

**South Carolina**

**Recycling Market Development Advisory Council**

**2015 Annual Report**



**South Carolina**  
Department of Commerce

*Just right for business.*

**South Carolina Department of Commerce**

**Recycling Market Development Advisory Council**

**2015 Annual Report**

**South Carolina Department of Commerce**

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## **ACKNOWLEDGEMENTS**

The “South Carolina Department of Commerce Recycling Market Development Advisory Council 2015 Annual Report” is submitted by the S.C. Department of Commerce in compliance with the S.C. Solid Waste Policy and Management Act of 1991(S.C. Code of Laws 44-96-60).

This report was published on March 15, 2016 by the Recycling Market Development staff at the S.C. Department of Commerce.

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From the pristine beaches of the Lowcountry to the picturesque rolling hills and mountains in the Upstate, South Carolina is blessed with a diverse, breathtaking geography, as well as an abundance of natural resources. The ongoing effort to conserve those resources, ensuring that they're available for future generations to enjoy, has turned into a robust industry in the Palmetto State. In fact, the economic impact of recycling—South Carolina's sustainable industry—has doubled in size over the last decade and now exceeds \$13 billion, annually.

As the recycling industry continues to grow, new companies are coming to South Carolina and existing industries are expanding their operations. In 2015, the recycling industry announced \$264 million in capital investment, as 13 new or existing companies announced projects creating 565 new jobs.

The S.C. Department of Commerce is focused on the recruitment of recycling firms to this state, as well as the promotion of recycling and other sustainable business practices. Last year, Commerce recycling staff focused on developing markets for organic material recovery, plastics recycling and continued to track our state's economic impact for recycling.

In the Palmetto State, we recognize that finding solutions that benefit the planet, its people and the economy is a fundamental part of good business practice. As a leader in manufacturing, we often say that, in South Carolina, we're great at making things. With a thriving recycling industry, it's clear that the Palmetto State also excels at remaking things

Bobby Hitt, Secretary of Commerce

## EXECUTIVE SUMMARY

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The SC Department of Commerce provides staff support for the Recycling Market Development Advisory Council as well as assists with economic development activities with the recycling industry sector. In addition, Recycling Market Development program staff undertakes specific activities in support of recycling market development. Commerce's Recycling Market Development program staff has focused its efforts on:

- Market based solutions to help increase recycling through support and coordination of stakeholders groups.
- Promoting recycling's economic strength and impact to the state, and prepare marketing materials that enumerate SC's economic strength and position in recycling.
- Working with the state's recycling industry through a variety of mechanisms, such as service on stakeholder groups, boards and councils.
- Providing assistance to the state's new or expanding recycling businesses.
- Providing technical assistance to existing industry to deliver solutions to their recycling needs.

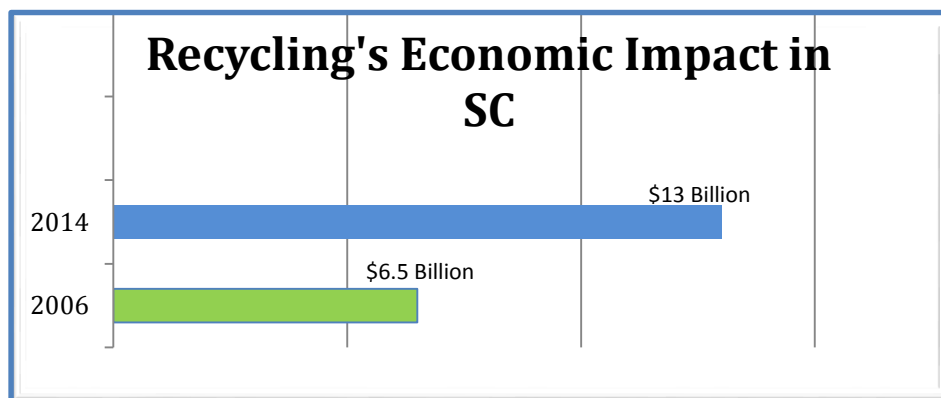
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### 2015 Recycling Industry Investments

- \$259,900 in capital investments
- 565 recycling related jobs created in the state
- 12 recycling related companies

As the recycling industry continues to grow, new companies are coming to South Carolina and existing industries are expanding their operations. According to the SC Department of Commerce Recycling Market Development Advisory Council staff, the recycling industry announced \$259.9 million in capital investment, creation of over 565 jobs with 12 new or existing companies investing in S.C. in 2015.

The recycling industry is comprised of haulers, collectors, processors, brokers, recycling equipment sales and manufacturers, and end-users or manufacturers who take recycled material feedstock and make recycled content products from them. The industry grew from 320 companies with a \$6.5 billion impact in 2006 to 520 companies with a \$13 billion economic impact in 2014.



This report also provides information on RMDAC's work plan, economic development data, resources and market information for the glass, paper, plastics, scrap tires, used oil, nonferrous aluminum and ferrous scrap metal industries.

The mission of RMDAC is to support the economic growth of South Carolina's recycling industry through building recycling markets, increasing material recovery, and promoting the recycling value chain.

Staff helps facilitate job growth and capital investment by assisting recycling industry companies operating within the state through programs:

- To meet specific Council requirements contained in the Solid Waste Policy and Management Act of 1991.
- To assure existing and potential recycling businesses of a consistent, cost competitive, quality supply of required recyclables.
- To identify existing barriers to and opportunities for increased recovery and use of recovered materials recycled within the State and take appropriate actions to eliminate or maximize these conditions.
- To monitor and understand the implications of institutional, economic, market, and technical developments both in and out of the State that could measurably influence the generation and use of recyclables.
- To assist in the creation of jobs and investment of recycling industries in the State.
- To maximize the recycling rate within the State consistent with all appropriate environmental and economic considerations.
- To establish and maintain close working partnerships with allied state agencies and councils.

In 2015, RMDAC pursued market development activities in the following areas:

- Plastics container recycling
- Carpet recycling
- Coastal recycling
- Organics management

Staff works closely with DHEC's Office of Solid Waste Reduction and Recycling in developing programs and stakeholder groups.

## RECYCLING MARKET DEVELOPMENT ADVISORY COUNCIL RECOMMENDATIONS

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For more than 20 years, RMDAC has been leading the charge to increase recycling markets in the state to help with recycling and recovery of materials. RMDAC was established by the 1991 Solid Waste Policy and Management Act and was fully staffed by May 1992. Managed within the South Carolina Department of Commerce (Commerce), the Recycling Market Development program staff coordinates the activities of the Council while providing technical and economic development assistance to recycling businesses and industry.

RMDAC is a governor-appointed council that represents recycling sectors, government, solid waste industry, higher education and the general public. Its mission is to support the economic growth of South Carolina's recycling industry through building recycling markets, increasing material recovery and promoting the recycling value chain.

### RECYCLING MARKET DEVELOPMENT ADVISORY COUNCIL



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**Recommendations**

RMDAC, created by the Solid Waste Policy and Management Act of 1991, is required to submit an annual report to the Governor and General Assembly. Requirements of the report include, but are not limited to:

*Any revisions which the Council determines are necessary to its initial report;*

There are no revisions to be added.

*A description and analysis of the amounts and types of solid waste materials recovered or recycled in this State during the preceding year;*

*In fiscal year 2015, the South Carolina Department of Health and Environmental Control (DHEC) reports:*

- 1,101,190 tons municipal solid waste (MSW) recycled
- MSW recycling rate of 26.5 percent
- MSW disposal rate of 3.47 pounds per person per day

The 2015 Municipal Solid Waste (MSW) recycling rate of 29.2 percent went down by 2.7% from the 2014 rate of 29.2%. This is due to the fact that businesses are not required to report (local governments are) so it is unclear how much volume in recycling is missed. MSW generation is generally broken down by roughly 60 percent residential and 40 percent commercial, so there is potential to improve upon the recycling rate by additional reporting.

RMDAC will continue to work with DHEC and other organizations to identify and grow recycling markets, develop strategies to help increase the recovery of materials and encourage business reporting.

*Recommendations regarding materials which should be added to or deleted from source separation, recovery, and recycling programs; and increase the recovery of recyclable materials*

With South Carolina’s strong recycling industry and over 520 businesses to take materials, RMDAC will continue to promote recovery, recycling and sustainable material options for:

Traditional Recyclable Materials	Emerging Recyclable Materials Markets
<ul style="list-style-type: none"> <li>• Plastics</li> </ul>	<ul style="list-style-type: none"> <li>• Carpet</li> </ul>
<ul style="list-style-type: none"> <li>• Metals</li> </ul>	<ul style="list-style-type: none"> <li>• Organics</li> </ul>
<ul style="list-style-type: none"> <li>• Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Textiles</li> </ul>
<ul style="list-style-type: none"> <li>• Glass</li> </ul>	<ul style="list-style-type: none"> <li>• Biomass</li> </ul>
<ul style="list-style-type: none"> <li>• Tires/Rubber</li> </ul>	<ul style="list-style-type: none"> <li>• Construction and Demolition Materials</li> </ul>
<ul style="list-style-type: none"> <li>• Petroleum</li> </ul>	<ul style="list-style-type: none"> <li>• Electronics</li> </ul>
	<ul style="list-style-type: none"> <li>• Mattresses</li> </ul>
	<ul style="list-style-type: none"> <li>• Carbon Fiber</li> </ul>
	<ul style="list-style-type: none"> <li>• By-products from the manufacturing process</li> </ul>

*Traditional recyclable materials* are those that are managed in residential recycling programs and have been managed for the last 20 years. *Emerging markets* are those additional materials that can be recycled and have end markets in the state but need further recycling market development either on the collection side at the local government level.

Food waste is the largest component of the nation’s municipal solid waste (MSW) stream accounting for more than 36 million tons (about 21 percent) of the nearly 251 million tons generated in 2012 according to the U.S. Environmental Protection Agency (EPA). Applying that percentage to South Carolina’s MSW generation, the state produced an estimated 873,511 tons of food waste in fiscal year (FY) 2014 (July 1, 2013 to June 30, 2014). (Source: DHEC)

Composting sustains four times the number of jobs as landfilling.

- According to the “State of Composting in the US”, on a per-ton basis, the research found that composting sustains four times the number of jobs as landfill or incinerator disposal (Platt and Seldman, 2000).
- Utilizing 10,000 tons of finished compost annually in green infrastructure can sustain one new business. For every 10,000 tons of compost used annually by these businesses, 18 full-time equivalent jobs can be sustained.
- For every 1 million tons of organic material composted followed by local use of the resulting compost in green infrastructure, almost 1,400 new full time equivalent jobs could potentially be supported.
- Composting and compost use represent place-based industries that cannot be outsourced.
- Work with all stakeholders to improve infrastructure as possible to increase the quality and quantity of recovered food waste.

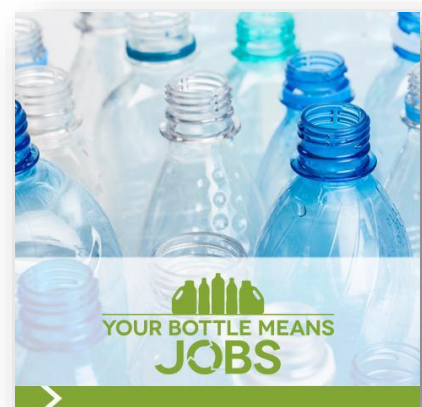
*Any other recommendations, including tax incentives, to facilitate the development of markets for recovered materials or products in this State*

Over 1,000 are employed by the state’s PET plastics recycling industry. Annual sales are nearly \$400 million. Clearly, South Carolina has a strong plastics recycling sector, yet over 70% of plastic bottles are thrown away. Each bottle disposed adds additional cost while each bottle recycled not only adds no cost to recycling, but also reduces that cost. An example, if disposal costs \$48 per ton and plastic bottles have a current market value of \$80 per ton, then each ton shifted from the trash can to the recycling bin is worth a total of \$128. So, if each household in the Carolinas recycles just 2 more plastic bottles each week, local governments are \$4 million better off and potentially create 300 new jobs in the industry.

If each household in the Carolinas recycles just 2 more plastic bottles each week, local governments are \$4 million better off and potentially create 300 new jobs in the industry companies.

Policy considerations to boost plastic bottle recovery might include encouraging the development of policy for meeting a 40% recycling rate vs. a 40% recycling goal, exploring a plastic bottle ban similar to North Carolina’s, pursuing Pay as You Throw, and providing incentives for the manufacture of recycled content materials with post-consumer plastics, or providing incentives for consumers to participate in recycling like RecycleBank or RecyclePerks. Below are a few recommendations to boost the recycling rate:

- Encourage municipalities to offer single-stream recycling. When single-stream recycling service is provided to a curbside collection community, the amount of material recycled increases an average of 22%. (Source: CVP)
- Reduce waste by not generating it – encourage waste prevention by both the residential and business sectors



- Increase resource recovery and recycling
  - Improve recycling convenience; encourage that trash cans are twinned with recycling carts (i.e., twin the bin)
  - Encourage commercial business recycling.
- Help grow organics management and composting - the frontier right now is around organic waste. Creating more municipal composting programs along with private sector hauling and service would boost composting and overall recycling rates.
- Encourage buy recycled. The more purchases around recycled content products, the stronger the industry is.

RMDAC will continue to work with various organizations to support and increase market-based solutions to recycling in South Carolina. These organizations include, but are not limited to:

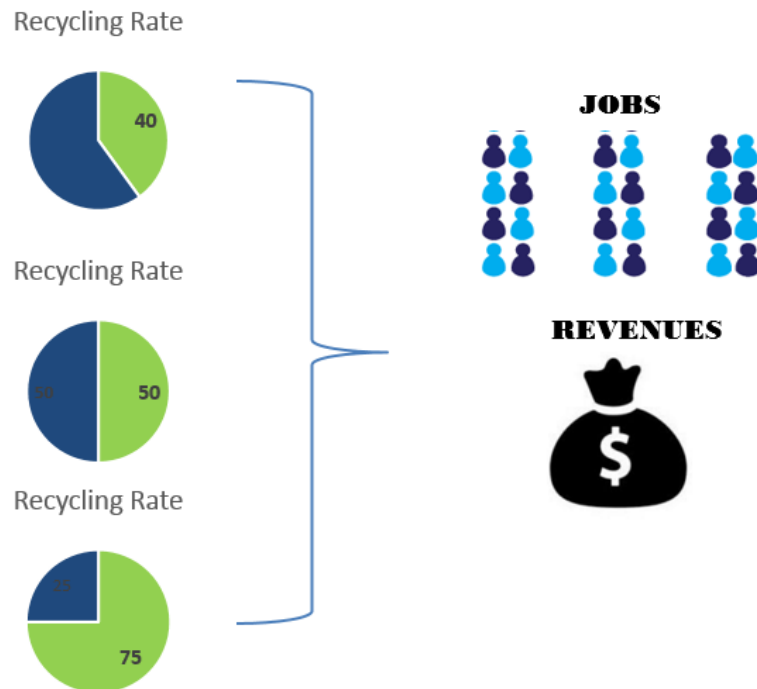
- Commerce
- DHEC
- Solid Waste Association of North America (SWANA) Palmetto Chapter
- South Carolina Recycling and Solid Waste Professionals Association
- Carolina Recycling Association (CRA)
- Southeast Recycling Development Council (SERDC)
- Recycling Coalition of South Carolina
- Carolina Plastics Recycling Council (CPRC)
- South Carolina Carpet Recovery Coalition (CRC)
- Carpet America Recovery Effort (CARE)
- Association of Post Consumer Plastic Recyclers (APR)
- National Association for PET Container Resources (NAPCOR)
- South Carolina Manufacturing Extension Partnership (SCMEP)
- BioCycle
- County Governments
- Municipalities
- EPA Region 4
- Fort Jackson
- USC Darla Moore School of Business
- Clemson University
- Asphalt Rubber Technology Service (ARTS): Clemson

## SOUTH CAROLINA RECYCLING INDUSTRY ECONOMIC IMPACT

In 2015, Commerce partnered with DHEC and the University of South Carolina's Darla Moore Schools of Business to update the recycling industry's economic impact report. The primary goal of this research effort is to conduct a comprehensive analysis of the recycling industry in South Carolina at the commodity-level in order to determine the industry's true impact on the state as well as the additional benefits that would arise from future increases in the rates of recycling.

This will be accomplished in four primary steps:

- (1) provide an overview of the current economic impact of the recycling industry in South Carolina;
- (2) estimate the increase in economic activity that would arise if households were to recycle more materials;
- (3) determine the increase in economic activity that would arise from an achievement of specific state-level recycling rates;
- (4) complete a lifecycle analysis in which the processes of landfilling, recycling, and incineration will be examined to determine the economic benefits of each – including both cost savings and job creation- and the extent to which recycling and incineration serve as economically beneficial alternatives to landfilling. The report is underway and will be available in May 2016.





Since 2006, Commerce has recruited \$5 billion in capital investment and 8,800 new jobs in the recycling-related sector. Since 2011, \$1.315 billion in capital investment has been announced with 3524 jobs and 65 companies.



SC Recycling Impact			
	Capital (Millions)	New Jobs	Businesses
2011	\$333	837	15
2012	\$463	771	19
2013	\$104	765	10
2014	\$156	586	9
2015	\$260	565	12
<b>Total</b>	<b>\$1,315</b>	<b>3,524</b>	<b>65</b>



In 2015, Commerce helped facilitate the recycling industry recruitment of:

- 565 jobs
- \$260 million in capital investment
- 12 new or existing companies investing in South Carolina

Name	County	Objective	Announce Date	Announced Investment	Announced Jobs
Advanta Southeast, LLC	Clarendon	Expansion	2015-12-23	\$2,600,000	26
Green Fence Recycling Corporation	Marion	New	2015-12-23	\$2,500,000	40
SAGE Automotive Interiors	Greenville	Expansion	2015-12-10	\$5,000,000	0
SAGE Automotive Interiors	Abbeville	Expansion	2015-11-10	\$4,000,000	0
Auriga Polymers, Inc.	Spartanburg	Expansion	2015-11-02	\$35,000,000	0
Sutera USA, LLC	Greenville	New	2015-10-27	\$2,000,000	20
AS/R Systems, Inc.	Jasper	New	2015-10-22	\$2,500,000	11
MAIREC	Spartanburg	New	2015-07-21	\$4,600,000	35
Shaw Industries, Inc. - Columbia	Lexington	Expansion	2015-08-26	\$45,000,000	50
Source Substrates dba Vapor Apparel	Union	Expansion	2015-01-13	\$1,300,000	114
Orchids Paper Products Company	Barnwell	New	2015-04-20	\$110,000,000	134
Footprint, LLC	Chester	New	2015-02-18	\$15,400,000	115
Flakeboard America Limited (ARAUCO)	Marlboro	Expansion	2015-03-09	\$30,000,000	0
<b>Total</b>				<b>\$259,900,000</b>	<b>565</b>

With more than 520 recycling-related companies that haul, collect, process, manufacture and broker, the South Carolina’s recycling industry is growing and boosting the economy. (See page 16 for infographic)



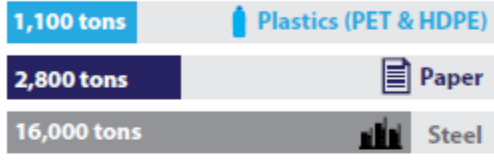
# SOUTH CAROLINA IS JUST RIGHT FOR RECYCLING

PALMETTO STATE RECYCLING MARKETS SNAPSHOT

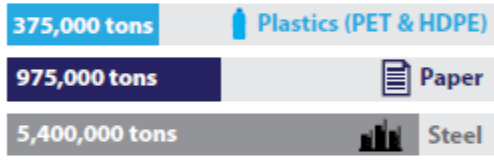


**Recycling Fuels Manufacturing**  
With a strong manufacturing presence, South Carolina has a high demand for recycled content feedstock. Manufacturers use recycled content materials for their finished products.

### CONSUMED PER DAY



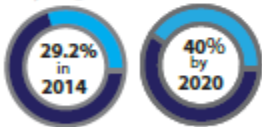
### ANNUAL DEMAND



### REDUCE, REUSE, RECYCLE

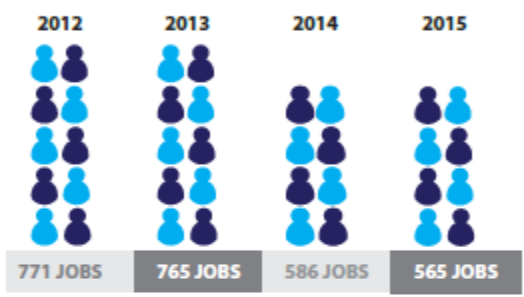
In 2014, 1,263,495 tons of Municipal Solid Waste was recycled. That is the equivalent of 4,570 Boeing 787 planes, loaded with the maximum take-off weight.

In 2014, South Carolina's MSW recycling rate was 29.2%. By 2020, the state's goal is to increase the recycling rate to 40%.



OVER 520 RECYCLING RELATED BUSINESSES

**A JOB GENERATOR**  
Since 2011, capital investment in the recycling-related sector has created nearly 3,500 jobs in South Carolina.



**RECYCLING IN SC**  
South Carolina has 4 times more jobs in recycling per capita than Massachusetts and California.

## RECYCLING INVESTMENT BY YEAR



**A Green State of Mind** | With a business-friendly environment, it is easy being green in South Carolina. Since 2006, South Carolina has recruited more than **\$5.0 billion** in capital investment in the recycling-related sector. In 2014, the recycling industry had an economic impact of **\$13 billion** and supported **22,400 jobs**.



*The above economic data is from the South Carolina Department of Commerce's internal records. The MSW data is from the South Carolina Department of Health and Environmental Control.*

## ANALYSIS OF THE STATE'S EXISTING RECYCLING INDUSTRY

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The state's recycling industry is strong. SC has 4 times more jobs per capita related to recycling than Massachusetts or California, both of which are recycling leaders. The state has over 520 recycling businesses that haul, process or manufacture recycled content materials. The state has robust plastics, metal, paper, textile, carpet, biomass, petroleum and rubber recycling industries. South Carolina is growing in its competitiveness by developing businesses in the following recycling sectors: glass, electronics, construction and demolition, organics and carbon fiber. Having additional processor and end-user capacity in these areas would ensure that new value-added products would be returned to the marketplace instead of landfilled.

SC has 4 times more jobs per capita related to recycling than Massachusetts or California.

As markets mature and develop, they can help to increase the state's 2015 MSW recycling rate of 26.5%.

### *Metals*

#### **Long-Term Capacity of Existing Markets**

Recyclable metals can be categorized into two categories: ferrous and non-ferrous metals. Ferrous metals are those that contain iron including various forms of steel and cast iron metals. Non-ferrous metals contain no iron or trace amounts of iron. The most common non-ferrous metals and alloys include aluminum, copper, brass, lead, nickel, and zinc.

In South Carolina, metal recycling has historically been a strong and healthy sector. This sector's robust status can be attributed to the fact that metals recycling has solid demand within South Carolina and the global marketplace has augmented demand for different types of scrap metals. Recycling metals has been cost justifiable for over a century. It is less capital intensive to make new steel from old scrap steel than to produce from virgin iron.

Steel mills are the largest consumers of recycled metals. Because of the vast amounts of scrap metal needed by steel mills that purchase recycled metals for melting, the three active steel mill facilities are located from 50-100 miles apart and have access to the ports. These mills must source scrap via truck, rail, and vessel due to there not being enough ferrous scrap within South Carolina to fulfill the mills demand for scrap. Geographically speaking, Nucor has one electric arc furnace (EAF) mill located near the coast and one in the Pee Dee region and CMC Steel has its location in the Midlands. There are no EAF mills in the upstate.

SC's electric arc furnace mills consume anywhere from 55-99.6% post-consumer scrap steel as their major feedstock. SC's strong automotive industry produce volumes of industrial scrap to feed the EAF mills. The 3 EAF mills produce structural steel and reinforcement bar for the construction industry coil sheets, which goes in to the manufacture of tires. A complex network of businesses and individuals involved in the metals recycling industry has evolved across the state. This network includes collectors, haulers, brokers and processors. Scrap metal

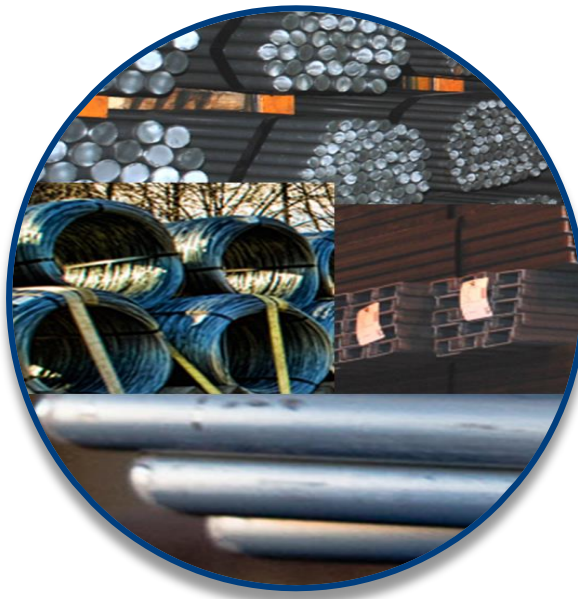
collectors are fairly evenly distributed around the state. Processors of metals are fewer in number in the state than are collectors. The main purpose of processors is to convert the scrap metals to an acceptable form for densification, transporting, and melting. Processors typically have shears, baling equipment and cranes which all require large capital investments.

For non-ferrous, JW Aluminum is a flat rolled aluminum mill, that uses recycled content located near the coast and Johnson Controls operates a lead battery smelter in Florence. There are no copper, brass, nickel or zinc smelters. There are a few small foundries that can take various grades of non-ferrous scrap such as Crown Casting, PineBrook Foundry, and Synehi Castings. This lack of melting capacity for non-ferrous scrap is not an issue due to the high value of the scrap as it can economically travel great distances without any loss of market demand.

The metal recycling industry continues to see investments in processing capacity and supports many major manufacturers like BMW, Boeing, as well as automotive and aerospace suppliers.

### **Metals Investment**

- In 2015, MAIREC, a Germany-based metals recycler, established operations in Spartanburg County. The \$4.6 million investment is expected to create 35 new jobs in Spartanburg, S.C. over the next five years. Headquartered in Alzenau, Germany, MAIREC specializes in the recovery of high-valued rare metals from recycled goods which contain them. This is a first overseas operation for MAIREC, who has a diverse customer base across a number of industries, including automotive, chemical, electronics, petrochemical, pharmaceuticals, porcelain, solar, surface technology and telecommunications.



Various steel and aluminum recycled products made in SC

### **Metal (Ferrous and non-ferrous) Recycling Current Market Status**

It is estimated 385,497 tons of metal (8.9 percent of MSW) are generated in South Carolina. The estimated amount generated is calculated by applying the U.S. Environmental Protection Agency's national MSW generation rates to South Carolina's MSW generation (Source: DHEC's South Carolina Solid Waste Management Annual Report for Fiscal Year 2015). In FY 2015, 236,137.27 tons of metal were reported as recycled.

Steel is the nation's most recycled material. An aluminum can produced today contains about 70 percent recycled content. South Carolina has several downstream operations. These facilities utilize the steel to fabricate steel joists and joist girders; steel deck; cold finished steel; and metal building systems.

South Carolina has an estimated 170 companies in the metal recycling value chain. These various types of businesses include:

- Scrap metal collectors
- Processing facilities
- Mills
- Haulers
- Commercial business recyclers (aluminum cans)



According to the U.S. Department of Commerce (Bureau of Census), the top export countries in 2015 for scrap iron and steel via South Carolina were:

- Turkey
- China
- Taiwan
- India
- South Korea

According to the U.S. Department of Commerce (Bureau of Census), the top export countries in 2015 for scrap copper via South Carolina were:

- China
- Canada
- Germany
- South Korea
- Japan

According to the U.S. Department of Commerce (Bureau of Census), the top export countries in 2014 for scrap nickel via South Carolina were:

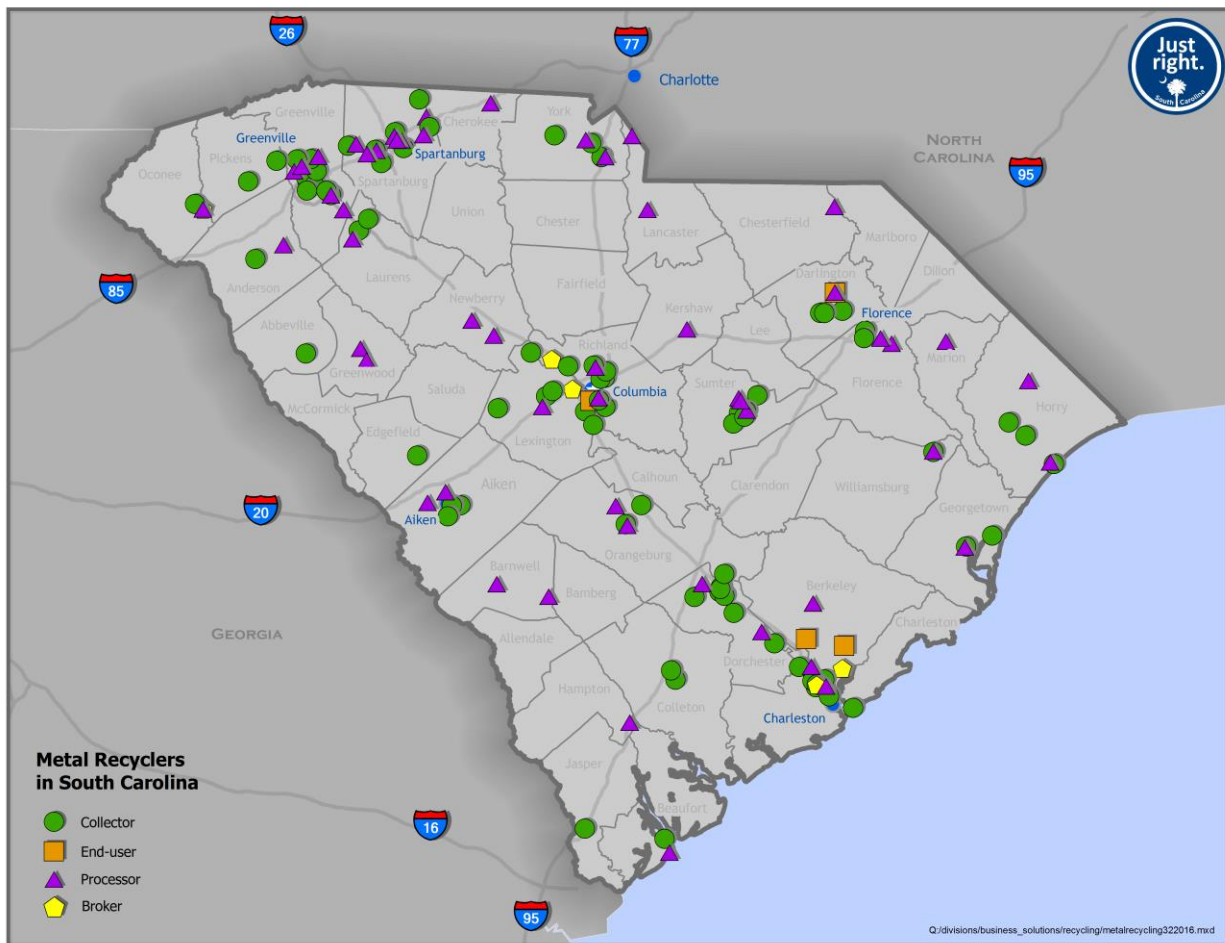
- Canada
- United Kingdom
- Japan
- Sweden

- Australia

According to the U.S. Department of Commerce (Bureau of Census), the top export countries in 2015 for scrap aluminum via South Carolina were:

- China
- South Korea
- Canada
- Mexico
- India

### Metal Recyclers in South Carolina



\*This map may not be representative of all entities in the SC metal recycling value chain.

Steel mills represent the primary consumer of recyclable metals. Because of the vast amounts of scrap material needed by steel mills that purchase recycled metals for melting, the 3 steel mill facilities are located anywhere from 50-100 miles apart and have access to the ports. Geographically speaking, the electric arc furnace (EAF) mills are located in Darlington, Berkeley, and Cayce, SC. South Carolina has 95 scrap yards across the state.

South Carolina's 3 steel mills and its 1 aluminum mill employ 2,250 people and recycle about 4.5M tons of material per day. The steel mills use electric arc furnaces to produce carbon and alloy steel — in bars, beams and sheet from recycled scrap steel and semi-finished products, such as angles, channels, flats, rebar, rounds, squares, t-post, billets, used in the construction, energy, heavy manufacturing, and automotive industries . JW Aluminum produces specialty, flat rolled aluminum products used in a wide variety of consumer and commercial applications.





## Plastics

### Long-Term Capacity of Existing Markets

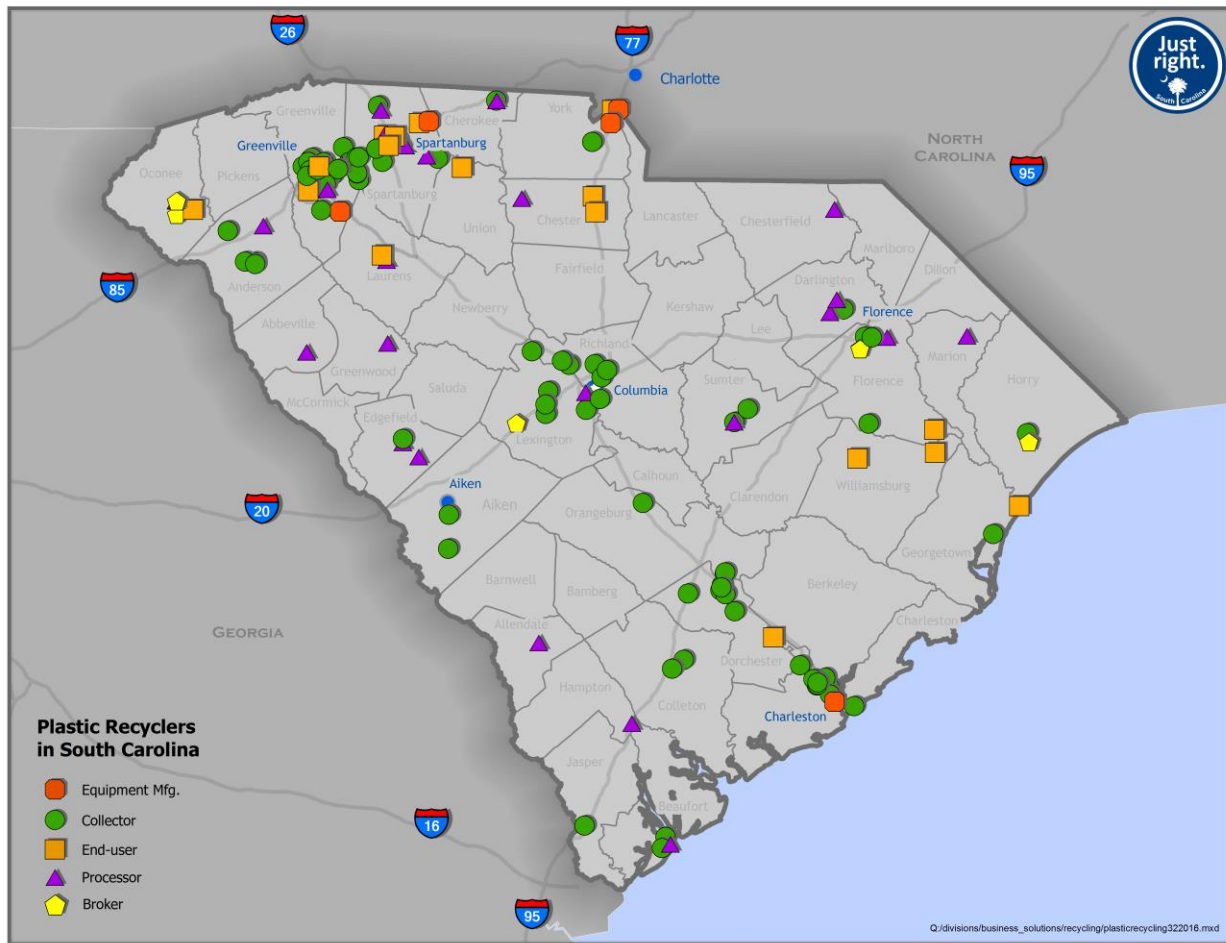
- PET #1 - Polyethylene Terephthalate plastics (soda and water bottles) have a robust market in the state. With 11 recyclers of PET material, end-use markets are strong and demand for material is greater than supply. There is a system of haulers, collectors and processors in place to support these end-users.
- HDPE #2 - High Density Polyethylene post-consumer plastics (milk jugs, laundry detergent and shampoo bottles) have no end markets in the state. However, demand from the closest processor in Reidsville, NC is strong. The other closest market is in Troy, AL. There is a system of haulers, collectors and processors in place that collect HDPE and export it out of state and out of country.
- PVC #3 – Vinyl (clear food packaging, pipes, cooking oil bottles) plastics do not have any end markets in SC for post-consumer plastics. Postindustrial rigid PVC is processed by a recycler in York County and flexible PVC is recycled by a flooring company in Jonesville, SC.
- LDPE#4 - Low Density Polyethylene (grocery bags, bubble wrap and shrink wrap) plastics are recycled in Hemingway, SC and demand exceeds supply. There is also a system of haulers, collectors and processors in place that collect LDPE and export it out of state.
- PP#5 - Polypropylene plastics (yogurt containers and ketchup bottles) do not have any end markets in SC for post-consumer plastics. Postindustrial PP is processed by a recycler in Barnwell County. There is also a system of haulers, collectors and processors in place that collect PP and export it out of state and out of country.
- PS #6 – Polystyrene (egg cartons, disposable plates and cups) plastics do not have any end markets in SC for post-consumer plastics.
- Other #7 plastics (polycarbonate and bio-based plastics) do not have any end markets in SC for post-consumer plastics. The nearest market is in Atlanta, GA.

### Current Market Status

South Carolina has approximately 100 companies in the plastics recycling value chain. Sun Fibers in Richburg is a plastics reclaiming company that can take the entire plastic bottle and convert it into a resin for a fiber end-use application. Wellman Plastics Recycling has paused its plastic bottle recycling capacity until markets for PET get better. Regional market demand is 347,500 tons of material. An estimated 550,092 tons (12.7 percent of MSW) of plastics material is generated. According to DHEC, only 17,311.26 tons were recycled in FY 15, up 534 tons since last year.

Industrial plastics (some common abbreviations are ABS, PC/ABS, PP, Nylon, HIPS, LLDPE, LDPE, PE, PS) are generated from automotive and packaging industries. There are 15 industrial plastics recyclers in the state. There are 13 textile recyclers in the state. Textile recyclers handle polyester, nylon and other non-woven materials that are part of the plastics recycling value chain.

## Plastics Recyclers in South Carolina



- \*This map may not be representative of all entities in the SC plastic recycling value chain.

According to the U.S. Department of Commerce (Bureau of Census), the top export countries for plastics scrap were:

- China
- Hong Kong
- Canada
- India
- Indonesia

### Industrial Plastics Recyclers in SC

Type	Company Name	City	State
Industrial Plastics	ACI Plastics	Anderson	SC
Industrial Plastics	Alterra Polymers	Seneca	SC
Industrial Plastics	ATD Inc	Greenville	SC
Industrial Plastics	Carolina Plastics	Seneca	SC
Industrial Plastics	Carolina Recycling Company	Greenville	SC



### Industrial Plastics Recyclers in SC continued

Type	Company Name	City	State
Industrial Plastics	ICE Recycling	Lake City	SC
Industrial Plastics	Industrial Recovery and Recycling	Greer	SC
Industrial Plastics	Innovative Plastics	Ridgeway	SC
Industrial Plastics	Mumford Industries	Ninety Six	SC
Industrial Plastics	Residue Recycling Inc	Pendleton	SC
Industrial Plastics	Stewart Recycling	Sumter	SC
Industrial Plastics	Southeastern Plastics Recovery	N. Charleston	SC
Industrial Plastics	Tahoma Rubber and Plastics	Abbeville	SC
Industrial Plastics	Waste Zero Envirobag	Hemingway	SC

### Textile Recyclers in SC

Type	Company Name	City	State
<b>Textiles</b>	Bowers Fibers	Lancaster	SC
<b>Textiles</b>	Carolina Green Clothing Recyclers	Conway	SC
<b>Textiles</b>	Carolina Textile Recycling	Walterboro	SC
<b>Textiles</b>	Fibex Incorporated	Aiken	SC
<b>Textiles</b>	Florence Textiles, Inc.	Florence	SC
<b>Textiles</b>	Greenwood Mills Inc-Easley	Easley	SC
<b>Textiles</b>	Greenwood Mills Inc-Greenwood	Greenwood	SC
<b>Textiles</b>	Leigh Fibers	Wellford	SC
<b>Textiles</b>	Martex Fiber	Spartanburg	SC
<b>Textiles</b>	Pharr Yarns Inc-Clover Div	Clover	SC
<b>Textiles</b>	Phoenix of Anderson	Williamston	SC
<b>Textiles</b>	Plastex	Edgefield	SC
<b>Textiles</b>	Textile Services International	Spartanburg	SC

## Paper

### Long-Term Capacity of Existing Markets

Paper recycling is one of the oldest, longest standing recycling sectors in the state with the presence of Sonoco in Hartsville, SC. Sonoco began recycling in the early 1900's, making textile cones out of recycled paper instead of wood. Paper makes up about 27 percent of municipal solid waste nationwide. Americans recycled about 65.4 percent of the paper they used in 2015. The paper recycling sector can take many grades of paper, especially those found at MRF's - mixed and sorted paper, old newsprint (ONP) and old corrugated cardboard (OCC).

SC has a comprehensive network of collectors, haulers, shredders, processors and mills. There are 4 paper mills that use recycled OCC to make new paperboard— Sonoco and WestRock are in the Pee Dee region, and Carotell Paperboard and KapStone are in the Upstate. These OCC mills vary in their capacity to take other grades of paper other than OCC such as mixed paper.

- Residential mixed paper (RMP) collection has been the growth area within the industry. While most RMP is exported to China, several domestic mills also consume RMP as a substitute to replace higher cost OCC.
- As it pertains to ONP, generation is declining at a significant rate with the younger generation shifting to electronic media. Many ONP mills have shut across the country with several now being converted into manufacturers of other packaging materials such as lightweight containerboard and bag stock.

Paper recycling has long been a part of residential and commercial recycling. Many cities have large recycling carts which can take cardboard in their curbside recycling programs. Businesses can also avoid disposal costs by recycling paper. Further improvements in paper recycling will also help to grow the market, as recent advances have made it possible to recycle coated paper packaging along with corrugated paper. This will reduce the cost of recycling significantly, driving up the demand for recycled paper.

### **Current Market Status**

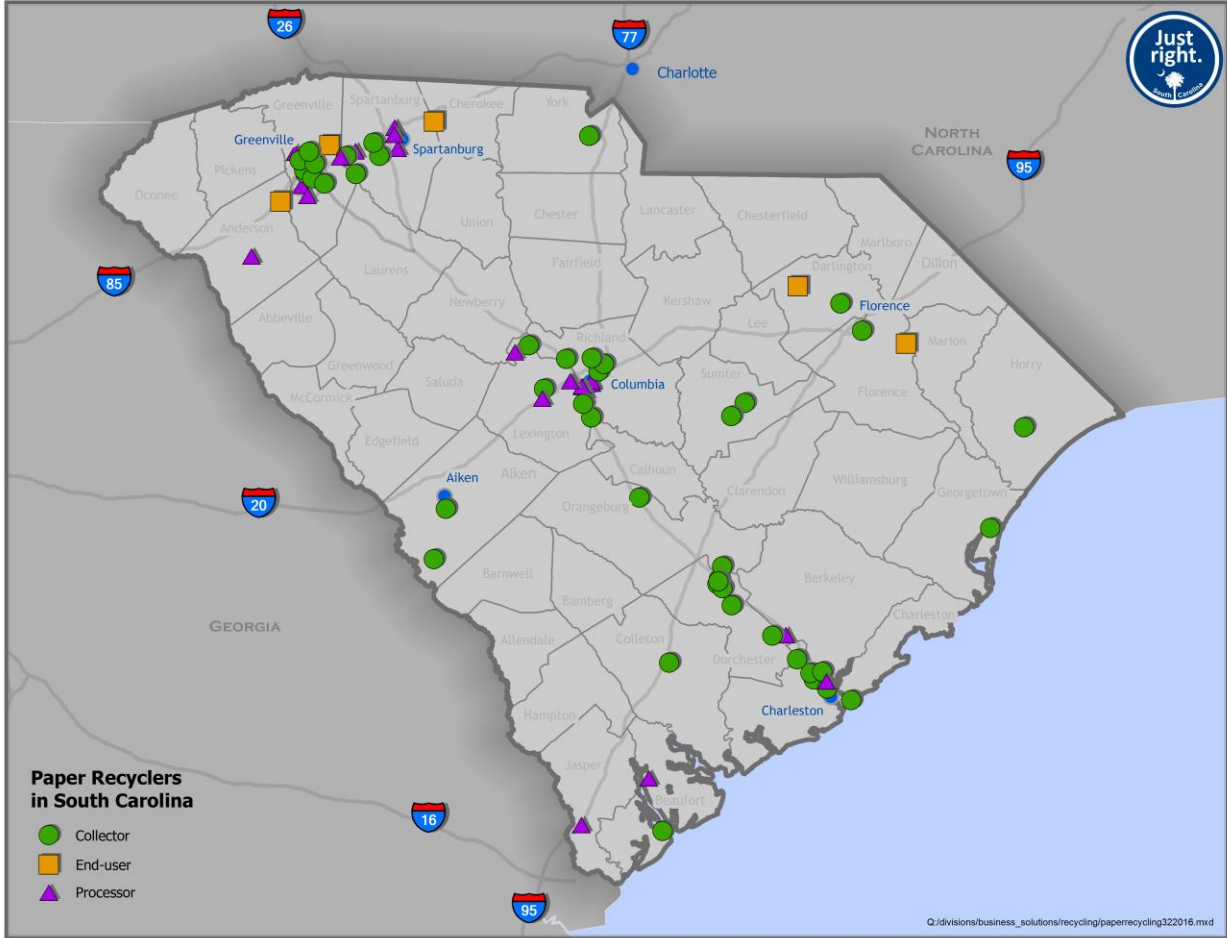
The markets for paper, OCC, and mixed paper remain steady in SC. An estimated 88 companies exist in the paper and OCC recovery value chain in South Carolina. There are 4 recycled paper processing mills that consume 1,261,000 tons annually. They employ approximately 3,000 workers in SC. These processing mills produce liner board, paperboard, tubes and cores (i.e., paper towel cores), game board and other packaging material for the consumer products industry.

According to the U.S. Department of Commerce (Bureau of Census), the top export countries for recovered paper were:

- China
- Mexico
- Japan
- India
- South Korea

According to the American Forest & Paper Association, since 2009, more than 60 percent of paper consumed in the U.S. has been recovered for recycling each year. In addition, an estimated 78 percent of U.S. paper mills use recovered fiber to manufacture office paper, packaging and tissue products. (Source: AF&PA)

### **Paper Recyclers in South Carolina**



\*This map may not be representative of all entities in the SC paper recycling value chain.

## Glass

### Long-Term Capacity of Existing Markets

Even though glass packaging is 100% recyclable, glass is a commodity with limited end-use markets in the state. Challenges to glass recycling are primarily due to its low market value, the weight of the material, the distance to market and its abrasive effect on processors recycling equipment. Single stream collection and processing practices lower the market value for glass as all glass colors (clear, amber, and green) are commingled. This results in a lower value three color-mix (three-mix) coming out of single stream programs which processors then have to sort back out into the individual colors. In addition, blue glass is an additional color that is becoming more mainstream and has to be sorted out because of the cobalt in it.



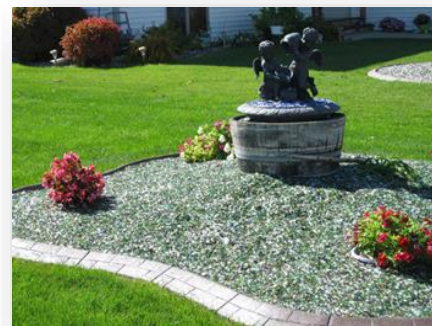
Glass recycling bunkers at Lexington County's Landfill

It is estimated 199,246 tons of glass (4.6 percent of MSW) are generated in South Carolina. The estimated amount generated is calculated by applying the U.S. Environmental Protection Agency's national MSW generation rates to South Carolina's MSW generation (Source: DHEC's South Carolina Solid Waste Management Annual Report for Fiscal Year 2015.) In FY 2015, 6,288.69 tons of glass were recycled (this excludes glass collected in commingled recycling programs).

### Current Market Status

Strategic Materials purchased Reflective Recycling in Pacolet, SC. There has been statewide discussion regarding the feasibility of taking glass out of single stream recycling. Glass-only collection systems are evolving nationally to secure a clean stream of glass material, and these have mostly been initiated by the private sector in conjunction with local governments. Eliminating glass from residential programs is a steep hill to climb. The U.S. Environmental Protection Agency (EPA) says glass packaging targeted for collection represents between 4-5 percent of the waste stream.

The most recent EPA data suggests that we recover about 28 percent of the glass generated. Approximately 80 percent is generated by residential sources.



Recycled Glass in Landscaping

- Strategic Materials – (used to be Reflective Recycling in Pacolet)
  - Has 3,000 tons a month post-consumer glass processing capacity
  - Post-industrial glass processing adds another 2,000 tons of material per month

- Secondary glass processor with the capability to process glass into color-sorted furnace-ready cullet
  - Cullet used by glass manufacturers need to make new glass
- Reflective also has a facility in Wilson, NC provides feedstock to a nearby glass container plant.

Major uses of Strategic Materials' processed glass are for:

- Container remanufacturing
- Highway bead
- Sand blasting abrasive
- Products produced: cullet (used to make new glass), glass beads, sand-blasting abrasive (used for reflective highway paint),

Direct impact: no direct end users in SC

Indirect impact: 20 companies who reuse, hauler, collect, or process glass.

- Fisher Recycling
- Horry County Solid Waste Authority
- Reflective Recycling



Fisher Recycling recycled glass countertop

According to the U.S. Department of Commerce (Bureau of Census), the top export countries for recovered glass were:

- China
- Germany
- Canada
- France
- Ireland

Success Stories:

- Fisher Recycling: Founded by Chris Fisher in 1992, Fisher Recycling manufactures the GlassECO product line of glass countertops and landscape cullet from 100 percent postconsumer content. Glass is crushed with glass crusher equipment and produces eight different sizes of cullet.

Others uses for recycled glass:

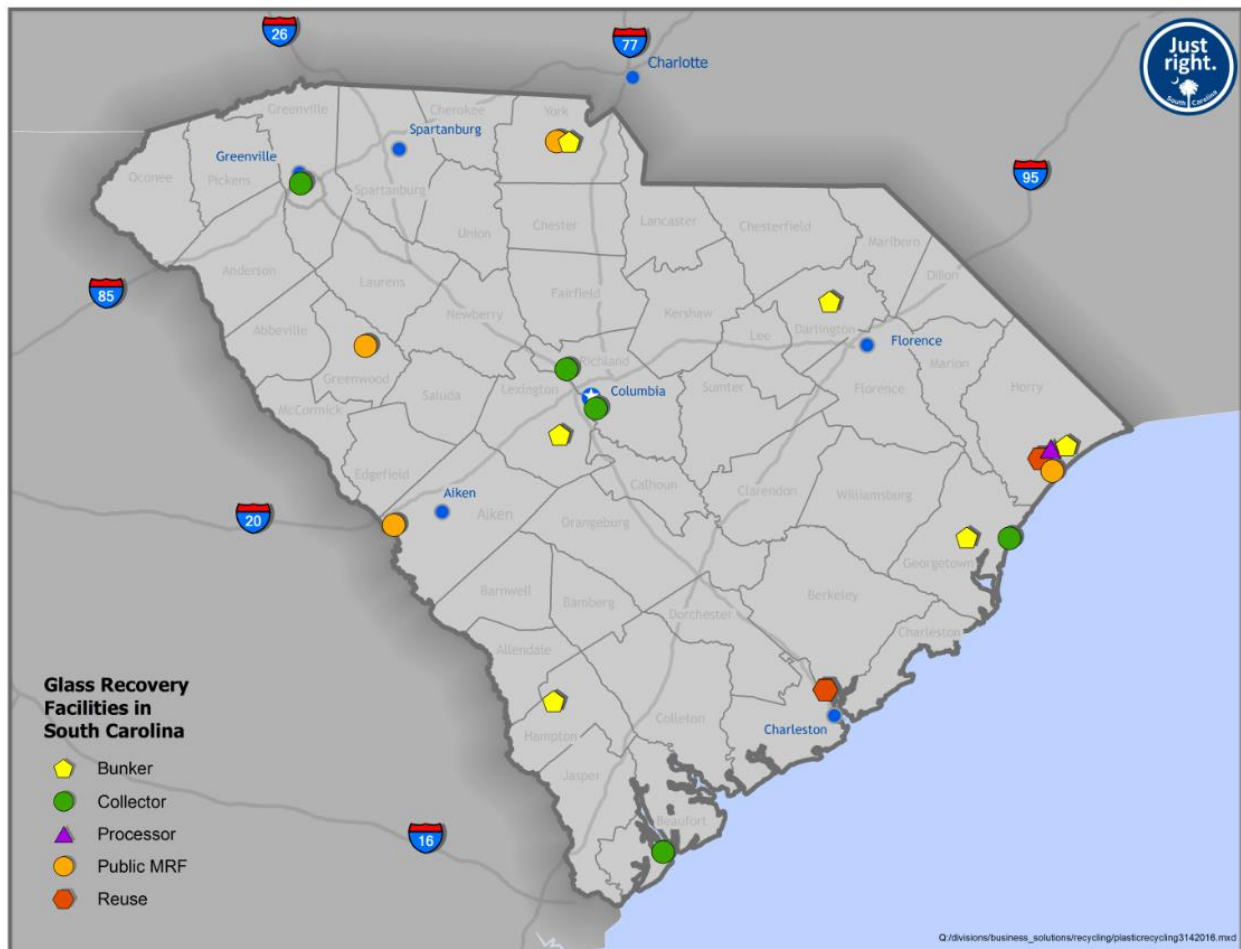
- Safety reflective beads
- Countertops
- Road beds
- Landscaping materials
- Alternative landfill cover
- Drinkware - reuse

According to the U.S. Environmental Protection Agency (EPA)

- Energy costs drop about 2-3% for every 10% cullet used in the manufacturing process
- In 2013, 41.3% of beer and soft drink bottles were recovered for recycling, according to the U.S. EPA. Another 34.5% of wine and liquor bottles and 15% of food and other glass jars were recycled. In total, 34% of all glass containers were recycled, equivalent to taking 210,000 cars off the road each year
- Recycling 1,000 tons of glass creates slightly over 8 jobs. (Source: 2011 Container Recycling Institute).
- 11.6 million tons of glass was generated in 2012.
- Glass containers are manufactured from sand, soda ash, limestone and cullet.
- Glass can be recycled endlessly with no loss in purity or quality.
- An estimated 90 percent of recovered glass containers are made into new bottles.

Due to its low value, transportation and processing costs, markets for glass are limited. Some public and private material recovery facilities (MRFs) in the state are equipped with glass breaking technology to manage glass collected via single stream. South Carolina does not have any bottle to bottle glass recycling, but other application uses for glass exist.

### Glass Recovery Facilities



\*This map may not be representative of all entities in the SC glass recycling value chain.



## Compost

### Long-Term Capacity of Existing Markets

Organics recovery is an emerging market area that is growing in South Carolina. Because regulations to allow for a composting industry were recently passed in July 2014, the composting industry is budding with potential with entre. The US EPA's food hierarchy prioritizes diversion of food from landfills/incineration to valued uses as follows:

- Source reduction
- Feed Hungry People
- Feeding Animals
- Industrial Uses
- Composting

Sources of organic materials in in South Carolina include:

- Colleges
- Correctional institutions
- Department of Defense facilities
- Farms
- Groceries
- Hospitals
- Manufacturers and processors
- Nursing homes
- Private schools
- Public schools
- Resorts and conference centers
- Restaurants
- Supermarkets
- Wholesalers and distributors



Compost Tour (Earthfarms)

Building infrastructure for organic material recovery is considered a priority area to develop this industry. Connecting organizations across sectors with common interests in sustainable wastes management solution is also a key area for industry growth.

### Current Market Status

SC Commerce conducted a food waste generation study in 2015. It is estimated that 625,322 tons of food waste is generated in South Carolina every year. Food processors, distributors, restaurants, and supermarkets are the top contributors, accounting for a total of 542,422 tons collectively. Historically, food waste has been disposed of in landfills, along with other MSW;

however, the effort to redirect food waste to compost facilities is beginning to gain momentum.

South Carolina has four commercial scale composters: Charleston and Horry Counties are local governments with food/organics composting operations and Re-Soil and GreenGo Recycling are also permitted to take food and other organics for composting. Food waste hauling companies are also growing to support these facilities and supply them with the organic material needed to make compost. Currently composting efforts are most prevalent in Charleston, SC, with operations growing throughout the state.

### Composters and Related Businesses

Entity	County	State	Type
Charleston County	Charleston	SC	Composter
Carolina Waste Services	Charleston	SC	Hauler
Fisher Recycling	Charleston	SC	Hauler
Food Waste Disposal	Charleston	SC	Hauler
Republic Services	Charleston	SC	Hauler
SMART Recycling	Charleston	SC	Hauler
Atlas Organics*	Greenville	SC	Hauler/Composter
Divergent Energy	Greenville	SC	Equipment
Seaside Mulch	Horry	SC	Compost
Re-Soil	Kershaw	SC	Composter
Becker Complete	Lexington	SC	Equipment
River Run Farms	Orangeburg	SC	Compost
GreenGo Recycling	Aiken	SC	Composter
Compost Matters	Spartanburg	SC	Hauler
Scoop-D-Doo	York	SC	Compost
Second Chance Compost	York	SC	Compost
Horry County	Horry	SC	Composter
Humble Acres Organics	Barnwell	SC	Compost

*\*Atlas Organics anticipated composting start up in 2016.*

### Long Term Market Capacity

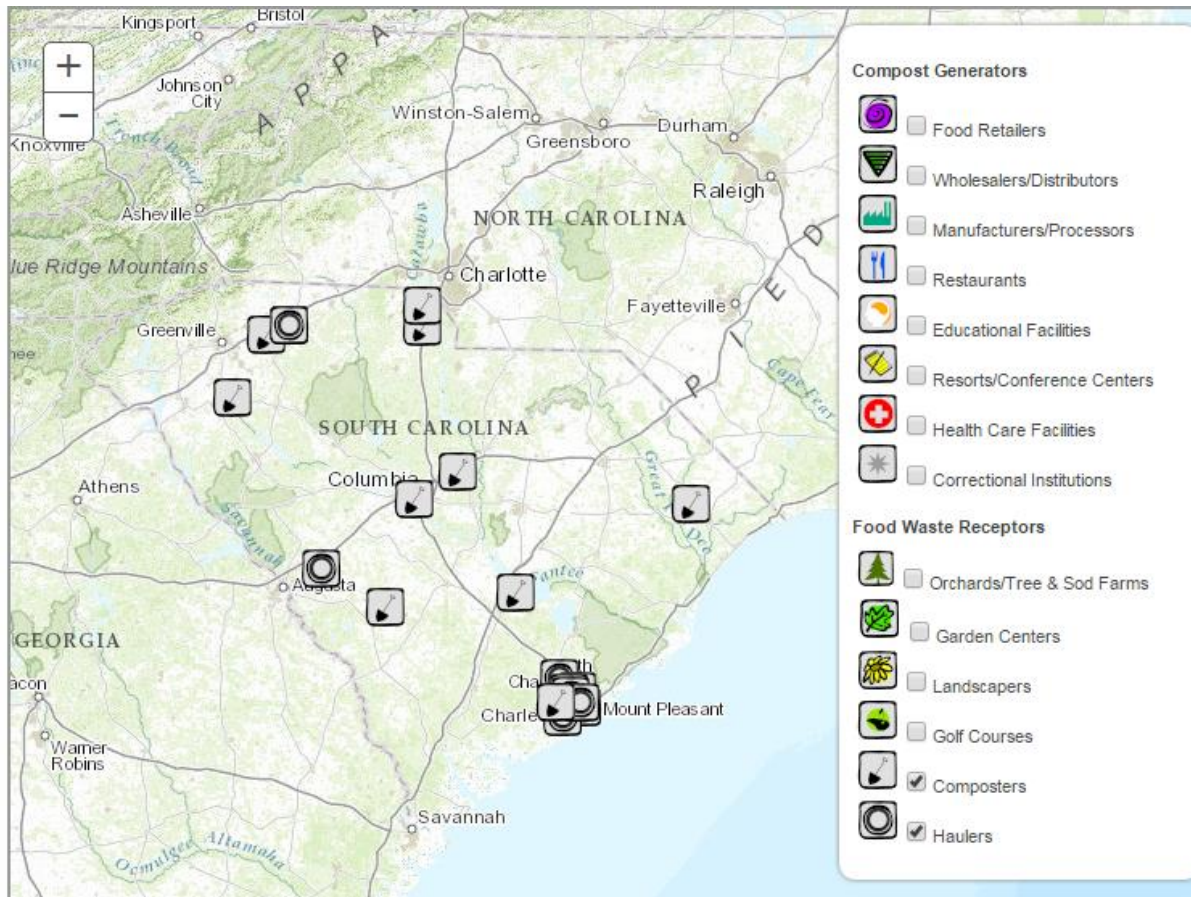
Currently, there is far more food waste being produced than there is space in compost facilities, but the industry is rising to meet to the demand. With governmental efforts being made to make food waste recycling a more viable industry, and with steps being taken to reduce the amount of food that is wasted in the first place, there is excellent potential for the long-term growth and success of composting in South Carolina.

In November 2015, the Southeast Recycling Development Council held their annual Food Recovery Summit in Charleston, SC, and DHEC hosted an Organics Waste Diversion work group in conjunction with EPA Region IV in Columbia, SC. Both meetings were intended to encourage cooperation on the federal, state, and local levels to further create policy that will allow these



new industries to flourish. Low landfill tipping fees, prohibitive zoning laws, and lack of funding are some of the issues faced by the growing compost sector today.

With the introduction of Bill H.R. 4184 in the US House of Representatives in December 2015, the federal government has demonstrated their interest in reducing food waste and ensuring its proper disposal. Also known as the Food Recovery Act, this bill encourages composting as a conservation practice eligible for support under the USDA's conservation program and promotes the creation of an infrastructure fund to support the construction of large-scale composting facilities. If this bill is passed, it will have a big positive impact on the long-term market capacity of the composting industry.



Food Waste Generation Map

## RECYCLING STAKEHOLDER GROUPS

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### South Carolina Carpet Recovery Coalition

Staff to RMDAC manages the activities of the South Carolina Carpet Recovery Coalition (CRC) in partnership with DHEC and other entities to help increase the recovery of carpet and carpet padding in the state. As a carpet recycling leader in the Southeast, South Carolina has a diverse network of companies with several hundred million pounds of recycling capacity. These businesses include collectors, processors and end users that utilize recovered carpet to manufacture new products for the automotive, construction, electronics and lawn and garden industries.



Project Goal: As part of the effort to recover more plastics, increase residential carpet recovery.

In 2015, the CRC accomplishments included:

- Updated carpet recovery facilities map
- Hosted CRC meeting in April at Greater Greenville Sanitation Commission
  - Speakers included Anthony Cline of CARE and Dennis Carter of Southeastern Plastics Recovery
  - Tour of Greater Greenville Sanitation Commission's carpet recycling collection area
- Reached out to Home Depot and Lowe's to ask them to share carpet recycling information with their carpet installers
- Updated CRC stakeholder group list
- Hosted a carpet recovery meeting in October with 40 attendees.
  - Speakers included: Jay Henry, Director of Operations and Support who gave an overview for Shaw Industries, Scott Taylor from Wellman gave an industry and markets update, and John Votaw shared best practices for carpet collection
  - Leadership awards were given to Richland County's carpet recycling staff Michael Maston and Randall Castleberry
  - CARE staff was in attendance and was interested in hosting a SC Carpet recovery panel/session at next CARE meeting in Greenville.



Michael Maston, Chantal Fryer and Randall Castleberry

- Keep the Midlands Beautiful awarded Richland County's carpet recycling staff member Randall Castleberry with the sustainability leadership award for his recycling efforts
- Commerce staff conducted three CRC steering committee conference calls
- Distributed a carpet recovery flyer for landfills
- Met with local governments to promote carpet recycling
- Worked with DHEC to offer carpet recycling grants for local governments
- Distributed letters to County Administrators to encourage them to offer carpet recovery in their broader recycling programs

The SC carpet recycling industry employs about 1,280 workers. As an example of the supply chain for recovered carpet, Ford is using recycled plastic extracted from discarded carpets for parts in some of its most popular vehicles' engines. Wellman Plastics Recycling, a carpet recycler, supplies that material to Ford from its Johnsonville, SC, location.

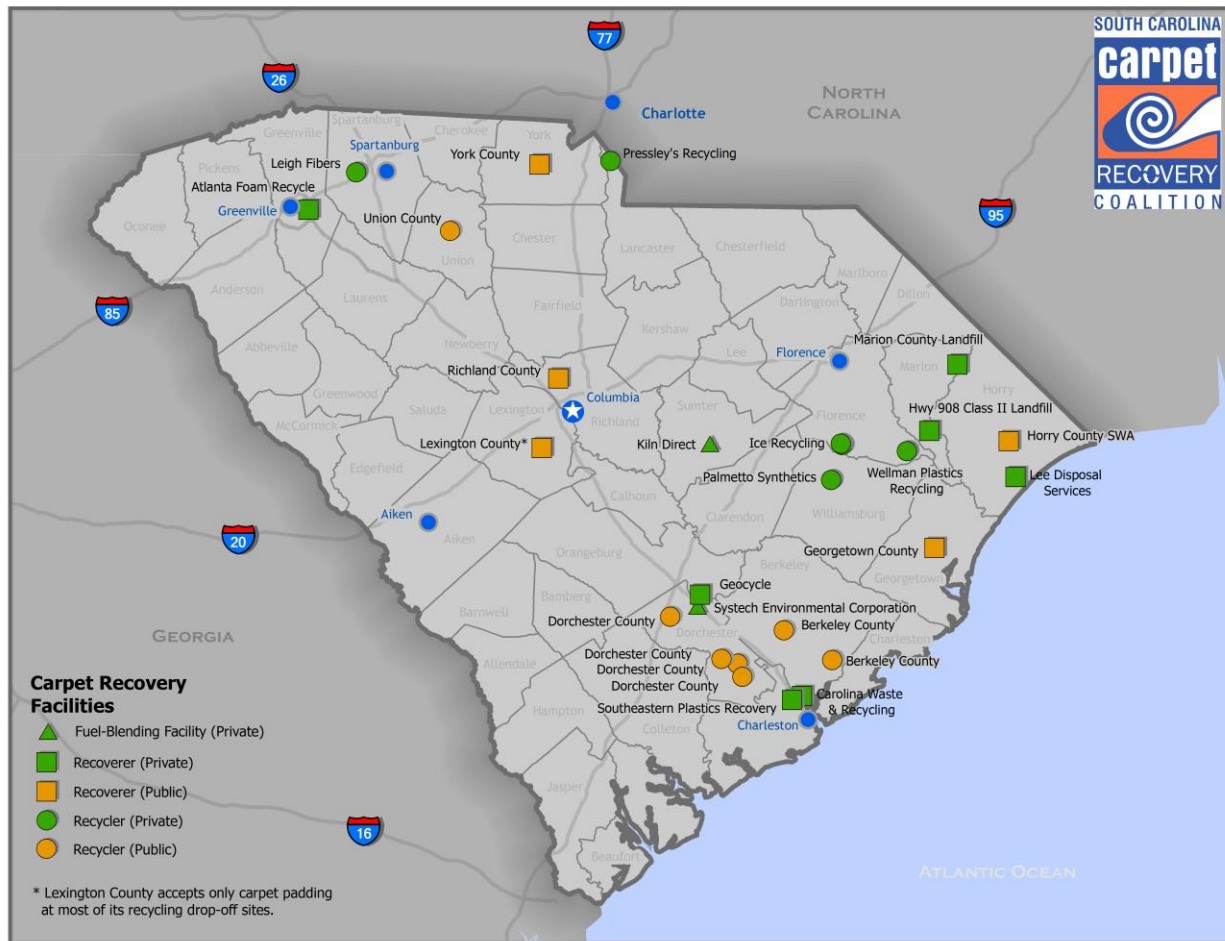
Background: Stemming from the initial carpet recovery meeting that was held on January 24, 2013, staff continued to support the stakeholder group and its activities.

Infrastructure: Commerce worked with DHEC to identify private and public carpet recovery facilities in the state. A map was updated to illustrate this infrastructure and identify facility type. In addition, a letter was distributed to county administrators and managers to encourage jurisdictions to offer carpet recycling. Horry, York, Richland and Georgetown all have active carpet recovery programs. GGSC terminated their program due to lack of participation. To grow carpet recycling in other counties, DHEC has distributed carpet recycling grants for 2016 to the following counties: Berkeley, Dorchester, Georgetown, GGSC, Greenwood, Horry, and Lexington.



Jay Henry from Shaw speaks at carpet recovery event in Columbia, SC

## Carpet Recovery Facilities



\*This map may not be representative of all entities in the SC carpet recycling value chain.

CRC Steering Committee: Coalition steering committee members were identified:

- Commerce
- USC
- Wellman Plastics Recycling
- Georgetown County
- Southeastern Plastics Recovery
- Greater Greenville Sanitation Commission
- DHEC

Bi-monthly steering committee conference calls were held in 2015 as well as two face-to-face stakeholder meetings.



Activities planned for 2016:

Activities identified for the next fiscal year include:

- Survey collectors/recyclers
- Create testimonial fact card for carpet collectors and processors
- Include specific data for the area
- Partner with other programs i.e. air quality coalitions
- Identify potential DHEC grant opportunities
- Identify potential student projects (USC)
- Provide updates for DHEC's carpet website
- Determine specific date for data to be added to website (after March 2016)
- Set dates for 2016 meetings and calls
- Explore opportunities to collaborate with CARE and CRI
- Review updates on PET carpet recycling opportunities



Creating a carpet recycling infrastructure with local governments takes time. While county progress in adding carpet collection capacity has been slow to come online, they are showing interest in recovery of carpet. Through education and outreach to local governments, landfills, and county administrators, the CRC feels that it can gain traction and create more collection infrastructure. Some of the recoverers try to make it easier for local governments by accepting commingled carpet and carpet padding, but other recyclers want it separated. The CRC is off to a good start and is looking at the education, outreach and infrastructure development as a long term investment for the state.

### **Carolina Plastics Recycling Council (CPRC)**



The CPRC is an effort between public and private partners in North Carolina and South Carolina to recover more plastic bottles. The Carolina Plastics Recycling Council formed a Your Bottle Means Jobs campaign to get more of the 3 billion plastic bottles (150,000 tons) discarded each year in the Carolinas back into the production cycle. The strategy is to build a Your Bottle Means Jobs media campaign to motivate citizens to recycle just TWO more bottles a week. These bottles help create jobs, build local wealth, reduce energy and natural resources consumption and reduce the tax and cost burden when plastic bottles are disposed as waste.

Staff managed the activities of the Carolinas Plastics Recycling Council for the 2014-2015 contract year. This stakeholder group is active and has grown over the four years of staff's management of the CPRC.

Project Goal: Increase plastic bottles recycled in the Carolinas; build the plastics recycling industry network.

It is estimated 300 million pounds of plastic bottles are landfilled in the Carolinas; these are potential feed stocks that could be turned into new recycled content products by businesses who employ South Carolinians as well as generate taxes.

#### Accomplishments Overview:

- Conducted May 2015 CPRC meeting in Rock Hill, SC with CPRC Steering Committee
  - Held at City of Rock Hill Ops Center with 70 attendees at the meeting
  - Speakers included: Steve Alexander of the Association of Post-Consumer Plastics Recyclers provided an update on its activities, Susan Kozora of International Automotive Components presented on how recycled plastics are integral to automotive manufacturing, Ms. Sun, Sun Fibers; spoke about the plant and provided an overview of the operations
  - Group toured recycled plastics firm Sun Fibers located in Chester County
- Held November CPRC meeting in Charlotte, NC at the Polymers Center of Excellence
  - Speed networking conducted for 70+ guests
  - Speakers included: Steve Alexander, Executive Director of the Association of Post-Consumer Plastics Recyclers provided an update on its activities. Will Culpepper presented on how various policies can have an impact on plastics recycling. Markets panel with Steve Alexander, Tina Huskey of Mumford Industries, Tamsin Etefagh of Envision Plastics and Khurm Hussain of Unifi.
  - Group took a tour of the Polymers Center of Excellence.

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#### Your Bottle Means Jobs Committee:

- Fundraising
  - Held several conference calls with Outreach subcommittee meeting to plan for 2015 fundraising for the Your Bottle Means Jobs campaign
  - Fundraising committee raised over \$60,000 for Your Bottle Means Jobs campaign
  - Tracked fundraising activities and invoicing for the media campaign.
- Outreach
  - Coordinated call with Big Eyed Bird on website and social media set up
  - Developed website information for the Your Bottle Means Jobs website
  - Provided all content for website and worked with NC to develop recycling success stories for the website. Promoted [www.yourbottlemeansjobs.com](http://www.yourbottlemeansjobs.com) at the Carolina Recycling Association conference, CPRC meeting, RMDAC meeting and other meetings
  - Reviewed and suggested revision to billboards and radio ads being proposed for Your Bottle Means Jobs campaign
  - Held several conference calls with Outreach subcommittee meeting to plan for 2015 fundraising for the Your Bottle Means Jobs campaign

- Promoted [www.yourbottlemeansjobs.com](http://www.yourbottlemeansjobs.com) at the CPRC meeting, RMDAC meeting and other meetings.
- Created social media campaign for Your Bottle Means Jobs in response to flooding in Columbia and increased use of plastic bottles with water service being compromised due to line breaks.
- Presented at the Recycling Innovators Forum(RIF) in September 2015 on Your Bottle Means Jobs. YBMJ was one of 5 finalists in the RIF. However, YBMJ was not awarded.
- YBMJ proposed grant for Patagonia foundation but was not awarded in this round.



Matanya Horowitz of AMP Robotics addresses the crowd at the Recycling Innovators Forum.

### **Retail Plastics committee**

- The retail plastics committee was activated this year to refocusing on film. A new chair was appointed, Heather Barberio, SC DHEC.
- The retail plastics committee held several conference calls conducted by Heather with support from Commerce
- The goal is to get 1 grocery store chain in the Carolinas to participate in film recycling by December
- Coordinating with Trex, APR and Moore Recycling and Associates on project
- Trex reached out to Ingles for interest in film recovery prior to group engaging with Ingles. Ingles was not interested.
- Retail Plastics committee engaged in conference call with John Laughead of Food Lion. Food Lion is interested in doing something with the group.
- Timothy Wallace attended CPRC meeting on 11/6 and is reconnecting with Ingles

The CPRC Steering Committee includes members of Clear Path Recycling, US Fibers, Envision Plastics, Orange County, SC Commerce, SC DHEC and APR.

Overall, the CPRC meetings are a success and have grown in attendance. From the first meeting at the APR fall conference in Charlotte in 2011 where the idea of a group formed around plastics recycling in the Carolinas was a new, untested concept to the last meeting in 2015 with over 70 participants, it is clear that the plastics recycling industry values the information, networking and business opportunities that are provided by the collaborative effort between North and South Carolina's industry and government stakeholders. Feedback from these meetings is positive. APR continues to support the effort with its attendance and input on various initiatives.



Outreach Campaign: Outreach to the citizen through marketing and outreach is one way the CPRC has identified to help increase recycling. Developing messaging around jobs is a relatively new concept at the local government level, but as the CPRC committee has discussed with many of the SC/NC local governments, they are ready for new messaging. However, there are system problems in residential recycling:

- There is a disconnect between the value of recycled material and signs from the market place to the citizen that these scrap materials have an intrinsic value, with the exception of used beverage cans (UBC's).
- In addition, the infrastructure to recapture that material has not been fully expanded to capture volumes necessary (for example, changing community collection from bins to carts, event recycling or on the go recycling programs).

Activities Planned for 2016:

- Plan a strategy session for CPRC during the beginning of 2016
- Coordinate a CPRC meeting for Sept. 2016
- Continue to conduct regular conference calls for the fundraising committee
- Work with Big Eyed Bird on associated marketing materials related to the Your Bottle Means Jobs campaign
- Coordinate the activities of the Retail Plastics initiative
- Communicate progress to CPRC stakeholders
- Make presentations on behalf of the CPRC
- Map the industry and communicate its economic impact

## Organics

Organic material makes up about 30 percent of South Carolina's waste stream and produces greenhouse gases as it decays. These materials include paper, wood, yard debris, food residuals and industrial and municipal sludges. The material is diverted to a composting facility where it can be recycled into soil amendments and other value-added products. State commercial composting regulations were finalized in 2014. Commercial composters work with waste haulers and organic waste generators to provide an alternative to landfills, leading to a reduction in the generator's waste management costs.

Goal: National food waste reduction goal of diverting 50% of food waste by 2030

Food waste and yard trimming comprised more than 1.2 million tons of material in FY14. Organic are the leading cause of greenhouse gas emissions in landfills

Charleston County was the first permitted public sector facility (2013).

Re-soil was the first permitted private sector facility (2015).

Discussions have been active regarding the development of a 6 acre area at Greenville County Twin Chimneys Landfill for organics collection.

Accomplishments Overview:

- Held at Food Recovery Networking Meeting at SC Archives
  - Speed networking and roundtable discussions



- Speakers included Joseph McMillin of JunkMatters, SC DHEC, and SC Commerce
  - Tour of Re-Soil held
  - 32 attendees
- Worked with Charleston County’s compost facilities’ to test biomass for use in energy production
  - Wood Waste Fuel Team is made up of DHEC, Commerce, Santee Cooper, EDF, Kapstone, and others interested in using wood waste for fuel
  - 30,000+ tpy of wood fuel is achievable from Charleston County facility
  - Definitions from DHEC, EPA still needed to move forward. DHEC (Veronica Barringer working with EPA on these specifics)
- Data generated, revised and published on users of compost for online interactive map
- Planning meeting held at Greenville County to discuss October 2015 Upstate Food Recovery event
- Hosted Upstate Food Recovery Networking Meeting at Greenville County Square.
  - EventBrite page was set up, Save the Date sent out, marketing
  - Open networking conducted for 40+ guests
  - Speakers included Holly Elmore of Elemental Impact, Kim Brunson of Publix, Paulette Dunne of Loaves and Fishes, Joseph McMillin of JunkMatters, others in the food waste recovery area and SC Commerce
- Attended Organics Waste Diversion group meetings in Columbia SC with EPA Region IV and DHEC
  - EPA published Food Waste Generation report for the Columbia area
- Presented and attended conference calls for a session for Nov 16-18 Food Recovery Summit State and Local Government in Charleston, SC.
- Staff contributed information for the BioCycle magazine article.
- Commerce updated a fact card that showcased:
  - Economic and environmental benefits of recovering food waste
  - South Carolina composting and organic and waste diversion businesses



Chantal Fryer speaks at Food Recovery Summit

#### Activities Planned for 2016

- Conduct stakeholder engagement event in summer/fall 2016
- Develop and support compost market in Columbia, SC with a March B2B event.

- Continue to coordinate and implement activities of EPA Stakeholder group. Update Food Waste Generation map
- Support organics infrastructure development
- Work to reduce food waste by 50% by 2030 re: EPA/DHEC goal

A copy of the fact sheet is located in the Appendix on page 77.

### **Coastal Recycling**

Another ongoing recycling industry stakeholder groups includes coastal recycling. The South Carolina Department of Commerce worked with the Solid Waste Advisory Council to offer grants to local governments for on-the-go recycling programs. This effort works directly to capture post-consumer material in highly-trafficked tourist areas.

- Focused on increasing glass and beverage container recycling along the state's coast
  - Beaufort County
  - City of Myrtle Beach
  - City of North Myrtle Beach
  - Town of Surfside



Activities in the Coastal Recycling initiative included staff monitoring the City of Myrtle Beach's pilot project on increased collection along the beach. Grants supported start-up costs for containers and labor.

### *Ferrous Metal*

Falling scrap prices challenged the scrap metal recycling industry in 2015. Ten months showed a steady decline in pricing from a January high of \$320/GT for Plate & Structural to \$160/GT in November. Numerous issues along the supply chain have resulted in a decrease in utilization rates at the steel mills. Along with falling prices was a decline in scrap flow into scrap yards. These two factors along with deterioration in demand from scrap export markets (particularly China) has negatively impacted the scrap metal recycling industry.

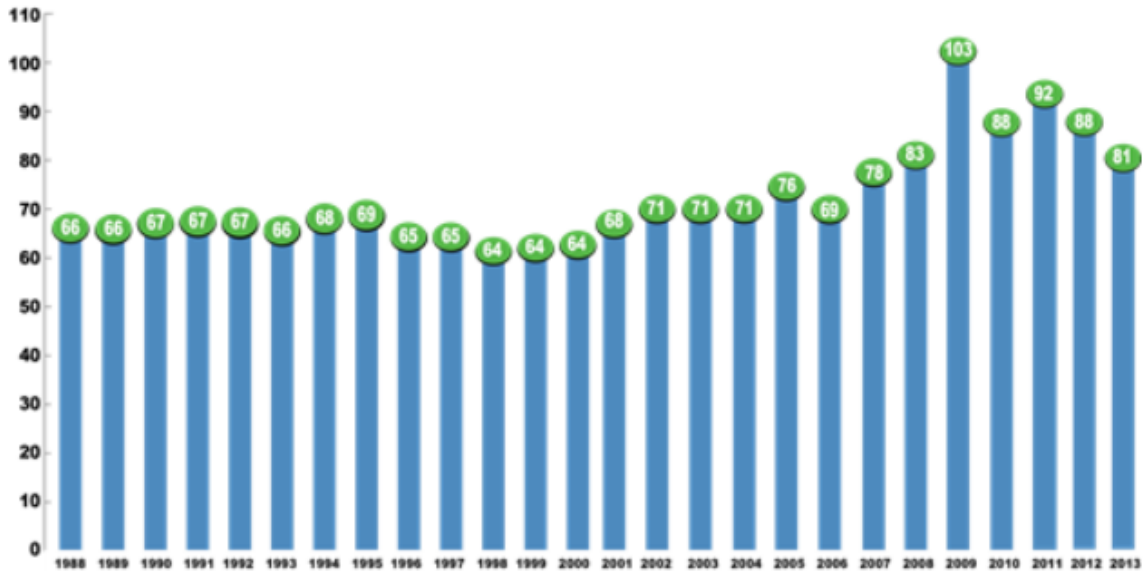
Steel mills in 2015 were affected by the cost of working through higher priced scrap purchased in 2014 as falling prices were the trend in 2015. Negative pricing trends and low volumes are because of the continued deterioration in global steel markets amplified by global excess capacity and historically high imports. The industry is working at the federal level to fight cheap steel imports by working on preliminary antidumping and countervailing duties which should have a positive impact on domestic sheet mills in the first half of 2016.

Close to 4 million tons of steel is imported into the U.S. from overseas every month which is about half of the steel that is produced in the U.S. This generates additional scrap and adds to the reservoir. There is excess on the supply side, both in industrial and obsolete scrap metal supply. Nonresidential construction markets, although improved from 2014, began to slow in 2015 mainly due to seasonal factors. Energy, heavy equipment and agricultural markets remain weak. The automotive market remains a rare bright spot in the marketplace, producing 16 million cars per year, which means consumption of steel is high in that sector.

In South Carolina, lower prices have had a ripple effect on many of the scrap yards statewide with the shuttering of some feeder yards, and shredders running 1-3 days a week due to the lack of feedstock to shred. Similarly, in North Carolina, over 5 major scrap yards closed.

In 2016, the industry according to Institute of Scrap Recycling Industries (ISRI), sees the situation getting worse in 2016 before it gets better in future years as scrap export markets have worsened due to the economic slowdown in China, the stronger U.S. dollar, increased imports of steel taking away market share from domestic steel mills which in turn results in reduced scrap consumption. With China's lowered demand for scrap metal, the top 5 net-gaining nations in ferrous exports are India, Turkey, Thailand, Saudi Arabia and Mexico, according to ISRI's chief economist Joe Pickard; however, these small net gains won't fully make up for the net shortfall in the near term. It is likely that 2016 will see the elimination of overcapacity and more industry consolidation as companies snatch up assets when the economic conditions are right.

# Steel Recycling Rates



(Source: Steel Recycling Institute)

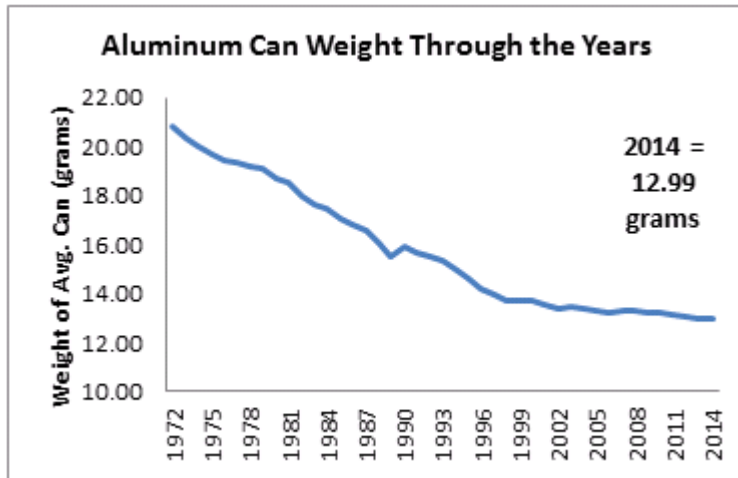
RMDAC should continue to help support the metal recycling industry in South Carolina through working with law enforcement to stop illegitimate recyclers that do not comply with laws as well as supply grants or funding to companies for new technology in areas that lack or have a need for recycling infrastructure, increase funding for infrastructure that improves logistical costs while creating increased demand for steel, education and outreach so the public learns the benefits that the recycling industry has on the state.

## Non-ferrous Metal

Aluminum beverage cans are the most recycled beverage packaging type in the United States with an industry recycled 59.3 billion cans for an industry recycling rate of 66.5 percent in 2015, the fourth year in a row the rate has held at historically high levels. Growth in the industry rate in recent years has been driven by a combination of increased domestic consumer recycling and increased industry recycling of imported can scrap according to data released by the Aluminum Association, Can Manufacturers Institute (CMI) and Institute of Scrap Recycling Industries (ISRI). This rate has grown dramatically since it was first reported in 1972 at 15.4 percent. <http://www.aluminum.org/aluminum-can-advantage#sthash.fb11RL5l.dpuf>

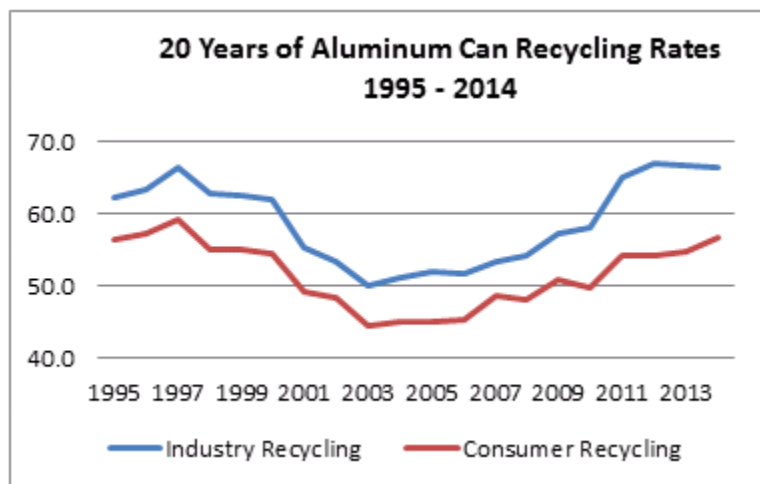
Aluminum beverage cans were recycled at a 66.5% recycling rate in 2015.

Each year nearly 40 billion cans – \$800 million worth of aluminum – end up landfills, a major loss to the economy and the environment. Making a can from recycled aluminum saves 92 percent of the energy required to make a new can.



### Weight

A strong indicator of material management and industrial efficiency, the weight of the average aluminum can has declined significantly – 38 percent – since tracking began in 1972. After all these years, can makers continue to innovate, making more cans with less metal while maintaining strength and durability.



Average Recycled Content of Beverage Containers	Consumer Recycling Rates of Beverage Containers	Value Per Ton of Recyclable Material
Aluminum: 70%	Aluminum: 56.7%	Aluminum: \$1,491
Plastic (PET): 3%	Plastic (PET): 31.2%	Plastic (PET): \$385
Glass: 23%	Glass: 34.1%	Glass: \$0

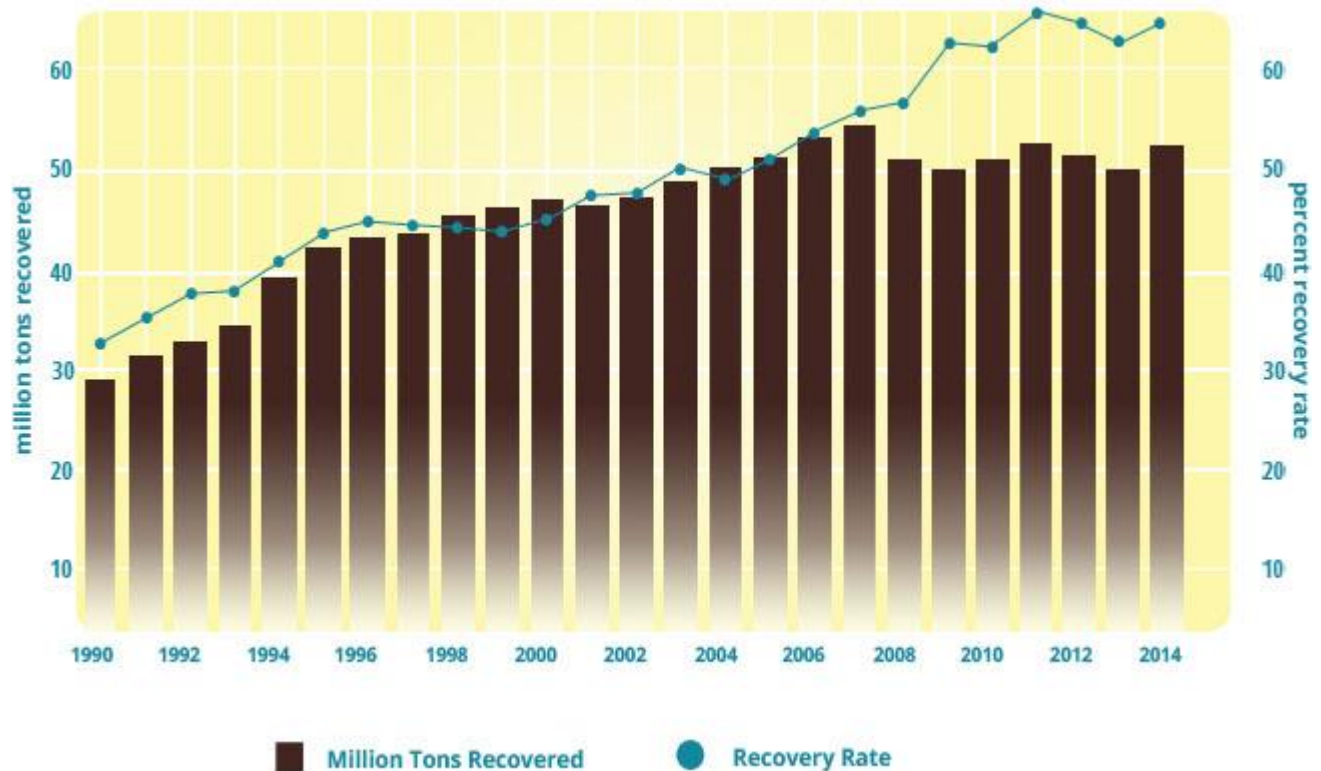
(Source: Can Manufacturing Institute)

The demand remains high in several markets, primarily in the automotive and aerospace markets. In 2015, Ford introduced the new Ford F150 with an aluminum body. Car manufacturers are using lightweight aluminum to replace heavier metal parts due to pressure from CAFÉ regulations to make cars more fuel efficient. New rules for warehouse queues may influence the inventory levels going into 2015 and will have an influence on the supply/demand balance for aluminum.

## Paper

Nationwide, the recovery of paper and paper-based packaging was 65.4% in 2014. Paper is the most-recycled material in the U.S. today: more paper (by weight) is recovered for recycling from municipal solid waste streams than glass, plastic and aluminum combined. (AF&PA)

### US Paper Recovery Rate 1990-2012



(Source: AF&PA)

Below is a market recap for the 2015 calendar for the various grades of paper.

- **OCC - Old Corrugated Containers**

2015 started out at \$90/ton for OCC. The market dropped to \$80/ton in February and held there until June. In June, the market went back up \$10/per to \$90/ton. There was an upswing in July of \$5/ton to \$95/ton followed by August's \$5/ton increase to \$100 per ton. The market remained constant through September and October. In November, it dropped \$5/ton to \$95/ton and then December saw another \$5/ton drop to \$90/ton. These decreases were driven by soft domestic demand coupled with heavy holiday generation.

- **Mixed Paper**

January 2015 mixed paper brought \$55/ton, then, in February, it dropped \$10/ton to \$50/ton. It remained steady throughout the year until December where it dropped \$5/ton to \$45/ton.



- **News - ONP #8**

News (ONP) changed very little in 2015. The market started out at \$60/ton in January of 2015 but dropped \$5/ton to \$55/ton in February through July. In August, it increased \$5/ton to \$60 and held until December where it dropped \$5/ton back to \$55/ton.

- **SOP – Sorted Office Paper**

Sorted Office Paper was bringing \$155/ton in January 2015. Due to weak export demand, price decreased to \$150/ton in March, dropped another \$5/per ton to \$145/ton in April and held until July. In August the SOP market dropped \$5/ton to \$140/ton and continued to drop each month ending up at \$115/ton in December.

**Outlook**

- **OCC - Old Corrugated Containers, Mix paper, News**

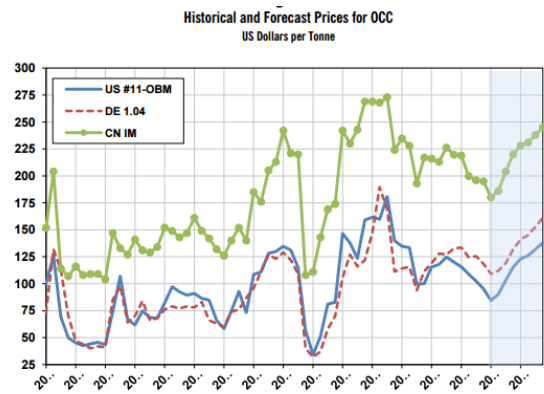
OCC averaged \$90/ton in 2015 with very little volatility. Also, News and Mix moved very little. With 1/3 of OCC and 1/2 of Mix and News going to China, their economy has a significant impact on the US recovered pricing. China’s economy is continuing to weaken. The US economy is forecasted to be mostly flat and with this being an election year, little change in price is predicted for 2016.

- **SOP – Sorted Office Paper**

SOP demand from China is increasing along with additional domestic capacity. An average of \$125-\$130/ton is anticipated for 2016.

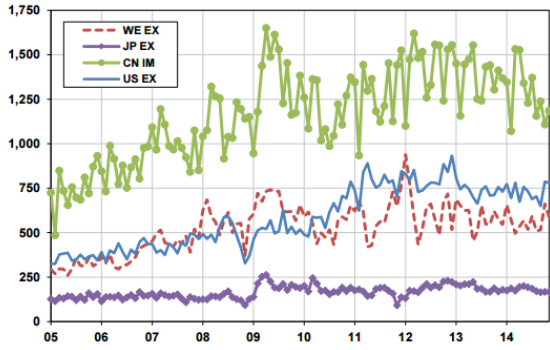


Source: Institute of Supply Management of the United States and National Bureau of Statistics of China.  
Note: Data for the latest month are preliminary and subject to change.



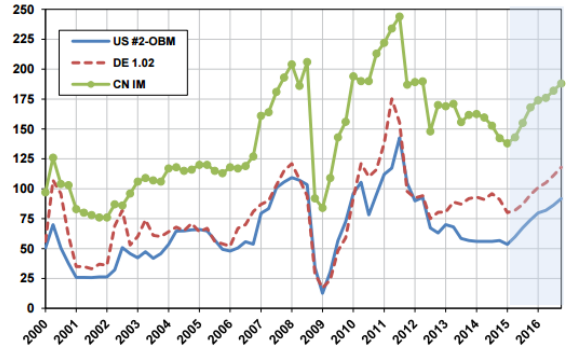
US #11 is the average FOB price of OCC #11 in the US market.  
DE 1.04 is the domestic free delivered price of OCC 1.04 in the German market.  
CN IM is the monthly average delivered CIF price of OCC sourced from the USA to main ports in China.

Major OCG Trade Flows  
Thousand Tonnes



Note: Trade for the latest month is preliminary and subject to change.

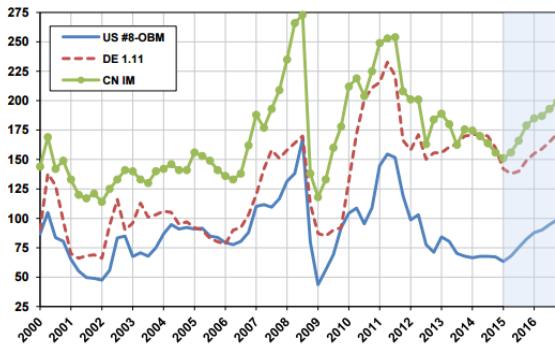
Historical and Forecast Prices for Mixed Paper  
US Dollars per Tonne



US #1 is the average FOB price of mixed paper #1 in the US market.  
DE 1.02 is the domestic free delivered price of mixed paper 1.02 in the German market.

CN IM is the monthly average delivered CIF price of mixed paper sourced from the USA to main ports in China.

Historical and Forecast Prices for ONP  
US Dollars per Tonne

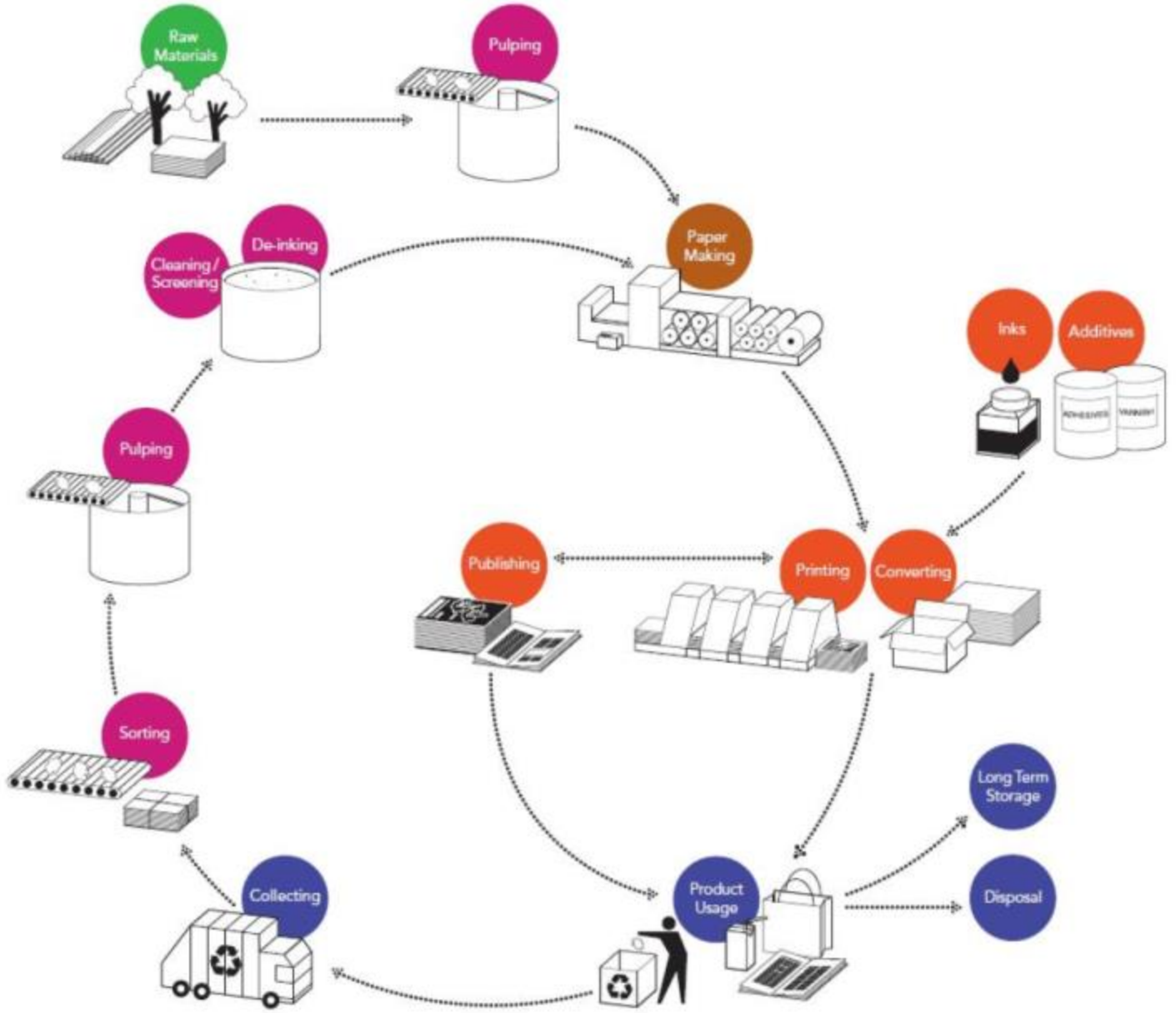


US #8 is the average FOB price of ONP #8 in the US market.  
DE 1.11 is the domestic free delivered price of ONP 1.11 in the German market.  
CN IM is the monthly average delivered CIF price of ONP sourced from the USA to main ports in China.

Source: World Recovered Paper Monitor <http://www.risiinfo.com/risi-store/do/product/detail/world-recovered-paper-monitor.html>

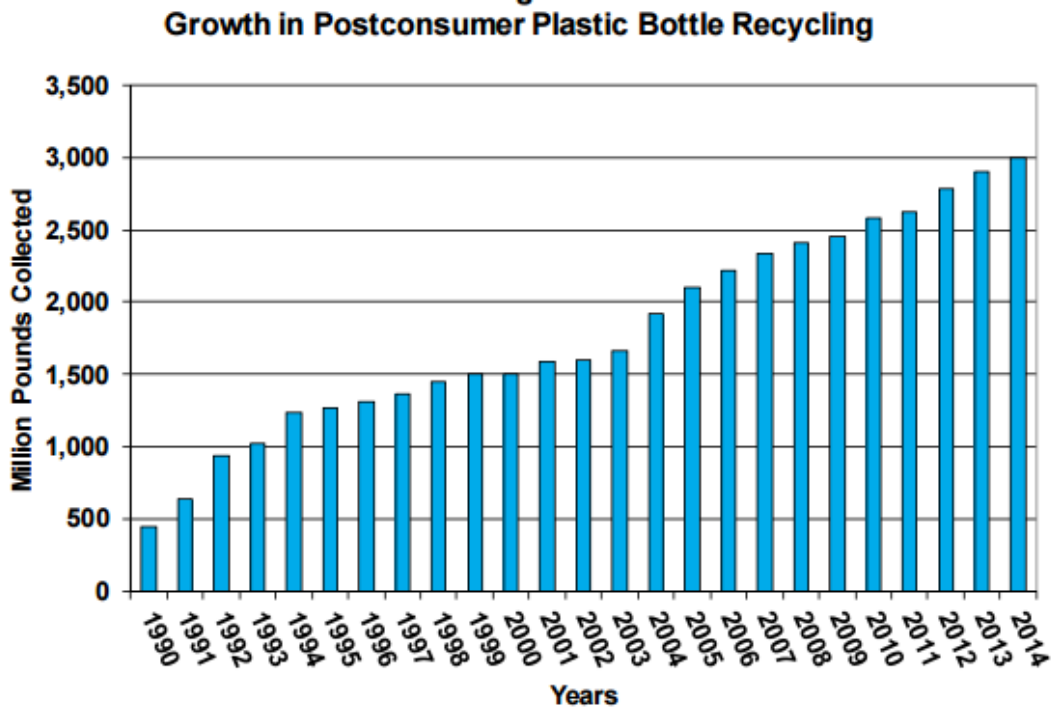
# Paper Lifecycle

(courtesy ClimateTechWiki)



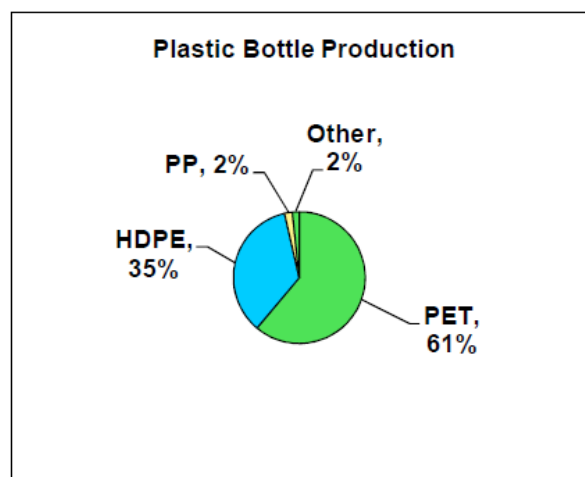
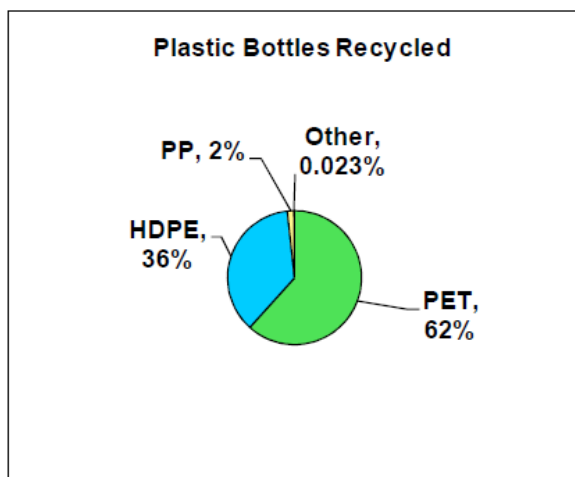
## Plastics

According to recently published 2014 recycling rates from the National Association for PET Container Resources (NAPCOR), 1,812 million pounds of PET bottles were recycled out of 5,849 million pounds sold for a recycling rate of 31 percent. The recycling rate grew 1.5 percent over 2013. PET bottles collected increased by 14 million pounds over 2013.



SOURCE: NAPCOR, all years, for PET. For other bottle resins, R.W. Beck, Inc., 1990-2006; Moore Recycling Associates, Inc., 2007-2015

2013 Plastic Bottles Recycled and Plastic Bottle Production by Resin



Source: Moore Recycling Associates, Inc. 2014  
NAPCOR, 2014

The use of recycled polyethylene terephthalate (RPET) in fiber is growing. Notable this year was the continued year-over-year growth in the bottle sector, with Food and Beverage Bottle recycled PET 351 million pounds, and usage in Non-Food and Beverages 57 million pounds. When combined with Sheet & Film category's 365 million pounds, 773 million pounds of recycled PET went back into PET packaging. Growth in Fiber application end use also stood out in 2014 to a total of 638 million pounds used in domestic end market. This reflects continued investment in fiber market applications, primarily in the southeastern United States, as was reported in 2012. Thermoform packaging recycling is on the rise: the 70 percent increase in the amount of thermoforms collected for recycling in 2014 demonstrates that the efforts of NAPCOR and its partners to open recycled PET markets to thermoforms is paying off.

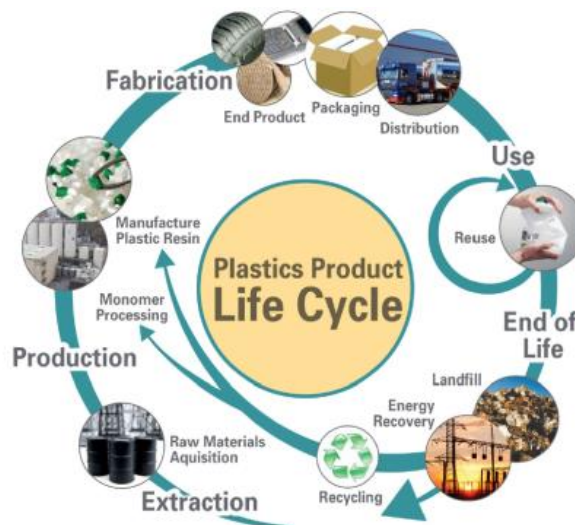
U.S. reclaimers increased purchased 1,398 million pounds of material in 2014. 404 million pounds of post-consumer bottles collected in the U.S. were purchased by export markets in 2014. With further growth for RPET packaging applications, and increases in new demand from expansions within the U.S., domestic demand is expected to be stronger for 2015.

Collection of PET bottles for recycling continues to lag far behind demand.

Demand for recycled PET is strong: significant end-use markets, including fiber, sheet & film, and non-food bottles saw increases in their use of recycled PET in 2014, illustrating solid domestic demand for this material. These increases more than offset declines in other sectors. This solid recycled PET demand is the underpinning of a robust and resilient reclaiming industry that stands at the ready to accept more material, should collections increase. In the interim, reclaimers will likely continue to creatively source non-bottle materials, and rely on imports to some extent.

Supply quality and quantity remain major concerns: The crisis-level contamination levels reported by reclaimers in prior years persisted in 2014, particularly in curbside PET bales.

### Plastics Products Lifecycle



Courtesy of Styron, LLC

RMDAC will continue to work closely with DHEC to increase collections and develop new markets. All areas should be reviewed to increase collections and keep PET bottles in the U.S. for reclaimers.

### *Scrap Tires*

Scrap tire recycling resources continue to grow in South Carolina. Four processing facilities are in operation around the state with fair geographic distribution. Facilities located in the Charleston, Greenville and Aiken metro areas processed an estimated 9.5 million tires in 2015. Out of state facilities also provide additional recycling and processing services for the state. The Pee Dee region is the only area of the state that is under served.

Collection and processing/recycling cost to the citizen, businesses and local governments is on the rise due to increased operating costs, additional compliance cost including federal transportation rule implementation and commodity revenue decreases. However, the cost in South Carolina is lower than other states in the region. Collection and processing fees are estimated to average \$0.95 per tire.

Tire Derived Fuel (TDF) continues to be the major commodity produced. Three industrial sites in South Carolina utilize TDF as part of their fuel stream. One plant in the state ceased TDF energy recovery during 2015; however, two out of state facilities increased TDF consumption. The result was a net increase in TDF demand with a small increase in fuel price to the recyclers.

Tire wire removed and collected during the recycling process has seen a drastic price decrease over the past year. Prices are approximately 15% below the previous year. This has had a detrimental effect on higher end use production and operating revenue.

Mulch and crumb rubber markets have increased slightly despite news reports and governmental inquiries into potential health and environmental concerns. Currently published investigation results do not indicate any health or environmental impacts. Ultra-fine ground crumb has seen an increase in demand as a feedstock for a variety of products. No ultra-fine producers are located in South Carolina; however, the state's recyclers supply high value feed stocks for these facilities.

Several emerging technologies such as plastic blending molded products will continue to develop over the coming year. If this technology develops as expected, it could be a welcome change to the economic picture for scrap tire recycling. South Carolina with its existing scrap tire programs and facilities could reap the rewards of these technologies.

With a growing tire manufacturing industry and continuing post-consumer production of used tires, South Carolina reaps the benefit of these tires as well as manages ongoing concerns such as scrap tire piles. Dealing with metal market deflation, increased regulation, and operational costs are the biggest challenges that tire recyclers see. RMDAC should continue to work with DHEC, DOT, ARTS, citizen groups, businesses and recyclers to develop new markets, encourage a positive regulatory environment, and support technology development for scrap tires.

## Glass

The recycled glass market remained stable in 2015. Nationally, market prices for recycled glass ranged from \$0 to \$20 per ton. It is anticipated that market pricing for glass cullet will remain stable for 2015.

In 2013, 41.3% of beer and soft drink bottles were recovered for recycling, according to the U.S. EPA. Another 34.5% of wine and liquor bottles and 15% of food and other glass jars were recycled. In total, 34% of all glass containers were recycled. States with container deposit legislation have an average glass container recycling rate of just over 63%, while non-deposit states only reach about 24%, according to the Container Recycling Institute.

Beverage container deposit systems provide 11 to 38 times more direct jobs than curbside recycling systems for beverage containers. (Source: The Container Recycling Institute, "Returning to Work: Understanding the Jobs Impacts from Different Methods of Recycling Beverage Containers").

There are 46 glass manufacturing plants operating in 22 states. 16 companies operate 51 glass beneficiating facilities (aka "glass processing" plants) in 27 states. At the glass processing plants, recycled glass is further cleaned and sorted to spec, then resold to the glass container manufacturing companies for remelting into new food and beverage containers.

In 2013, 41.3% of beer and soft drink bottles were recovered for recycling, according to the U.S. EPA. Another 34.5% of wine and liquor bottles and 15% of food and other glass jars were recycled. In total, 34% of all glass containers were recycled.

As in previous years, glass container and fiberglass industries are continually in need of more clean, recycled glass and cullet to utilize in the manufacturing of their respective products. These markets have stringent quality specifications, which often limits the ability to utilize single stream material.

Due to strict quality requirements of cullet end users, challenges with transporting recycled glass and an increase in single stream collection systems, alternative uses for recovered glass material has increased. These alternate uses include:

- The manufacturing of glass beads for reflective highway paint
- The construction of recycled glass counter tops and flooring
- The production of recycled glass aggregate for use in landscaping and road cover

RMDAC will continue to encourage the recovery of glass in South Carolina and promote the use of alternative markets for recovered glass.



## Glass Container Recycling Loop

Glass bottles and jars are 100% and infinitely recyclable



\*A material recovery facility is a specialized plant that receives, separates and prepares recyclable materials for manufacturers.

### Used Oil

The statewide used motor oil recycling program targeting do-it-yourselfers (DIYers; those who change their own oil) continues to flourish. Through a combination of educational programs, technical assistance and grant funding for local governments, South Carolina has developed one of the nation's most comprehensive used motor oil recycling programs for DIYers.

DIYers recycled more than 951,531 gallons of oil which equates to about 3,330 tons. This is a 14% increase over the previous year.

According to figures compiled by DHEC's Office of Solid Waste Reduction and Recycling (Office), DIYers recycled 828,838 gallons of used motor oil in (calendar year) 2013. For fiscal year (FY) 2014 (July 1, 2013 – June 30, 2014), DIYers recycled more than 951,531 gallons which equates to about 3,330 tons. This is a 14% increase over the previous year. Overall, more than 19 million gallons

have been collected from DIYers since used motor oil recycling efforts began in South Carolina in 1990.

Used motor oil, used oil filter and oil bottle recycling programs should continue to see growth. The priorities of the Office regarding the used motor oil recycling program are:

- To continue to collect and recycle motor oil bottles. Most counties are using oil bottle drain racks to drain the bottles and make them easier to recycle.
- To continue to expand the farmer oil collection program by adding collection tanks where needed. There are currently 67 farmer oil collection sites in 43 counties. Each of the tanks holds at least 600 gallons of used motor oil and is fitted with a pump and hose to make it easier for farmers to recycle up to 55 gallons of used motor oil at one time.
- To continue to expand the oil/gasoline mixture collection program by adding collection tanks where needed. There are currently 105 oil/gasoline mixture collection sites in 43 counties. The oil/gasoline mixture tanks typically hold 500 gallons and are designed to accept motor oil, gasoline and oil/gasoline mixtures from lawn equipment and recreational vehicles.
- To secure and maintain markets or other uses for used motor oil, bottles and filters.

DHEC will continue to provide grant funding to local governments to set up, maintain and improve used motor oil recycling programs. DHEC also will continue to promote used motor oil recycling using a variety of educational materials and the “Green Driver Project.”

RMDAC should continue its work promoting, supporting and securing markets for the state’s used motor oil recycling program.

**Your Bottle Means Jobs Campaign Material**



**YOU CAN BE A JOB CREATOR**

The Carolinas plastics recycling industry is growing. About 1,700 people are directly employed in this industry. That's great news for the economy. What is less realized is that we need to recycle more plastic bottles. Over 70% of all plastic bottles are thrown away. Companies right here in the Carolinas who make new products from plastic bottles CAN'T find enough recycled plastic to run their plants efficiently.



**That's why we are putting the call out for everyone to recycle more plastic bottles.**

What can you do? Take the empty water or soda bottles that you have in your car, house, work or on-the-go and put those bottles in the recycling bin. Put your shampoo and laundry detergent bottles in the recycling bin rather than in the trash can.

The simple act of recycling plastic bottles creates well-paying jobs. And companies that have a good supply of recycled bottles will continue to invest and expand their businesses in North and South Carolina.

# BOTTLES WORK BETTER IN THE CAROLINAS



PLEASE RECYCLE



## YOUR BOTTLE MEANS JOBS FAST FACTS:

Look at what just 200 bottles can do - that's less than a bottle a day:







  
YOUR BOTTLE MEANS  
**JOBS**

 PLEASE RECYCLE

Plastic bottles. They are everywhere. They are on your desk at work, at home in your bathroom and kitchen, at the park, at the gym, in your car. Empty, they seem like they have no further use. Think again.

- By simply recycling plastic bottles that used to contain water, soda, shampoo, milk, laundry detergents, food and many other items, we can increase the available LOCAL recyclables for companies in our area.
- An increase in RECYCLED material supports the bottle-to-bottle, automotive, textile, home furnishings, carpet, consumer products and other industries in the Carolinas.
- All of this creates a positive economic impact locally and across the region with NEW JOBS, reduced or avoided landfill costs, and increased

energy savings. The impact of recycling just a few more plastic bottles each week is an amazing JOB-CREATING, resource-saving act.



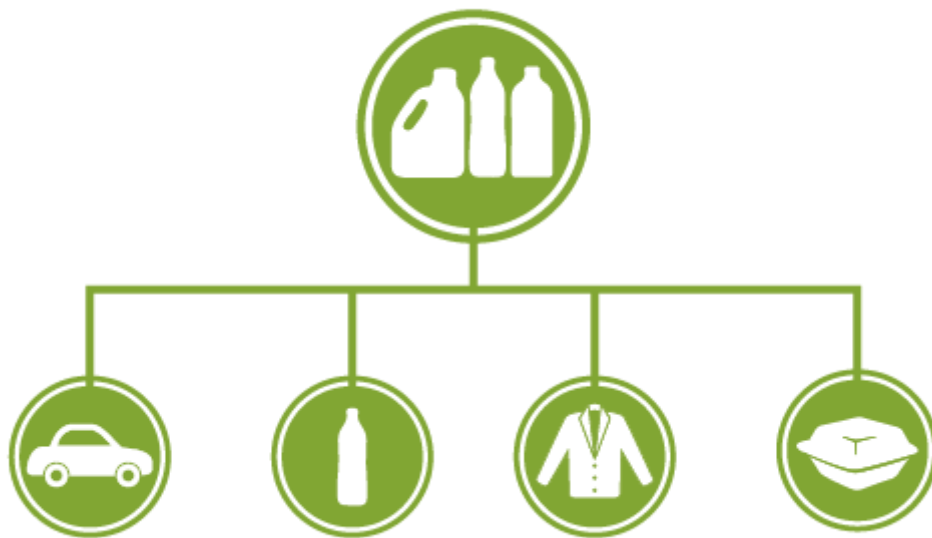
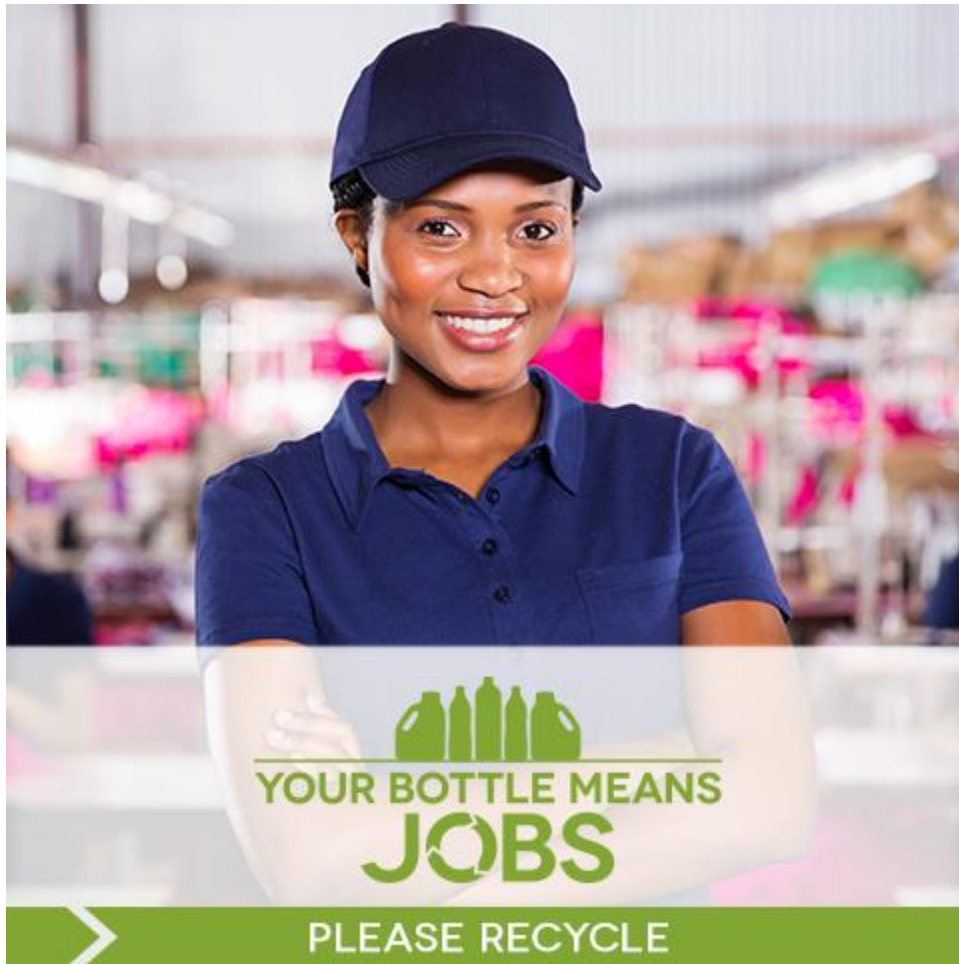
## You Can Be a Job Creator

Individuals can make a difference. It's easy!

If each Carolina household recycled just two more plastic bottles a week, we could create 300 new jobs!

Did you know that 3 billion bottles are thrown away in North and South Carolina? That's a lot of bottles and a lot of potential jobs being thrown away.





Only 25% of the old bottles used in making new products come from the Carolinas. The rest are imported domestically or from overseas. When you recycle, a major industry gets into gear to remake those bottles into something new. Plastics recyclers believe in recycling in the Carolinas. They have invested over \$126 million in our two states, and there is a production capacity of over 750 million pounds a year, but not enough bottles are being recycled to keep up with this demand.



The Carolina Plastics Recycling Council formed a Your Bottle Means Jobs campaign to get more of the 3 billion plastic bottles (150,000 tons) discarded each year in the Carolinas back into the production cycle. Our plan for getting more bottles back is to build a Your Bottle Means Jobs media campaign to motivate the public to recycle just TWO more bottles a week. In recycling, they're helping create jobs, build local wealth, reduce energy and natural resources consumption and reducing the tax and cost burden when plastic bottles are disposed as waste.

You can make a difference, it's easy!  
When you recycle, you help give a person a job.

What do you need to do? Recycle more and support our program! The plastics recycling industry in the Carolinas is robust and growing but needs everyone's help and support to get more bottles recycled. Over

1,700 people are directly employed converting bottles and other plastics to new products like carpeting, clothes and other textiles, plastic pipe, plastic lumber and more bottles. The Carolinas need more of these types of well-paying jobs and investments that will create them. The simple act of recycling more plastic bottles is one way to make this happen.

IF EACH HOUSEHOLD IN  
THE CAROLINAS RECYCLED  
**JUST 2 MORE**  
**PLASTIC BOTTLES A WEEK**



+



X



NC / SC

WE WILL HAVE POTENTIALLY CREATED

**300** **NEW**  
**JOBS**

IN THE PLASTICS RECYCLING INDUSTRY

The Carolina's plastic recycling chain has over 200 companies involved in collecting, processing, and manufacturing recycled plastics. These companies help to save valuable resources and in turn, create revenue and JOBS for local communities.



### **Local Costs Less**

Buying local saves money and conserves resources whether it's food or locally recycled plastic feedstocks. BUT, did you know that right now, across the Carolinas, there aren't enough plastic bottles being recycled to provide the needed materials that many of our states' manufacturers depend on to produce their products and create jobs?

While millions have been invested in the plastics recycling industry in our two states, (with a production capacity of over 750 million pounds a year) sadly, only 25% of the recycled plastic bottles needed to make these new products, comes from the Carolinas. That means that 75% of the needed materials are purchased elsewhere in the United States and overseas. This shortfall can be easily remedied... Recycle your plastic bottles and encourage others to do the same!



Did you know that more than 70% of all plastic bottles are tossed in the trash? With all the [#SCFlood](#) water donations, we've seen a massive increase in plastic bottles in our state. Let's not make them another statistic. [#PleaseRecycle](#)





  
YOUR BOTTLE MEANS  
**JOBS**



### **What Do These Plastic Bottles Have in Common?**

There aren't enough being recycled in North and South Carolina to support the manufacturers and businesses that are dependent upon them.

But, by recycling your bottles today and every day, we can change that. When you recycle, your help create jobs in your community and in the Carolinas!





## Success Stories

Clear Path Recycling Tyechia D. McDowell - Lab Supervisor

"Clear Path Recycling PET plant has provided me with an important lab position after 4 years of hard work. Because of the industry demand and the need for sustainable end-of-life products, recycled PET plastics help NC/SC and local communities by increasing awareness and participation in recycled material collections. With your help, the greater education and participation really do help create meaningful jobs in the Carolinas."



Sonoco Recycling Annie Padilla - Line Leader

Annie has been with Sonoco Recycling in Columbia, SC for 4 years and currently serves as Line Leader at the materials recovery facility.

"People get the impression that recycling is trash. But it is so much more. I am proud to work in an industry where we can take materials that once were thought of as trash and make them into new products that we use everyday.

It is so important to educate people about recycling – you can teach kids about it, apply it at home, and everywhere you go. Safety is very important at our facility. I use what I learn about safety at work and teach my family at home about it, too.

I recently got my US citizenship. I got a lot of support by Sonoco during this process."

# 2014 SOUTH CAROLINA Recycling Industry ECONOMIC IMPACT STUDY

Many see the social value of recycling, but few understand its economic impact. To better address this, four partners - S.C. Department of Commerce, S.C. Department of Health and Environmental Control, New Carolina and RecyclonomicsSC - commissioned a 2014 update to a 2006 recycling industry economic impact study. The results are in, and the growth is impressive.

Both studies were completed by economist Dr. Frank Hefner of the College of Charleston Department of Economics and Finance. In 2006, Dr. Hefner concluded, "That recycling is beneficial for the environment is a virtually uncontested proposition. What is becoming increasingly more obvious is that recycling contributes to the economic health of a state's economy." That conclusion holds true today as the recycling industry in South Carolina has grown from 340 firms in 2006 to 524 firms in 2014.

## By The Numbers:

- There are **22,403** jobs attributable to recycling in S.C.
- There is a total economic impact of **54,121** jobs in the Palmetto State
- **44%** increase in recycling employment from 2006 to 2014 = **4.7%** annual growth rate
- Average annual wage is **\$40,203** (vs. average wage in SC for all jobs of \$38,700)
- A total of **\$2.7 billion** in labor income generated annually\*
- There are more than **520** recycling-related companies in S.C.
- **\$329 million** in state & local taxes each year\*
- The average number of employees per company is **63**, while the median number of employees is **14**
- **63.8%** of respondents indicate they are planning an expansion in 2014 at an average of 3.5 employees each - with 521 firms in the industry, this implies **332** firms will expand in 2014, projecting to add an additional **1,162** employees in 2014
- **89%** of respondents indicate recycling is a growing industry, with an average annual growth rate of **19%**
- In just 8 years, the industry has doubled its annual total economic impact: from \$6.5 billion in 2006 to **\$13 billion** in 2014

THE INDUSTRY HAS AN  
**annual total  
economic  
impact OF  
\$13  
BILLION**



NEW CAROLINA  
SOUTH CAROLINA DEPARTMENT OF ECONOMICS AND FINANCE



\*Annual figures reflect 2013 data.

Research completed by economist Dr. Frank Hefner of the College of Charleston Department of Economics and Finance, April 2014.

PRINTED ON RECYCLED PAPER



## South Carolina is Just Right for Recycling



## Economic Impact of \$13 Billion

South Carolina has a high demand for recycled content, with manufacturers using recycled materials to create new products. These activities are boosting employment in the state, the recycling sector has created 2,400 jobs in the past three years. South Carolina now has four times more jobs in recycling per capita than California and Massachusetts.

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### Recycling means jobs

- In 2013, 1.4 million tons of solid waste was recycled, which is equivalent to nearly 5,000 Boeing 787 planes loaded to the maximum weight.
- Since 2006, South Carolina has recruited more than \$4.5 billion in capital investment in the recycling industry.
- There are more than 520 recycling-related companies in South Carolina.
- In just eight years, the industry has doubled its annual economic impact: from \$6.5 billion in 2006 to \$13 billion in 2014.

### It's easy being green

The average person generates 4.5 pounds of trash every day—about 1.5 tons of solid waste per year, and 75% of that waste is recyclable.



### SC recycling companies recycle everything from A to Z:

- **Aluminum** – melted into new aluminum products for packaging and construction industries
- **Carbon Fiber** – reclaimed and made into new products for the automotive industry
- **Glass** – recycled glass makes new glass bottles, counter tops and decorative items
- **Metals** – collected, processed and turned into new products
- **Plastic** – bottles can go into recycled resins for new bottles, strapping, textiles or film
- **Petroleum** – re-refined or burned for energy recovery
- **Steel** – steel mills make products for the automotive and green building sectors
- **Tires** – transformed into new playground and landscape surfacing materials, tire-derived fuel
- **Textiles** – recycled textiles used in automotive industry, furniture
- **Wood** - converted into biomass, new pallets and mulch
- **Zinc** – zinc and other metals recycled into new products for the construction, container and automotive industries



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## South Carolina is Just Right for Carpet Recovery



There are many different kinds of carpet and nearly all are recyclable. Carpet is a petroleum-based product and accounts for more than 3.5% of the waste disposed of in U.S. landfills.

By recycling your carpet and foam carpet padding, you will be reducing the use of millions of barrels of oil to produce new carpeting.

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Carpet Recycling Fact Card – back


Carpet Recognition Letter – back



## The Carpet Recovery Industry: A Growing Economic Sector

As a carpet recycling leader in the Southeast, South Carolina has a diverse network of companies with several hundred million pounds of recycling capacity. These businesses include collectors, processors and end users that utilize recovered carpet to manufacture new products for the automotive, construction, electronics and lawn and garden industries.

### South Carolina Carpet Recovery Coalition

 The South Carolina Carpet Recovery Coalition is a cooperative effort between governments, colleges and universities to increase the recovery of post-consumer carpet and carpet padding. The coalition's goal is to maximize the economic and environmental benefits of carpet recycling.

### Fast Facts

- South Carolina employs an estimated 1,280 workers in the carpet recycling and recovery industry.
- Recycled carpet is typically turned back into plastic resin to create new products or manufacture new carpet.
- Recovered carpet can be used as a fuel to create energy.
- 5 billion pounds of carpet are landfilled every year.
- Almost 60 percent of the carpet made in the U.S. is made of nylon. Nylon fibers have the highest economic value in the recycling process making them ideal for recycling into new products.

### Carpet Recovery in South Carolina

Geohay	Spartanburg County
Leigh Fibers	Spartanburg County
Atlanta Foam Recycle	Greenville County
Kiln Direct	Sumter County
Wellman Plastics Recycling	Florence County
ICE Recycling	Florence County
Southeastern Plastics Recovery	Charleston County
Palmetto Synthetics	Williamsburg County
Carolina Waste and Recycling	Charleston County
Hwy 908 Class II Landfill	Marion County
Systech Environmental Corporation	Dorchester County
Geocycle	Orangeburg County

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**CARPET AMERICA RECOVERY EFFORT<sup>SM</sup>**  
Developing market-based solutions for the recycling & reuse  
of post-consumer carpet

---

January 5, 2015

Dear Members of the South Carolina Carpet Recovery Coalition (CRC),

On behalf of the Carpet America Recovery Effort (CARE), I want to thank CRC and your teams for the commitment and dedication you have made to maximize the economic and environmental benefits of post-consumer carpet recycling in South Carolina.

Your innovative program serves as a model to other states and municipalities for how a collaborative effort can raise awareness in local communities, grow jobs in South Carolina, create and support local businesses, and keep post-consumer carpet out of the landfill.

South Carolina has been a leader in post-consumer carpet diversion and recycling, as the home of:

- Carpet Collection companies
- Processors that process post-consumer carpet for new consumer and industrial applications
- Local government collection sites for post-consumer carpet
- Companies that can produce a post-consumer carpet recycled resin
- Companies that can use carpet as a fuel to create energy as an alternative to landfill
- Manufacturer of erosion control products from 100% recycled content carpet

We especially wish to recognize the hard work and leadership of the CRC team including Fred Davis, Georgetown County; Stacey Washington South Carolina Department of Health and Environment; Larry Cook, University of South Carolina; Ed Marr, Greater Greenville Sanitation Commission; John Votaw, Southeastern Plastics Recovery; Chantal Fryer and Tonya Lott, South Carolina Department of Commerce; and Glenn Odom, Wellman Plastics. This team is instrumental in making the CRC program successful, through establishing post-consumer carpet recycling in local counties and training landfill personnel, launching the CRC web site, and developing educational materials for consumers and participants.

We believe that market-based programs, such as CRC, are examples of how cooperative efforts can achieve real change and sustainable results. Thank you again for your leadership, vision and commitment to CRC.

Sincerely,

Robert Peoples, Ph.D.  
Executive Director, CARE





## South Carolina is Just Right for Composting



In most of the world, we do one of two things with our ordinary garbage: burn it or bury it. As a result, alternatives to the burn-or-bury options are increasingly attractive, and composting leads the list.

### Benefits of Composting

- Provides local jobs for communities
- Green option to save money and landfill space
- Creates a product that you can use

South Carolina  
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Composting Fact Card – front  
Composting Fact Card – back

# South Carolina Food Waste Generation Report

This project was created to assess who South Carolina's food waste generators are, where they are located and to provide a resource map using the data collected that could be used by government and businesses to understand where and how much food waste is being generated. This map can help market development for composting and organics management by providing the location and category of generators to develop or increase composting. Entities interested in developing sites for composting, anaerobic digestion or other forms of organics management could use this information in determining what location would be the most efficient to place a facility that can take in the appropriate amount of food waste from surrounding areas.

To facilitate this project, data was collected and formed into a database that separated each generator by various categories. After using various sources to create a list of the all the food waste generators in the state, formulas from the Massachusetts Food Waste Generators Report were used to calculate the estimated amount of organic waste created by each generator category.

This study was conducted with three goals:

1. Create a database of the food waste generators in South Carolina under multiple generator categories including:
  - Correctional Institutions
  - Restaurants
  - Supermarkets
  - Groceries
  - Colleges
  - Private Schools
  - Hospitals
  - Nursing Homes
  - Manufacturers/Processors
  - Wholesalers/Distributors
  - Public Schools
  - Resort/Conference Facilities
2. To create an assessment of the availability of organic waste from commercial and industrial sources.
3. To provide information for Geographic Information System (GIS) technology to map food waste generators

**Table 1****Summary of the Data Collected**

Summary of South Carolina's Food Waste Generation from Generators Analyzed			
Generator Category	Number of Establishments	Total SSOM Generation (tons/yr)	SSOM Generation Per Establishment (tons/yr)
Correctional Institutions	29	3,788	131
Restaurants	2,451	131,937	54
Supermarkets	524	81,261	155
Groceries	211	16,076	76
Colleges (Residential)	43	12,082	281
Colleges (Non-Residential)	18	1,225	68
Independent Schools	2	27	14
Hospitals	77	7,447	97
Nursing Homes	665	12,071	18
Manufacturers/Processors	371	243,376	656
Wholesalers/Distributors	584	85,848	147
Resorts/Conference Facilities	119	7,259	61
Private Schools	77	991	13
Public Schools	1,177	21,934	19
<b>Total</b>	<b>6,348</b>	<b>625,322</b>	

Through the research data shown in **Table 1**, it is estimated that the state of South Carolina has approximately **625,322 tons** of organic food waste from these food waste generator categories. The findings of the research show that a large portion of the organic food waste that is being created in South Carolina is a result of the manufacturers and the food processors. It is important to note the average generation per establishment to see which generators are producing a large amount of waste per establishment. Residential colleges were a market with a significant amount of waste per year in a central location. The average Source Separated Organics Material (SSOM) tons of waste per year for these entities were also skewed with the larger universities contributing more to the waste stream than some of the smaller enrollment schools. It should be considered that most of these universities and private/public schools are producing the majority of their waste during the school year and see a drop-off in generation during the summer.

**Table 2**

Summary of South Carolina's Food Waste Generation from Generators Analyzed		
Generator Category	Number	Minimum Size Included in Database
Correctional Institutions	29	All identified establishments included
Restaurants	2451	>=10 employees
Supermarkets	524	>10 employees (convenience stores excluded)
Groceries	211	>10 employees (convenience stores excluded)
Colleges (Residential)	43	All identified establishments included
Colleges (Non-Residential)	18	All identified establishments included
Independent Schools	2	All identified establishments included
Hospitals	77	All identified inpatient establishments included
Nursing Homes	665	All identified establishments included
Manufacturers/ Processors	371	>=5 employees
Wholesalers/Distributors	584	>=5 employees
Resorts/Conference Facilities	119	All identified establishments included
Private Schools	77	>200 students
Public Schools	1177	All identified establishments included
<b>Total</b>	<b>6348</b>	

**Table 2** shows the requirements and minimums that the data collected was filtered through. The different requirements and minimums were used and determined in order to eliminate potential businesses that were either too small to be contributing significant waste, or businesses that were not in business. By creating these minimum requirements, the average results for the various generators were able to depict a more accurate average for each category of generator. The generators that were excluded from the study are believed to not be of significance for the goal and meaning behind the report in aiding South Carolina’s food waste recovery. Each manufacturer and distributor should be evaluated individually to determine the amount of valuable food waste collectable. The value of 656 tons/year in **Table 1** under Manufacturers is greatly inflated due to large food manufacturers that have a much greater waste stream than the average manufacturer. There is no discrete formula used for the manufacturers and distributors due to multiple variables. Some of the problems with evaluating these generators include:

- If the food waste is generated in packaged containers, the process of removing the packaging can post a challenge, for the food waste must not be contaminated with other materials.
- There is no easy way to predict food waste from sales, employment, or other measure due to the variety of products and the differences in production processes.



## Formulas

**Table 3** exhibits the different formulas used to calculate the total SSOM generation (tons/yr) for each generator category. The total SSOM generation for each category was then divided by the number of businesses or institutions in that category to determine the average SSOM generation per generator. Many of the formulas were collected from the Massachusetts' Food Waste Generation Study. The formula for private schools and public schools was formed by using the non-residential college equation and adapting that equation to the average number of days that these schools are in class as well as other variable factors such as attendance rate.

**Table 3**

Food Waste Generation Estimate Formulas by Generator Category
<p><b>Hospitals</b></p> <p style="padding-left: 40px;">Food waste (lbs/yr) = N of beds * 5.7 meals/bed/day * 0.6 lbs food waste/meal * 365 days/yr</p>
<p><b>Nursing Homes and Extended Care Facilities</b></p> <p style="padding-left: 40px;">Food waste (lbs/yr) = N of beds * 3.0 meals/bed/day * 0.6 lbs food waste/meal * 365 days/yr</p>
<p><b>Colleges and Independent Boarding Schools</b></p> <p style="padding-left: 40px;"><b>Residential Institutions</b></p> <p style="padding-left: 80px;">Food waste (lbs/yr) = 0.35 lbs/meal * N of students * 405 meals/student/yr</p> <p style="padding-left: 40px;"><b>Non-Residential Institutions</b></p> <p style="padding-left: 80px;">Food waste (lbs/yr) = 0.35 lbs/meal * N of students * 108 meals/student/yr</p>
<p><b>Private Schools</b></p> <p style="padding-left: 40px;">Food waste (lbs/yr) = 0.35 lbs/meal * N of students * Attendance Rate* 180 meals/student/yr</p> <p><b>Public Schools</b></p> <p style="padding-left: 40px;">Food waste (lbs/yr) = 0.35 lbs/meal * N of students * Attendance Rate *180 meals/student/yr</p>
<p><b>Correctional Facilities</b></p> <p style="padding-left: 40px;">Food waste (lbs/yr) = 1.0 lb/inmate/day * N of inmates * 365 days/yr</p>
<p><b>Resorts/Conference Facilities</b></p> <p style="padding-left: 40px;">Food waste (lbs/yr) = 1.0 lbs/meal * N of meals/seat/day * N of seats * 365 days/yr</p>
<p><b>Supermarkets and Groceries</b></p> <p style="padding-left: 40px;">Food waste (lbs/year) = N of employees * 3,000 lbs/employee/yr</p>
<p><b>Restaurants</b></p> <p style="padding-left: 40px;">Food waste (lbs/year) = N of employees * 3,000 lbs/employee/yr</p>

## Sources for Food Waste Generation

The Hoover Database was the primary resource for the data collected regarding the companies. However, the Hoover Database did not include many of the categories of information needed, so other external sources were used. Sources below are listed by the category in which data was collected for.

**General Resources-** Formula reference and other information was used through the Massachusetts Food Waste Generators Report and the Food Residual Generation Report in Connecticut - <http://www.mass.gov/eea/docs/dep/recycle/priorities/foodwast.pdf>, [http://www.ct.gov/deep/lib/deep/compost/compost\\_pdf/ct\\_food\\_residual\\_generator\\_report\\_2012.pdf](http://www.ct.gov/deep/lib/deep/compost/compost_pdf/ct_food_residual_generator_report_2012.pdf)

**Correctional Institutions-** The number of inmates and the list of facilities were provided by the South Carolina Department of Corrections. Several of these institutions are located next to each other but operate separately depending on the level of security for the inmates in each institution.

**Restaurants-** The list of restaurants and number of employees was obtained using SIC codes through Hoover Database. These were then filtered to meet required criteria. A large number of registered restaurants under the Hoover Database consisted of only 1-5 employees, resulting in many of these restaurants to not be included in the research in order to maintain the goal of the research and provide businesses that would be valuable for a composter to locate.

**Supermarkets and Groceries-** The list of supermarkets and groceries was obtained through multiple SIC code searches through Hoover Database; these results were then examined to determine if they met the required criteria to be considered for the research. Convenience stores, including gas stations, were then sifted out resulting in the businesses that are constantly contributing to the food waste stream.

**Colleges-** The list of colleges were obtained through Hoovers Database. Each university website was then used to determine residency provided and student enrollment. It was determined to create two separate categories for colleges, residential and non-residential, to show the large difference in amount of waste generated per university. This differential provides a clearer picture as to the opportunity for composting near these universities.

**Independent and Private Schools-** South Carolina's Information Highway was used to collect the list of private schools then this list was filtered to meet the required number of students to be included in the study - <http://www.sciway.net/edu/k12/k12private.html>. As previously stated, it is important to understand that these schools are producing the majority of their waste during the school calendar year.

**Hospitals-** The hospitals data set list of hospitals in South Carolina was collected from the American Hospital Directory - [http://www.ahd.com/states/hospital\\_SC.html](http://www.ahd.com/states/hospital_SC.html). Each hospital needed to have beds in which food was served to patients.

**Nursing Homes-** The data from the nursing homes was collect using the South Carolina Office on Aging and South Carolina Healthy Connections - <http://www.nfbl.sc.gov/>

**Manufacturers/Processors-** The list of manufacturers and processors was obtained through multiple SIC codes using the Hoover Database. The formulas from the Massachusetts and Connecticut reports were then used to calculate the waste generation.

**Wholesalers/Distributors-** The list of wholesalers and distributors was obtained through multiple SIC codes using the Hoover Database. The formulas from the Massachusetts and Connecticut reports were then used to calculate the waste generation.

**Resorts/Conference Facilities-** The list of resorts and conference facilities was collected through the Hoover database. The number of seats and meals were then estimated using information from the Massachusetts and Connecticut reports.

**Public Schools-** The information regarding public school headcounts and information collected to develop a formula were found on the South Carolina Department of Education page.

STATE INITIATIVES

# Positive Climate For Infrastructure Development

*The State of South Carolina takes steps to foster development of composting facilities, recover edible food and divert food waste from disposal.*

*Richard Chesley*



SMART Recycling of South Carolina collects food scraps in the Charleston area, which are composted at the Charleston County Bees Ferry facility.

**T**HE numbers tell the story. South Carolina was generating an estimated 600,000 tons-plus of food waste annually — the vast majority not being recovered.

"This was an issue we needed to address and we did," explains Elizabeth Dieck, Deputy Director of the South Carolina Department of Health and Environmental Control (DHEC). "The first step was to revise the composting regulation in order to provide industry with a clear path toward permitting food waste composting facilities. The second step was to develop an overall plan of outreach and technical assistance to support the new regulation that, in turn, would help develop infrastructure and increase recovery."

Clearly, one hurdle was the state's original composting regulation. Since

the effective date of the original regulation in 1993, it was difficult for DHEC to permit composting facilities that wished to process more than yard trimmings and land clearing debris. The revised regulation (see "Building Flexibility Into Composting Rule" page 27 in this issue) became effective June 27, 2014. It clarifies the rules for all stakeholders, supports increased organics recovery by expanding the list of allowable feedstocks, establishes exemptions for some operations and provides standards for compost production.

"We had known for some time that composters were reluctant to invest in infrastructure in South Carolina," notes Chantal Fryer, director of Recycling Market Development with the South Carolina Department of Com-

merce. "With the more robust compost regulation, we're already seeing new facilities becoming permitted or operating under the expanded exemptions."

#### STRATEGY PAYS DIVIDENDS

South Carolina's plans to increase organics recovery through a revised composting regulation and reemerge outreach and technical assistance are in its first stages of implementation. The strategy, however, is already paying dividends. "We have developed a comprehensive approach to promote composting and food recovery to schools, businesses, colleges and universities, local governments, military facilities and other stakeholders," notes Dieck. DHEC is providing technical assistance and offering grants through its programs as well as taking



## Food Donation

**I**n South Carolina, donating food is easy and convenient through a network of food banks, including Harvest Hope Food Bank throughout the state, Loaves & Fishes in the Greenville area and the Lowcountry Food Bank in the Charleston region. Retailers such as grocery stores and restaurants regularly donate edible food to these food banks. In addition, homeless shelters, such as One80 Place in Charleston and the



One80 Place, Charleston, SC

Oliver Gospel Mission in Columbia, accept edible food from the organizations listed above as well as from universities (e.g., the University of South Carolina). Restaurants such as Panera Bread and Cupcake Down South also donate their unsold bread and cupcakes.

Fields to Families, based in the Charleston area, is a gleaning organization that removes excess produce from farmers' fields that does not meet quality standards from their buyer. The produce is still edible but may be misshapen or bruised. It is donated to food banks and shelters and to the Destiny Community Café in North Charleston, a pay-what-you-can eatery. The Café is based on a model of One World Everybody Eats Foundation and allows diners to pay what they can or volunteer to work in the Café to pay for their food. Opening in April 2015 and located in a food desert (no convenient grocery stores), the Café welcomes support through their Go Fund Me page for those who cannot visit and wish to donate. Another restaurant, The Obstinate Daughter, donates their time and food once a month to the Café.



Lowcountry Food Bank, North Charleston, SC

"Currently, three local farms are donating fresh surplus food, which is used daily in the hot bar and mini cold bar for salads," explains RaGina Saunders, owner of the Café. Saunders adds that the restaurant is working with a local college's agriculture department to plant an herb garden in front of the Café and set up a composting program in the back.

— Stacey Washington

Stacey Washington works in the SC DHEC Office of Solid Waste Reduction and Recycling and is the program manager for the Smart Business Recycling Program.

the big picture approach and working with all stakeholders.

Examples include:

- Providing technical assistance through several programs including the Smart Business Recycling Program and the Green Hospitality Program. The latter is a partnership with the state's hospitality industry and offers a three-tiered green certification, which will be updated to include food recovery and donation. Each of the programs offers free, confidential technical assistance including site visits, best management practices, market research and vendor information.

- Offering two grant programs in 2015 to local governments. One provides funding and bins to promote backyard composting while the other provides funding to divert food waste from landfills. In 2014, DHEC provided funding to three schools for pilot projects focused on food waste recovery. See sidebar for grant program details.

- Developing a campaign to provide information to residents on strategies to reduce food waste.

- Working closely with the state's military facilities through an informal Department of Defense Alliance. Participants meet to network

and discuss a variety of issues including composting and food waste recovery.

Another key initiative is DHEC's collaboration with the Recycling Market Development program, which has developed two key projects — a mapping system and food waste recovery networking events. The South Carolina Food Waste Generation Report, released in Spring 2015, estimates that potential generation of food waste is over 600,000 tons/year. Generators include correctional institutions, restaurants, supermarkets, groceries, colleges, schools, hospitals, manufacturers and processors, wholesalers and distributors and resort and conference facilities.



The Recycling Market Development program's Food Waste Recovery Networking events are held throughout the state. They include stakeholders from local governments, hauling companies and businesses such as Publix, and provide the opportunity to learn what services are available for food donation, composting and hauling.

Clemson University composts food scraps with yard trimmings at its Cherry Crossing Research Facility. In FY14, 263 tons of food scraps were composted.

Clemson University composts food scraps with yard trimmings at its Cherry Crossing Research Facility. In FY14, 263 tons of food scraps were composted.



#### NEW COMPOSTING INFRASTRUCTURE

Development of organics recycling infrastructure has taken on more urgency and importance since adoption of the revised composting regulation. Infrastructure is already expanding in the state. One new composting facility is Re-Soil, located in Elgin, about 20 miles from South Carolina's capital, Columbia. Re-Soil, which is permitted to accept Type Two feedstocks (see Composting Regulation snapshot on page 28), occupies a 9,600-sq ft building on three acres. The facility is next to two landfills — one for MSW and the other for construction and demolition debris. The indoor facility uses a hybrid system combining forced air with turned windrows to manage source separated pre and post-consumer food waste, compostable paper and cardboard, agricultural gypsum, clean lumber and yard trimmings.

Anthony Centola and his partner Brett Serbin of Re-Soil have developed relationships with haulers to receive material from throughout central

South Carolina, most notably the State Farmers' Market. "We firmly believe that we can do right by the environment, creating good paying local jobs while creating a valuable product for nurseries, turf growers, organic farmers, home gardeners and the rest of the community," notes Centola.

#### Online BioCycle.net

Links to the South Carolina Food Waste Generation map that identifies composting operations, food waste generators and haulers, and the South Carolina Food Waste Generation Report, released in Spring 2015, are available in the online version of this article.

Atlas Organics is working with DHEC on its permit. The company, which is in a partnership with Greenville County, will set up operations at the existing landfill. It plans on processing 12,000 tons/year of food scraps, yard trimmings and land clearing debris using an aerated static pile system. Atlas Organics already provides organics hauling services to the Greenville Hospital System, Michelin Tire and Spartanburg

School District 7 and plans to supply them with finished compost. Atlas Organics collects 110 to 150 tons/month of food waste; material is composted at the Re-Soil facility.

The Horry County Solid Waste Authority (located near Myrtle Beach) began accepting food waste in July at

its composting facility located at the authority's landfill. Its clients include Coastal Carolina University and several Horry County schools. Feed waste is hauled to the facility by Smart Recycling. And EPA Region 4 is working with DHEC, the Department of Commerce and other stakeholders including the City of Columbia, Richland and Lexington counties, Port Jackson and the University of South Carolina, to look into the possibility of developing organics recovery infrastructure in the Columbia area (located in the center of the state).

#### EXISTING INFRASTRUCTURE

While new organics processing infrastructure is needed, successful composting operations are already in place in South Carolina. Charleston County's Bees Ferry Compost Facility was recognized as the 2014 Composting Program of the Year by the US Composting Council. The county's organics recycling program, which began in 2003, has continually grown and is now the largest compost producer in South Carolina and one of the largest on the East Coast. It began accepting food waste from commercial businesses in 2010-2011 as part of a pilot program,



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## Composting Grants In South Carolina

**T**HE State of South Carolina made two composting and/or food recovery grants available during 2015 to eligible local governments. The first, the Compost Bin Grant Program, supports promotion of backyard composting. The South Carolina Department of Health and Environmental Control (DHEC) solicited bids to purchase compost bins to make available to local governments. DHEC provides local governments up to 250 compost bins. Local governments can apply for \$2,000 in grant funding to promote backyard composting and sale of compost bins. The funds can also be used to provide educational materials for the program. DHEC awarded grants (\$26,000 in total) to 13 local governments. It expects the bid for the compost bins to be awarded in September 2015 and bins distributed by year-end.

The second grant program, the Compost/Food Recovery Grant, was offered to local governments to provide funding for projects to divert food waste from landfills and direct it to composting,

reuse or other recycling options. DHEC recently awarded a total of \$111,000 in grants to five local governments. The funds can be used to purchase equipment or supplies for food collection; purchase recycling and/or composting equipment; site preparation costs to facilitate a food recovery program; and/or production and distribution of materials designed to increase awareness of, and/or participation in the compost/food recovery program.

The five awardees uses for the grant funds are:

**Charleston County**—Promote county composting and food recovery program. Public education will be directed at business generating organic waste via print ads, social and digital media.

**City of North Charleston**—Implement food recovery program in the food service areas of the North Charleston Coliseum, Performing Arts Center and Convention Center.

**City of Rock Hill**—Purchase Earth Tubes in cooperation with Winthrop University

that will be placed on campus; material will be collected from the dining halls and community garden.

**Greater Greenville**—Purchase equipment and supplies to implement a mobile composting education program in cooperation with the Children's Museum of the Upstate and the Roper Mountain Science Center. Will complement existing sustainable schools program to raise awareness about composting and food recovery.

Local governments could apply for up to \$25,000. These awards also included scholarships to attend the Food Recovery Summit Conference being hosted in Charleston, South Carolina, November 15-18, 2015.

**Horry County Solid Waste Authority**—Purchase equipment and public education materials to implement and promote compost and food recovery program. Targeted areas include wholesale/retail food establishments, food services establishments, schools and municipalities.

operating under a Research, Demonstration and Development (RD&D) permit. The facility is now permitted as Type 2; no limits on quantity of material that can be accepted annually are specified in the permit. As a result, a number of haulers are collecting food scraps in the Charleston area, including Smart Recycling of South Carolina and Food Waste Disposal (FWD). FWD

has hauled more than 6,500 tons of material since 2012 and provides Charleston County with 80 percent of its food waste feedstock. That, in turn, reflects the upward trend of food waste being collected in Charleston — increasing from 1,615 tons in FY 2012 to 1,841 tons in FY13 and 3,723 tons in FY14.

Colleges and universities were among the first in the state to divert food waste to composting. The Citadel, Clemson University, Coastal Carolina University, College of Charleston, Furman University, Medical University of South Carolina (MUSC) and Winthrop University have programs. The Citadel sent more than 245 tons of food waste to Charleston County's facility — earning the second highest rating in the RecycleMania competition. Furman University is collecting food waste from dining halls on campus and composted nearly 39 tons in FY14 on its Furman Farm. MUSC recycled 92 tons of food waste in FY 13 and nearly 94 tons in FY15 (composted at Charleston County facility). Clemson's food waste recovery has increased more than 1,000

percent since FY10, going from nearly 24 tons to more than 263 tons in FY14. Material is composted with yard trimmings at the university's Cherry Crossing Research Facility. Finished compost is used on campus grounds.

K-12 schools also are involved with composting food waste. In Charleston County, 46 elementary and middle-schools collect pre and postconsumer food waste (see "Food Scraps Diversion Goes To School," May 2014). FWD works with the Charleston County School District to haul this material to the Bees Ferry Compost Facility. The food waste is composted and returned to the schools and used in their landscaping. An elementary school in Spartanburg County diverts about 5,000 pounds/month of pre and postconsumer food waste. Other businesses such as Sea Pines resort are composting food waste and yard trimmings on site and using the material on its grounds. Sea Pines, located on Hilton Head Island, has steadily increased its organics diversion since 2012 — recovering more than 34 tons of organics since the program began.

South Carolina also has several food waste equipment businesses. Divergent Energy, located in Duncan, manufactures a food scraps dehydrator. EnviroPure, located in Travelers Rest, manufactures on-site processing units. Concludes DHEC's Deputy Director Elizabeth Dieck: "We believe we are headed in the right direction." ■

*Richard Chesky is a manager with the South Carolina Department of Health and Environmental Control's Office of Solid Waste Reduction and Recycling.*



Coastal Carolina University in Conway recently initiated food scraps collection in two of its dining halls. Organics are collected by SMART Recycling and taken to the Horry County Solid Waste Authority's composting site in Conway.

REDUCING BARRIERS

# Building Flexibility Into Composting Rule

**A**S the South Carolina Department of Health and Environmental Control (DHEC) began to assess its options for increasing organics diversion several years ago, one of the first places it looked was its composting regulation. Since the effective date of the original regulation in 1993, it was difficult for DHEC to permit composting facilities that wished to process more than yard trimmings and land clearing debris. Facilities could obtain a Research, Demonstration and Development (RD&D) permit, however the permit had a two-year limit and was required to be unique from other applicants. Few composters were eager to invest in a facility with the potential to lose the permit after two years.

Composters also were given the opportunity to operate under a composting permit with special conditions, but applicants worried about the uncertainty of a permit that included operational, location and testing standards not clearly outlined by regulation.

South Carolina began revision of its composting regulation focused on three specific goals:

- 1) Develop a regulation to reduce the amount of material disposed in landfills and include more types of material that may be composted by providing waste generators options for managing a wider variety of organics, particularly food waste.

- 2) Encourage production of high quality compost by updating standards for compost production and testing.

- 3) Reduce barriers or perceived barriers to operating composting facilities in the state (perhaps the most important goal).

The revision was led by DHEC and included a stakeholder process involving

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*South Carolina's revised composting regulation became effective in June 2014. It is designed to "attract and support the composting industry."*

Jana White

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the composting industry, U.S. Environmental Protection Agency (EPA), U.S. Department of Agriculture (USDA), local governments, environmental nonprofits and others. EPA Region 4 and the US Composting Council were developing model compost rules at this time and that model was considered in drafting the South Carolina regulation. EPA Region 4 and the US Composting Council were developing model compost rules at this time, which were considered in drafting the South Carolina regulation.

The revised regulation — which became effective June 27, 2014 — includes siting, operational, closure and financial responsibility standards for composting facilities as well as testing

standards for finished compost. But the regulation is flexible enough to allow variances from regulatory requirements, provided the applicant can demonstrate that the proposed alternative is safe and effective. "The new regulation not only provides the guidelines for the safe and efficient management of organics that protects human health and the environment, but it also is designed to attract and support the composting industry," explains Elizabeth Dieck, Deputy Director of DHEC.

The regulation expands the list of materials that can be composted and clarifies guidelines for the management, mulching (grinding) and composting of land clearing debris and yard trimmings. It creates three facility types, based on three feedstock categories, with varying exemptions or conditions depending on the feedstock, end product and size or location of the facility (see snapshot in Table 1).

## FEEDSTOCK CATEGORIES

The original regulation did not address feedstocks other than yard trimmings (known in the original regulation as "yard trash") and land clearing debris. The revision expands the list of allowable feedstocks to include materials such as food waste, fats/oils/greases (FOG), unrecyclable paper, produce, biosolids and manure. It utilizes tiered permit requirements, depending on the feedstock, facility size, and whether or not the facility is located at the point of feedstock generation. Feedstock categories were designed with consideration to the risk of contamination from pathogens, trace metals, hazardous constituents or physical contaminants that are not compostable.

Category One feedstocks only include yard trimmings; leaves and grass

**Table 1. South Carolina compost regulation snapshot <sup>1,2</sup>**

Facility Types	Feedstocks	Subtypes	Permit Requirements
Type 1 Facility	Yard trimmings Land-clearing debris Wood chips/sawdust Crop residuals Compostable bags	Type 1 wood-grinding/composting at point of generation	Exempt
		Public utilities maintenance	Exempt
		Seasonal – grinding/green	Exempt
		Crop farms	Exempt
		Emergency storm debris management	Exempt
		Very small Type 1 chipper/composter (<80 cy <sup>3</sup> on site)	Exempt
		Small Type 1 chipper/composter (<400 cy on site)	Exempt (with conditions)
		Large Type 1 chipper/composter	Solid waste permit req.
		Off-site very small Type 2 composter (<5 cy on site)	Exempt
		Type 2 Facility	Nonmeat food wastes Produce Plate scrapings Compostable products Waste paper Animal manures
Backyard composting	Exempt		
Type 2 composter at site of generation (<400 cy unfinished material on site)	Exempt (with conditions)		
Small Type 2 composter	Exempt		
Large Type 2 composter (<40 cy unfinished material on site)	Exempt (with conditions)		
Large Type 2 composter	Solid waste permit req.		
All Type 3 facilities	Solid waste permit req. (and may require other permits)		
Type 3 Facility	Sludges off site of treatment facility and/or mixed with solid waste Fats, oils and greases (FOG), other animal/meat residuals Other industrial non-hazardous organic residuals		

<sup>1</sup>The table is provided only as an overview. To view the full regulation, please visit [www.scdhec.gov/Agency/docs/wm-regs/R61-107\\_4.pdf](http://www.scdhec.gov/Agency/docs/wm-regs/R61-107_4.pdf). <sup>2</sup>Revised regulations became effective June 2014. <sup>3</sup>cy=cubic yards

clippings; land clearing debris; wood chips and sawdust; agricultural crop field residuals; and compostable yard trimmings bags.

Category Two feedstocks have a lower carbon-to-nitrogen ratio than Category One feedstocks, high moisture content and are more likely to contain pathogens, trace metals and physical contaminants. This category only includes the following source separated material: nonmeat food processing waste; produce and nonmeat food residuals from wholesale, retail or food service establishments; plate scrapings from food service establishments; certain manufactured compostable products and waste paper products; animal manure and material incidental to its collection; and certain residual organics from waste-to-energy conversion processes, e.g. anaerobic digestion.

Category Three feedstocks have properties that may require more intensive analysis and monitoring prior to being incorporated into the active composting area and approved for composting by DHEC on a case-by-case basis. Included

are biosolids, industrial sludge, and drinking water treatment sludge; FOG; and animal-derived residuals except as specifically identified as a Category Two feedstock.

Mixed municipal solid waste (MSW) is a prohibited feedstock unless a facility can demonstrate safe and effective operations for a two-year period under authority of a RD&D permit.

#### TESTING AND EXEMPTIONS

Compost made by facilities that manage Type Two and Type Three feedstock must be tested on a frequency prescribed by the regulation.

Steps were taken during rule revision to provide exemptions from permitting or to reduce the regulatory requirements whenever possible. Exemptions were developed in hopes of promoting on-site composting at industrial and institutional locations and to encourage small-scale composting that would foster future development into larger, more complex operations.

The following activities are exempt from permitting: all backyard com-

posting; on-site wood grinding; on-site composting of Category One feedstock; management of Category One feedstock in amounts less than 80 cubic yards; composting of Category Two feedstock in amounts less than five cubic yards; emergency storm debris management; on-site farming operations; community programs such as "Grinding of the Greens;" and participants in the USDA's National Organic Program.

Conditional exemptions are provided to the following activities: management of Category One feedstock in amounts less than 400 cubic yards; management of Category Two feedstock in amounts less than 40 cubic yards; and management of Category Two feedstock generated and managed on site of commercial, industrial, or institutional properties in amounts of less than 400 cubic yards.

An example of a conditional exemption is a facility, e.g., college, manufacturing plant or restaurant, which is allowed to compost their Category One and Category Two feedstocks without a permit as long as they have less than 400 cubic yards of unfinished material on site at any time and maintain certain buffers. Up to 40 cubic yards of material that includes food waste may be composted at a location other than the point of generation, without a permit, provided the composter complies with the buffers and conditions of the conditional exemption. (This exemption would apply to community composting sites, urban farms and community gardens.)

Conditionally exempt activities must be performed in accordance with the following buffers: 200-foot buffer from residences, schools, day-care centers, churches, hospitals and parks; 100-foot buffer from drinking water wells; and 50-foot buffer from property lines.

Additionally, the regulation requires exempt composting activities to be performed so as to properly manage putrescibles and storm water as well as prevent fires.

With input from DHEC inspectors, the decision was made to exempt facilities using a system based on maximum allowable material at the site at any given time. This method allows inspectors to visit a site and determine compliance visually, avoiding the need to review historical throughput and annual production records. ■

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