Introduction

Advocates of landfills long have argued that a comprehensive recycling system is not an economically viable solution to the increases in municipal solid waste created by a growing population. In this regard, the states of the Southern Legislative Conference (SLC) of The Council of State Governments (CSG) have demonstrated that this presumption is incorrect and that, even in rural areas with low population densities, the jobs, supply chains and manufacturing facilities created by investment and participation in the recycling industry deliver significant, direct economic rewards. With strategically located primary collection points, community education and relatively few tax incentives, SLC states have promoted economic development and allowed local markets to deliver the goods necessary to supply the thriving recycling manufacturing industry of the South and negate the need to import these commodities from outside sources.

Regardless of the fact that economically viable recyclable materials manufacturing can occur anywhere, the proportion of the urban population in the South continues to grow. According to the last census, urban areas comprised 72 percent of the total population of the 15 SLC states. Notwithstanding the Dot-Com Bust of 2000 and the more recent Great Recession, the South has seen exponential urbanization in the past decade of industrial and commercial expansion. The economies of scale offered by these areas with high population con-
centrations provide an even greater opportunity for taking advantage of the savings made possible by diverting a stream of waste toward reprocessing with cost-effective recycling programs. This Regional Resource focuses on the economic analyses of recycling, especially in the SLC states, and the viable solutions that Southern states have realized with regard to the recycling of municipal solid waste (MSW) components. Further, by providing a 15-state compendium of the executive agency programs and legislative actions in the Southern region, this report offers a baseline for interstate comparison.

### Basics of Recycling

Recycling is a process whereby monetary value is added to a recovered material through an extensive collection, separation, and manufacturing system. The primary materials collected for processing, in order of yearly national tonnage, are yard wastes (converted into compost), ferrous metals (sold to scrap metal dealers and steel mills for remanufacturing), paper (used for a number of pulp and paper products), nonferrous metals (sold to, then melted and reused by original manufacturers), glass (sorted, crushed, melted, and sold to glass manufacturers) and plastics (cleaned, melted into pellets, and sold to manufacturers). The focus of this report is the recycling of MSW, for which the increasingly preferred method of collection is the single-stream system, also known as fully commingled recycling, that allows consumers to mix together all recyclables into one container, which then are picked up and separated at a recycling facility by automated and human labor. The final step of the recycling process involves manufacturing, whereby the raw materials are transformed into high value commodities and then sold to third parties that are not specifically involved with the business of recycling (e.g., plastic pellets are sold to manufacturers that make a range of consumer products including furniture, apparel, garden tools, containers, mulch, carpet, among others).

### Creating Value

Essentially, recycling takes what is a product with negative value (the cost of dumping) and transforms it into something with positive value (the price of a reprocessed commodity). Further, recycling businesses, just like any business, create economic activity in the areas of their operations in the form of sales revenues, wages, equipment purchases and property management costs, among others. The latest analysis of the national economic impact of the recycling industry, still widely cited in current publications, is the U.S. Recycling Economic Information (REI) Study commissioned by the National Recycling Coalition, and partly funded by the U.S. Environmental Protection Agency (EPA), published in 2001. This study found that the U.S. recycling industry comprises nearly 30,000 establishments, employs approximately 950,000 workers, pays almost $34 billion in wages, and collects revenues of over $222 billion. For comparison, the state revenues of the entire Southern region in fiscal year 2009 amounted to $194 billion.

**Table 1** Direct Economic Activity of the Recycling Industry

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Collection</th>
<th>Processing</th>
<th>Manufacturing</th>
<th>Industry Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishments (9,247)</td>
<td>12,051</td>
<td>8,047</td>
<td>29,345</td>
<td></td>
</tr>
<tr>
<td>Employment (32,010)</td>
<td>160,865</td>
<td>759,746</td>
<td>952,621</td>
<td></td>
</tr>
<tr>
<td>Annual Payroll ($956,875,000)</td>
<td>$3,826,360,000</td>
<td>$29,181,749,000</td>
<td>$33,964,984,000</td>
<td></td>
</tr>
<tr>
<td>Estimated Receipts ($1,974,516,000)</td>
<td>$41,753,902,000</td>
<td>$178,390,423,000</td>
<td>$222,118,841,000</td>
<td></td>
</tr>
<tr>
<td>Estimated Throughput $191,082,000</td>
<td>191,082,000</td>
<td>157,545,000</td>
<td>N/A b</td>
<td></td>
</tr>
</tbody>
</table>

*In tons.

**Throughput estimates are not summed to avoid triple counting at collection, processing, and manufacturing stages.**


The study also found that recycling establishments generally employ about 33 people and pay them an average salary of $36,000, mainly due to the recycling manu-

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7. The 27,000 establishments operated by the reuse and remanufacturing industry and their impact are not included in these figures, for their focus is on consolidation and refurbishment of products, not raw materials.

8. According to the study, this was approximately $6,000 more than the contemporary national average.
facturing sector, which often requires employees of high skill and training. Recycling manufacturing also employs the greatest number of workers, since the conversion of recovered materials into valuable products favors continuous production and economies of scale, and thus may require three shifts instead of one to process the vast quantities of incoming materials. Public policy that promotes recycling and discourages disposal, as well as investments into collection and processing infrastructure, can yield significant economic activity created by private recyclers with the supply and means to expand their operations. Two final conclusions made by the study regarding the value generated by recycling were: 1) although the amount of MSW disposed is far greater than what is recycled, the recycling industry is much larger than the waste management industry, due to the value-adding nature of recycling processes, and 2) this value extends into state coffers, in the amount of an estimated $3.1 billion in direct revenues, primarily from sales and individual income taxes.

The Missouri Department of Natural Resources, Division of Environmental Quality, recently investigated the economics of recycling and trash disposal. The Division found that the assumptions that are made in order to argue against the cost-effectiveness of a municipal recycling program often are erroneous. For example, with regard to trash pickups, individuals paying for private services may not realize that many of their expenses are subsidized by the government in the form of fees paid to hauling companies, transfer stations, and landfills. In addition, calculations of cost-effectiveness usually are made under the assumption that landfills have an endless supply of space. This computation omits the costs of simple dumping associated with new landfill site location, environmental compliance, land purchase, construction, operation, and long-term maintenance after a site is closed. Further, the money saved by diverting waste (and thereby increasing the long-term availability of a current landfill) often is ignored. The Division also observed that recycling saves energy. For example, the recycling of aluminum cans uses 95 percent less energy than the production of those cans from raw materials. Similar energy savings are created by recycling corrugated cardboard, using 24 percent less energy; glass, at 30 percent less energy; newsprint, requiring 60 percent or less energy; plastic, saving 80 percent of energy needed; and steel, with 74 percent in energy savings. Taking into account these factors, the Division concluded that “recycling does make sense. Using resources wisely is always economical.”

In 1987, New Jersey became the second state ‡ to pass mandatory recycling, making it a legal responsibility of all its citizens. Twelve years later, the New Jersey Department of Environmental Protection, Division of Solid and Hazardous Waste, issued a report on the ongoing solutions for implementing cost-efficient recycling programs. The report found that the best strategy for tracking the costs associated with MSW and recycling programs is the use of full cost accounting while excluding hard-to-measure externalities such as the environmental (pollution, depletion of non-renewable resources, etc.) and social (community image, property values, etc.) costs of landfills.

Full cost accounting, or FCA, tackles the problem of MSW agencies’ exclusion of capital and overhead costs, which underestimates the full cost of landfill service.

‡ Rhode Island was the first in 1986, with the passage of the Rhode Island Recycling Act and later sections on Refuse Disposal and Litter Control and Recycling. However, the state has run into some problems with implementation and still has not attained the 70 percent recycling rate mandated by the effecting legislation and subsequent rules and regulations by the Department of Environmental Management.
With FCA, agencies can enter the long-term costs and values of equipment purchases (capital) and office management (overhead) into their calculations. Instead of looking at these costs as a one-time payment, FCA stretches them over time by calculating depreciation and grouping certain expenditures to come up with a per-year cost for each cost category. In this manner, FCA allows the inclusion of costs associated with siting, designing, and building of landfills, as well as the costs of capping, closure, and post-closure maintenance.

**Figure 1** MSW Recycling Rates in the United States: 1970 to 2008


**Figure 2** Recycling Rates of MSW Materials in the United States: 2008

and monitoring as yearly expenses rather than up-front and residual costs.\textsuperscript{10} Further, this approach recognizes the fundamental concept of economics that all decisions involve trade-offs, including decisions regarding recycling. Thus, when an effective recycling program is in full operation, the amount of MSW disposed by households served decreases, which creates savings by decreasing the time and money needed for the collection of waste destined for landfills. The report concluded that recycling can be cost-effective while also generating indirect economic and environmental benefits, including: conservation of virgin resources; job creation and economic development; extending the life of landfills and incinerators; increased self-sufficiency in solid waste management; energy conservation; greenhouse gas reductions; and increased exports that improve state trade balances.\textsuperscript{11}

Another report by the EPA found that remanufacturing of MSW into valuable raw materials creates jobs, encourages competition in the manufacturing industry, and provides a significant boost to the overall U.S. economy. Further, the jobs created often are within inner city urban areas where it matters the most, providing residents with employment that generally pays them more than the average wage.\textsuperscript{12} Finally, compared to landfill operations, the recycling industry creates five times the number of these higher-than-average jobs.\textsuperscript{13}

### The National Perspective and Regional Highlights

The United States Environmental Protection Agency (EPA) has collected data on waste generation and disposal rates for over 30 years. The most recent numbers, along with supporting data tables and figures, both published in November 2009, depict various measurements of recycling rates in the nation as well as the Southern region in particular. For 2008, the EPA reported some encouraging news for the nation: during the year, “Americans generated about 250 million tons of trash and recycled and composted 83 million tons of this material, equivalent to a 33.2 percent recycling rate,”\textsuperscript{14} up from 33.1 percent in 2007. Another 12.6 percent of MSW was used for combustion with energy recovery while the majority, 54.2 percent, was discarded.

Paradoxically, while the national recycling rate increased, the total amount of MSW recycled decreased, meaning that Americans not only are recycling more, but also generating less waste overall. Figure 1 provides a historical comparison for recycling rates and total amounts of MSW recycled since 1970, whereas Figure 2 illustrates recycling rates of various materials in the MSW stream in 2008 and Figure 3 details rates for specific recyclable consumer products, showing satisfactory levels and those with room for improvement. Tables 2 and 3 present numbers on curbside recycling programs and landfills, respectively.

As illustrated in Figure 2, in 2008, plastics saw the most dismal rates of recycling in the United States. However, this primarily is due to the cost of recovering plastics from durable and nondurable goods other than containers and packaging. If the recycling rate of only plastic containers and packaging is calculated, this rate jumps to 13.3 percent for the nation. Regarding curbside recycling programs, only 30 percent of Americans living in the South were served by these operations, almost half the rate of the national average. Conversely, the Southern region has the second-highest number of landfills in operation. These circumstances offer vast opportunities for improving the current regional status quo, given that

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### Table 2

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Programs</th>
<th>Total Population</th>
<th>Population Served</th>
<th>Percent Served</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>3,299</td>
<td>50,803</td>
<td>42,800</td>
<td>84</td>
</tr>
<tr>
<td>South</td>
<td>797</td>
<td>85,536</td>
<td>25,690</td>
<td>30</td>
</tr>
<tr>
<td>Midwest</td>
<td>3,749</td>
<td>46,579</td>
<td>28,300</td>
<td>61</td>
</tr>
<tr>
<td>West</td>
<td>814</td>
<td>64,620</td>
<td>49,190</td>
<td>76</td>
</tr>
<tr>
<td>Total</td>
<td>8,659</td>
<td>247,538</td>
<td>145,980</td>
<td>59</td>
</tr>
</tbody>
</table>

\textsuperscript{a} The U.S. Environmental Protection Agency demarcations for U.S. regions are similar, but not identical, to those of The Council of State Governments.

\textsuperscript{b} In thousands.

\textsuperscript{c} The total population of the United States in 2008 was approximately 304,060,000 people. The numbers presented and all calculations reflect only the states that reported data to the U.S. Census Bureau.

Figure 3  Recycling Rates of Common Household Products in the United States: 2008


Figure 4  Prices of Newspaper, Cardboard, Office Paper and Mixed Paper in North Carolina: March 2005 – April 2010

the potential for diverting more MSW from the waste stream would be far easier to realize in the South than in areas with more comprehensive services. The findings of these select studies, among others, create a compelling argument for the practicality and cost-effectiveness of statewide recycling programs. The economic development created by recycling activities in each individual Southern state is discussed further in the following chapter.

**The Recycling Commodities Marketplace**

Just like all markets, the market for recyclable commodities experiences price fluctuations in relation to the U.S. and global economies. Thus, with the late 2008 collapse of worldwide financial markets, the repercussions were seen in the drastic downfall of commodity markets, including those for recyclable materials. Following the struggles of the automotive industry, demand for recycled aluminum experienced a substantial decline. Exacerbating the dire market circumstances for recycled plastics, decreased petroleum prices reduced the cost and increased the competitiveness of virgin resins. Finally, prices for recycled paper products suffered the greatest decrease in value; for example, mixed paper started the year valued at $95 per ton and, at the end of 2008, closed out at $5 per ton.

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**Table 3: Landfill Facilities in the United States and Regions**

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Landfills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>134</td>
</tr>
<tr>
<td>South</td>
<td>726</td>
</tr>
<tr>
<td>Midwest</td>
<td>416</td>
</tr>
<tr>
<td>West</td>
<td>846</td>
</tr>
<tr>
<td>Total</td>
<td>2,122</td>
</tr>
</tbody>
</table>

*a* The U.S. Environmental Protection Agency demarcations for U.S. regions are similar, but not identical, to those of The Council of State Governments.

*b* The figure for the West includes 300 landfills operating in Alaska alone, as well as 10 in Hawaii.


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**Figure 5**  
*Prices of Aluminum, PET Plastics and HDPE Plastics in North Carolina: March 2005 - April 2010*

Source: Telephone and e-mail correspondence with Matt Dodd, Recycling Business Development Specialist, North Carolina Department of Environmental and Natural Resources, January 26, 2010; "pricing trends for recyclables" (Recycling Business Assistance Center, North Carolina Department of Environmental and Natural Resources), http://www.p2pays.org/rbac/pricing_trends.html.
In essence, within a two week period in November 2008, prices for recyclables plummeted from their artificially inflated levels to historic lows. However, following this precipitous drop, prices have continued to climb toward more lucrative and sustainable levels. The Recycling Business and Assistance Center (RBAC), a partnership between North Carolina’s Department of Environment and Natural Resources (NCDENR) and the state Department of Commerce, tracks market prices for recyclables in the state and issues quarterly updates for historical comparison. Although the prices are state-specific, they are closely comparable to the prices of these materials on a Southern regional average.\textsuperscript{18}

**Public Perceptions regarding Recycling in the South**

At least two states of the SLC have conducted or commissioned surveys that gauged public perceptions of MSW recycling. Both survey reports indicate that convenience is generally the major factor affecting public recycling behavior and attitudes. For example, in 2004, the Missouri Department of Natural Resources commissioned Cluff, Inc. to conduct a survey on public opinions regarding solid waste management. Opinions about recycling also were thoroughly queried and published in the final report. According to the survey results, 74 percent of Missourians stated that they do recycle, with most (65 percent) taking their materials to a drop-off collection point and about one-quarter (26 percent) utilizing curbside collection services. Of the respondents stating they do not recycle, the main reason given (by 35 percent) was the lack of a recycling center or knowledge of a recycling center. The effort needed for recycling, inconvenience and time investment also played a significant role in the respondents’ choice (by 33 percent) not to recycle. However, of all the non-recyclers, 40 percent stated that greater accessibility and convenience (more and closer recycling centers, curbside collection and free recycling bins) would motivate them to start recycling. Finally, when asked about disposal and cleanup responsibilities, 66 percent of respondents strongly or moderately agreed that manufacturers should share in the responsibility of recycling or disposing of their products.\textsuperscript{19}

In 2006, the South Carolina Department of Health and Environmental Control commissioned a study addressing public perceptions regarding recycling in the state. In order to measure general opinions, a public telephone survey was conducted by MarketSearch Corporation between December 2006 and January 2007. The final report noted that approximately 70 percent of the South Carolina population recycles, with most (54 percent) taking their materials to a local recycling center. The study also found that curbside collection plays a significant role in the recycling behavior of state residents: of the respondents who answered that they do not recycle, only one in 10 had curbside collection available. Further, over half of non-recyclers attributed the lack of facilities or information to the cause of their behavior. In this regard, an overwhelming majority (83 percent) of all consumers agreed that state and local governments should do more to encourage recycling in South Carolina.\textsuperscript{20}

**Methodology**

The greater portion of information in this report was collected through online research, with some additional correspondence with employees in agencies overseeing statewide recycling programs and publications. This reliance on electronic data could be the reason for a lack of information on recycling for some Southern states. However, for these states, additional inquiries were made of environmental and waste management agencies in an attempt to gather further information.

**Scope and Limitations**

This report provides details on state agency programs and legislative actions that relate to recycling in the 15 states that comprise the SLC. Furthermore, reports issued by state authorities that specifically address waste minimization and/or recycling were reviewed and summarized. State agency programs include: state employee recycling programs, grants, material-specific recycling (e.g., waste tires and mercury), educational initiatives, public-private partnerships, online resources, waste exchange programs, market development, and others. Alternatively, except for North Carolina, Southern states’ Pollution Prevention (P2) programs were not extensively reviewed, since most of these programs focus on hazardous waste rather than MSW management systems. Further, for the sake of brevity and due to the semi-autonomous nature of these institutions, programs created by state universities and colleges also are not included in this report. Sections on legislative accomplishments refer to acts that have been passed between 2006 and 2009; if background information for these recent actions is required, then historical legislation is provided.
Recycling in the SLC States

Compared to other CSG regions, the South has lagged in the development of sustainable, effective recycling programs. Economically speaking, this deficiency has thwarted expansion in the market for Southern recycling companies. For example, in Alabama, KW Plastics is only able to collect about 185 tons of high-density polyethylene (HDPE) plastics, such as milk containers, annually from sources within the state. This amount keeps the plant running for one day of the entire year, meaning that most resources must be imported from other states and even from overseas, thereby increasing the cost of running the facility. In a similar vein, the SP Newsprint Company operates a paper mill in Dublin, Georgia, that converts more than 750,000 tons of recycled fiber each year to make recycled newprint. Due to a shortage of local supplies, the company must import quality tonnage from outside the Southern region in order to meet their production needs. If SLC states were able to provide more materials for processing, it would afford these companies, and many others like them, greater profits and opportunities to expand their operations.

A recent report on the economics of recycling in the South recognized that the industry creates jobs, saves money, stays in the region (i.e., does not outsource its operations to overseas locations), generates tax revenues and fosters economic development. Some states in the SLC have conducted studies to measure the effects and rates of recycling within their territories. It is important to note that the figures from the reports generated cannot be practically compared nationally or among states, due to the different standards that various studies used for calculating their respective numbers. However, studies conducted by the same research group, such as those by R.W. Beck, Inc. for the United States, Florida and Georgia, and studies that attempt to replicate their methodology, such as the Missouri Recycling Economic Information Study, offer more potential for accurate comparisons.

Alabama

The Department of Economic and Community Affairs (ADECA) and the Department of Environmental Management (ADEM) both have taken the initiative for the administration of statewide recycling programs in Alabama. Recently, ADECA found that the state’s recycling industry employs about 2,200 workers, and the Department supports the expansion of this foundation through providing technical assistance to local governments seeking to start or expand their own programs.

Legislative Accomplishments

In 2008, the Alabama Legislature passed the Solid Wastes & Recyclable Materials Management Act, which then was signed into law by Governor Riley. The Act created the basis for a statewide system for recycling and solid waste management, as well as directed ADEM to adopt minimum recycling and waste management standards. Further, the Act placed a $1 per ton fee on waste disposed into Alabama landfills, thereby incentivizing the use of other approaches. In May 2009, Chief Gavin Adams of the ADEM Materials Management Section presented revenue estimates for the disposal fee at $3.4 million for solid waste regulation, education, and outreach; $1.9 million for the establishment and expansion of local recycling programs; $1.9 million for the cleanup of unauthorized dumps; and $400,000 for landfill operators and the Department of Revenue. Thus, one-quarter of the collected revenues are deposited into the Alabama Recycling Fund, providing grant money for new recycling and waste minimization initiatives to cities, counties and non-profit organizations within the state. As of late 2009, ADEM had awarded grants to eight localities totaling over $1.2 million for programs ranging from new recycling centers and drop-off points, to expansion of existing recycling programs, to education and outreach.
Arkansas

According to the most recent recycling report by the Department of Environmental Quality (ADEQ), in fiscal year 2008, Arkansas’s overall recycling rate rose to 44.6 percent, an increase of 2.5 percent from the previous reported rate. However, during the same time period, overall waste generation increased by almost 9 percent, from 5 million to 5.4 million tons annually, while the state population increased by only 1 percent. Table 4 provides further details on the amounts of materials recycled in Arkansas.

In addition to the annual recycling report, ADEQ is in charge of the management of several recycling grants and programs within the state. For example, in fiscal year 2008, the Department distributed 139 grants totaling over $3.5 million under the Recycling Grants Program to cities, counties, and solid waste authorities for planning expenditures, equipment purchases, education and awareness programs, and transfer stations. Also, ADEQ offers a waste sort service to local communities and businesses to determine the kinds of waste they generate and identify opportunities for exchange, reuse, and recycling while reducing waste and increasing efficiency.

The Market Development Branch of the ADEQ administers the state’s Recycling Equipment Tax Credit Program, established in 1993, which allows state income tax credits of up to 30 percent for recycling equipment purchases. In fiscal year 2008, ADEQ approved 69 income tax credits providing $27.9 million in savings to Arkansas’s recycling industry. The Arkansas Marketing Board for Recyclables is tasked with identifying recycling markets within the state and the surrounding region. Recently, the Board completed the most comprehensive list of regional recycling markets to date, and has made this information available to the public through an online database. The Board also assists state entities and businesses in recyclables marketing and fosters partnerships with recycling-related industries.

LEGISLATIVE ACCOMPLISHMENTS

In 2001, the General Assembly passed the Arkansas Computer and Electronic Solid Waste Management Act, effectively banning the disposal of electronic waste in landfills within the state by 2005, while providing a funding mechanism for a long-term approach to electronic waste management. In 2005, due to issues in funding and existing infrastructure, the deadline given by the previous legislation was deemed impractical and, with Act 970, was amended to the beginning of 2010. For 2007, the legislative session shaped the passing of Act 512, which diverted greater funding levels to the Solid Waste Management and Recycling Fund to provide further support for the state electronics recycling program. With these supplemental funds, ADEQ was able to distribute $168,769 to 13 electronics recycling projects for fiscal year 2008 in addition to the rewards distributed under the Recycling Grants Program. Nonetheless, in late 2009, the ADEQ announced that it will postpone the ban on electronic waste disposal into landfills until it finds a new way to fund an electronics recycling program.

Table 4 Arkansas Recycling: Fiscal Year 2008

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount Recycled</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car Batteries</td>
<td>3,420</td>
<td>0.1</td>
</tr>
<tr>
<td>Electronic Waste</td>
<td>2,996</td>
<td>0.1</td>
</tr>
<tr>
<td>Glass</td>
<td>2,389</td>
<td>0.1</td>
</tr>
<tr>
<td>Household Hazardous Waste</td>
<td>8</td>
<td>0.0</td>
</tr>
<tr>
<td>Metals</td>
<td>1,077,070</td>
<td>44.3</td>
</tr>
<tr>
<td>Oil</td>
<td>110,965</td>
<td>4.6</td>
</tr>
<tr>
<td>Paper</td>
<td>314,695</td>
<td>12.9</td>
</tr>
<tr>
<td>Plastic</td>
<td>55,189</td>
<td>2.3</td>
</tr>
<tr>
<td>Textiles and Leather</td>
<td>685</td>
<td>0.0</td>
</tr>
<tr>
<td>Tires and Rubber</td>
<td>40,073</td>
<td>1.6</td>
</tr>
<tr>
<td>Wood Waste</td>
<td>493,895</td>
<td>20.3</td>
</tr>
<tr>
<td>Yard Waste</td>
<td>331,263</td>
<td>13.6</td>
</tr>
<tr>
<td>Total</td>
<td>2,432,648</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* In tons.

† In 2007, the Arkansas General Assembly passed, and Governor Mike Beebe signed, a nonbinding resolution to have all future official government documents use Arkansas’s as the possessive form of the state’s name. As a professional courtesy, the official form is reflected within this report.

† A previous deal with UNICOR, a federal government corporation that employs prison inmate labor to produce goods and services, fell through over issues with shipping costs.

A working group of public and private industry representatives was assigned to examine the issue and subsequently voiced concerns over the adoption of an extended producer responsibility program and advance recycling fees. As of June 9, 2010, no date had been set for the electronic waste landfill ban, although individual landfills have adopted such a ban at their facilities.15

Florida

The Department of Environmental Protection (DEP) administers and tracks recycling and waste reduction programs within the state. For example, the DEP oversees the Innovative Recycling and Waste Reduction Grants program, allowing Florida counties to compete for funds to create and expand local recycling initiatives. Further, the Small County Consolidated Grants program, for counties with less than 100,000 residents, equally distributes awards for solid waste management and recycling programs.16 Finally, the Florida Recycling Loan Program, a partnership between DEP and Florida First Capital Finance Corporation, provides long-term loans of up to $200,000 and interest rates 2 percent below Prime to qualifying for-profit small businesses for the purchase of recycling equipment and machinery. To date, the program has loaned over $1.3 million to Florida recycling companies.17

In 2000, the DEP commissioned R. W. Beck, Inc. to conduct the comprehensive Florida Recycling Economic Information (REI) Study, later incorporated into the national REI study results. R. W. Beck, Inc. found that, one decade ago, Florida hosted over 1,100 recycling establishments that employed over 20,000 workers, with $567 million in total annual payroll, and generated $3.34 billion in estimated receipts. Recyclable material wholesalers (constituting 21 percent of the total recycling industry workforce), pulp mills (16 percent) and plastic converters (14 percent) made up the majority of these businesses. On average, each recycling establishment employed 18 workers who each earned a $28,000 yearly salary. For comparison, the report noted that fast food restaurants in Florida employed about eight times more workers than the recycling industry, while their workers still earned about 10 percent less in total pay-roll. The report also noted that, due to the greater revenues generated by recycling manufacturing, state and local laws that promote the collection of recycled materials and discourage disposal directly increase the economic activity of private sector establishments. Finally, the study estimated government tax revenues generated by the recycling industry at approximately $46.3 million for the study period.18 Table 5 provides details on these collections.

**LEGISLATIVE ACCOMPLISHMENTS**

Most recently, the Legislature passed the Energy, Climate Change and Economic Security Act of 2008, subsequently signed by Governor Charlie Crist, creating the statewide goal of a 75 percent recycling rate by the year 2020. According to the most recent data published by the DEP, Florida’s current overall recycling rate stands at 28.7 percent. Table 6 provides further figures for the recycling rates of various materials in the state. About 83 percent of Florida residents currently have access to recycling services which, although a better rate than other states in the region, also presents a challenge to achieving the goal.19

The Act also directed DEP to prepare a report on how to reach the 75 percent recycling rate, to be presented to the Legislature no later than January 1, 2010.20 In compliance, the report submitted by DEP Secretary Michael Sole outlines the many successes and shortcomings of recycling initiatives in Florida and offers several strategies for increasing the state recycling rate by an estimated total of 87.5 percent. Most significantly, the report recognized the importance of commercial sector participation in recycling, especially since this sector contributed 67 percent to the total MSW collected in Florida in 2007, while recycling at a rate of only 30 percent. In Florida counties, mandatory commercial recycling ordinances have increased recycling rates in the local sector to 53 percent, while saving individual businesses up to $2,300 annually. According to the report, a similar state mandate could add 31 percent to the statewide recycling

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**Table 5**

<table>
<thead>
<tr>
<th>Collection</th>
<th>$6,360,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing</td>
<td>$12,230,000</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$27,700,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$46,290,000</strong></td>
</tr>
</tbody>
</table>

rate while creating savings with decreased disposal costs. The plan also explored construction and demolition debris recycling (for a potential recycling rate increase of 12 percent), government leadership by example (effective recycling programs in state-operated buildings could add 1.5 percent to the statewide recycling rate), Pay-As-You-Throw (PAYT)* residential waste disposal programs, and single-stream recycling as strategies for maximum effect on the recycling rate.²¹

**Georgia**

Recycling programs in Georgia are financed by the Solid Waste Trust Fund (SWTF), originally created by the General Assembly in 1990 and sustained by a $1 fee on new tire purchases, legislatively implemented in 1992. The Fund finances numerous waste management programs in the state, with waste reduction and recycling projects receiving the largest portion (30 percent between fiscal years 2007 and 2008). In order of the greatest proceeds, the yearly appropriations from the SWTF are distributed for programs administered by Department of Community Affairs (DCA); Department of Natural Resources (DNR), Environmental Protection Division (EPD); Georgia Environmental Facilities Authority (GEFA); DNR, Wildlife Resource Division (WRD); and Georgia Department of Corrections (GDC). In previous years, the Pollution Prevention Assistance Division (P2AD) of DNR received appropriations for their operations as well.²²

The DCA operates several recycling initiatives in the state. For example, the Away From Home Recycling Program, which provides equipment for recycling at sporting events, festivals and other special venues, collected 14 tons of recyclable materials in fiscal year 2008 by collaborating with local governments for recycling options at 180 events around the state.²³ A report by the Department of Natural Resources’ EPD noted that the initiative was the first of its kind and has become a nationally recognized model for other states.²⁴ Also in fiscal year 2008, DCA provided $2.2 million in funding (matched with over $8 million by private sector partners and local governments)²⁵ for four Regional Hubs to continue the installation of a statewide network of collection points for commingled recyclables, with the purpose of reducing transportation and processing costs, increasing the availability of recycling opportunities for residents, and augmenting the supply of recovered materials for local recycling industries.²⁶ The DCA estimates a 185 percent increase in the recycling rate of impacted communities and a return on investment in less than three years.²⁷

The state of Georgia generates about 8 million scrap tires annually, most of which are recycled due to the

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### Table 6: Municipal Solid Waste Collected and Recycled in Florida: 2007

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount Collected a</th>
<th>Amount Recycled a</th>
<th>Percent Recycled</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process Fuels</strong> b</td>
<td>N/A</td>
<td>546,281</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Ferrous Materials</strong></td>
<td>2,919,690</td>
<td>1,985,773</td>
<td>68.0</td>
</tr>
<tr>
<td><strong>White Goods</strong></td>
<td>497,406</td>
<td>275,561</td>
<td>55.4</td>
</tr>
<tr>
<td><strong>Special Wastes</strong> c</td>
<td>3,649,505</td>
<td>1,900,738</td>
<td>52.1</td>
</tr>
<tr>
<td><strong>Corrugated Paper</strong></td>
<td>2,828,120</td>
<td>1,183,770</td>
<td>41.9</td>
</tr>
<tr>
<td><strong>Nonferrous Metals</strong></td>
<td>796,643</td>
<td>330,984</td>
<td>41.5</td>
</tr>
<tr>
<td><strong>Newspapers</strong></td>
<td>1,534,890</td>
<td>583,281</td>
<td>38.0</td>
</tr>
<tr>
<td><strong>Yard Trash</strong></td>
<td>3,649,505</td>
<td>1,354,457</td>
<td>37.1</td>
</tr>
<tr>
<td><strong>Construction and Demolition Debris</strong></td>
<td>8,038,948</td>
<td>2,141,384</td>
<td>26.6</td>
</tr>
<tr>
<td><strong>Steel Cans</strong></td>
<td>292,688</td>
<td>52,075</td>
<td>17.8</td>
</tr>
<tr>
<td><strong>Glass</strong></td>
<td>763,012</td>
<td>125,836</td>
<td>16.5</td>
</tr>
<tr>
<td><strong>Aluminum Cans</strong></td>
<td>215,031</td>
<td>35,400</td>
<td>16.5</td>
</tr>
<tr>
<td><strong>Tires</strong></td>
<td>319,746</td>
<td>46,791</td>
<td>14.6</td>
</tr>
<tr>
<td><strong>Office Paper</strong></td>
<td>956,182</td>
<td>136,658</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Plastic Bottles</strong></td>
<td>502,384</td>
<td>56,914</td>
<td>11.3</td>
</tr>
<tr>
<td><strong>Other Paper</strong></td>
<td>2,510,134</td>
<td>240,666</td>
<td>9.6</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td>2,656,641</td>
<td>91,154</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>Textiles</strong></td>
<td>953,962</td>
<td>28,812</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Other Plastics</strong></td>
<td>1,204,202</td>
<td>29,365</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Food Wastes</strong></td>
<td>1,687,985</td>
<td>22,912</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Total MSW</strong></td>
<td>32,327,172</td>
<td>9,268,080</td>
<td>28.7</td>
</tr>
</tbody>
</table>

---

*PAYT programs, incentive systems that manage residential waste disposal charges like those for any other utility, as well as single-stream (commingled) recyclable materials collection, are discussed in greater detail in the following chapter.

*PAYT programs, incentive systems that manage residential waste disposal charges like those for any other utility, as well as single-stream (commingled) recyclable materials collection, are discussed in greater detail in the following chapter.

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²¹ Pay-As-You-Throw (PAYT) residential waste disposal programs. The tonnage utilized in this category is subtracted from others.

²² Special wastes are not included in the total MSW figures.

Source: “2007 Solid Waste Annual Report Data” (Florida Department of Environmental Protection), [http://www.dep.state.fl.us/waste/categories/recycling/SWreportdata/07_data.htm](http://www.dep.state.fl.us/waste/categories/recycling/SWreportdata/07_data.htm).
constant vigilance of the EPD. About 85 percent of recycled tires are used to produce tire-derived fuel, with 10 percent used in septic drain fields and the remaining 5 percent converted into crumb rubber stock. In fiscal year 2002, EPD developed and offered the Innovative Technology Grant for local governments that invented new markets for this constant supply of rubber. As a result, the city of Milan was awarded $2.4 million to construct a facility for manufacturing rubber mat products from reprocessed waste tires with the capacity to convert up to 6 million pounds of ground rubber annually. As of January 2008, a total of $3.3 million had been awarded to localities and state agencies pursuing alternative markets for scrap tires.

The Recycling and Waste Reduction (RWR) competitive grant program, administered by GEFA, reimburses local governments for programs that promote recycling, waste minimization, composting, and other innovative initiatives. Since 1996, RWR has financed 269 projects with more than $11 million, providing a variety of benefits including: improvements in recycling efficiency and capacity; greater waste diversion rates; lower landfill tipping fees; private sector investments; and higher local revenues.

Table 7: Estimated Value of Common Recyclables Disposed in Georgia

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount Landfilled per Year</th>
<th>Market Price</th>
<th>Estimated Value as Recyclables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
<td>322,001</td>
<td>$80</td>
<td>$25,760,080</td>
</tr>
<tr>
<td>Corrugated Cardboard</td>
<td>733,866</td>
<td>$80</td>
<td>$58,709,280</td>
</tr>
<tr>
<td>Aluminum</td>
<td>48,148</td>
<td>$1,200</td>
<td>$57,777,600</td>
</tr>
<tr>
<td>Clear Glass</td>
<td>112,492</td>
<td>$30</td>
<td>$3,374,760</td>
</tr>
<tr>
<td>Brown Glass</td>
<td>79,405</td>
<td>$15</td>
<td>$1,191,075</td>
</tr>
<tr>
<td>PET Plastics</td>
<td>89,577</td>
<td>$440</td>
<td>$39,413,880</td>
</tr>
<tr>
<td>HDPE Plastics</td>
<td>73,460</td>
<td>$500</td>
<td>$36,730,000</td>
</tr>
<tr>
<td>Total</td>
<td>1,458,949</td>
<td>N/A</td>
<td>$222,956,675</td>
</tr>
</tbody>
</table>

*In tons.  
$/ton.


In 2006, DCA, DNR, and GEFA, working in conjunction with R.W. Beck, Inc., developed and adopted the Solid Waste Management Plan of Georgia. Recycling programs were given strong consideration, and the agencies estimated that Georgia could generate $223 million per year by recycling common household materials that currently are disposed into state landfills. Table 7 provides further details on these estimates. In a more recent presentation by the DCA, the numbers were estimated at 2.6 million tons of recyclables for over $300 million of potential market value. The document also noted that Georgia has a strong existing market for recyclable materials, but the manufacturing facilities currently must import most of their supply, thus increasing operating costs and reducing the competitiveness of these businesses.

LEGISLATIVE ACCOMPLISHMENTS

Due to overwhelming problems with in-state landfill capacity, the General Assembly passed the landmark Georgia Comprehensive Solid Waste Management Act of 1990, signed into law by the governor. In 1992, an estimated 3 million scrap tires, about two-thirds of all scrap tires in the state, caught fire in Palmetto, Georgia, Georgia mills comprise about 8 percent, or 2.7 million tons, of total United States recovered paper consumption; one-third of all PET beverage container recycling in North America is done in Georgia; the executive office of Novelis, the world leader in aluminum rolling and recycler of about 36 billion aluminum cans annually, is located in Atlanta, Georgia, and operates a plant in Greensboro that must import most of its aluminum; and, finally, Georgia hosts two glass manufacturing facilities that process recycled glass.
and burned for weeks, filling the local air with black smoke and contaminating the water supply with pyrolytic oil. The federal Environmental Protection Agency responded with $2 million to fund fire extinguishing and cleanup, supplemented with $2.5 million from the Georgia EPD, though to date the site and local water resources still remain contaminated. This environmental disaster prompted the General Assembly to amend the Act with the addition of a section on the Georgia Solid Waste Trust Fund, sustained with a $1 per tire fee on all new tires purchased in state, to finance multiple recycling projects and initiatives.\textsuperscript{36,37,38} The General Assembly has extended the collection of the fee three times since its inception to the current termination date of June 20, 2011.\textsuperscript{39} A report by DNR noted that the state’s solid waste legislation has not been significantly revised since the early 1990s and identified some current statewide challenges: an unusually high per capita MSW disposal rate; particularly low recycling rate; increasing out-of-state waste imports; incomplete accounting of landfill costs (i.e., cash-based, rather than full cost accounting, or FCA);\textsuperscript{*} increases in litter; and insufficient funding.\textsuperscript{40}

\section*{Kentucky}

The Department for Environmental Protection’s Division of Waste Management (DWM), Recycling and Local Assistance Branch (RLA) oversees most of the recycling programs within the commonwealth. The finances for most operations are provided by the Kentucky Pride Fund,\textsuperscript{†} with revenue generated by a $1.75 per ton environmental remediation fee on waste disposed at Kentucky landfills.\textsuperscript{41} The RLA also operates the Kentucky Recycling and Marketing Assistance (KRMA) program, assisting the development of local recycling centers. In addition, RLA provides information to businesses and communities on the market conditions for recyclables and maintains a listing of companies related to the industry, also made publicly available.

The Waste Tire Trust Fund, established by the General Assembly in 1998, provides financing for the Waste Tire Amnesty Program, as well as Crumb Rubber Grants. The tire program allows constituents to drop off old tires for free at various county collection points throughout the year. Originally designed as a one-time offer, the program was so successful that the General Assembly chose in 2002 to continue the program, facilitating the collection and recycling of more than 16.5 million waste tires.\textsuperscript{42,43} The grants program, on the other hand, provides 75 percent in matching funds for schools and communities that use crumb rubber for athletic fields, playgrounds and other applications.\textsuperscript{44} In 2008, this program awarded $994,133 for 36 school playgrounds and five athletic fields, among other projects.\textsuperscript{45}

The DWM also runs a state government office paper recycling program for 115 government agencies in the commonwealth capital. In 2008, the program collected 1,781 tons of recyclable office and computer paper, newsprint and cardboard;\textsuperscript{46} employees separate materials at their workspace and place them into separate collection containers at a central office location. The program recovers approximately $154 per ton of paper recycled and currently operates at no cost to taxpayers, supporting seven full-time staff positions in 2008.

\begin{table}[h]
\centering
\caption{Waste Generation and MSW Recycling in Kentucky: 2004-2008}
\begin{tabular}{|c|cc|cc|cc|cc|}
\hline
Year & MSW Landfilled \textsuperscript{a} & MSW Landfilled \textsuperscript{b} & Total MSW Landfilled \textsuperscript{b} & Total MSW Diverted \textsuperscript{a} & Total MSW Collected \textsuperscript{a} & Recycling Rate \\
\hline
2004 & 4,259,181 & 217,761 & 4,476,942 & 1,237,294 & 5,714,236 & 21.65\% \\
2005 & 4,493,499 & 191,923 & 4,685,422 & 1,429,490 & 6,114,912 & 23.38\% \\
2006 & 4,636,351 & 193,948 & 4,830,299 & 1,626,778 & 6,457,078 & 25.19\% \\
2007 & 4,500,843 & 299,852 & 4,800,695 & 2,005,249 & 6,805,944 & 29.46\% \\
2008 & 4,273,781 & 248,408 & 4,522,189 & 2,395,819 & 6,918,008 & 34.63\% \\
\hline
\end{tabular}
\begin{flushleft}
\textsuperscript{a} In tons.
\end{flushleft}
\begin{flushleft}
Source: Telephone and e-mail correspondence with William M. Hill, Environmental Scientist II, Division of Waste Management, Department for Environmental Protection, January 28, 2010.
\end{flushleft}
\end{table}

\textsuperscript{*} A cash-based system fails to include long-term costs of landfills, such as site selection and post-closure maintenance; see previous chapter for more details on full cost accounting (FCA).

\textsuperscript{†} See Legislative Accomplishments section for details.
with $356,000 of revenue generated from the sale of the commodities collected. Finally, the Division offers a free sensitive document destruction service to agencies in Frankfort.\textsuperscript{47,48}

The Kentucky Division of Waste Management Annual Report offers yearly updates on the state of recycling. Among the achievements for fiscal year 2009, the report noted that the Kentucky recycling rate for common household recyclables increased to 34.6 percent in 2008, up from 29.5 percent in 2007. Table 8 provides further details regarding waste generation and MSW recycling in Kentucky. Recent statistics on recycling, presented at the September 2009 Governor’s Conference on the Environment, demonstrate that Kentucky hosts 86 recycling reclamation facilities employing 7,418 workers,\textsuperscript{49} with Logan Aluminum in Russellville as the largest employer, providing 1,030 jobs to the surrounding region.\textsuperscript{50}

**LEGISLATIVE ACCOMPLISHMENTS**

In 2002, the General Assembly enacted House Bill 174, establishing the Kentucky Pride Fund and environmental remediation fee (ERF) of $1.75 per ton of waste disposed into landfills, which generates about $10 million in revenue per year. Further, the bill required commercial waste collection services to register with counties and, beginning in March 1, 2004, report statistics on the amount of waste collected, landfilled, and diverted from the waste stream. Finally, although the fund originally was intended for cleaning illegal open dumps and litter abatement activities, a portion of the revenue was directed toward recycling programs and household hazardous waste management grants with the enactment of Senate Bill 50 of 2006.\textsuperscript{51} As of 2008, the Kentucky Pride Fund has provided recycling grants for 57 local governments, solid waste management districts, schools and universities totaling $3.9 million.\textsuperscript{52,53}

Also in 2008, the General Assembly adopted a resolution directing the Energy and Environment Cabinet to conduct a study on the prospects of commonwealth-wide electronic scrap recycling.\textsuperscript{54} This report, submitted to the Legislative Research Commission in December 2008, recommended that the General Assembly adopt moderate electronic waste reporting and recycling standards, including extended producer responsibility for electronic products sold in the commonwealth, recycler certification programs, an eventual ban on the disposal of electronic waste into landfills, and authorization to collect fees for administrative costs of electronic recycling programs.\textsuperscript{55}

**Louisiana**

On a state level, recycling in Louisiana is overseen by the Department of Environmental Quality (LDEQ). In June 2006, most staff members of the Litter Abatement and Recycling Program were reassigned to other duties.\textsuperscript{56} Thus, most state-level programs have been discontinued. The Department does provide information regarding recycling at their website, such as a state listing of recyclers and recycling services providers and guides for independent recycling projects, and through workshops open to the public.\textsuperscript{57}

In its most recent annual report, LDEQ determined that landfill capacities are adequate for state needs. Further, the Department noted that parishes and municipalities ultimately are responsible for recycling and waste reduction programs; oversight of recycling markets and products; and the submission of statistics and progress reports to LDEQ each year.\textsuperscript{58}

**LEGISLATIVE ACCOMPLISHMENTS**

In the past four years, the Legislature has not passed legislation addressing recycling issues.

**Mississippi**

The Mississippi Department of Environmental Quality (MDEQ) is largely responsible for the management of state recycling programs. For example, the Department regulates the Beneficial Use Program, enabled by MDEQ regulations adopted in 2005, which creates opportunities for industries interested in recycling byproducts. Previously, these materials were considered solid waste, but with the program, they are directed away from landfills toward a more efficient purpose. Primarily, combustion ash from coal-fired power plants undergoes the most collection and reapplication: in 2006 alone, approximately 175,000 tons of recycled coal ash was used in road and highway construction, with another 85,000 tons utilized in concrete production. In addition, as of 2008, MDEQ has permitted nine facilities to use industrial byproducts, mostly sludge, as a soil amendment or conditioner.\textsuperscript{59}

The Department also awards several state grants with revenue generated by a $1 per ton landfill disposal fee, two of which fund recycling initiatives. The first, Solid
Waste Assistance Grants, provides competitive and non-competitive grants to Mississippi cities, counties, solid waste authorities and other entities for various solid waste management and planning projects, including the establishment of local recycling programs and public education initiatives regarding recycling. Many of the comprehensive local waste management plans created with grant funding include a mechanism for MDEQ review of proposals for new landfills or other disposal sites, thus preventing a proliferation of in-state landfills. In fiscal year 2008, the total amount awarded through this grant program was $2,066 million.

The second, Incentive Recycling and Research Grants, provides financing to research institutions, private recycling companies, cities, counties and solid waste authorities for waste tire recycling equipment and product development. In fiscal year 2008, 15 grants totaling $697,900 were awarded to local governments for these purposes. According to the most recent report by MDEQ, Mississippi Waste Tire Management Program: 2007 Annual Report, the recycling rate for all waste tires collected and processed in the state was approximately 95 percent for that year. Notably, the disablement of a southern Mississippi tire recycling facility by Hurricane Katrina has created a significant increase in the number of tires exported out of state, a setback that the MDEQ is seeking to address.

Additionally, the Department maintains the informational Electronic Waste Program and the Recycling and Solid Waste Reduction Program. The latter collaborates with state and local governments; commercial, industrial and military facilities; educational and medical institutions; and the general public in pursuit of increased awareness and education addressing recycling and solid waste reduction.

Since a 2006 legislative enactment, MDEQ prepares an annual comprehensive report to the Legislature on the status of recycling and pollution prevention in Mississippi. Of note, the most recent 2007 report indicated that, between 2000 and 2006, the amount of solid waste generated and disposed in Mississippi increased by 26 percent, or over 585,000 tons, while the state population increased by only 2.3 percent. Although Hurricane Katrina caused a sizable portion of the increase, 2004 disposal rates from before the disaster still reflect an increase of 7.6 percent from the year 2000.

Further, a survey conducted by the Department found that local governments provide residential recycling options to 1.3 million people, less than half of Mississippi residents, and indicated household participation rates ranging from 2 percent to 15 percent for drop-off programs and from 15 percent to 40 percent for curbside collection programs. On a more positive note, the state’s agricultural industry has the second highest agro-chemical container recycling rate in the nation, recycling about 347 tons in 2006. More specific recycling rates on common household materials are not available, as the reporting of these numbers is not required by the state.

**LEGISLATIVE ACCOMPLISHMENTS**

In 2004, the Legislature passed House Bill 818, creating the State Task Force on Recycling. The main purpose of the Task Force is the development of a comprehensive plan for the collection and processing of common household recyclables, as well as assistance and coordination for an effective statewide recycling system. The first Task Force consisted of 13 government and related industry representatives, supplemented by six governor appointees, and was required to deliver their findings to the Legislature by December 31, 2004. Of note, the final Report to the Mississippi Legislature by the State Task Force on Recycling estimated the statewide recycling rate at between 12 percent and 16 percent, although the calculation was mostly speculative due to the lack of reporting requirements for recycling activities. On the other hand, the document identified economic benefits bestowed by recycling to Wayne County in particular, a rural county in southeast Mississippi. With the support of local officials and state grant funding, the County recycled 107.5 tons of material, actually generating a profit of $7,161.15 and saving $3,977.50 in landfill disposal costs. Finally, the 2004 Task Force noted that a number of state agencies had failed to implement a comprehensive recycling program as required by the Mississippi Multimedia Pollution Prevention Act of 1990. After a thorough review of recycling, the Task Force established several recommendations for the Legislature, including:

» Developing a system for measuring and reporting recycling activities in the state, to be integrated into the annual report for local solid waste management plans;

*Of the Southern states that do require reporting of recycling activities, the numbers usually are generated at no cost to the state simply by requiring all commercial recyclers to collect the data.
Providing additional resources for the development and implementation of local recycling programs;

Providing more assistance to local governments for finding federal, non-profit and private funding sources for their recycling activities;

Taking further action to ensure that all state agencies adhere to the recycling requirements of the Mississippi Multimedia Prevention Act of 1990;

Providing recycling market assistance for local governments and industries;

Establishing liability protection and financial assistance for recycling collectors and processors;

Increasing state focus on purchases of recycled-content products, with individual agency goals; and

Performing further research into the feasibility of extended producer responsibility.†

In 2006, the Legislature passed House Bill 896, requiring further industry research by the Task Force, with the assistance of the Mississippi Development Authority (MDA) and MDEQ. With similar membership as in 2004, the Task Force was to submit a comprehensive report on the recycling industry due to the Legislature by December 31, 2006. House Bill 896 also incorporated some of the recommendations made in the previous Task Force report to the Legislature, including: providing technical assistance to recycling businesses; giving priority to recycling projects when awarding solid waste assistance grants; publishing an annual report on statewide recycling, prepared by MDEQ; recruiting and promoting activities for recycling industries and markets; and developing a waste minimization awareness curriculum for elementary and middle schools by the Department of Education. The report published by the 2006 Task Force, A Review of the Recycling Industry and the Recyclable Materials Markets in the State of Mississippi, reiterated some of the previous recommendations, but also made some new ones specifically addressing the expansion of recycling industries in the state. These recommendations included:

Amending the Mississippi statutes to remove an unfair burden on scrap vehicle recyclers by requiring owners to clear the title of their vehicle before selling it to a processor;

Creating grant funds that are awarded specifically to local recycling projects;

Reviewing and considering an electronic waste recycling program;

Establishing tax incentive programs and sales tax reductions for recycling businesses; and

Conducting comprehensive studies of plastic manufacturing companies in the state and new developments in the use of recyclable materials highway and road construction.

The report concluded that, if the “state is interested in creating and maintaining long-term sustainable markets, then Mississippi must ensure there is a consistent and continuous infrastructure and leadership in place” in order to compete in a globalized economy.69

House Bill 708 of 2008 required the Department of Finance and Administration (DFA) to create a report of Mississippi-based companies manufacturing recycled-content products. The report was to include contact information for each company as well as a listing of their recycled-content products and recommended usages. Further, the bill directed the DFA to negotiate the prices for these products and encourage state agencies and subdivisions to acquire supplies from these vendors.70 As of March 2, 2010, the DFA has not prepared the report. However, it did post a request for proposal allowing companies to submit their information, but has not received any submittals from manufacturers as of the aforementioned date.71

In 2009, following the recommendations of the 2006 Task Force, the Legislature adopted Senate Bill 2796, creating a study committee tasked with the development of a plan for Recycling and Asset Disposition (READ) Services to state agencies. Essentially, this service would allow the agencies and state institutions to effectively dispose of obsolete electronic inventory while ensuring data security and maximizing the benefits from the use, sale and/or recycling of the items. Further, the Legislature

†Extended producer responsibility is discussed to a greater extent in the Conclusion.
required reporting on a statewide plan for solid waste management, specifically addressing electronic waste. The final report to the Legislature by the READ study committee, Recommendations to the Office of the Governor and the Mississippi Legislature on the Recycling Electronic and Asset Disposition (READ) Services, noted that most obsolete electronics of state agencies currently are sent to the DFA Office of Surplus Property or sold at a local surplus auction. In this regard, the Committee found that the most effective strategy for maximizing the efficiency of state government electronics recycling would be making relatively minor changes to the implementation of already existing policies. However, the Committee also recommended that the governor and the Legislature consider the benefits (such as the economy of scale) of mandating that all public agencies dispose of obsolete electronics through the DFA or a statewide recycling contract. Also, if a recycling contract is developed, local governments should be allowed to use the services under the same terms as the state.\textsuperscript{72}

**Missouri**

Missouri has an abundance of different entities working toward and around recycling initiatives, with responsibilities distributed to the Department of Natural Resources (DNR), Office of Administration (OA) and others. Within the DNR, the Environmental Improvement and Energy Resources Authority (EIERA) serves as one financing mechanism for recycling projects. A quasi-governmental agency established in 1972, the main purpose of the EIERA has evolved to providing financial assistance for energy and environment projects, conducting research and promoting economic development. Since its inception, the Authority has taken a one-time appropriation of $225,000 and turned it into $7 billion in financing and over $4 million in projects, research, technical assistance and education, with income generated exclusively from financing fees, grant income and interest on funds.\textsuperscript{73} An example of a project funded by the EIERA is the construction of the first glasphalt airport runway in the nation at the Rolla Downtown Airport in Rolla, Missouri. In other states, this mixture of glass and asphalt generally is used for paving streets and parking lots, but with $150,000 of EIERA funding, Ozark River Environmental, Inc. utilized 400 tons of recycled glass to demonstrate its additional utility as a more reflective and visible material for airport runways.\textsuperscript{74}

In 2004, a comprehensive analysis of the recycling industry in Missouri was commissioned by the EIERA. The research closely paralleled the methodology used by R. W. Beck, Inc. for the 2001 U.S. REI Study and the resulting publication, Missouri Recycling Economic Information Study, provided another microcosmic perspective to the national picture. The researchers calculated that a conservative estimate for the annual direct effects of the recycling industry on the Missouri economy included: operation of 871 establishments; employment of almost 25,000 workers with approximately $675 million in salaries; and generation of about $5 billion in sales revenues.\textsuperscript{75} Table 9 provides further details on these figures.

The Authority also administers the Missouri Market Development Program, which provides a number of services for the recycling industry. Information services come in the form of consultations on resource location, market conditions, product development, among other issues; workshops and presentations on recycled-content products;\textsuperscript{76} a directory of recycled-content products sold in Missouri;\textsuperscript{76} and the Missouri Directory of Markets for Recovered Materials, which provides outlets for materials collected and manufactured by the industry.\textsuperscript{77} In addition, the EIERA provides financial assistance of up to $50,000 for businesses investing in equipment and machinery for recyclables processing or recycled-content product manufacturing, as well as technical assistance such as website design, fiscal and market analysis, business planning, tech-

\textsuperscript{74}As with the REI figures in the *Introduction*, numbers provided for the reuse and remanufacturing sector are not included here.

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Collection</th>
<th>Processing</th>
<th>Manufacturing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishments</td>
<td>199</td>
<td>358</td>
<td>314</td>
<td>871</td>
</tr>
<tr>
<td>Sales</td>
<td>$21,392,000</td>
<td>$2,548,167,000</td>
<td>$2,434,264,000</td>
<td>$5,003,823,000</td>
</tr>
<tr>
<td>Payroll</td>
<td>$14,777,000</td>
<td>$184,414,000</td>
<td>$475,510,000</td>
<td>$674,701,000</td>
</tr>
<tr>
<td>Employees</td>
<td>547</td>
<td>6,248</td>
<td>17,962</td>
<td>24,757</td>
</tr>
</tbody>
</table>

technology demonstrations, project evaluation, among other services.\textsuperscript{78,79} In 2007, the Market Development Program provided $426,000 in financial assistance to businesses and $65,000 for technical assistance projects.\textsuperscript{80}

The Missouri Revised Statutes require that the OA submit an Annual Recycling Report to the Legislature that summarizes state progress in recycling, waste reduction and purchasing of recycled-content products. Within the report for fiscal year 2009, the OA reviewed the legislatively created Missouri State Recycling Program (MSRP), which facilitates recycled-content product purchasing by state agencies; coordinates waste reduction strategies; and oversees state recycling contracts and the logistics of collection.\textsuperscript{81} Since state employees are ultimately responsible for the success or failure of the MSRP, the Missouri Interagency Recycling Committee (MIRC), composed of representatives from all state departments and offices, as well as the judicial and legislative branches, communicates the recycling policies for all employees and the programs that are available to them.\textsuperscript{82}

Comprehensive in nature, the MSRP provides recycling services and contracts for common paper products and containers as well as computer electronics, rechargeable batteries, fluorescent and incandescent lamps and ballasts, styrofoam, ink cartridges, media products (CDs, DVDs, videotapes, etc.), and confidential records destruction.\textsuperscript{83} The 7,480 tons of materials recycled in fiscal year 2009 by state agencies avoided at least $317,900 in waste disposal costs; utilization of the contract for ink cartridge remanufacturing saved the state an additional $220,474.\textsuperscript{84} The Program also administers recycling contracts for state agencies located in Jefferson City and Kansas City. Although state agency recycling in Kansas City plummeted between fiscal years 2008 and 2009,

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount Disposed (2007)\textsuperscript{a}</th>
<th>Amount Disposed (2006)\textsuperscript{a}</th>
<th>Value (2006)\textsuperscript{b}</th>
<th>Value Wasted (2006)</th>
<th>Cost to Landfill (2006)\textsuperscript{c}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardboard</td>
<td>304,226</td>
<td>220,013</td>
<td>82.00</td>
<td>$18,041,066</td>
<td>$8,917,127</td>
</tr>
<tr>
<td>Newsprint (#6)\textsuperscript{d}</td>
<td>95,787</td>
<td>69,283</td>
<td>57.00</td>
<td>$3,949,152</td>
<td>$2,808,055</td>
</tr>
<tr>
<td>Newsprint (#8)\textsuperscript{d}</td>
<td>95,787</td>
<td>69,283</td>
<td>83.50</td>
<td>$5,785,162</td>
<td>$2,808,055</td>
</tr>
<tr>
<td>Magazines</td>
<td>136,202</td>
<td>98,249</td>
<td>59.50</td>
<td>$5,845,818</td>
<td>$3,982,034</td>
</tr>
<tr>
<td>High Grade Paper</td>
<td>237,398</td>
<td>171,587</td>
<td>137.00</td>
<td>$23,507,379</td>
<td>$6,954,409</td>
</tr>
<tr>
<td>Mixed Paper\textsuperscript{d}</td>
<td>265,084</td>
<td>191,565</td>
<td>59.50</td>
<td>$11,398,139</td>
<td>$7,764,144</td>
</tr>
<tr>
<td>Clear Glass</td>
<td>100,560</td>
<td>72,797</td>
<td>27.50</td>
<td>$2,001,920</td>
<td>$2,950,466</td>
</tr>
<tr>
<td>Brown Glass</td>
<td>65,555</td>
<td>47,480</td>
<td>16.00</td>
<td>$759,685</td>
<td>$1,924,376</td>
</tr>
<tr>
<td>Green Glass</td>
<td>23,549</td>
<td>16,848</td>
<td>7.50</td>
<td>$126,359</td>
<td>$682,843</td>
</tr>
<tr>
<td>Aluminum Cans</td>
<td>59,190</td>
<td>42,615</td>
<td>1,750.00</td>
<td>$74,576,477</td>
<td>$1,727,191</td>
</tr>
<tr>
<td>Steel Cans</td>
<td>108,834</td>
<td>78,698</td>
<td>194.50</td>
<td>$15,305,828</td>
<td>$3,189,644</td>
</tr>
<tr>
<td>PET (#1 Plastics)</td>
<td>94,195</td>
<td>68,292</td>
<td>292.00</td>
<td>$19,941,358</td>
<td>$2,767,888</td>
</tr>
<tr>
<td>Clear HDPE (#2 Plastics)\textsuperscript{d}</td>
<td>49,453</td>
<td>35,601</td>
<td>600.00</td>
<td>$21,360,721</td>
<td>$1,422,917</td>
</tr>
<tr>
<td>Colored HDPE (#2 Plastics)\textsuperscript{d}</td>
<td>21,194</td>
<td>15,258</td>
<td>348.00</td>
<td>$5,309,665</td>
<td>$618,393</td>
</tr>
<tr>
<td>Totals</td>
<td>1,657,013</td>
<td>1,197,569</td>
<td>N/A</td>
<td>$207,908,729</td>
<td>$48,517,542</td>
</tr>
</tbody>
</table>

\textsuperscript{a} In tons.
\textsuperscript{b} $/ton.
\textsuperscript{c} The cost to landfill is calculated by multiplying the amount of material generated by the state average tipping fee, or $40.53.
\textsuperscript{d} The 2007 report made certain estimates regarding the marketable portions of newspaper, mixed paper and HDPE (#2 Plastics). For the sake of consistency, the numbers from the 2008 report have been adjusted in the same manner.

Sources: Midwest Assistance Program, Inc., \textit{The 2006-2007 Missouri Municipal Solid Waste Composition Study} (Missouri Department of Natural Resources, 2007), 22; Midwest Assistance Program, Inc., \textit{The 2008 Missouri Waste Composition Study} (Missouri Department of Natural Resources, 2009), 40.
the 927 tons of materials recycled in fiscal year 2009 through the Jefferson City contract generated an appreciable $72,910 in revenue for the State Recycling Fund. The Missouri Revised Statutes require that excess revenues generated by the sale of recyclables be transferred to the Heating Assistance Program of the Department of Social Services, which provides financial assistance to low-income Missourians. In fiscal year 2009, $30,000 of the $130,100 MSRP revenues was transferred for this purpose, helping approximately 150 households stay warm the following winter. In an effort to promote recycling by state employees, MSRP also assists state agencies with recycled-content product purchasing, each year, recognizes one individual and one agency for outstanding accomplishments in recycling and waste reduction with the Annual Recycling Award.

Waste composition studies are contracted annually by the DNR Solid Waste Management Program. The report, issued in 2007, estimated that 1.2 million tons of recyclable materials with a total value of $208 million are disposed into landfills in Missouri each year. Table 10 provides further details on these figures for 2006 and 2007. However, in the Missouri Waste Diversion Status Report for Calendar Year 2007, the DNR Solid Waste Management Program reported that, of the 12.8 million tons of waste generated in that year, 46 percent was diverted from landfills, shedding more positive light for comparison to the figures on landfill waste composition. Also, between 2006 and 2007, the statewide annual per capita disposal rate dropped from 1.22 tons per person to 1.18 tons per person.

The Department also administers two grant programs that promote recycling to some degree. Annual Solid Waste Management District Grants are awarded to the 20 districts created by Senate Bill 530 of 1990, which in turn reassign at least half of the funds toward recycling and waste diversion initiatives. Scrap Tire Surfacing Material Grants reimburse up to $20,000 for schools, parks, non-profits and governmental organizations for the cost and delivery of scrap tire surface material at playgrounds, running tracks, walking tracks or other projects. As of 2009, about $1.6 million has been awarded to 289 entities for the utilization of 9,925 tons of recycled tires. In addition to grants, the Department provides various information services, such as public instructions for composting organic materials and how to dispose of items banned from landfills, as well as lists for recycling drop-off collection sites, among other resources.

Regarding electronic waste, in February 2006, DNR initiated the Electronic Scrap Stakeholder Workgroup in order to develop best practices for managing electronic waste, determine the steps necessary to implement these strategies and encourage sustainable economic development in the Missouri electronics industry. As a product of this Workgroup, the Missouri E-cycling Standards (MOEST) were created, providing best practices for electronics recyclers and demanufacturers. The Workgroup also developed a voluntary registration program for facilities that collect and process electronic waste. Four levels of registration represent the extent of MOEST adopted by each participating business, which is then entered into the Department’s Computer/Electronics Recycling List and made available to the public so that individuals can choose a recycler that best meets their needs.

**LEGISLATIVE ACCOMPLISHMENTS**

The most significant state legislation addressing recycling was passed in the early 1990s. Since then, subsequent legislation has mainly focused on the extension of the policies created. For example, Senate Bill 426 of 1999 extended the 50-cent per tire fee on all new tire purchases, used for scrap tire recycling, education and cleanup programs, until January 1, 2004. In 2003 and 2004, bills to extend the fee again were introduced, but none passed the Legislature. On March 11, 2005, an illegal tire dump in Polk County caught fire; 750,000 tires were left to burn out over several months after firefighers and volunteers unsuccessfully attempted to extinguish the flames. Later that year, the passage of Senate Bill 225 reinstated the 50-cent per tire fee, set to expire on January 1, 2010. The bill also placed a fee on sales of lead-acid batteries, adjusted the distribution of state solid waste management funds, changed the membership of the solid waste advisory board, and modified various sections pertaining to hazardous waste.

In 2008, the Legislature passed Senate Bill 720, requiring that computer manufacturers set up recovery plans and appropriate labeling for the collection and subsequent recycling or reuse of the obsolete equipment. Before a manufacturer could continue selling their computers in the state, they had to implement and submit a plan for the recycling service to the DNR. The DNR...
was directed to educate the public regarding the electronics recycling and reuse options available to them and provide online information about the services.\textsuperscript{95}

**North Carolina**

Statewide recycling efforts are mostly coordinated by the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Pollution Prevention and Environmental Assistance (DPPEA), with some other services provided by or in collaboration with the Department of Commerce and Department of Administration. The most comprehensive annual report on solid waste management and recycling also is compiled by NCDENR and presented to the General Assembly. In the fiscal year 2009 report, the Department found that the state per capita disposal rate had declined to the lowest level since fiscal year 1992, and that North Carolina communities disposed 12 percent less waste than the previous year, both outstanding accomplishments. Also, curbside recycling contributed more to recycling than drop-off collection points for the first time on record.\textsuperscript{96}

The Solid Waste Management Trust Fund, created by the Solid Waste Management Act of 1989, provides financing for many of the recycling grants and programs in North Carolina. The Trust Fund receives its revenue from a 2 percent tax on the sale of new tires, advance disposal fees on “white goods” (such as refrigerators, water heaters and other major household appliances) and a solid waste disposal tax. In fiscal year 2009, with revenue generated by these funding mechanisms, DPPEA awarded $751,372 in Community Waste Reduction and Recycling Grants to 50 counties and municipalities to expand their recycling activities and $600,000 for 29 Business Recycling Grants for recycling collection and processing improvements.\textsuperscript{97} As curbside collection has started to play a greater role in statewide recyclable materials collection, DPPEA also has initiated a Curbside Recycling Roll-Out Cart Grant Program, which assists local governments in implementing or transitioning to more effective curbside recycling systems.\textsuperscript{98} Processed Tire Material Market Development Grants have assisted the expansion of the tire recycling industry, although recently the balance in the fund for these grants was transferred to the state general fund. About 80 percent of tires received by the two North Carolina processing facilities are recycled, with 91,392 tons of tire-derived fuel produced in fiscal year 2009.\textsuperscript{99}

Regarding public outreach efforts, the DPPEA continues to use the newest forms of social networking media (Facebook, Twitter, Flickr, etc.) to increase public awareness and participation in recycling activities.\textsuperscript{100}

State law and executive orders both require that state agencies purchase recycled-content products for their operations. Beginning in fiscal year 2001, state agencies were ordered to direct 100 percent of their purchases toward recycled-content paper and paper products. In fiscal year 2009, state agencies purchased $34.5 million of recycled-content paper, 73 percent of all paper purchases, and $21.8 million of other recycled-content products, almost doubling the responsibly directed, non-paper spending of the previous fiscal year. Notwithstanding these positive developments, fiscal year 2009 marked the eighth year that state agencies failed to fulfill the 100 percent recycled-content paper purchasing requirement. Therefore, in its latest annual report, NCDENR recommended strengthening and reinforcing the objectives set forth by previous administrations.\textsuperscript{101}

The Recycling Business Assistance Center (RBAC), a partnership of NCDENR and the Department of Commerce, provides various services to the recycling industry of the state. A 2008 study conducted by RBAC found that North Carolina hosts 14,490 recycling-related jobs with an average hourly wage of $12.50, for an annual payroll of $376.8 million. The estimates reflect a conservative calculation of the direct economic impacts of the recycling industry and, therefore, do not include businesses such as equipment manufacturers and distributors, for example.\textsuperscript{102} Along with the Business Recycling Grants, RBAC offers an online directory of 600 recycling companies in the state, commodity market assessments, pricing trends for recyclables and various publications. In addition, RBAC helps businesses in all stages of development with facility siting, equipment purchases, loan security, business planning, permitting and expansion.\textsuperscript{103}

North Carolina also encourages investments into the recycling industry with the N.C. Recycling Property Tax Exemption, allowing a tax exemption for recycling equipment and facilities. This program also offers adjustments to corporate state income and franchise taxes. The N.C. Sales Tax Incentive for Manufacturing Equipment allows an adjusted 1 percent sales tax rate on manufacturing equipment in lieu of the usual 7 percent sales tax, with a tax cap of $80.00 per article.\textsuperscript{104}
The Department of Administration arranges recycling contracts for the state. For example, the contract for electronic equipment recycling provides a way for state agencies to recycle their obsolete electronic equipment, utilizing one of three possible electronics recycling companies. The Department of Administration, Division of Surplus Property, also handles electronic waste generated by state agencies. Used computers are converted into machines for public schools at a low cost, as well as auctioned to individual buyers. The Division also collects and recycles oil, antifreeze and batteries.

**LEGISLATIVE ACCOMPLISHMENTS**

North Carolina has some of the most advanced recycling legislation in the South, having passed a number of bills to promote economic development in the sector. Starting in 2005, the General Assembly passed House Bill 1465, signed into law by Governor Easley, that banned the disposal of plastic bottles, oil filters, wooden pallets and oyster shells into North Carolina landfills beginning October 1, 2009. In the case of plastic bottles, although the new addition to the statutes is more symbolic than realistic (i.e., enforceable), the recycling of plastics in the state has seen a significant uptick. This increase in supply provides materials for two major enterprises already located or planning expansion in the state: Envision Plastics, which currently operates the second largest HDPE plastics recycling facility in the United States in Reidsville, and Clear Path Recycling, a joint venture between the carpet producer Shaw Industries Group, Inc. and plastic manufacturer DAK Americas, which is planning to complete the second and final construction phase of the largest PET plastics recycling facility in North America by 2012, with the capacity to recycle 140,000 tons of PET per year. The legislation also banned the disposal of televisions and computer equipment into landfills, effective January 1, 2011.

In 2005, the General Assembly also passed House Bill 1518, which required every bar and restaurant with certain Alcoholic Beverage Control (ABC) Commission permits to recycle their empty beverage containers by 2008. The legislation most likely was the cause of a 22 percent increase in glass recovery by local governments between fiscal years 2008 and 2009. In 2007, with the ratification of House Bill 267, the law was adjusted with the new requirement that all new permit applications must be accompanied by a plan for recycling beverage containers, while ensuring that violations of the law will not lead to revocation of an ABC permit and allowing establishments a one-year stay on the requirements if they experienced difficulties in finding recycling services. Finally, with House Bill 259 of 2009 signed by Governor Easley, the one-year stay deadline for permit holders with recycling difficulties was extended indefinitely.

The Solid Waste Management Act of 2007, Senate Bill 1492, was another landmark law passed by the General Assembly. Among other provisions, the Act established the Solid Waste Disposal Tax, with a percentage of the proceeds from this tax distributed to DPPEA for local government grant awards and also a percentage directed to local governments for recycling and solid waste management. Further, the Act required all major computer equipment manufacturers to share the responsibility of computer recycling: register with the NCDENR; initially pay a $10,000 registration fee and $1,000 annually thereafter; properly identify their company with a label on all equipment; develop a computer equipment recycling plan, submit it to NCDENR, and pay for its implementation after approval; and report annually to NCDENR regarding its computer recycling program. Finally, the Act directed two divisions of NCDENR to develop a plan for the recycling of fluorescent lamps and report to the Environmental Review Commission. The 2008 amendment to the Solid Waste Management Act, House Bill 819, added a requirement for the recycling of televisions as well, with separate television manufacturer responsibilities. The amendment also delayed the effective date of the legislation until January 1, 2010.

In 2009, the General Assembly passed House Bill 1287, requiring all state agencies to recycle fluorescent lights and mercury thermostats, the removal of these components from buildings set for demolition, and banning mercury from unlined landfills.

**Oklahoma**

Statewide recycling initiatives are managed by the Oklahoma Department of Environmental Quality (DEQ), Land Protection Division. Although the responsibility over recycling services in Oklahoma is primarily relegated to counties and municipalities, the Department has been involved with projects addressing waste tires, electronic waste, and intergovernmental cooperation.
Oklahoma communities organize approximately 50 waste tire cleanup events every year. For its part, the Land Protection Division of DEQ authorizes these events and helps to facilitate communication between the communities and waste tire processors. Recent legislation has extended the role of the Division regarding the recycling of waste tires. The Division also administers the Oklahoma Star Incentive Program (OKStar), which recognizes businesses and organization that voluntarily implement plans for waste reduction and prevention, such as recycling programs.

**LEGISLATIVE ACCOMPLISHMENTS**

In 2007, the Legislature passed Senate Bill 747, making adjustments to the Waste Tire Recycling Act of 1989. The 2007 bill increased fees charged on all new tire purchases made in the state; clarified that waste tires transported out of state are not eligible for compensation of the tire purchase fees originally placed on them; adjusted allocations made from the Waste Tire Recycling Indemnity Fund; reassigned several of the responsibilities of waste tire oversight to the DEQ, as well as creating new administrative requirements for the DEQ and the Oklahoma Tax Commission; and established a Waste Tire Recycling Task Force.

In 2008, the Oklahoma Computer Equipment Recovery Act, or Senate Bill 1631, created a mechanism for recycling outdated computer equipment by Oklahoma consumers. Previously, the responsibility and costs for handling old computers were carried out by municipal hazardous waste centers and waste management systems. However, as of January 1, 2009, computer manufacturers were required to adopt plans for the collection and recycling of used desktop computers, laptops and computer monitors at no cost to consumers; inform consumers about the new service; adopt appropriate labeling standards for all new equipment; and submit a report of the plan to the DEQ, which will in turn provide yearly reports to the governor and legislative leadership. Further, the Act prohibited state agencies from purchasing equipment from manufacturers not in compliance with the law. Also in 2008, Senate Bill 498 revised a previous 2001 bill on the Oklahoma Recycling Initiative, declaring legislative encouragement for a 10 percent recycling rate for solid waste by 2011. Further, the bill required DEQ to coordinate the effort and issue a report on statewide recycling by December 31, 2011.

**South Carolina**

The Department of Health and Environmental Control (DHEC) is thoroughly involved in statewide recycling efforts, offering numerous grants, programs, instructions and incentives promoting the growth of the industry. In accordance with the original S.C. Solid Waste Policy and Management Act of 1991, the DHEC prepares and submits a comprehensive annual report on the status of solid waste management and recycling processes within the state to the governor and General Assembly. The report from fiscal year 2008 offers the most recent data regarding the yearly progress toward, or regression from, certain targets.

<table>
<thead>
<tr>
<th>Statistic</th>
<th>FY 2007</th>
<th>FY 2008</th>
<th>Percent / Rate Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Population</td>
<td>4,343,204</td>
<td>4,428,393</td>
<td>2.0</td>
</tr>
<tr>
<td>MSW Disposed (^b)</td>
<td>3,460,657</td>
<td>3,367,422</td>
<td>-2.7</td>
</tr>
<tr>
<td>MSW Recycled (^b)</td>
<td>1,551,365</td>
<td>1,084,926</td>
<td>-30.1</td>
</tr>
<tr>
<td>MSW Generated (^b)</td>
<td>5,012,022</td>
<td>4,452,348</td>
<td>-11.2</td>
</tr>
<tr>
<td>MSW Recycling Rate</td>
<td>31.0</td>
<td>24.4</td>
<td>-7.4</td>
</tr>
<tr>
<td>Per Capita MSW</td>
<td>4.4</td>
<td>4.2</td>
<td>-0.2</td>
</tr>
<tr>
<td>Disposal Rate (^c)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Capita Recycling Rate (^c)</td>
<td>2.0</td>
<td>1.3</td>
<td>-0.7</td>
</tr>
<tr>
<td>Per Capita MSW Generation Rate (^c)</td>
<td>6.3</td>
<td>5.5</td>
<td>-1.2</td>
</tr>
</tbody>
</table>

\(^a\) Percent change is presented when the corresponding statistic is a quantity; when the statistic is a rate, the number reflects the increase or decrease of the rate.

\(^b\) In tons.

\(^c\) Pounds per person per day.

Source: Division of Mining and Solid Waste Management, *South Carolina Solid Waste Management Annual Report: Fiscal Year 2008* (Department of Health and Environmental Control), 3.
the statewide 35 percent recycling goal.1 The statewide 35 percent recycling goal.1 Tables 11 and 12 offer further details regarding the figures.

The report indicates that, while the state population grew by 2 percent, the overall recycling rate dropped drastically, from 31 percent to 24 percent. Absolutely, the amount of MSW recycled in the state fell by over 466,000 tons. However, this sharp decrease can be ascribed to three significant factors: a 52,000 ton decrease in the collection of residential landfill-banned items (lead-acid batteries, yard trimmings and consumer appliances); ongoing inconsistencies in recycling reports submitted by commercial businesses; and insufficient reporting by waste tire processors.123

The DHEC publication also indicated that, with 28 of the state’s 46 counties reporting, South Carolina localities received $8,302,429 in revenues from the sale of recyclables in fiscal year 2008. Further, most recovered materials collected are sent to one of nine in-state materials recovery facilities, which pay the counties deflated market prices. Regardless, recycling revenue generated by most counties is deposited into the state’s general fund, from where it may or may not be reallocated to local recycling programs.124

In 2006, the DHEC commissioned a study on the economic impact of recycling in South Carolina, prepared by economists Frank Hefner and Calvin Blackwell at the College of Charleston. Among its findings, the final report indicated that the $6.5 billion state recycling industry supports 37,440 jobs and generates almost $70 million in yearly revenues.125 Table 13 provides details on these and other figures discussed in the report. Further, the researchers made a calculated estimate of the potential value in the 3.1 million tons of MSW disposed into state landfills in 2003. Assuming that the recycling rates of certain commodities in South Carolina are proportional to the national rates calculated by the federal EPA, the estimated 889,615 tons of recyclable commodities in the 2003 MSW stream could have supported an additional 1,494 jobs; generated $210 million in economic output and $71 million in personal income; and provided approximately $3.3 million in state sales and income tax revenues.126

The DHEC provides numerous grants and awards to counties, municipalities and educational institutions to assist them with achieving waste minimization and recycling goals. The Collegiate Recycling Program, funded by a 2 cent per quart fee on motor oil, offers grants to colleges and universities for equipment, supplies or educational materials that implement or expand recycling programs. The Recycling Education Program, funded by a 2 cent per gallon fee on motor oil, helps K-12 schools implement instructional programs regarding waste reduction and recycling, as well as purchase containers for recyclables and composting projects. As part of the original funding mechanism agreement, instructional programs also must address the recycling of motor oil.127 The Division also has collaborated with

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**Table 12: Composition of Recycled Materials in South Carolina: Fiscal Year 2008**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount Collected</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td>14,914</td>
<td>1.4</td>
</tr>
<tr>
<td>Metal</td>
<td>262,494</td>
<td>24.2</td>
</tr>
<tr>
<td>Paper</td>
<td>487,553</td>
<td>44.9</td>
</tr>
<tr>
<td>Plastic</td>
<td>19,885</td>
<td>1.8</td>
</tr>
<tr>
<td>Items Banned from Landfills</td>
<td>258,740</td>
<td>23.8</td>
</tr>
<tr>
<td>Miscellaneous Items</td>
<td>41,339</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,084,926</td>
<td>100</td>
</tr>
</tbody>
</table>

a In tons.
b Totals do not add up because of rounding.

Source: Division of Mining and Solid Waste Management, South Carolina Solid Waste Management Annual Report: Fiscal Year 2008 (Department of Health and Environmental Control), 7.

**Table 13: Economic Impact of Recycling in South Carolina: 2005**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs Supported</td>
<td>37,440</td>
</tr>
<tr>
<td>Average Annual Salary</td>
<td>$32,339</td>
</tr>
<tr>
<td>Average Annual Salary in State</td>
<td>$31,940</td>
</tr>
<tr>
<td>Personal Income Generated</td>
<td>$1,550,842,800</td>
</tr>
<tr>
<td>State Sales and Income Tax Revenues</td>
<td>$69,279,609</td>
</tr>
<tr>
<td><strong>Total Economic Impact</strong></td>
<td>$6,449,445,600</td>
</tr>
</tbody>
</table>

Sonoco Recycling and Keep the Midlands Beautiful to establish the Green Steps Program for Environmental Education, which promotes and offers training and instructional resources for environmental education and initiatives, such as recycling, at South Carolina schools.\textsuperscript{128}

The Solid Waste Grant Program, funded by a $2 fee on appliances and lead-acid batteries, provides awards to local governments for waste reduction and recycling projects. The Used Oil Grant Program, also maintained with a 2 cent per quart fee on motor oil, allocates revenues to local governments to operate recycling programs that specifically target do-it-yourself (DIY) oil changers. Notably, this unique grant funding has given South Carolina the most comprehensive oil recycling program in the Southern region, recycling more than 15 million gallons of used motor oil from DIYers since its inception and hosting more than 800 collection sites throughout the state. The Waste Tire Grant Program, funded by a $2 fee on all new tire purchases, maintains waste tire collection and recycling programs at the local level.\textsuperscript{129}

Other DHEC programs include the Recycle Guys Awards, which gives annual recognition to top programs, projects and people involved with the recycling industry.\textsuperscript{130} The Green Hospitality Program provides free, confidential and non-regulatory technical assistance to the hospitality industry for environmentally responsible practices, including recycling, in order to lower waste disposal costs and increase customer satisfaction. The DHEC also partnered with the South Carolina Hospitality Association to form the Green Hospitality Alliance, further facilitating the expansion of the initiative.\textsuperscript{131}

The DHEC also offers professional development opportunities to interested parties. The Recycling Professional Certification Program targets local government recycling coordinators and solid waste directors, providing free training that addresses cost-effective and comprehensive recycling programs. Recycling Center Attendant Training is another program offered at no charge that helps local governments keep their recycling collection employees thoroughly informed and utilizing best business practices. Finally, Teacher and Environmental Education Training is a free service available to teachers, schools and school districts that demonstrates how to introduce a national, award-winning curriculum supplement in their instructions.\textsuperscript{132} In addition to the nationally recognized curriculum, the DHEC offers a wealth of resources, from activity books to posters and videos to science projects, which teachers and schools can employ in their recycling initiatives.\textsuperscript{133}

The South Carolina Recycling Market Development Advisory Council (RMDAC) also was established by the landmark Solid Waste Policy and Management Act of 1991. The Council serves a number of purposes that aid the expansion of the state recycling industry. In its most recent annual report, RMDAC noted that, in 2008, the state’s recycling businesses and industry generated over $1.13 billion in capital investment and created almost 1,400 new jobs. Added to the $6.5 billion economic impact estimated in the 2006 DHEC study, RMDAC calculated a $7.6 billion economic impact by the South Carolina recycling industry for 2008.

The South Carolina Department of Commerce (DOC) hosts a Recycling Market Development Program that facilitates the expansion of the state’s recycling industry. Operated by Business Services, the Program assists both start-up recycling businesses and existing companies to create, find and develop recycling markets, as well as provides technical assistance regarding waste reduction and recycling. For example, the Department’s Recycling Directory provides recycling businesses an easy way to search for available markets near their operations.\textsuperscript{134} The Department also is involved with the state’s Recycling Industry Group (RIG), a public-private partnership working toward making South Carolina a national leader in recycling jobs, investments and markets.\textsuperscript{135} Most recently, the RIG collaborated with other state programs and organizations on the creation of a recycling license plate.
plate to increase awareness about recycling and generate revenue for the Carolina Recycling Coalition.\(^{136}\)

The South Carolina Smart Business Recycling Program, a partnership between DOC and two DHEC divisions, provides companies with free, confidential and non-regulatory site visits, technical assistance, market information and workshops.\(^{137}\) The Program also presents yearly Smart Business Recycling Recognitions and Awards to companies such as the Freightliner Custom Chassis Corporation, a zero waste pilot plant of Daimler Trucks North America located in Gaffney, South Carolina, which in one year increased its recycling rate to over 95 percent and diverted 2,000 tons of recyclable commodities away from landfills, while also saving 37 percent in waste disposal costs.\(^{138}\) The South Carolina Environmental Excellence Program (SCEEP) is another option for businesses interested in adopting environmental conservation and recycling practices. Between 1998 and 2008, SCEEP members collectively maintained a 64.4 percent recycling or reuse rate.\(^{139}\)

The South Carolina Materials Management Office collaborated with DHEC and the state Budget and Control Board to create an Environmentally Preferred Purchasing Policy for state government. The Policy attempts to reduce waste and save money without loss of safety or quality products. As part of its guidance, the Policy recommends several practices for recycled-content product purchasing. The initiative has demonstrated that the state is able to lead by example and take an active role in closing the loop for recyclable markets.\(^{140}\)

The Department of Natural Resources oversees a statewide oyster shell recycling program in order to return them to state shores, build oyster reefs and rebuild the coastal oyster population, which has dropped 85 percent from its historic levels. The program also is an attempt to save money, since the state has found it necessary to import oyster shells from Texas and North Carolina, which has proven too impractical and expensive for continuation.\(^{141}\) Local and county governments and businesses cooperated with the Department to establish 16 drop-off sites for the shells. The project is funded by a portion of the revenue from Saltwater Recreational Fishing License sales and eventually may be able to create open shellfish grounds to provide shellfish harvesting opportunities to the public.\(^{142}\)

Electronics recycling in the state is administered by the South Carolina Budget and Control Board, Division of State Information Technology, Information Technology Management Office. State agencies, educational institutions and local governments are required to use the state contract with Creative Recycling Systems of North Carolina for recycling electronics, unless another vendor can offer the same service for 10 percent less and the state selected vendor has been given a chance to match the offer.

**LEGISLATIVE ACCOMPLISHMENTS**

In 2006, the General Assembly passed House Bill 3922, adding a Mercury Switch Removal Program to the landmark Solid Waste Policy and Management Act of 1991. The legislation, intended to keep mercury from contaminating state water supplies, required automobile manufacturers to work in conjunction with the DHEC to create a statewide mercury switch recycling program. To fulfill the requirements, automobile manufacturers formed, and DHEC partnered with, a non-profit corporation to manage and recycle the switches. The collaborative program maintained by the partnership ensures that car dismantlers and scrap metal recycling facilities remove the switches before crushing or shredding vehicles. Participants in the program are entitled to $2.50 tax credit for each recycled mercury switch and collectively have recovered more than 10,000 of the hazardous components.\(^{143}\)

In 2008, through House Resolution 4581 and Senate Resolution 1051, both chambers of the General Assembly recognized the contributions to economic development, environmental conservation and energy efficiency made by the state’s recycling industry. In 2009, House Resolution 3867 and Senate Resolution 682 declared April 21, 2009, as South Carolina Recyclers Day and again commended the state recycling industry for its contributions to the economy, environment and energy efficiency.

**Tennessee**

The most recent analysis of the economic impact of recycling in Tennessee was published through the Waste Reduction Task Force, a 23-member group comprised of solid waste professionals from county and municipal governments, the waste management industry, and environmental organizations.\(^7\) Notably, the report found...
that, while the state’s solid waste collection and disposal companies maintained 7,584 jobs with an average salary of $36,115, Tennessee recycling and manufacturing sectors utilizing the top four recyclable commodities (paper, plastic, metal and glass) provided 77,200 jobs with an average salary of $45,550.\(^{144}\)

In order to fulfill a legislative requirement passed in 2007 ordering a review of waste disposal and waste reduction in the state.

Generally, statewide recycling programs in Tennessee are under the purview of the Department of Environment and Conservation (TDEC). As part of its duties, the TDEC generates an annual report regarding the Solid Waste Management Act of 1991 to the governor and General Assembly. The report offers executive and legislative leaders a comprehensive perspective on statistics regarding disposal and recycling rates, as well as state programs and initiatives that pertain to statewide MSW.
management and recycling. Tables 14, 15 and 16 present the most recent figures provided by TDEC.

The TDEC also manages distributions from the state’s Solid Waste Management Fund. Revenue for the Fund is generated by a 90-cent per ton fee on all MSW dumped into landfills and a $1.35 pre-disposal fee on all new tires sold within the state. In turn, the Fund provides revenue for a number of grants awarded to recycling programs throughout the state. For example, funded at $356,272 in fiscal year 2008, the Recycling Equipment Grants program provides matching grants of up to $25,000 to local governments and non-profit organizations for the purchase of basic recycling equipment. Similarly, annual recycling rebates for any recycling-related expense, matching $586,555 in fiscal year 2008, are offered to the 11 counties with the highest MSW generation, with municipalities also eligible to receive a portion of the rebate. Waste Tire Recycling Grants, at $4,160,297 in fiscal year 2008, reimburse counties at a rate of $70 per ton for locating, collecting and finding recycling markets for scrap tires. Finally, used oil grants reimburse up to $15,000 to public and private operators of used oil collection sites, giving preference to locations in underserved areas.

In addition to grants awarded to local governments, the TDEC provides grants to other entities to fulfill some of its statutory obligations. For example, in fiscal year 2008, TDEC granted $247,000 to the University of Tennessee, Center for Industrial Service (CIS), for the provision of solid waste management technical assistance to Tennessee counties. The grant also provides funding for the CIS-maintained Tennessee Material Exchange, assisting businesses in finding markets for industrial byproducts, surplus materials and waste, and Recycling Markets Directory, an online listing of all companies that recycle materials generated in Tennessee. In addition, TDEC contracts with the Recycling Marketing Cooperative for Tennessee (RMCT) to assist counties with finding recycling markets as well as market development, grant writing and logistics. In fiscal year 2008, due in part to the assistance of RMCT, local solid waste programs collected over $850,000 from the sale of recyclable materials and saved over $980,000 in disposal costs. Further, in the same year, RMCT facilitated the collection of over 1,000 tons of electronic waste, saving the state household hazardous waste collection program over $750,000. Finally, each fiscal year, TDEC provides grants ranging between $50,000 and $75,000 to the state’s nine development districts for the provision of technical assistance for solid waste planning to Tennessee counties.

The Department also operates the State Employee Recycling Program (SERP), providing paper recycling ser-

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### Table 16  
**Public Collection of Recyclable Commodities in Tennessee: 2007-2008**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>2007 a</th>
<th>2008 a</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite and All Other</td>
<td>9384.7</td>
<td>10570.6</td>
<td>12.6%</td>
</tr>
<tr>
<td>Corrugated</td>
<td>50202.0</td>
<td>43476.0</td>
<td>-13.4%</td>
</tr>
<tr>
<td>Miscellaneous Paper</td>
<td>21238.0</td>
<td>18735.3</td>
<td>-11.8%</td>
</tr>
<tr>
<td>Newspaper</td>
<td>22112.0</td>
<td>21047.4</td>
<td>-4.8%</td>
</tr>
<tr>
<td>Office Paper</td>
<td>5198.0</td>
<td>3962.3</td>
<td>-23.8%</td>
</tr>
<tr>
<td>Total Paper</td>
<td>108134.7</td>
<td>97791.5</td>
<td>-9.6%</td>
</tr>
<tr>
<td>Ferrous</td>
<td>10252.0</td>
<td>29941.1</td>
<td>192.1%</td>
</tr>
<tr>
<td>Mixed Metals</td>
<td>40632.0</td>
<td>27981.8</td>
<td>-31.1%</td>
</tr>
<tr>
<td>Nonferrous Metals</td>
<td>2335.0</td>
<td>2793.1</td>
<td>19.6%</td>
</tr>
<tr>
<td>Total Metals</td>
<td>53219.0</td>
<td>60716.1</td>
<td>14.1%</td>
</tr>
<tr>
<td>PET (#1 Plastics)</td>
<td>470.0</td>
<td>398.0</td>
<td>-15.3%</td>
</tr>
<tr>
<td>HDPE (#2 Plastics)</td>
<td>214.7</td>
<td>207.3</td>
<td>-3.5%</td>
</tr>
<tr>
<td>Mixed #1 and #2 Plastics</td>
<td>5982.0</td>
<td>3391.8</td>
<td>-43.3%</td>
</tr>
<tr>
<td>Other Plastics</td>
<td>1457.0</td>
<td>2351.1</td>
<td>61.4%</td>
</tr>
<tr>
<td>Total Plastic</td>
<td>8128.7</td>
<td>6358.6</td>
<td>-21.8%</td>
</tr>
<tr>
<td>Amber Glass</td>
<td>1036.0</td>
<td>1203.8</td>
<td>16.2%</td>
</tr>
<tr>
<td>Clear Glass</td>
<td>1422.0</td>
<td>1056.2</td>
<td>-25.7%</td>
</tr>
<tr>
<td>Green Glass</td>
<td>813.0</td>
<td>974.8</td>
<td>19.9%</td>
</tr>
<tr>
<td>Mixed</td>
<td>2363.0</td>
<td>3587.1</td>
<td>51.8%</td>
</tr>
<tr>
<td>Other</td>
<td>3759.0</td>
<td>5053.5</td>
<td>34.4%</td>
</tr>
<tr>
<td>Total Glass</td>
<td>9393.0</td>
<td>11920.7</td>
<td>26.9%</td>
</tr>
</tbody>
</table>

*a In tons.

Source: Nickolaus Lytle, Environmental Specialist, Division of Solid Waste Management, Tennessee Department of Environment and Conservation, e-mail message to author, March 8, 2010.
services to 32,000 state employees. In the past 10 years, the SERP has recycled over 9,000 tons of paper, generating $117 million in revenue and saving $270 million in avoided landfill costs. Table 17 provides further details regarding the figures. The program also has received EPA’s Partner of the Year Award for the past six years, being one of nine recipients in 2008.

**LEGISLATIVE ACCOMPLISHMENTS**

In 2007, the Tennessee General Assembly amended the historic Solid Waste Management Act of 1991 with House Bill 2289 and Senate Bill 2267, continuing the installment of several changes to the original legislation. First, the previous deadline of December 31, 2003, for a 25 percent waste reduction and diversion rate was deleted, essentially replacing the deadline with an unlimited time frame for completion.

Next, the bills transferred the responsibility over the establishment of an office of cooperative marketing for recyclables from the Department of Economic and Community Development to TDEC. Also, tipping fees at MSW facilities and waste tire pre-disposal fees were both increased to their current levels of $.90 per ton and $1.35 per tire, respectively. Further, the legislation effectively ended the state contract for a mobile tire shredding service to local governments, but also expanded the eligibility requirements for the state’s waste tire grants. Thus, the business relationships that were legislatively fostered between counties and private sector scrap tire processors were given self-regulation with state subsidization. Finally, the 2007 recycling and waste reduction legislation also directed the state’s Solid Waste Disposal Control Board to adopt rules promoting recycling and waste reduction. As of early March 2010, the Board was continuing the consideration of the rules originally presented by the aforementioned Waste Reduction Task Force in September 2008.

In 2008, House Bill 1220 and the corresponding Senate Bill 1851 required the Department of Revenue to create a license plate recycling program which would permit motor vehicle owners to deposit their old, outdated or expired license plates into state-provided collection containers at locations designated by each county. Further, the Department was permitted to contract with non-profits for collection, disposal and recycling services, which would retain the revenue generated by their services.

In 2009, the General Assembly passed House Bill 1108, which exempted persons, firms, and corporations dealing solely in recyclable aluminum cans from the registration requirements on scrap jewelry and metal dealers. Also in 2009, House Resolution 182 created a special House committee charged with studying how to reduce the amount of waste disposed into Tennessee landfills, the efficacy of recycling and waste source reduction programs, the appropriateness of committee referrals for legislation pertaining to landfills, solid waste, and related issues. After the study, the committee was to present its findings and potential recommendations to the General Assembly.

**Texas**

The Texas Commission on Environmental Quality (TCEQ) holds most responsibility over statewide recycling programs. Generally, solid waste management in Texas is administered by the state’s 24 Regional Councils of Government (COGs), but the TCEQ does play a significant role in environmental regulations enforcement, reporting and grant funding. In its most recent report to the Legislature, TCEQ indicated that, in fiscal year 2008, total waste disposed in Texas amounted to 33.1

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**Table 17**

<table>
<thead>
<tr>
<th>Year</th>
<th>Paper Recycled</th>
<th>Revenue Generated</th>
<th>Landfilling Costs Avoided</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,183.2</td>
<td>$2,543.06</td>
<td>$35,496.00</td>
</tr>
<tr>
<td>2001</td>
<td>1,187.5</td>
<td>$1,564.22</td>
<td>$35,625.00</td>
</tr>
<tr>
<td>2002</td>
<td>1,252.7</td>
<td>$2,068.16</td>
<td>$37,581.00</td>
</tr>
<tr>
<td>2003</td>
<td>1,195.1</td>
<td>$8,513.78</td>
<td>$35,853.00</td>
</tr>
<tr>
<td>2004</td>
<td>821.6</td>
<td>$32,795.90</td>
<td>$24,648.00</td>
</tr>
<tr>
<td>2005</td>
<td>620.9</td>
<td>$25,333.94</td>
<td>$18,627.00</td>
</tr>
<tr>
<td>2006</td>
<td>729.8</td>
<td>$3,363.87</td>
<td>$20,100.00</td>
</tr>
<tr>
<td>2007</td>
<td>798.9</td>
<td>$16,581.04</td>
<td>$23,968.00</td>
</tr>
<tr>
<td>2008</td>
<td>641.8</td>
<td>$21,125.39</td>
<td>$19,255.00</td>
</tr>
<tr>
<td>2009</td>
<td>619.1</td>
<td>$3,317.08</td>
<td>$18,573.00</td>
</tr>
<tr>
<td>Total</td>
<td>9,050.6</td>
<td>$117,206.44</td>
<td>$269,726.00</td>
</tr>
</tbody>
</table>

*In tons.

million tons, for a per capita rate of 7.4 pounds per person per day. In the same period, the residential sector consumed the largest portion of total waste disposal, generating 11,367,722 tons of MSW, or 34 percent of the total waste stream.  

In Texas, there is no reporting requirement for recycling activities carried out by entities other than landfills and processing facilities. However, in their annual reports for fiscal year 2008, 63 permitted facilities and 90 registered facilities indicated a combined 2,634,275 tons of material that was either recycled or reused. Further, state authorized processing facilities reported 760,000 tons of material that was either composted or recycled.  

Texas charges a $1.25 per ton tipping fee for most of the waste deposited into state landfills. The TCEQ is required to allocate half of the revenue generated by this fee to the Regional Solid Waste Grants Program, which provides grants to COGs for solid waste management and planning in their respective regions. In turn, local governments and school systems may apply for pass-through grants from their respective COGs for eligible projects within the regional solid waste management plans prepared by COGs and approved by TCEQ. These projects, such as source reduction and recycling initiatives, must promote public-private cooperation and may not create a public competitive advantage over private recycling or waste management services. According to the most recent report by the Texas Association of Regional Councils, in fiscal year 2005, local waste reduction projects funded by the regional solid waste grants diverted over 210,000 tons of materials from disposal; provided more than $25.9 million in local disposal cost savings; and generated $2 million in local revenues from the sale of the collected materials.

The TCEQ maintains two databases to assist the state recycling industry locate markets for collected and dispensable materials. The first, Recycle Texas Online, lists recycling businesses handling specific recyclable materials and, the second, Resource Exchange Network for Eliminating Waste, allows industries, businesses and governmental entities to find outlets for recycling surplus materials, industrial byproducts and other potential commodities. The TCEQ also operates a voluntary automobile mercury switch recycling program, subsidizing the collection and recycling of the hazardous element with free collection services and regulatory incentives.

**LEGISLATIVE ACCOMPLISHMENTS**

In 2007, the Legislature passed House Bill 2714, subsequently signed by the governor, establishing a statewide computer recycling program. Among its provisions, the legislation required all computer manufacturers to establish free and convenient programs for the collection and recycling of their computer products that are used for personal or home business purposes. Further, manufacturers were required to adopt appropriate labeling practices for the easy identification of different brands. For their protection, manufacturers were not liable for sensitive data left by consumers on recycled computer products. Next, electronics retailers were prohibited from selling products of specific manufacturers before confirming their compliance with the new law. For its part, TDEQ was charged with the task of informing consumers about the new legislation and the services available to them through each computer manufacturer, as well as the preparation of an annual report to the Legislature regarding the computer recycling program. Of note, the program is not expected to increase the cost of computer products, but still facilitated the recycling of more than 6,000 tons of computer equipment in 2008.

Also in 2007, as a provision of the biennial budget bill, the Legislature again required the TCEQ to audit the state tire recycling industry in order to confirm full compliance with the regulations set forth by the Commission. With the 1997 sunset of the statewide Waste Tire Recycling Program and the associated $2 fee on all new tire purchases, the industry was left to self-regulate scrap tire recycling. The audit report submitted to the Legislature in December 2008 found that the vast majority of scrap tires in state are properly managed by the private sector.

In 2009, the Legislature adopted, and the governor signed, House Bill 3765, allowing the use of up to 10 percent of the revenues from the hazardous and solid waste remediation fee for lead-acid battery recycling activities. Programs authorized by the legislation included remediation and those incentivizing the development of lead-acid battery recycling technology.

**Virginia**

Recycling programs encompassing the entire commonwealth are overseen by the Virginia Department of Environmental Quality (DEQ). As part of its responsibi-
ties, the Department reviews and reports on the data submitted by 71 solid waste planning units (SWPUs) on an annual basis. According to the most recent report, between 2007 and 2008, although the total amount of Principal Recyclable Materials (PRMs) recycled decreased by 120,000 tons, the annual recycling rate held steady at 38.5 percent, due primarily to the increased reporting of reuse and recycling of non-PRMs combined with increased levels of commingled recycling.\textsuperscript{169} Tables 18 and 19 provide further details regarding these statistics.

In addition to the production of the annual recycling report, DEQ manages the commonwealth’s Litter Control and Recycling Fund. Revenues for the Fund are provided by a Litter Tax, essentially a $10 to $15 annual fee per location paid by manufacturers, wholesalers, distributors and retailers of various consumer products; a gross receipts tax on wholesalers of soft drinks; and 2 percent of the taxes collected on sales of beer and wine coolers. In turn, the Fund provides annual non-competitive grants to local governments for litter prevention and recycling programs. Five percent of Fund revenues are allocated to DEQ for the administration of the Local Government Grant Program and support of the legislatively created Litter Control and Recycling Fund Advisory Board, composed of five governor-appointed members from the business community, local government and general public.\textsuperscript{170} In fiscal year 2009, the Program awarded $1,878,504 to 185 grant applicants, matched with a contribution of $8,885,383 by local governments.\textsuperscript{171}

<table>
<thead>
<tr>
<th>Statistic</th>
<th>2007\textsuperscript{a}</th>
<th>2008\textsuperscript{a}</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Waste Reused</td>
<td>690,394</td>
<td>800,530</td>
<td>16.0%</td>
</tr>
<tr>
<td>Non-PRMs Recycled</td>
<td>41,306</td>
<td>76,073</td>
<td>84.2%</td>
</tr>
<tr>
<td>Recycling Residue</td>
<td>8,327</td>
<td>9,082</td>
<td>9.1%</td>
</tr>
<tr>
<td>Total Credits</td>
<td>740,027</td>
<td>885,684</td>
<td>19.7%</td>
</tr>
<tr>
<td>Household Waste Disposed</td>
<td>4,314,577</td>
<td>4,239,713</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Commercial Waste Disposed</td>
<td>1,522,851</td>
<td>1,465,130</td>
<td>-3.8%</td>
</tr>
<tr>
<td>Institutional Waste Disposed</td>
<td>50,736</td>
<td>108,852</td>
<td>114.5%</td>
</tr>
<tr>
<td>Other</td>
<td>863</td>
<td>67,706</td>
<td>7745.4%</td>
</tr>
<tr>
<td>Total MSW Disposed</td>
<td>5,889,026</td>
<td>5,881,400</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Solid Waste Generated</td>
<td>9,542,428</td>
<td>9,526,959</td>
<td>-0.2%</td>
</tr>
<tr>
<td>Material Recycled or Reused</td>
<td>3,661,027</td>
<td>3,637,933</td>
<td>-0.6%</td>
</tr>
<tr>
<td>Additional Credit to Recycling Rate\textsuperscript{b}</td>
<td>0.17%</td>
<td>0.27%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Statewide Recycling Rate</td>
<td>38.5%</td>
<td>38.5%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Quantities are in tons.
\textsuperscript{b} For SWPU Source Reduction Initiatives.

Sources: The Virginia Annual Recycling Rate Report: Calendar Year 2008 Summary (Virginia Department of Environmental Quality, 2009), 10; The Virginia Annual Recycling Rate Report: Calendar Year 2007 Summary (Virginia Department of Environmental Quality, 2008).

<table>
<thead>
<tr>
<th>Materials</th>
<th>2007\textsuperscript{a}</th>
<th>2008\textsuperscript{a}</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>917,852</td>
<td>872,416</td>
<td>-5.0%</td>
</tr>
<tr>
<td>Metal</td>
<td>762,334</td>
<td>718,219</td>
<td>-5.8%</td>
</tr>
<tr>
<td>Yard Debris</td>
<td>567,595</td>
<td>473,655</td>
<td>-16.6%</td>
</tr>
<tr>
<td>Wood</td>
<td>232,092</td>
<td>262,714</td>
<td>13.2%</td>
</tr>
<tr>
<td>Commingled</td>
<td>110,915</td>
<td>176,440</td>
<td>59.1%</td>
</tr>
<tr>
<td>Tires</td>
<td>66,384</td>
<td>67,161</td>
<td>1.2%</td>
</tr>
<tr>
<td>Used Oil</td>
<td>52,886</td>
<td>46,027</td>
<td>-13.0%</td>
</tr>
<tr>
<td>Plastic</td>
<td>48,450</td>
<td>29,413</td>
<td>-39.3%</td>
</tr>
<tr>
<td>Glass</td>
<td>44,268</td>
<td>26,526</td>
<td>-40.1%</td>
</tr>
<tr>
<td>Other</td>
<td>33,850</td>
<td>36,611</td>
<td>8.2%</td>
</tr>
<tr>
<td>Textiles</td>
<td>24,684</td>
<td>28,550</td>
<td>15.7%</td>
</tr>
<tr>
<td>Batteries</td>
<td>17,163</td>
<td>18,310</td>
<td>6.7%</td>
</tr>
<tr>
<td>Auto Bodies</td>
<td>8,241</td>
<td>8,380</td>
<td>1.7%</td>
</tr>
<tr>
<td>Used Oil Filters</td>
<td>4,427</td>
<td>2,008</td>
<td>-54.6%</td>
</tr>
<tr>
<td>Used Antifreeze</td>
<td>3,685</td>
<td>4,332</td>
<td>17.6%</td>
</tr>
<tr>
<td>Electronics</td>
<td>3,081</td>
<td>4,581</td>
<td>48.7%</td>
</tr>
</tbody>
</table>

| Total PRMs | 2,897,906 | 2,775,343 | -4.2% |

\textsuperscript{a} Quantities are in tons.

Sources: The Virginia Annual Recycling Rate Report: Calendar Year 2008 Summary (Virginia Department of Environmental Quality, 2009), 10; The Virginia Annual Recycling Rate Report: Calendar Year 2007 Summary (Virginia Department of Environmental Quality, 2008).
Virginia’s Waste Tire Management Program is one of the most comprehensive scrap tire collection and recycling plans of the Southern region, as well as the nation. After the dissolution of the consumer tire retreading industry in the 1980s, the tire recycling rate in the commonwealth decreased to 10 percent by 1991. By 1994, in order to deal with the increasing abundance of waste tire piles, DEQ initiated a three-component program to transform the struggling waste tire recycling industry into a viable, privately sustainable enterprise. First, DEQ developed 16 Regional Waste Tire Programs to build the infrastructure necessary for cost-effective collection of the tires generated within the commonwealth. Next, DEQ set up a Waste Tire End User Reimbursement Program, offering direct rebates to beneficial end users of recycled tires at the rate of 22.5 cents per tire utilized. Unique in its nature, the program went even further with reimbursements by offering a $1.00 per tire rebate to tire processor and beneficial end user “teams” that collected the scrap tires themselves from designated tire piles. Finally, DEQ established the Waste Tire Pile Clean Up Program with revenues from a legislatively increased new tire purchase fee to clear the remaining, least accessible piles of scrap tires. Today, the Program sustains a nearly 100 percent collection, processing and recycling rate for the approximately 7 million tires generated in the commonwealth each year.

In order to further promote the recycling industry, Virginia offers a corporate income tax credit of 10 percent of the cost of PRM processing equipment and machinery, up to 40 percent of total tax liability. To support used motor oil recycling, the commonwealth allows business facilities that purchase waste oil heaters and accept used motor oil from public sources for their operation to claim an income tax credit equaling 50 percent of the purchase price of the equipment. For mercury recycling, the DEQ partners with End of Life Vehicle Solutions for the recycling of automobile mercury switches and also encourages recycling by commercial buildings with its Fluorescent Lamp Recycling Challenge.

The Virginia Recycling Markets Development Council previously has taken an active role in promoting the state’s recycling industry, although recent contributions by the group have been less than anticipated. Finally, following Governor Kaine’s Executive Order 82 of 2009, every state agency has been required to develop an Environmental Management System or adopt specified environmental policies. Among its provisions, Order 82 reaffirmed previous legislation requiring agencies and educational institutions to establish programs for the recycling of paper, plastic, aluminum, batteries and print cartridges, as well as purchase and use recycled paper in their operations whenever possible.

### LEGISLATIVE ACCOMPLISHMENTS

Since 1989, the General Assembly has made several additions and amendments to sections of the Code of Virginia addressing recycling. More recently, the Regular Session of 2006 effected new recycling standards for SWPUs. Prior legislation had required these entities to realize a 25 percent MSW recycling rate by 1995. With the passage of House Bill 647 and the identical Senate Bill 57, SWPUs were allowed additional credits for reaching their recycling rate; the mandatory MSW recycling rate was reduced to 15 percent for SWPUs with low population densities or higher-than-average unemployment rates; and the denial of a permit for a new or expanding landfill, incinerator or waste-to-energy facility solely on the basis of a SWPU’s failure to meet the mandated MSW recycling rate was prohibited. Also in 2006, House Bill 448 reallocated distributions from the Litter Control and Recycling Fund, directing 90 percent (from a previous 75 percent) to local governments’ litter control and recycling programs, reducing grants for regional and statewide programs from 20 percent to 5 percent, and allowing the remaining 5 percent to be expended for program administration. House Bill 522 extended a $1.00 per tire fee (previously $.50 per tire) on all new tire purchases until July 1, 2008, giving DEQ the revenues to continue the expansion of the most comprehensive tire recycling program in the region. Finally, House Bill 447 of 2006 and the identical Senate Bill 88 authorized the DEQ, through the Virginia Waste Management Board, to adopt regulations and create a recycling program for vehicular mercury switches.

In 2007, the General Assembly passed House Bill 2946, requiring the chief information officer of the commonwealth to guide the Department of General Services in the creation of a system for the recycling and disposal of surplus computers and information technology assets.

Fluorescent lamps contain small quantities of mercury. When multiplying that small quantity by the 53,000 bulbs recycled per year by the program participants, the overall effect becomes significant.
and ensuring the proper removal of sensitive information from the electronic equipment prior to recycling or disposal. Also in 2007, Senate Bill 870 and an identical House Bill 3044 extended the corporate income tax credit for the purchase of equipment or machinery used for manufacturing recycled-content products until January 1, 2015, while also allowing the credit to be used against individual income taxes and by partnerships, limited liability companies and electing small businesses. Lastly, Senate Joint Resolution 361 of 2007 directed the Joint Legislative Audit and Review Commission (JLARC) to conduct a two-year study on waste minimization, reuse and recycling and present its findings to the General Assembly. After review, JLARC presented an extensive and comprehensive report, Waste Reduction Efforts in Virginia, to the governor and General Assembly in late 2008. Within the publication, JLARC noted that Virginia has much of the statutory and regulatory infrastructure necessary for an expansive recycling program and excels in scrap tire and lead-acid battery recycling; however, there is still room for improvement in other areas. Among its recommendations, JLARC suggested that the commonwealth follow the example of other states in the region and adopt a tipping fee on landfill waste disposal to provide comparable funding to local recycling programs and initiatives, as well as invest more into facilitating better market relations between suppliers and users of recyclable commodities, primarily by assisting each party to find their counterpart. In 2008, House Bill 360 and the identical Senate Bill 513 extended, again, the $1.00 per tire fee on new tire purchases until July 1, 2011, when it will drop to $.50 per tire. Also in 2008, the General Assembly passed, and Governor Tim Kaine signed into law, House Bill 344, the Virginia Computer Recovery and Recycling Act. The legislation required most computer equipment manufacturers to develop and implement reasonably convenient and completely free recycling programs for consumers in the commonwealth that purchase their computer products. Further, manufacturers had to adopt appropriate labeling standards for the proper identification of their equipment and, in order to continue selling their equipment in the commonwealth, had to submit their recycling plan to DEQ for authorization. Finally, the Act required manufacturers to report annually on the weight of computer equipment collected, recycled and reused, and assigned the enforcement of the provisions to the Office of the Attorney General. In 2009, House Bill 2177 gave Virginia localities the right to prohibit the disposal of rechargeable batteries into any waste-to-energy or solid waste disposal facility within its jurisdiction if the locality has implemented a proper recycling program for the batteries. Also in 2009, House Bill 1973 eliminated the competitive grant program for statewide and regional recycling projects and increased Litter Control and Recycling Fund allocations to local government programs from 90 percent to 95 percent. House Bill 1973 also continued the practice of allowing up to 5 percent of the remaining balance to be retained by the DEQ and Litter Control and Recycling Fund Advisory Board for program administration. Furthermore, the bill stipulated that, in order to qualify for the funding, localities must follow the Guidelines for Litter Prevention and Recycling Grants established by DEQ.

**West Virginia**

In West Virginia, the Solid Waste Management Board (SWMB) and the Department of Environmental Protection (DEP) have the most involvement with statewide programs that address recycling. The state recently has not conducted or commissioned many studies regarding the economic impact of recycling and does not usually calculate a statewide recycling rate. However, according to the latest Solid Waste Management Plan published by SWMB, the most recent statewide recycling rate was estimated at 16 percent by the WV Recycling Measurement Committee in 2002, about 14 percent below legislative goals. Also, SWMB does conduct biennial surveys of recycling activities of the states’ 50 Solid Waste Authorities (SWAs) and 14 municipalities that are mandated to provide recycling services. In the survey results for 2007, SWMB indicated that SWA recycling activities accounted for 58,000 tons of recycled materials and $2.2 million in recycling revenue. Table 20 provides further details regarding these figures.

In addition to its reporting duties, SWMB administers solid waste management grants to local governments. In fiscal year 2010, $300,000 was distributed to 30 SWAs for various projects including recycling equipment purchases and school recycling programs. Alternatively, the Recycling Assistance Grant Program of the Rehabilitation Environmental Action Plan (REAP), under the purview of the DEP, offers grants of up to $150,000 for counties, municipalities and even private entities’ for recycling programs, equipment, public...
education and market development. Revenues for the Program are provided by a $1.00 per ton fee on solid waste disposed into state landfills.\textsuperscript{200}

The West Virginia Materials Recycling Directory, maintained by the Department of Commerce, Division of Energy, provides a useful resource for individuals and businesses trying to find local markets to sell or donate recyclable materials.\textsuperscript{201} Similarly, the West Virginia Materials Exchange, administered by SWMB, provides a free online listing service to connect collectors and processors of recyclable materials and provide a potential market for manufacturers with surplus or leftover materials.\textsuperscript{202} In order to further support the local recycling industry while saving in disposal costs, the Public Employees Office Wastepaper Recovery Program encourages state employees to recycle office paper, aluminum/bimetal cans, plastic and corrugated boxes at the workplace. Revenue generated from the sale of recyclable materials is injected back into the recycling programs.\textsuperscript{203}

### LEGISLATIVE ACCOMPLISHMENTS

In 2005, with the guidance of Governor Joe Manchin, the passage of Senate Bill 428 and an identical House Bill 2838 consolidated several waste management and recycling programs of the state to form the statewide Rehabilitation Environmental Action Plan (REAP), overseen by the Department of Environmental Protection.\textsuperscript{204,205}

In 2008, the West Virginia Legislature passed House Concurrent Resolution 114, requesting that the Joint Committee on Government and Finance conduct a study on waste reduction, recycling and litter control systems and submit a report to the Legislature on the matter by the 2009 Regular Session.\textsuperscript{206} Also in 2008, the Legislature passed Senate Bill 746, creating the West Virginia Covered Electronics Manufacturer Registration and Takeback/Recycling Program.\textsuperscript{207} Under the Program, manufacturers of computers, monitors, televisions and most video display devices are required to register with and report to the DEP on a yearly basis, pay related registration fees, adopt proper labeling practices and provide free electronics collection services to West Virginia consumers for their products, or pay greater fees. Revenues generated by the Program are deposited into Covered Electronic Devices Takeback Fund, which in turn provides grants to local governments for electronics recycling programs, up to $40,000 on a tiered matching basis.\textsuperscript{208,209} Finally, the legislation gave DEP the opportunity to recommend further legislative rules for the recycling of electronic devices.\textsuperscript{210}

<table>
<thead>
<tr>
<th>Area</th>
<th>Amount Recycled (^a)</th>
<th>Revenue Generated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watershed A SWAs</td>
<td>2,508.79</td>
<td>$12,009.69</td>
</tr>
<tr>
<td>Watershed B SWAs</td>
<td>7,083.01</td>
<td>$295,152.61</td>
</tr>
<tr>
<td>Watershed C SWAs</td>
<td>1,058.33</td>
<td>$112,246.24</td>
</tr>
<tr>
<td>Watershed E SWAs</td>
<td>3,670.39</td>
<td>$40,825.00</td>
</tr>
<tr>
<td>Watershed F SWAs</td>
<td>1,885.40</td>
<td>$358,235.00</td>
</tr>
<tr>
<td>Watershed G SWAs</td>
<td>6,634.38</td>
<td>$507,840.23</td>
</tr>
<tr>
<td>Watershed H SWAs</td>
<td>15,052.46</td>
<td>$877,013.77</td>
</tr>
<tr>
<td>Watershed A Municipalities</td>
<td>7,795.60</td>
<td>$0.00</td>
</tr>
<tr>
<td>Watershed B Municipalities</td>
<td>4,971.69</td>
<td>$0.00</td>
</tr>
<tr>
<td>Watershed C Municipalities</td>
<td>587.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Watershed E Municipalities</td>
<td>101.80</td>
<td>$0.00</td>
</tr>
<tr>
<td>Watershed G Municipalities</td>
<td>905.34</td>
<td>$0.00</td>
</tr>
<tr>
<td>Watershed H Municipalities</td>
<td>5,813.80</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>All SWAs: E-waste</strong></td>
<td>173.60</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>48,141.40</td>
<td>$2,203,322.54</td>
</tr>
</tbody>
</table>

\(^a\) In tons. 
\(^b\) Total tonnage does not add up because some materials collected by municipalities are processed by SWAs and therefore are subtracted from the total in order to avoid double counting.

Several states in the SLC have implemented impressive programs and legislation to assist the expansion of the recycling industry within the region. To reemphasize some of the most notable initiatives, the comprehensive Missouri State Recycling Program (see page 19) tops the region in government leadership by example, providing savings from unnecessary disposal costs while generating revenue for the state’s Heating Assistance Program. The Away From Home Recycling Program of the Georgia DCA (see page 12) involves state and local cooperation for a nationally recognized model for event recycling. Further, the state’s employment of Regional Hubs (also on page 12) for commingled recycling provides central locations for the economical collection and resale of supplies required by the local recycling industry. North Carolina, among many other legislative solutions (see page 22), instituted a symbolic ban on plastic bottles in state landfills and saw a significant increase in plastics recycling, thereby providing a more affordable supply to the state’s expanding recycling facilities. South Carolina’s Used Oil Grant Program (see page 25) offers the most comprehensive recycling program of its kind in the region, with more than 800 collection sites facilitating the recycling of more than 15 million gallons of used motor oil to date. Virginia’s Waste Tire Management Program (see pages 32) represents the most comprehensive scrap tire recycling system in the region, maintaining a nearly 100 percent recycling rate for scrap tires generated within the commonwealth.

In addition, many SLC states have adopted legislation that, as part of doing business in the state, requires manufacturers of computers and other electronic equipment to provide recycling services for their products, for which costs to the industry (and, indirectly, to consumers) are very low to negligible. Finally, several SLC states have adopted either landfill disposal fees (as illustrated in Figure 6) or new tire purchase fees as a funding mechanism for managing waste tires.

For comparison, in public health management, it is generally accepted that the prevention of diseases is much more affordable in the long run than the treatment of these conditions after they have developed and possibly worsened. Similarly, the prevention of conditions that allow environmental disasters to occur is much more affordable than dealing with catastrophes after they happen. In this connection, state programs that encourage the collection and processing of recyclable materials, especially hazardous materials, such as scrap tires, are the simplest and most economical approach to public waste management planning.

**Dual-Stream Collection Programs**

In recent years, single-stream collection programs, also known as commingled recycling, have been introduced to curbside collection programs to make recycling more convenient for the common household. In December 2009, the Container Recycling Institute (CRI) released a report comparing the real costs of several collection methods. In the report, CRI acknowledged that the single-stream collection system was introduced as a way to expand operations and reduce costs for municipalities, which it did accomplish. However, as these collection operations expanded, the quality of the material acquired by manufacturers decreased significantly, thus increasing their
operating expenses. For example, only 40 percent of glass collected for recycling through single-stream systems actually is recycled, due to breakage caused by repeated dumping, compacting and crushing. Alternatively, 90 percent of the glass collected by dual-stream systems is, in fact, recyclable.\(^1\) Summarizing the results of a related industry analysis, the total cost of reprocessing paper from single-stream collection systems was $3 per ton higher than from dual-stream systems, detailed in Table 21.\(^2\) Similar advantages are experienced with other commodities.

The CRI report noted that, while manufacturers continue to invest in ways to increase the use of recycled commodities, the “investments will remain contingent upon a regular supply of clean material.”\(^3\) Further, in reaction to increasing levels of contamination, manufacturers have begun to penalize suppliers for materials of inferior quality. For example, Atlanta-based Novelis,\(^*\) after attempting to increase supply quality with recommendations, lowered the price per pound paid for low-quality aluminum by 10 cents, which still did not fully compensate the company for the higher cost of processing poor materials. Further, although the U.S. economy continued to display signs of recovery from the Great Recession in the second quarter of 2010, a variety of factors will keep demand for recyclable commodities in China at relatively low levels, thereby increasing the strategic advantage of U.S. recycling manufacturers.\(^4\)

In light of these factors, state agencies providing grants to local curbside collection programs might encourage consideration of the end markets for recyclables collected, and how to organize collection systems so as to have the highest possible quality, and create the most value, for these commodities. Low-quality mater-

\(^*\)Previously mentioned in the Georgia state section, Novelis is the largest recycler of used beverage containers in North America.

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**Figure 6** SLC States with Landfill Disposal Fees

Note: The image was updated to include the $1 per ton fee on waste disposed into Alabama landfills after the passage of the Solid Wastes & Recyclable Materials Management Act of 2008 by the Alabama Legislature.

rials create an unbalanced competitive disadvantage for manufacturers utilizing them and, ultimately, pass the higher costs of processing to consumers. To continue the strong growth of recycling in the South, the final end use of recyclables must receive more recognition. Dual-stream collection systems provide a solution to this issue.

### Extended Producer Responsibility

One of the underlying problems with waste management itself is the lack of incentives for producers to consider their products on a life-cycle basis. The responsibility over increased amounts of MSW generated by this approach ultimately is relegated to local, state, and federal governments. A proactive, long-term solution is the assignment of extended producer responsibility (EPR), also known as product stewardship, a strategy that places some of the responsibility over MSW on the original manufacturers of the products that compose the waste. Thus, government regulations incentivize private waste management solutions by encouraging redesign of packaging, alternative product components, recyclability and reusability.

Essentially, EPR programs have two forms. The first, a take-back system, requires that manufacturers take back their product once its service life has ended. The most prevalent examples of state implementation of take-back programs are the dozens of electronic waste recycling

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**Table 21** Average Savings and Costs for Paper in Single-Stream Collection Systems in Relation to Dual-Stream

<table>
<thead>
<tr>
<th></th>
<th>Collection</th>
<th>Processing</th>
<th>Pulping/Paper-making</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings</td>
<td>$15</td>
<td>N/A</td>
<td>N/A</td>
<td>$15</td>
</tr>
<tr>
<td>Costs</td>
<td>N/A</td>
<td>$10</td>
<td>$8</td>
<td>$18</td>
</tr>
</tbody>
</table>


---

**Figure 7** SLC States with Electronic Waste Legislation

bills that have passed legislatures in recent years. Experts on the issue agree that individual take-back programs, programs that assign recycling responsibilities to each individual producer rather than collective take-back programs, which assign the responsibility to the producers of a group of products, are more effective. In contrast to collective take-back programs, individual producer responsibility prevents undue burdens on producers that already have implemented appropriate end-of-life recycling programs and spurs those that have not done so to take appropriate action to expand their systems.\(^7\) Again, state electronic waste recycling programs generally have taken this approach. Figure 7 displays the SLC states that have instituted electronic waste legislation.

The second EPR program, advance recycling fees (ARFs), formerly referred to as advance disposal fees, places a tax on product sales, generally per unit, which then funds a recycling program for the product in question. Examples of state implemented ARFs are the fees collected on sales of general home appliances, such as refrigerators, that are then redirected to collection and recycling programs.

While the Southern states have implemented EPR programs for products such as electronics and home appliances, there is plenty of room for expansion to other products, as already has been done in many states for beverage containers, tires and used oil. Such expansion encourages private sector solutions to increasing quantities of MSW while decreasing the cost of MSW management for local and state governments. Some members of the battery industry took the initiative to address the hazardous chemicals in batteries and, in 1995, created the Rechargeable Battery Recycling Corporation, which then launched a national, industry-funded recovery and recycling system for nickel-cadmium batteries.\(^8\) If the container and packaging industries were encouraged to take similar steps to decrease their contribution to MSW, the effects of their participation would be substantial.

**Pay-As-You-Throw**

Invariably tied to the issue of producer responsibility is the issue of consumer responsibility. In the United States, pay-as-you-throw (PAYT) programs currently are the increasingly preferred strategy of assigning consumer responsibility to the quantities of residential MSW disposed into landfills. Essentially, PAYT programs charge households for waste by counting each unit of consumption, in the same manner that utility companies charge them for their services. Generally, the most cost-effective approach is to charge households for each bag or bin of trash they generate, rather than the weight of their waste. In order to further reduce waste generation, PAYT programs often are coupled with recycling services offered at lower prices, or even for free. The attractiveness of these programs is that each household is responsible for the amount of waste they choose to dispose, avoiding an undue burden of waste collection and dumping costs on households that recycle. Although implementation can be challenging, PAYT programs have a proven track record of boosting MSW diversion rates, reducing collection costs and increasing local revenues with the sale of collected recyclables. Thus, state incentives for the adoption and expansion of PAYT programs can yield considerable dividends for both regional recycling industries and households combined.

**Container Deposit Legislation**

Another potential legislative approach to decreasing quantities of MSW disposed focuses on the adoption of container deposit legislation. Essentially, once passed, these laws add a charge, usually 5 cents or 10 cents, on beverage containers at their purchase point, which then is recoverable after the consumer returns the empty container to one of various collection points. Proponents of container deposit legislation argue that such laws significantly decrease litter, increase recycling rates and create a greater stream of supplies for local recycling manufacturers, whereas opponents assert that they create an artificial increase in beverage purchase prices, needlessly expand government regulation and necessitate system expansion for empty beverage collection. Of the Southern Legislative Conference member
states, currently none have adopted container deposit legislation. However, campaigns for their adoption continue to expand, most notably in Florida, Oklahoma, Tennessee and West Virginia.9

In non-SLC member states container deposit legislation does appear to create value by supporting state beautification projects and, thus, the tourism industry (states that have adopted such laws have seen significant reductions in overall littering, especially along roadways). However, these focus only on the collection of a small percentage of the MSW generated by the citizenry and commercial industry.

Alternatively, container deposit legislation would be most relevant in SLC member states that already have an established foundation for container recycling, such as Kentucky, the main host of U.S. primary aluminum establishments and the world's largest fully-dedicated aluminum recycling plant.10 However, states wishing to become competitive in the field also have a reason for the legislation.

Aluminum has the most potential for a substantial return on investment; as mentioned previously, recycling this resource uses 95 percent less energy than production from virgin materials, and the value of the product does not decline by reuse, i.e., aluminum can be recycled innumerable times without loss of quality. Thus, a container deposit on aluminum cans creates a strong incentive for recycling the material, and thereby creates better local market conditions for an extremely profitable aluminum industry. Similar results, although perhaps not as remunerative, can be derived from deposits for plastic containers.

In summary, while recognizing that some benefits accrue from the adoption of container deposit legislation, this report focuses on more comprehensive solutions to MSW issues in the Southern region.

Mandatory Commercial Recycling

A critical component of MSW reduction is the provision of recycling services to more than just the residential sector. After the Florida Legislature issued a 75 percent recycling goal for 2020, a subsequent report on the objective noted that commercial establishments contributed 67 percent to the total MSW collected in the state, and that a higher recycling rate by the commercial sector was indispensable for the realization of the statewide recycling goal. Further, the report noted that, in Florida counties, mandatory commercial recycling ordinances increased recycling rates in the local sector to 53 percent, while saving individual businesses up to $2,300 annually. In a similar vein, in 2005, after the North Carolina General Assembly passed legislation requiring most bars and restaurants to recycle empty beverage containers, recovery of used glass increased by 22 percent in just one year, significantly increasing supplies for local glass recycling establishments. Statewide regulations that promote recycling by the commercial sector can be a significant step toward creating a competitive edge for the regional recycling industry.

Conclusion

In the 1990s, several Southern states joined the contemporary movement sweeping across the nation that created many of the solid waste management acts that continue to play a momentous role in MSW management to this day. Further, many states in the region have recognized the contribution of the recycling industry to the economic growth of their industrial base and, in response, decided to promote the industry through many nationally recognized and state-specific initiatives. However, there still are several SLC states that lag behind their neighbors in adopting the necessary components for supporting recycling manufacturers while simultaneously decreasing some of the monetary burden on local governments for handling MSW. This report provides policymakers several examples of the solutions taken by states in the SLC, many of which can be duplicated within their own home state, to the multiple issues caused by growing landfills around an increasingly urbanizing Southern United States. Without appropriate action to support the recycling industry and encourage residents to participate in recycling programs, the Southern region stands to hinder their competitiveness in the new 21st century, increasingly connected and resourceful global economy.
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