts to review our selections. Both experts agreed that our list was comprehensive. During the structured interviews, we presented the 13 stakeholders with a list of 17 policy proposals that had been identified by the city recycling coordinators and others we interviewed. We asked these stakeholders how effective they thought each of the proposals would be in helping cities and counties to increase their recycling rates. We then asked them to identify the three proposals that they thought the federal government should prioritize in order to be most effective in assisting cities and counties to increase their recycling rates. A complete ranking of these proposals, based on the frequency that each was cited as a top three priority by stakeholders, can be found in appendix III. To gain additional context on each policy option, we also asked stakeholders to describe what features of the proposal led them to consider it to be a top priority for the federal government. Some stakeholders cited specific research studies to justify their selections, and while we include references to these studies in the report, we did not evaluate these studies, and they may not represent the full range of research relevant to each policy option. To supplement information obtained through these structured interviews, we also reviewed reports from government agencies, nonprofit organizations, industry associations, and academia.

We conducted our work from January 2006 to December 2006 in accordance with generally accepted government auditing standards.

Appendix II: Recycling Program Characteristics of Selected U.S. Cities

We conducted structured interviews with recycling coordinators in 11 cities across the United States. This appendix provides a summary of their responses to questions about the characteristics of their recycling programs. Please note that (1) commercial recycling refers to both businesses and institutions; (2) single stream recycling refers to the practice of commingling all recyclables, such as paper, plastic, and glass, in one container for pickup; and (3) while various private recycling programs may exist in cities, the recycling coordinators were asked specifically about city-sponsored recycling programs.

Table 1: Summary of Recycling Program in Atlanta, Georgia

Category	Characteristic
Residential recycling	
Collection point	Curbside and drop-off points.
Materials collected	Aluminum, glass, paper, plastic, tin cans, and yard trimmings.
Single-unit dwellings	Yes
Multiunit dwellings	Yes, for up to three units.
Curbside collection frequency	Weekly
Single-stream curbside collection	Yes
State legal recycling requirements	None
Local legal recycling requirements	$30 annual recycling fee per resident, with exceptions.
Commercial recycling	
City recycling program	None
Materials collected	None
Construction and demolition	No city program.
State legal recycling requirements	None
Local legal recycling requirements	None
Other recycling program features	
City financial incentives to recycle	None
Public outreach efforts	Television, radio, newspaper, billboard, and public transit ads; school programs; and public meetings.
Recycling in public places (e.g., streets, parks, etc.)	None
Recycling goal	26 percent waste reduction from landfills by 2015.

Source: Recycling coordinator in Atlanta, Georgia.

Table 2: Summary of Recycling Program in Austin, Texas

Category	Characteristic
Residential recycling	
Collection point	Curbside
Materials collected	Aluminum, corrugated cardboard, glass, paper, plastic, tin cans, and yard trimmings.
Single-unit dwellings	Yes
Multiunit dwellings	Yes, for up to four units.
Curbside collection frequency	Weekly
Single-stream curbside collection	No
State legal recycling requirements	None
Local legal recycling requirements	None
Commercial recycling	
City recycling program	Voluntary program for small businesses.
Materials collected	Same as residential materials.
Construction and demolition	No city program.
State legal recycling requirements	None
Local legal recycling requirements	None
Other recycling program features	
City financial incentives to recycle	Garbage fee is based on size of the garbage can.
Public outreach efforts	Television, radio, and billboard ads; school programs; and press events.
Recycling in public places (e.g., streets, parks, etc.)	None
Recycling goal	None

Source: Recycling coordinator in Austin, Texas.

Table 3: Summary of Recycling Program in Chicago, Illinois

Category	Characteristic
Residential recycling	
Collection point	Alley and some curbside.
Materials collected	Aluminum, glass, paper, plastic, tin and steel cans, and yard trimmings.
Single-unit dwellings	Yes
Multiunit dwellings	Yes, for up to four units.
Curbside collection frequency	Weekly
Single-stream curbside collection	No
State legal recycling requirements	25 percent recycling goal and mandated local recycling coordinator position.
Local legal recycling requirements	A working recycling program and an annual report on the status of recycling program.
Commercial recycling	
City recycling program	None
Materials collected	None
Construction and demolition	Yes
State legal recycling requirements	None
Local legal recycling requirements	Property managers and building owners must have a recycling program that recycles at least three approved items.
Other recycling program features	
City financial incentives to recycle	None
Public outreach efforts	Television, radio, and billboard ads; school programs; and press events.
Recycling in public places (e.g., streets, parks, etc.)	None, except at special events.
Recycling goal	25 percent.

Source: Recycling coordinator in Chicago, Illinois.

Table 4: Summary of Recycling Program in Denver, Colorado

Category	Characteristic
Residential recycling	
Collection point	Curbside
Materials collected	Aluminum, glass, paper, plastic, steel, Fall leaves, and Christmas trees.
Single-unit dwellings	Yes
Multiunit dwellings	Yes, for up to seven units.
Curbside collection frequency	Every 2 weeks.
Single-stream curbside collection	Yes
State legal recycling requirements	None
Local legal recycling requirements	None
Commercial recycling	
City recycling program	None
Materials collected	None
Construction and demolition	No city program.
State legal recycling requirements	None
Local legal recycling requirements	None
Other recycling program features	
City financial incentives to recycle	None
Public outreach efforts	Television and radio ads, ads on trash trucks, flyers, brochures, Web site, and public meetings.
Recycling in public places (e.g., streets, parks, etc.)	None
Recycling goal	30 percent waste diversion by 2011.

Source: Recycling coordinator in Denver, Colorado.

Table 5: Summary of Recycling Program in Jacksonville, Florida

Category	Characteristic
Residential recycling	
Collection point	Curbside
Materials collected	Aluminum, glass, paper, and plastic.
Single-unit dwellings	Yes
Multiunit dwellings	Yes, for up to 10 units.
Curbside collection frequency	Weekly
Single-stream curbside collection	No
State legal recycling requirements	Cities must offer a recycling program.
Local legal recycling requirements	Residents required to recycle.
Commercial recycling	
City recycling program	None
Materials collected	None
Construction and demolition	No city program.
State legal recycling requirements	None
Local legal recycling requirements	None
Other recycling program features	
City financial incentives to recycle	None
Public outreach efforts	Television and radio ads and school programs.
Recycling in public places (e.g., streets, parks, etc.)	None
Recycling goal	None

Source: Recycling coordinator in Jacksonville, Florida.

Table 6: Summary of Recycling Program in Minneapolis, Minnesota

Category	Characteristic
Residential recycling	
Collection point	Curbside
Materials collected	Aluminum, glass, paper, plastic, and household batteries.
Single-unit dwellings	Yes
Multiunit dwellings	Yes
Curbside collection frequency	Every 2 weeks.
Single-stream curbside collection	No
State legal recycling requirements	None
Local legal recycling requirements	City must offer a recycling program. All yard waste and recyclable materials should be placed in appropriate containers as required and approved by the city engineer. Multiunit building owners must provide recycling for their building.
Commercial recycling	
City recycling program	Yes
Materials collected	Same as residential materials.
Construction and demolition	Yes
State legal recycling requirements	None
Local legal recycling requirements	None
Other recycling program features	
City financial incentives to recycle	$7 credit on monthly garbage bill for households that recycle.
Public outreach efforts	Inserts in utility bills, annual recycling calendars, community events, Web site, and parades.
Recycling in public places (e.g., streets, parks, etc.)	Yes
Recycling goal	Improve on last year's recycling rate.

Source: Recycling coordinator in Minneapolis, Minnesota.

Table 7: Summary of Recycling Program in New York, New York

Category	Characteristic
Residential recycling	
Collection point	Curbside
Materials collected	Aluminum, glass, paper, plastic, tin cans, all scrap metal, and leaves.
Single-unit dwellings	Yes
Multiunit dwellings	Yes
Curbside collection frequency	Weekly
Single-stream curbside collection	No
State legal recycling requirements	Cities must have at least a 10-year solid waste plan and run a recycling program.
Local legal recycling requirements	City must create citizen advisory groups and a recycling program, designate which materials must be recycled, mandate amount of waste that must be recycled, and run a leaf collection program. Residents required to recycle or be subject to fines.
Commercial recycling	
City recycling program	Yes
Materials collected	Varies by businesses. Paper collected from office buildings and beverage containers from food establishments.
Construction and demolition	No city program.
State legal recycling requirements	City must offer businesses a recycling program.
Local legal recycling requirements	Businesses are required to recycle.
Other recycling program features	
City financial incentives to recycle	None
Public outreach efforts	Media, direct mail, Web site, and public transit ads.
Recycling in public places (e.g., streets, parks, etc.)	To be piloted in 2007.
Recycling goal	25 percent by 2007.

Source: Recycling coordinator in New York, New York.

Table 8: Summary of Recycling Program in Philadelphia, Pennsylvania

Category	Characteristic
Residential recycling	
Collection point	Curbside and drop-off.
Materials collected	Aluminum, glass, and paper.
Single-unit dwellings	Yes
Multiunit dwellings	Yes, for up to six units.
Curbside collection frequency	Every 2 weeks for most residences.
Single-stream curbside collection	Implementation began on July 2006.
State legal recycling requirements	25 percent recycling goal, curbside collection program.
Local legal recycling requirements	City must offer residential and commercial recycling program. Residents are required to recycle.
Commercial recycling	
City recycling program	Yes
Materials collected	Same as residential materials.
Construction and demolition	No city program.
State legal recycling requirements	Cities must have commercial recycling program.
Local legal recycling requirements	Businesses must have recycling plan.
Other recycling program features	
City financial incentives to recycle	A pilot program (Recycle Bank) gives each household up to $25 per month in retail coupons based on the weight of each household's recyclables.
Public outreach efforts	Television, radio, and newspaper ads; public meetings, and school programs.
Recycling in public places (e.g., streets, parks, etc.)	Recreation centers.
Recycling goal	35 percent.

Source: Recycling coordinator in Philadelphia, Pennsylvania.

Table 9: Summary of Recycling Program in Portland, Oregon

Category	Characteristic
Residential recycling	
Collection point	Curbside and drop-off.
Materials collected	Aluminum, glass, metals, motor oil, paper, plastic, and yard trimmings.
Single-unit dwellings	Yes
Multiunit dwellings	Yes, for up to five units.
Curbside collection frequency	Weekly
Single-stream curbside collection	No
State legal recycling requirements	Local governments must provide weekly curbside recycling to populations greater than or equal to 4,000. It also specifies which materials must be recycled.
Local legal recycling requirements	Requires curbside recycling and extends the list of items that must be recycled, including yard trimmings.
Commercial recycling	
City recycling program	Yes
Materials collected	Same as residential materials.
Construction and demolition	Yes
State legal recycling requirements	None
Local legal recycling requirements	Businesses must recycle 50 percent of their wastes.
Other recycling program features	
City financial incentives to recycle	Garbage fee is based on size of the garbage can; cash deposit for beverage containers.
Public outreach efforts	Newsletters, radio spots, and bus billboards.
Recycling in public places (e.g., streets, parks, etc.)	None
Recycling goal	75 percent by 2015.

Source: Recycling coordinator in Portland, Oregon.

Table 10: Summary of Recycling Program in San Francisco, California

Category	Characteristic
Residential recycling	
Collection point	Curbside and drop-off.
Materials collected	Aluminum, food scraps, glass, metals, motor oil, paper, plastic, wood, and yard trimmings.
Single-unit dwellings	Yes
Multiunit dwellings	Yes
Curbside collection frequency	Weekly
Single-stream curbside collection	Yes
State legal recycling requirements	Local governments must develop a solid waste management plan, 50 percent diversion rate beginning in 2000 (total for residential and commercial).
Local legal recycling requirements	None
Commercial recycling	
City recycling program	Yes
Materials collected	Aluminum, food scraps, glass, metals, paper, plastic, wood, and yard trimmings.
Construction and demolition	Yes
State legal recycling requirements	Same requirement as under residential category.
Local legal recycling requirements	None
Other recycling program features	
City financial incentives to recycle	Residential disposal fee based on size of the garbage can. Commercial disposal fee based on collection frequency and size of garbage can, recycling container, and composting container, with up to a 75 percent discount based on the amount recycled and composted.
Public outreach efforts	Broad media, bus shelter ads, monthly letter from service provider, and brochures.
Recycling in public places (e.g., streets, parks, etc.)	Yes
Recycling goal	75 percent diversion by 2010; 100 percent diversion by 2020.

Source: Recycling coordinator in San Francisco, California.

Table 11: Summary of Recycling Program in Seattle, Washington

Category	Characteristic
Residential recycling	
Collection point	Curbside and drop-off.
Materials collected	Aluminum, food scraps, compostable paper, glass, metals, paper, cardboard, plastic, wood, and yard trimmings.
Single-unit dwellings	Yes
Multiunit dwellings	Yes
Curbside collection frequency	Every 2 weeks.
Single-stream curbside collection	Dual stream. Glass separated from other recyclables.
State legal recycling requirements	None
Local legal recycling requirements	Glass bottles and jars, paper, aluminum cans, and yard waste can not be disposed of in garbage cans.
Commercial recycling	
City recycling program	Yes
Materials collected	Aluminum, food scraps, paper, and plastic.
Construction and demolition	Yes
State legal recycling requirements	None
Local legal recycling requirements	No paper, cardboard, or yard waste in trash can.
Other recycling program features	
City financial incentives to recycle	Garbage fee is based on size of the garbage can.
Public outreach efforts	Direct mail, television and radio ads, and newsletters.
Recycling in public places (e.g., streets, parks, etc.)	Yes
Recycling goal	60 percent diversion by 2010.

Source: Recycling coordinator in Seattle, Washington.

Appendix III: Federal Policy Options Reviewed by Recycling Stakeholders

We asked the recycling coordinators of 11 U.S. cities what actions the federal government could take to help their cities increase recycling rates. Based on their responses, we compiled a list of 17 policy options. To gather additional detail on each option, we then asked 13 stakeholders with recycling expertise to review the list of proposals and identify the three proposals they believed should be the top priorities for federal action. This table lists the 17 policy options reviewed by recycling stakeholders and shows the number of times each option was cited as a top three priority.

Table 12: Federal Policy Options

Policy option	Number of times cited as a top three priority
Establishing a nationwide campaign to educate the public about recycling.	7
Enacting a federal bottle bill in which beverage containers may be returned for money.	6
Requiring manufacturers to establish a system that consumers can use to recycle their products.	4
Providing additional grant money for recycling projects.	3
Facilitating the sharing of recycling best practices among municipalities.	2
Reducing or removing federal subsidies to industries that extract virgin materials.	2
Expanding EPA research on the economic and environmental benefits of recycling.	2
Requiring manufacturers to use a minimum percentage of recycled materials in their products.	2
Increasing taxes on operators of solid waste landfills.	2
Providing federal subsidies to industries that process recyclable materials.	1
Adopting mandatory national recycling goals for states or municipalities.	1
Providing federal subsidies to businesses that recycle their waste.	1
Expanding federal purchasing guidelines to include a greater number of products or greater percentage of recycled content.	1
Promoting existing markets and creating new markets for recycled materials.	0
Requiring manufacturers to design products that contain a minimum percentage of recyclable materials.	0
Providing federal subsidies to businesses that purchase products made with recycled materials.	0
Mandating that states establish recycling programs.	0

Source: GAO.

Appendix IV: Comments from the Environmental Protection Agency

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

OCT 27 2006

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

Mr. John B. Stephenson
Director
Natural Resources and Environment
Government Accountability Office
Washington, DC 20548

Dear Mr. Stephenson:

This letter provides EPA's comments and responses to the draft report "Recycling - Additional Efforts Could Increase Municipal Recycling." We appreciate your report and the work that lies behind it. We have carefully reviewed the report and find it to be very well written, carefully researched and clearly argued. We have a number of technical and editorial suggestions which are provided in the enclosed document; however, we generally agree with the findings made in this report and with the recommendation that EPA should establish performance measures and gather comprehensive performance data to evaluate the impact of its recycling programs. As mentioned in the Agency's recently published strategic plan, during fiscal year 2007 and through fiscal year 2008, EPA will develop performance measures for key aspects of the municipal waste reduction program.

Thank you for the opportunity to review the draft. If you need additional information, you may contact Lillian Bagus, Director of the Municipal and Industrial Solid Waste Division, Office of Solid Waste, at (703) 308-8474.

Sincerely,

Susan Parker Bodine
Assistant Administrator

Enclosures

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EPA Comments on GAO Draft Report to Congress – Recycling: Additional Efforts Could Increase Municipal Recycling

GAO Recommendation: To ensure that the Agency's available resources are utilized in the most effective and efficient manner, EPA should establish performance measures and gather comprehensive performance data to evaluate the impact of its recycling programs.

EPA's response to GAO's recommendation: EPA agrees with GAO's recommendation. EPA is completing a municipal solid waste (MSW) strategy for addressing specific areas within the MSW universe. As mentioned in the Agency's recently published strategic plan, during fiscal year 2007 and through fiscal year 2008, EPA will develop performance measures for key aspects of the municipal waste reduction program.

General Comment: The report uses 2003 data on MSW generation and recycling at various places in the report. The Agency now has data for 2005. The full report will be released on October 31, 2006. For your reference, we have enclosed a copy of *Municipal Solid Waste In The United States: 2005 Facts and Figures Executive Summary.* We recommend the report be amended to reflect the new data so that it better reflects the country's current generation/recycling status. The following are excerpts from the report:

> *In the United States in 2005, we generated approximately 245.7 million tons of MSW in 2005—a decrease of 1.6 million tons from 2004. Excluding composting, the amount of MSW recycled increased to 58.4 million tons, an increase of 1.2 million tons from 2004. This is a 2 percent increase in the tons recycled. The tons recovered for composting rose slightly to 20.6 million tons in 2005, up from 20.5 million tons in 2004. The recovery rate for recycling (including composting) was 79 million tons or 32.1 percent in 2005, up from 31.4 percent in 2004.*
>
> *MSW generation in 2005 declined to 4.54 pounds per person per day. This is a decrease of 1.5 percent from 2004. The recycling rate in 2005 was 1.46 pounds per person per day. Discards after recycling declined to 3.08 pounds per person per day in 2005.*

Appendix V: Comments from the Department of Commerce

UNITED STATES DEPARTMENT OF COMMERCE
The Deputy Under Secretary for International Trade
Washington, D.C. 20230

OCT 27 2006

Mr. John B. Stephenson
Director, Natural Resources
and Environment
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Stephenson:

Thank you for transmitting the draft report entitled, *Recycling: Additional Efforts Could Increase Municipal Recycling.* The International Trade Administration appreciates the opportunity to review and comment on the draft report.

The draft report properly recognizes the Department's efforts in support of increased international trade in recycled and recyclable materials. As its name implies, the Department's International Trade Administration (ITA) has as its central mission the promotion and liberalization of international trade in goods and services produced in the United States, including trade in recycled and recyclable materials.

We would like to bring to your attention several ongoing activities in support of ITA's mission:

- The Office of Materials and Machinery (OMM) and the Office of Energy and Environmental Industries (OEEI) undertake industry analysis to identify and support policies that help U.S. recyclers, processors, and users of secondary raw materials compete in free and fair markets, and coordinate with other units within ITA to encourage exports of secondary raw materials and recycled goods to foreign markets.
- ITA has played a major role in multilateral trade negotiations that positively affect trade in recyclable materials and goods, such as the Basel Convention on Transboundary Movement and Disposal of Hazardous Wastes. A key outcome of the Department's involvement was ensuring that recyclable secondary raw materials were not unnecessarily listed by the Convention among hazardous materials prohibited from international trade. Further, ITA is active in many multilateral trade initiatives, WTO negotiations, and bilateral FTAs (e.g. CAFTA, Malaysia FTA, Chile FTA) aimed at reducing barriers to the international flow of goods and materials for recycling and recycled products.
- ITA assistance to the U.S. scrap processing industry ensured open access for secondary materials to the Indian and Chinese markets, the two fastest growing markets in the world. Secondary materials are the second largest U.S. export to China, representing a positive trade balance of over $4 billion in 2005, according to the Institute of Scrap Recycling Industries.

- ITA is an active participant in President Bush's Asia Pacific Partnership for Clean Development and Climate (APP), a public-private partnership that seeks to accelerate the development and deployment of clean energy technologies in the six member countries (U.S., Australia, China, India, South Korea, Japan). Current APP work plans include projects to implement activities that utilize cutting-edge commercial technologies, for example the thermal recycling of waste plastics, waste tires, biomass, and other by-products as alternative raw materials in cement production.
- Since July 2005, the Manufacturing and Services (MAS) unit of ITA has a new mandate to promote the domestic competitiveness of U.S. industry. MAS has been working to implement its expanded mandate by offering new services and programs to its private industry and government stakeholders.
- OMM leads a multi-disciplinary team of analysts conducting a regulatory review of the Environmental Protection Agency's Definition of Solid Waste under the Resource Conservation and Recovery Act. The Department's efforts are aimed at facilitating the recovery of more secondary raw materials from "waste" streams.
- By promoting international trade of secondary raw materials and recycled goods, Commerce is stimulating the demand for domestic recycling markets to supply foreign buyers. Whether that demand is realized into actionable recycling programs has historically been determined by municipalities through the adoption of collection programs.

I hope that the GAO will consider this information in the preparation of its final report. If you have any questions, please contact me or David Cammarota, Director of the Office of Materials and Machinery, at 202-482-5157.

Sincerely,

Michelle O'Neill

Appendix VI: GAO Contact and Staff Acknowledgments

GAO Contact

John B. Stephenson, (202) 512-3841 or stephensonj@gao.gov

Staff Acknowledgments

In addition to the contact named above, Stephen D. Secrist, Assistant Director; Leo G. Acosta; Charles W. Bausell, Jr.; Mark A. Braza; Allen T. Chan; Nancy L. Crothers; Cynthia M. Daffron; Drew Lindsey; Gregory A. Marchand; Katherine M. Raheb; Gloria M. Sutton; and Lisa M. Walling made key contributions to this report.

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