

Recommendations for Improving Solid Waste Management

SECTION

3

The S.C. Solid Waste Policy and Management Act of 1991 (Act) – S.C. Code of Laws § 44-96-60 – requires the S.C. Department of Health and Environmental Control (DHEC) to make annual recommendations on how to improve solid waste management in the state.

Much has been accomplished since the passage of the Act. For example, South Carolina has fewer landfills and less illegal dumping. More rigorous requirements for landfills and other solid waste facilities are in place. Solid waste management technology has dramatically improved. Greenhouse gas emissions have been reduced.

At the same time, the state’s recycling infrastructure has grown to 93 curbside programs, 580 recycling drop-off centers and 891 used oil collection centers for do-it-yourself oil changers. Each of South Carolina’s 47 state parks and historic sites offer recycling. Companies set zero waste goals. The state’s recycling industry is growing with more than 520 companies and a \$13 billion annual economic impact.

While South Carolina can enjoy the many accomplishments of the past 25 years, much remains to be done.

While South Carolina can enjoy the many accomplishments of the past 25 years, much remains to be done.

With more individuals, businesses, organizations, schools, colleges/ universities and government agencies recycling more than ever, nearly 74 percent of the MSW generated in South Carolina was disposed of in landfills. Disposal of valuable material is a waste of resources and lost economic opportunity. What steps need to be taken to keep it out of the landfill?

More specifically, how do we prevent and recover more food waste? How do we improve construction and demolition (C&D) debris recycling? How does the state address waste-to-energy and other new technologies? What needs to be done to grow South Carolina’s recycling industry and recycling markets?

What can local governments do to better manage the rising cost of the essential solid waste services that they offer?

Beyond these challenges, there is a nationwide shift in thinking from traditional waste management (e.g., disposal, recycling) to sustainable materials management (SMM). This new approach is centered on using and reusing materials more productively throughout their entire life cycle. Looking at how materials are used throughout their life cycle provides new opportunities to reduce environmental impacts, conserve resources and lessen costs.

South Carolina is well prepared to make this transition and meet all its challenges by building on the foundation created by the policies and goals outlined in the Act. These goals and policies include:

- **Ensure that landfills and other solid waste facilities are properly sited, designed, constructed, operated and closed** to protect human health and the environment;
- **Promote regionalization** to manage solid waste more efficiently;
- **Promote waste reduction, reuse and recycling** above other methods that preclude further use of the material;
- **Work towards achieving South Carolina’s waste reduction and recycling goals;**
- **Work with county governments to create and maintain 20 years of landfill capacity;** and
- **Provide and improve outreach, education and access of information** to residents, businesses, organizations, schools and others on solid waste management issues.

The recommendations that follow support the policies and goals listed above. They are the key steps that South Carolina can take to manage its waste more safely and efficiently, meet its waste reduction and recycling goals and realize more of the economic benefits of recycling.



Update the State Plan.

The Act (Section 44-96-60) requires DHEC to develop a state solid waste management plan (State Plan) and outlines the types of information that must be part of the publication. The State Plan sets the direction, purpose and vision for South Carolina’s management of its solid waste. Counties and regions must develop solid waste plans that are consistent with the State Plan. Smart planning at both the state and local level provides South Carolina the opportunity to manage its solid waste in a safe, efficient and environmentally responsible manner and move towards meeting the state’s waste reduction and recycling goals.

While the State Plan is updated through the publication of the S.C. Solid Waste Management Annual Report, it has not been revised since 1999. The State Plan needs to be revised to reflect new issues, new recyclable material and significant changes in technologies and practices as well as the knowledge gained from successes and shortcomings in the past 15-plus years. A new State Plan also is necessary to meet the responsibility of providing up-to-date data and an overall direction for county governments as they update their solid waste plans.

RECOMMENDATION

Publish a new State Plan by June 30, 2017.



Improve reporting.

The focus of this report, as required by the Act, is MSW (see definition on page 2) and specifically the state’s MSW recycling rate. It is important to know that South Carolina’s recycling rate reflects what is reported to DHEC on an annual basis – not necessarily what is actually recovered for recycling. Currently, only county governments, state agencies and state-supported colleges/universities are required to report recycling efforts to DHEC. Businesses are not required to report – so it is unclear how much recycling data is missed. Lack of reporting by businesses becomes more significant when it is generally accepted that MSW generation is roughly 60 percent residential and 40 percent commercial.

Lack of reporting by businesses becomes more significant when it is generally accepted that MSW generation is roughly 60 percent residential and 40 percent commercial.

There are efforts to secure commercial recycling numbers. Many counties ask businesses for recycling information, but most local governments don’t have the resources to address this issue. DHEC, through its S.C. Smart Business Recycling Program and Green Hospitality Program, provides a Web-based reporting tool. DHEC and local governments also work with processors to gather statewide commercial recycling tonnages. All of these efforts provide some numbers, but lead to incomplete and inconsistent reporting from year to year. It is important to note that permitted solid waste facilities are required to

report to DHEC all material disposed of in South Carolina landfills or exported for disposal. The state’s recycling rate is calculated by dividing the state’s total recycling tonnage by the state’s total generation tonnage (recycling total combined with disposal total). DHEC receives complete information on disposal and residential recycling, but incomplete information on commercial recycling. Given that, the state’s recycling rate is skewed and does not accurately reflect recycling efforts across all sectors.

With a goal to reduce per capita MSW disposal to 3.25 pounds or less and recycle 40 percent of all MSW generated by 2020, it is critical that the reporting of recycling efforts across all sectors (residential, commercial/institutional and industrial) improve.

RECOMMENDATIONS

Continue providing technical assistance and training to local governments to secure and provide accurate reporting of residential tonnages and ways to secure more recycling data from commercial and industrial sectors.

Promote the benefits of having accurate and comprehensive recycling data. Governments and businesses that comprise the state’s recycling industry will be able to properly plan, determine recycling behaviors from different sectors, measure recycling of specific commodities, and more efficiently maintain and/or develop recycling markets.

Encourage large industries, businesses, recycling processors and haulers to report recycling data. Work on this recommendation with the S.C. Department of Commerce. If this effort fails, consider updating the Act to require mandatory reporting for recycling processors and businesses with more than 50 employees.

3 End the myth that recycling is free.

Recycling is not free. It never was. When recycling re-emerged into the nation's consciousness in the 1990s, it was almost always promoted to residents that recycling will pay for itself through the revenue earned from the sale of the recovered material combined with avoided disposal costs. Many residents believed it then and still believe it now as well as a second myth that every material recycled has great value.

Both of these myths need to end. Residents must be made aware that they are paying for two basic solid waste management options: disposal and recycling. Both

management choices help protect human health and the environment. But once a material is disposed of in a landfill, it has no additional value and produces no additional economic activity.

Conversely, recycling offers a chance to earn revenue, avoid disposal costs and generate further economic activity. Material that is recycled and reintroduced into a manufacturing process supports economic growth and development through the creation of businesses, markets and jobs necessary to support those activities. The economic impact study (see Section 4) completed in 2014 shows the significant, positive impact the recycling industry has on South Carolina's economy.

Residents also need to know that recyclables are commodities that are subject to the same market

fluctuations in value as other commodities. Unfortunately, it is generally accepted that the market value of recyclables are more volatile than other commodities. Those highs and lows are unpredictable. When prices are good, revenues are good. When prices are down, programs are more stressed.



Local governments should carefully consider and measure the true costs of any option to managing solid waste and communicate that information to residents. All aspects should be considered including long-term management, monitoring, post-closure, environmental impacts and lost opportunities for material recovery.

Residents must be made aware that they are paying for two basic solid waste management options: disposal and recycling.

RECOMMENDATIONS

Conduct research to develop information and tools that local governments can use to promote recycling centered on the economic impact of recycling. This work will be done in partnership with the S.C. Department of Commerce and University of South Carolina's Moore School of Business. This information should include an analysis comparing the life-cycle costs of disposal to recycling and of the jobs created by each method of material management.

Develop an information campaign to increase awareness to residents of the costs of solid waste management (i.e., disposal, recycling). Integrate that campaign into the RecycleMoreSC campaign and other potential venues.

Local governments should consider not having or promoting a separate charge for recycling or a specific commodity (e.g., electronics), but rather provide one cost with an explanation of all of the solid waste services offered.

Recycling is big business in South Carolina.

"The Economic Impact of the Recycling Industry in South Carolina" is a 2014 study commissioned by DHEC, the S.C. Department of Commerce and others. It shows that the industry, which is comprised of more than 520 companies, is responsible for more than 22,000 direct jobs (a 44 percent increase from 2006), \$2.7 billion in annual labor income (up 80 percent from 2006) and \$329 million in state and local taxes each year.

The study was completed by Dr. Frank Hefner of the College of Charleston's Department of Economics and Finance. To view the complete study, please visit www.scdhec.gov/HomeAndEnvironment/Recycling/EconomicImpact/.



4 Maximize food waste reduction and recovery opportunities.

Food waste is the top item thrown away by Americans accounting for 35.2 million tons (21 percent) of the nation's discards in 2013 according to the U.S. Environmental Protection Agency (EPA). Nationally, about 1.8 tons (5 percent) of the food waste generated was recovered.

Applying those percentages to South Carolina's MSW generation, the state produced an estimated 607,298 tons of food waste in FY15 and recovered only 1 percent (6,083 tons).

Clearly, if South Carolina is to achieve its per capita waste reduction (3.25 pounds or less) and recycling

Nationally, about 5 percent of the food waste generated was recovered.

Eliminating Food Waste

Food waste is much more than a solid waste issue. In the United States, it is estimated that at least 31 percent of edible food goes to waste – a loss valued at more than \$160 million according to EPA. A family of four on average throws away about \$1,500 of uneaten food ever year according to the U.S. Department of Agriculture (USDA). At the same time about one in six Americans – about 50 million people overall – live in food insecure households according to a November 2014 study.

Added to these numbers is the loss of natural resources used to produce food that is never eaten. Steps are being taken to address this issue. In September 2015, USDA and EPA announced America's first food waste reduction goal – committing to a 50 percent reduction by 2030.

In November 2015, another step was taken in South Carolina when DHEC, EPA and Southeast Recycling Development Council sponsored the Food Recovery Summit in Charleston. The event ended with a commitment to develop a strategic vision and plan to move forward and achieve the national goals.



goals (40 percent of the MSW stream) by 2020, the state must include a concentrated focus on increased food waste prevention and recovery.

Food waste reduction and recovery includes:

- **Preventing food waste before it is created;**
- **Donation;** and
- **Composting and other options** (e.g., anaerobic digestion).

These actions have significant economic, social and environmental benefits. Preventing food waste can save businesses money through improved purchasing and food preparation practices that result in lowered disposal costs. Donation, done properly, is a safe and easy way to provide much needed food to individuals. Composting turns excess food that is not fit for consumption into a nutrient-rich soil amendment.

RECOMMENDATIONS

Develop and promote best management practices to reduce food waste. Hospitality facilities, colleges/universities, institutions (e.g., nursing homes, hospitals) and businesses should be encouraged to closely track food waste, change purchasing habits and train staff to ensure the efficient preparation of food.

Continue to promote food waste prevention and recovery throughout the region through the partnership with the Southeast Recycling Development Council.

Continue to promote food recovery through the Green Hospitality Program and the S.C. Smart Business Recycling Program.

Increase food recovery on military bases in South Carolina by continuing to work with the Department of Defense Alliance stakeholder group.

Find a regional solution for organic material in the Midlands by continuing to work with EPA, Fort Jackson, the University of South Carolina, S.C. Department of Commerce and local governments.

Increase the quality and quantity of recovered food waste by continuing to work with all stakeholders to improve infrastructure as possible.

Develop a stakeholder group to encourage efficient, proper practices of food donation.

Develop a campaign to educate residents on strategies for reducing food waste. Work with local governments and state agencies to provide technical assistance, outreach programs and grant funding if possible. As part of this effort, develop a comprehensive Web site to include a one-stop shop of information for all stakeholders including a listing of food recovery options.

5 Compost more yard trimmings.

Yard trimmings comprise about 34.2 million tons (13.5 percent) of the nation's MSW waste stream according to EPA.

In South Carolina, it is estimated that more than 560,000 tons of yard trimmings were generated in FY15. Of that amount, only 35 percent (197,488 tons) was recovered.

Increased recovery of yard trimmings will decrease South Carolina's per capita disposal and increase the state's MSW recycling rate as well as conserve resources, produce nutrient-rich soil amendments and create jobs and businesses.

Increased recovery of yard trimmings will decrease South Carolina's per capita disposal and increase the state's MSW recycling rate ...

RECOMMENDATIONS

Composting should be encouraged from backyard to large-scale systems and promoted to all stakeholders including households, schools, colleges/universities, businesses, U.S. Department of Defense facilities and other government entities.

Promote residential and small-scale community composting. This strategy includes working closely with local governments to offer technical assistance, outreach programs and grant funding to support residential compost bin sales.

Attract businesses to South Carolina that want to set up large-scale composting operations to recover more material, produce valuable products and create jobs by working with the S.C. Department of Commerce's Recycling Market Development Program and regional experts.

Expand school composting programs. Provide technical assistance, training and grant funding to increase the number of schools recovering organic material through composting and waste reduction. Develop partnerships through the "Action for a Cleaner Tomorrow" program to set up composting systems in elementary and middle schools.

Map commercial compost operations, generators of food waste and markets by continuing to work with the S.C. Department of Commerce Recycling Market Development Program.

6 Increase C&D debris recycling.

C&D debris is comprised of material that is generated during the construction, renovation and demolition of buildings, roads and bridges. C&D debris contains bulky, heavy material such as concrete, wood, metal, glass, new gypsum scrap, asphalt paving and other building components.

Reducing and recycling C&D debris conserves natural resources, saves landfill space, improves landfill stability and compaction, reduces the environmental impact of producing new material, creates jobs and reduces project expenses through avoided purchases and disposal costs.

Despite the many benefits, C&D debris recycling is only occurring at a small level and remains a significant challenge.

C&D debris recycling is only occurring at a small level and remains a significant challenge.

South Carolina, like other states, faces two obstacles to increased recovery – low disposal costs and lack of markets. There are limited markets in the state for C&D debris and even more limited markets for specific material such as shingles and gypsum wallboard.

In addition, it is almost always less expensive for contractors and builders to dispose of the material than take the time to separate, store and find a market. Limited markets also can lead to the creation of illegal stockpiles or dumped C&D debris, when collectors fail to either recycle or properly dispose of the material.

To encourage the recycling of C&D debris, many local governments throughout the United States have adopted policies and C&D bans. Some examples are mandating a 50 percent C&D debris recovery rate.

RECOMMENDATIONS

Develop and implement a plan to promote the benefits of C&D recycling to all stakeholders that includes a Web-based clearinghouse and printed material (e.g., C&D manual, pocket guide, posters and signage).

Encourage local governments to determine whether any policy change or bans would be effective in increasing C&D debris recycling in their community.

7

Manage electronics recycling programs efficiently.

Unwanted electronics, often called e-scrap, contain potentially hazardous material such as lead and mercury that can pose a risk to human health and the environment if not properly managed. Unwanted electronics also contain valuable material such as precious metals that can be recovered through responsible recycling.

Recycling electronics helps protect the environment, conserve resources and provide raw material for new products. Given that, South Carolina passed legislation in 2010 that banned the disposal of specific electronics in solid waste landfills effective July 1, 2011. In short, residents are required to recycle computers, computer monitors, printers and televisions. The legislation was revised on March 4, 2014 to add more specific requirements and recovery obligations for computer monitor and television manufacturers.

These obligations require a manufacturer of computer monitors or televisions to recycle or arrange to recycle either: 1) 80 percent of the weight

of computer monitors and televisions sold the previous year; or 2) join a representative organization (partnership) of manufacturers that provides recycling services to local governments proportionate to their market share for the previous year. Specifics of these requirements are outlined in the legislation.

If measured by the amount of material recovered, electronics recycling has been successful in South Carolina. If measured by cost to local governments to offer programs, it has been a costly endeavor. Despite funding assistance by computer monitor and television manufacturers as required by the legislation, recovery costs have dramatically increased the past several years, placing a severe burden on local government budgets.

RECOMMENDATIONS

Local governments should follow best management practices when collecting, storing and packaging material to reduce human health and environmental risk as well as potentially increase revenue for material.

Local governments should provide as much packaging and sorting to potentially increase revenue for material.

8

Increase recovery of hard-to-recycle items.

Many products that are part of the MSW stream are not easily recovered including carpet, paint, mercury-containing lamps, thermostats, rechargeable batteries, mattresses and many household goods (e.g., cleaners, pesticides). These products frequently are costly to recover, have limited markets and often contain hazardous material (e.g., mercury-containing lamps). There are several ways to address these products. One approach is to simply place a fee on the product when it is purchased that, in turn, is used to recover the material. Another approach is for industry to take the lead in recovering its product (e.g., Call2Recycle – the program that recovers rechargeable batteries). In this effort, industry provides outreach material, collection containers (almost always located in retail outlets) and shipping of the collected material to the recycling facility at no cost.

Another approach uses everyone involved with the product. The approach – known as product stewardship – is simply defined as all parties that

are involved in the design, manufacturing, selling and use of a product take responsibility for the environmental impact of that product throughout its entire life. Product stewardship addresses a number of factors including: the effectiveness of current collection and recycling of the product; costs to local governments to manage the material; disposal rates; toxic components of the product; interest and readiness of industry, government and markets; and life-cycle analysis.

There is only one product stewardship program in South Carolina – electronics – specifically computer monitors and televisions. By law, these manufacturers have recovery obligations that help fund the cost to recover these products. The state also is working with state and national groups involved in increasing the recovery of carpet.

RECOMMENDATIONS

Use nationally established programs to recover more material.

Work with all stakeholders to increase the collection of hard-to-recycle items.

9 State agencies and colleges/ universities should lead by example.

As part of South Carolina's effort to meet its waste reduction and recycling goals, state agencies and state-supported colleges/universities are required by the Act to recycle and buy recycled-content products (See specifics in the box below).

Beyond those requirements, state agencies as well as colleges/universities should lead by example. These stakeholders not only generate significant quantities of recyclables but also can use their considerable purchasing power to buy recycled-content products to support recycling markets and South Carolina's recycling industry.

RECOMMENDATIONS

Implement the Green Government Initiative to increase recycling and buying recycled-content products at state agencies. This campaign includes technical assistance, training and recognition as well as tools to improve reporting of recycling activities as required by the Act.

Promote the 7.5 percent price preference for recycled-content products as outlined in the Act to ensure that it is consistently implemented.

Develop a statewide system to track and report recycled-content purchases.

Update and promote the state's Environmentally Preferred Purchasing Policy. Set up a stakeholder group to review and revise this policy.

Stimulate new recycling markets through state agency procurement practices. Educate purchasers on recycled-content products, particularly those on state contract. Ensure that the list of recycled-content products and specifications are updated annually as required by the Act.

Recycling, Buying Recycled Requirements for State Government



The Act (Section 44-96-140) requires the General Assembly, Governor's Office and Judiciary – as well as state agencies and state-supported colleges/universities – to have waste reduction and recycling programs and report those recycling activities annually to DHEC.

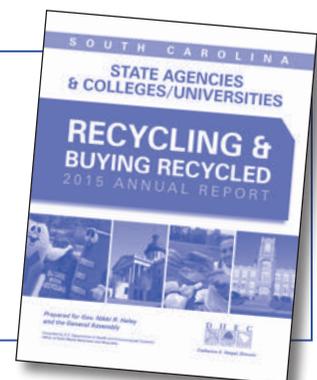
This section of the Act also outlines requirements and goals for these stakeholders on purchasing recycled-content products. These requirements include:

1. A goal that 25 percent of products purchased contain recycled content;
2. A system to track and report those purchases annually to DHEC; and
3. A 7.5 percent price preference for recycled-content products.

South Carolina also established an Environmentally Preferred Purchasing Policy in 2009 that provides additional information, standards, guidance and tools for state agencies as well as colleges/universities.

Learn more about the recycling efforts of South Carolina's state agencies and colleges/universities.

Visit www.scdhec.gov/recycle and select "Data and Reports."



10

Local governments should maximize efficiency of their recycling programs.

Local government programs are the front line of solid waste management. These services – which represent a significant investment – include collection of garbage and recyclables through curbside programs and/or drop-off centers as well as programs for composting, electronics and hazardous household material.

According to full-cost disclosure reports submitted to DHEC, local governments spent more than \$323 million to manage solid waste in FY15 and more than \$1.6 billion since FY11.

While some of these costs are offset by avoided disposal costs and the revenue earned from the sale of recyclables, each program should always ask how it can be more efficient, more cost-effective and more successful.



Local governments spent more than \$323 million to manage solid waste in FY15 and more than \$1.6 billion since FY11.

RECOMMENDATIONS

Maintain an up-to-date solid waste plan that focuses on minimizing the amount of material that is disposed of in landfills.

Provide as much education and outreach as possible to residents. Maintain up-to-date information on the Web. Review materials periodically. Make clear what is recyclable in the program and what is not.

Use roll carts for residential recycling collection as possible. The use of roll carts often increases participation and the amount of material collected.

Promote the environmental and economic benefits of recycling to community decision makers.

Develop local or regional partnerships that can improve programs (e.g., national retailers located in your community, local businesses, nearby local governments, schools, non-profits, other government agencies).

Identify improvements that can be made without additional costs to programs (e.g., adding a commodity).

Partner with local businesses and recycling processors to encourage commercial waste reduction, recycling and reporting of these activities.

RecycleMoreSC Campaign Introduced to Boost Statewide Recycling

The RecycleMoreSC campaign is designed to reinvigorate recycling in South Carolina by:

- Promoting the economic and environmental benefits of recycling;
- Providing tools to local governments to present a clear, consistent message across the state; and
- Challenging residents, businesses and others to do their part and recycle more.

The campaign is the centerpiece effort of the 40by2020 Partnership. The partnership is a group of public and private stakeholders dedicated to sharing knowledge, coordinating resources and working together to help South Carolina meet or exceed its 40 percent recycling goal set for 2020.

The partnership includes Pratt Industries, Sonoco Recycling, the S.C. Beverage Association, PalmettoPride, the S.C. Department of Commerce and DHEC.



11

Consider pay-as-you-throw programs.

Traditionally, residents pay for waste collection through property taxes or a fixed fee regardless of how much or how little waste they generate.

Pay-as-you-throw (PAYT) programs break that tradition by treating waste collection just like electricity, gas and other utilities where consumers pay for what they use. In PAYT programs, residents are charged for the amount of waste they throw away and not charged directly for recycling. This creates a direct economic incentive to recycle more and throw away less.

PAYT programs work. Many communities with PAYT programs have reported significant increases in recycling. In addition, PAYT programs often have proven to be an effective way for local

governments to offset increased solid waste management costs.

Setting up a PAYT program is not without its difficulties and will require careful consideration, planning, time and commitment. Still, this option should be considered. Local governments should not just continue to accept the traditional methods of managing waste.

As part this effort, residents need to understand the true cost of managing solid waste. See Section 4 for more information.

RECOMMENDATIONS

Local governments should evaluate their programs and consider implementing a PAYT program.

Local governments should make their solid waste management program costs more transparent to residents.

12

Enhance and strengthen education and outreach.

From elementary school students to local government decision makers, education, outreach and technical assistance are essential tools to help South Carolinians understand and promote the economic and environmental benefits as well as the challenges of recycling and encourage them to do their part and participate.

South Carolina has the infrastructure to recycle far more material than is being recovered.

South Carolina has the infrastructure to recycle far more material than is being recovered. The primary way to improve recovery is with successful outreach and education efforts that inspire people to change their behavior and make recycling a social norm.

DHEC’s Office of Solid Waste Reduction and Recycling (Office), as required by the Act, plays a key role in providing outreach and education programs and projects as well as technical assistance to schools, colleges/universities, businesses, local governments, the public and other stakeholders. The Office, however, is only one stakeholder. Every South Carolinian has the opportunity – and responsibility – to do their part.

RECOMMENDATIONS

Encourage and assist local governments to offer outreach and education programs to residents on community recycling options and to look for partnerships to promote recycling.

Encourage local governments to adopt the RecycleMoreSC outreach campaign.

Identify opportunities to promote the economic benefits of recycling to local decision makers and appropriate organizations.

Inspire more businesses to reduce waste, recycle, report these activities and use the resources of the S.C. Smart Business Recycling Program.

Increase the number of hotels, motels, restaurants and bars that are reducing their environmental impact through resources from DHEC’s Green Hospitality Program and participation in the Green Hospitality Alliance.

Encourage more teachers and schools to participate in “Action for a Cleaner Tomorrow” trainings and classroom presentations and take advantage of DHEC’s K-12 environmental education resources.

Continue to expand public-private partnerships to set up, promote and maintain recycling in public venues (e.g., airports, state and local parks, welcome centers, athletic fields). Encourage “twinning the bin” by placing a recycling receptacle beside every trash receptacle.

13

Prevent illegal dumping of waste tires and facilitate removal of existing waste tire dumps.

South Carolinians generate an estimated 4.5 million waste tires every year. When managed improperly – dumped or stored illegally – tires can become a health hazard by holding water and attracting mosquitoes as well as creating potential fire hazards and unsightly nuisances.

Unfortunately, many waste tires do not take a direct route to a tire recycler. The state continues to see illegal dumping and is working to identify responsible parties to remove and manage illegally dumped tires. The cleanup of existing piles, however, is not a solution. Preventing

the creation of waste tire piles is critical to the success of any waste tire management program.

When managed properly, tires can be used in construction activities and new products as well as burned for energy recovery. Most waste tires generated in South Carolina are chipped and burned in place of other fuels (e.g., coal). They also are used frequently as a substitute for gravel or other aggregates in septic tank drain fields or other drainage applications. Wire-free tire rubber can be used for higher-value products. Chipped tire rubber, for example, can be used in place of wood chips in playgrounds. Finely ground tire rubber can be formed into running tracks or molded into industrial mats.

The proper management of waste tires continues to be a priority. DHEC has initiated steps to prevent illegal tire dumping and to help ensure the movement of tires to recycling facilities. These initiatives include a revision to Regulation 61-107.3 Solid Waste Management: Waste Tires, which became effective in 2015. The regulation revision clarifies reporting and record keeping, and expands the operational, permitting and registration requirements for haulers, collectors and processors of waste tires. One important change is new financial assurance requirements for certain waste tire haulers. Waste tire haulers that haul tires for compensation by other persons are now required to provide \$10,000 in financial assurance in order to become registered. Financial assurance is not required for persons who haul 15 or fewer tires at any time or for those who haul tires they have generated in the course of their own business.

When managed properly, tires can be used in construction activities and new products as well as burned for energy recovery.

DHEC is working with stakeholders to ensure understanding of the provisions of the regulation and provides technical assistance upon request.

RECOMMENDATIONS

Improve markets. Strong markets for waste tires can't happen without end-users that are knowledgeable about opportunities for using recycled tire rubber in manufacturing and engineering applications and can't be sustained without healthy waste tire processors to supply quality product. DHEC and the S.C. Department of Commerce (Recycling Market Development Program) should continue efforts in conjunction with tire manufacturers, tire processors, research institutions and others to promote higher-value uses for waste tires and a climate where the economics of waste tire processing can sustain suppliers of processed tire material.

Work with the EPA and others to gain understanding of the potential dangers of crumb tire rubber in certain applications especially playgrounds and sports turfs.

Minimize the opportunities for illegal tire disposal. DHEC efforts should include full implementation of the manifesting and registration requirements. Tire generators and retailers must verify their waste tires are hauled only by legally registered haulers and that they are delivered to appropriate facilities. DHEC should work with waste tire generators, haulers, local governments and waste tire processors to ensure that only properly bonded waste tire haulers are used to move tires.

Engage law enforcement and anti-littering organizations. DHEC should work with state and local law enforcement and anti-littering organizations to locate illegal tire dumps and waste tire stockpiles, and to identify offenders. DHEC also should work with law enforcement to deter illegal dumping and to ensure offenders are dealt with consistently and with all available force of law and regulation. DHEC should work with anti-littering agencies and non-profits to increase awareness of tire dumping issues, and to promote cooperation between law enforcement and community environmental groups.

Involve local governments. DHEC should continue to assist county and municipal governments in implementing waste tire management programs that prevent illegal dumping and encourage the purchase of high-value products made from waste tires. DHEC also should work with local governments to develop programs that expedite the removal of tire dumps and stockpiles. As of the publication date of this report, there have been no confirmed cases of Zika virus in South Carolina; however, mosquitoes also may carry West Nile virus and eastern equine encephalitis. It's important to control the mosquito populations in our communities, and removing waste tire dumps and other sources of standing water helps eliminate mosquito breeding grounds.

14 Prevent illegal dumping of other material.

Tires, C&D debris, land-clearing debris and electronics are the materials most frequently dumped illegally.

Tires, C&D debris, land-clearing debris and electronics are the materials most frequently dumped illegally.

The most common practice is dumping material in a remote area. Another common problem is when material is collected for recycling and stockpiled with a minimum amount being recycled and the remainder left unmanaged. Both activities result in the creation of illegal dumping that degrades property values and puts human health and the environment at risk. Both activities also result in property owners or taxpayers paying for the cleanup.

The underlying causes of illegal dumping are varied, but generally fall into the following categories:

- **Low Risk** – Haulers that dump tires and land-clearing debris and other material, face a low risk of being identified because the material they dump is difficult to trace to the source. Law enforcement and judicial bodies also may not consider the impact of this dumping on the health, environmental or economic welfare of a community, resulting in low fines and penalties against dumpers.
- **Cost Factors** – The cost of properly recycling or disposing of certain materials creates an incentive for illegal dumping. The average fee to recycle waste tires, for example, is higher in South Carolina than the cost to properly dispose

of MSW in a landfill. In addition, when a recycled material has a low intrinsic value, the costs to process and sell the material may be greater than the revenue received from its sale. Collectors may stockpile material to avoid processing costs.

- **Generator Responsibility** – Waste generators sometimes encourage illegal dumping by choosing the lowest cost option available to dispose of waste, without regard for how their waste is managed.
- **Statutory and Regulatory Exemptions** – The Act provides regulatory exemptions for recycling activities. While this is a positive incentive for legitimate recyclers, some operators use these loopholes to claim they are performing a recycling activity when, in fact, their activities more closely resemble unpermitted landfills.

RECOMMENDATIONS

Regulatory agencies, local governments, private sector businesses and residents should work together to prevent illegal dumping.

Develop strong markets for recyclable material. The higher value a material has, the more likely it is to be treated as a commodity and the less likely it is to be dumped illegally.

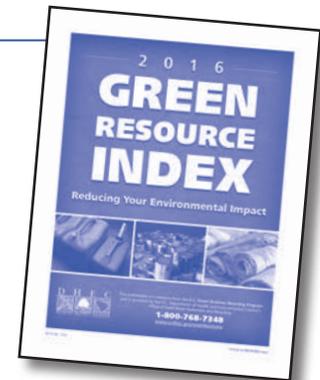
Consider statutory and regulatory changes to hold haulers, processors and generators more accountable for the proper collection, transport, recycling and disposal of solid waste and recyclable material.

Implement more robust litter control policies and practices including cooperation between state and local law enforcement agencies and add litter control staff.

Recycling Market Resources

The Green Resource Index, which is designed to help businesses, industry, local governments and others, is a continuously updated, Web-based directory that includes recyclers by commodity, material substitution providers, recycling service providers and equipment vendors. Visit www.scdhec.gov/recycle.

The S.C. Materials Exchange is designed to help businesses, non-profits and other organizations exchange reusable material by providing users access to information on material available or wanted. Visit www.scdhec.gov/scme.



15 Maintain and continue to develop recycling markets.

Recycling markets and market development are an indispensable component of South Carolina's waste management system. Markets use material that otherwise would be disposed of and keeps that material in circulation, creating jobs, conserving resources, reducing the need to build landfills and lessening negative environmental impacts. Recycling only works when there are businesses to buy and reprocess the material that is collected.

South Carolina has several key players focused on market development. The S.C. Department of Commerce's Recycling Market Development

Program and the Recycling Market Development Advisory Council work together to create and grow recycling markets and provide technical assistance as well as track growth, investment and other recycling industry indicators. In addition, the state is a member of the Southeast Recycling Development Council (SERDC). SERDC represents 11 states and works toward coordinating efforts in the region to promote recycling, recycling partnerships and markets through technical assistance and tools.

South Carolina is fortunate to have a robust recycling industry (see Section 4) as well as access to other major companies in the Southeast that need recovered material. These recycling markets, though expanding and widely available for most commodities, continue to be impacted by low regional tipping fees, price fluctuations, competition with virgin material and the economic competition of disposal.

South Carolina is fortunate to have a robust recycling industry as well as access to other major companies in the Southeast that need recovered material.

In summary, while much has been accomplished, much remains to be done such as recovering more and cleaner material in a more efficient way and finding solutions for hard-to-recycle items such as carpet, mattresses and fluorescents.

RECOMMENDATIONS

Conduct research to provide more detailed information on the economic impact of recycling with the S.C. Department of Commerce and the University of South Carolina's Moore School of Business. Work will include determining the benefits of increased recycling of specific commodities and comparing the costs/benefits of disposal, recycling and waste-to-energy.

Promote the economic impact of recycling to decision makers and the public.

Consider incentives to assist in the development of recycling businesses.

Consider the implementation of potential programs to stimulate and support markets for specific material.

Continue to work to attract commercial composting investment in South Carolina. While local governments can play an integral role in developing organics recovery infrastructure in the state, it simply will not work without private investment. Provide technical assistance (e.g., mapping food waste generators across the state).

Encourage the recycling industry to assist stakeholders (e.g., local governments and businesses) **to improve the quantity and quality of recovered material** through outreach, technical assistance and partnerships.

Work with national, regional and state stakeholders to find new or improved market-based solutions for commodities (e.g., tires, plastic, glass, carpet, C&D debris).

Work with state agencies (e.g., S.C. Department of Transportation) **to increase the use of recycled-content material** developed by South Carolina companies.

S.C. Smart Business Recycling and Green Hospitality Programs

These programs help businesses of all sizes reduce waste, recycle and lessen their environmental impact.

Both programs offer free, confidential, non-regulatory services including: best management practices fact sheets and guides; site visits and technical assistance; research and contacts for potential markets, service providers and beneficial reuse; on-demand webinars; and workshops.

To learn more, visit www.scdhec.gov/smartbusiness or www.scdhec.gov/greenhospitality.

