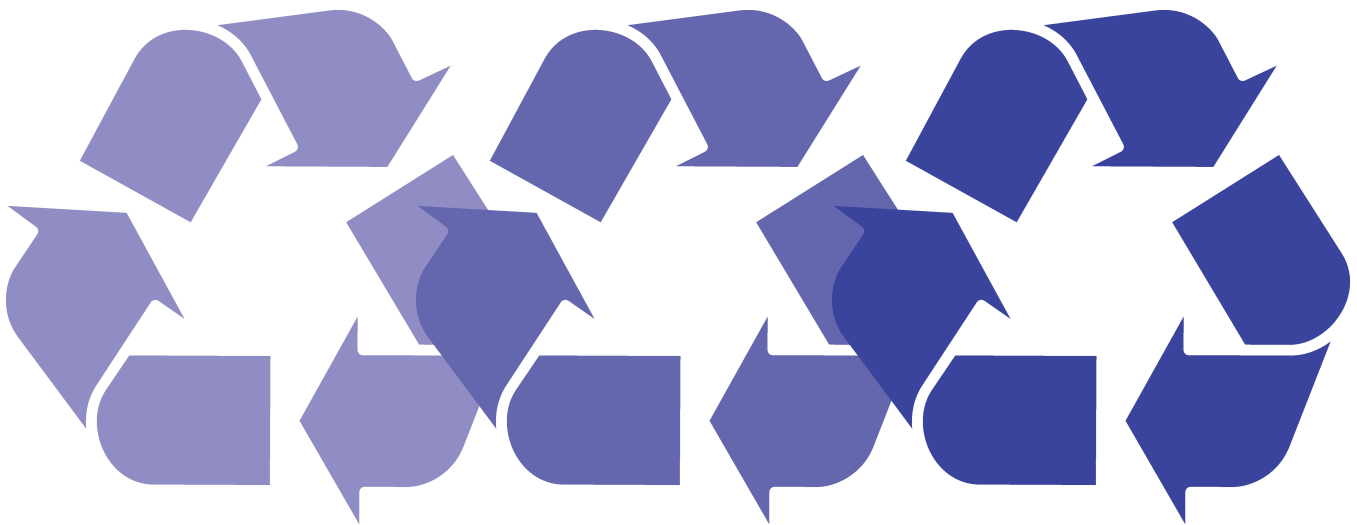


# The Economic Impact of the Recycling Industry in South Carolina

**By Dr. Frank Hefner**

*College of Charleston  
Department of Economics*

**April 22, 2014**



# Recycling is BIG Business in South Carolina

Long understood for its environmental benefits, recycling has evolved into a significant part of South Carolina's economy.

Recycling, in fact, has an estimated **\$13 billion annual economic impact in the state.** That is just one of the key findings of "The Economic Impact of the Recycling Industry in South Carolina."

This report, compiled by Dr. Frank Hefner of the College of Charleston's Department of Economics and Finance, quantifies the contributions of recycling through a combination of direct survey data from recycling companies as well as economic modeling through IMPLAN – Impact Analysis for Planning. It is an update of Dr. Hefner's 2006 study that used the same methodology.

**This report shows that the recycling industry, which has grown from 340 companies in 2006 to more**

*Recycling has an estimated \$13 billion annual economic impact in South Carolina.*

than 520 companies in 2014 in South Carolina, is responsible for:

- A total economic impact of more than 54,000 jobs in the state – a 44 percent growth from the 2006 study – and more than 22,000 direct jobs;
- An annual average wage of \$40,203 (higher than the average annual South Carolina wage for all jobs);
- Nearly \$2.7 billion in annual labor income – an increase of 80 percent from 2006;
- Nearly \$329 million in state and local taxes each year.

Overall, the recycling industry has doubled its total economic impact from \$6.5 billion in 2006 to \$13 billion in 2014.

*This summary is provided by the S.C. Department of Health and Environmental Control's (DHEC) Office of Solid Waste Reduction and Recycling.*

*This study is presented by:*



# Introduction

In order to better understand the economic potential of recycling to the state of South Carolina, the S.C. Department of Health and Environmental Control in conjunction with the S.C. Department of Commerce commissioned a study in 2006 to measure the economic impact of recycling. That report documented the economic impact of the industry in 2005. Recognizing that many changes have occurred in the economy and the recycling industry, the S.C. Department of Commerce, S.C. Department of Health and Environmental Control and New Carolina commissioned this study to update the 2006 analysis.

The 2006 study was widely cited by many organizations and companies engaged in recycling. The following quote from the 2006 study is most often reported:

***“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.”***

– Frank Hefner and Calvin Blackwell, *College of Charleston, Department of Economics and Finance*

The basic results and methodology were also published in an academic journal.<sup>1</sup>

There are a number of methodological issues in analyzing the recycling industry. Unlike industries such as car manufacturing, which have a unique and identifiable designation in the North American Industry Classification System, recycling is not so easily identified. There is no one category that captures the variety of activities that fall under recycling. Researchers have been confronted with similar problems in analyzing other amorphous industries, such as “retirement” and “tourism.” Much like recycling, there is no well-defined category for tourism. The economic activities associated with tourism, like recycling, are diffuse and spread across the entire region. The most common method to deal with these problems is to combine survey data with an impact model. This is the method we used in this research.

Because of the ambiguity in defining the industry and the usual problems with surveys, comparisons of studies done in other states are not easily made. For example,

Alabama in 2012 conducted a study that looked only at municipal solid waste.<sup>2</sup>

A study in Connecticut in 2012 found that recycling created 4,860 jobs and contributed \$74.6 million in economic activity in the state.<sup>3</sup> The direct impact on jobs was estimated to be 2,785, which implies a multiplier of 1.75 for jobs. The study included public curbside activities as part of the recycling industry.

The Iowa Department of Natural Resources estimated the impact of recycling in 2005 using a survey.<sup>4</sup> About 1,365 surveys were mailed with a 15 percent response rate. It was estimated that 15,684 jobs were directly related to recycling. This generated a total impact of 34,162 jobs in Iowa, which implies a multiplier of 2.18.

A study done in Illinois included public and private collection of recycling. They identified 958 contacts for a survey, sent 668 surveys, and received 100 returned (15 percent rate). Municipal residential curbside and drop-off collection amounted to 308 establishments, 665 employees and \$27,981,000 in payroll. Private residential and commercial collection was 239 establishments and 1,215 employees with a payroll of \$60,859,000. In the Illinois estimate, they also include retail used merchandise sales (595 establishments such as used furniture, Goodwill industries, Play it Again Sports, etc.). The database used was more in line with an industrial concept. The Illinois study estimated a direct impact of 40,000 jobs and a total job impact of 111,500. Labor income of \$1.5 billion multiplies to \$3.6 billion. Total economic output is \$30.3 billion.<sup>5</sup>

The Northeast Recycling Council found in 2009 that Massachusetts is home to more than 2,000 recycling businesses that employ close to 14,000 people with a payroll approaching \$500 million annually.<sup>6</sup> In a 2012 follow-up study that focused on the workforce needs in the industry, it was estimated that more than 1,200 jobs would be added in the next two years.



1 Hefner, Frank, and Calvin Blackwell. (2007) “The Economic Impact of the Recycling Industry in South Carolina,” *Southern Business Review*, 32 (2), 33-41.

2 “Economic Impact of Recycling in Alabama and Opportunities for Growth,” Alabama Department of Environmental Management, June 2010.

3 “The Economic Impact on Connecticut from Recycling Activity,” prepared by the Connecticut Economic Resource Center, November 2012.

4 “Economic Impacts of Recycling in Iowa,” Iowa Department of Natural Resources, December 2007.

5 “2010 Recycling Economic Information Study Update for Illinois,” November 2010, prepared by DSM Environmental under contract to Illinois Recycling Association.

6 “Recycling and Jobs in Massachusetts,” Environmental Business Council of New England and MassRecycle, March 2012.

## Survey Results

The S.C. Department of Commerce maintains and publishes a directory of businesses that are identified as being engaged in recycling activities.<sup>7</sup> In 2006, there were 340 firms listed in the directory. In 2014, the industry had grown to where 524 firms are listed. A cover letter and survey, presented in Appendix D, were sent to all 524 firms. Three came back as undeliverable. A total of 47 surveys were completed, which represents a 9 percent response rate. This compares with an 18.8 percent response rate in 2006, where 15 out of the 340 surveys were returned as undeliverable and 61 firms completed surveys. The survey instrument was modified to include materials. The survey and cover letter that accompanied it are presented in the appendix.

Results from the 2005 and 2013 surveys are shown in Tables 1, 2 and 3.

## Employment

A number of firms engage in recycling activities but recycling is not their main business activity. Recycling was the only business for 61.7 percent of the firms surveyed. The range was 100 percent to 4 percent.

The average number of employees in the industry is 63. The largest firm reported 577 employees while the smallest reported 1 employee. The median is 14 employees per firm. In the 2005 survey the average was 75 while the median was 30 employees per firm. The number of firms identified as being in the industry has increased while the firm size has decreased.

For the purpose of determining economic impacts, the percentage of the firm's business engaged in recycling was applied to the total number of employees to determine the number of employees actually engaged in recycling. We estimate that the average number of employees per firm engaged in recycling activities is 43. **This implies 22,403 jobs in the state are attributable to recycling.**

**The average payroll per employee in the industry was reported to be \$40,203.** This compares to the 2005 average of \$32,229. The latest data from the Bureau of Labor Statistics (BLS) indicates that the average wage in South Carolina is \$38,700.<sup>8</sup>

## Expansion Plans

The report indicated that 63.8 percent of the firms are planning an expansion in their business hiring an average of 3.5 additional employees in 2014. The largest expansion was 25 employees. In terms of capital investment in the

<sup>7</sup> [www.recyclinginsc.com/directory](http://www.recyclinginsc.com/directory).

<sup>8</sup> May 2012 State Occupational Employment and Wage Estimates, BLS.

**TABLE 1: 2013 Survey Respondents by Type of Business**

TYPE	PERCENT
Hauler	25.5
Manufacturer	19.1
Broker	25.5
Processor	57.4
Remanufacturer	6.4
Reuse	2.1
Recycling Equipment Manufacturer	2.1

**NOTE:** One of the characteristics of this industry is that firms often offer multiple services and deal with multiple products (e.g., a firm could be both a hauler and manufacturer). Thus the total adds to more than 100 percent. Of the survey respondents, 27.7 percent of the firms were multiple categories, indicating a high degree of multi-product activity.

**TABLE 2: 2005 Survey Respondents by Type of Business**

TYPE	PERCENT
Hauler	27.9
Manufacturer	37.7
Broker	16.4
Processor	49.2
Remanufacturer	2.0
Reuse	2.3

See **NOTE** above.

**TABLE 3: 2013 Survey Respondents by Commodities Collected or Processed**

MATERIAL	PERCENT
Biomass	27.7
Metals	34.0
Petroleum	4.3
Glass	14.9
Electronics	8.5
Organics	8.5
Rubber	8.5
Paper	23.4
Construction/Demolition	14.9
Textiles	21.3
Miscellaneous	8.5
Plastics	53.9

**NOTE:** Again, some firms recycle more than one type of material, so the percentages add to more than 100 percent. In fact, 51 percent of the firms processed more than one material.

next five years, the average was \$709,450. With 521 firms in the industry, this implies 332 firms will expand, adding 1,162 employees in 2014.

As we found in 2005, the investment plans of the respondents match their outlook for the future. In other words, their expectations for the industry match their plans in their own firms. In 2005, the total investment anticipated in the next five years by the firms that responded was more than \$365,630,000. The much larger expansion in investment in 2005 compared to eight years later would seem to indicate that there was surge in activity that has leveled off. As indicated in the outlook, the respondents are still optimistic about the growth in the industry, but eight years later it is apparently a more mature industry.

## Outlook

The respondents are very optimistic about recycling with 89 percent indicating that it is a growing industry. The average annual growth rate is 19 percent.<sup>9</sup> In 2005, 84 percent of the firms responding reported an average annual growth rate of 12 percent.

A total of 524 businesses were identified as being in the recycling industry in South Carolina. All firms listed were sampled by mail. In addition, firms were contacted via the industry newsletter. Three surveys were returned as undeliverable. Thus the population is estimated to be 521

firms. A total of 47 surveys were completed. The economic impact analysis uses 521 firms as the base with an average of 43 employees engaged in recycling. This implies a total employment of 22,403 in the industry compared to the 15,600 we estimated in 2005.<sup>10</sup> This represents a 44 percent increase in recycling employment from 2005 to 2013, which implies a 4.7 percent annual growth rate. The survey response in 2005 estimated a more optimistic 12 percent over the next five years. In 2005, no one was predicting the Great Recession. A 4.7 percent growth must be viewed in the context of the Recession.<sup>11</sup>

## Multiplier Concept

The survey results provide information on what is termed a "direct impact." The direct impact is the initial spending or job generated by the firm engaged in recycling activities. In order to understand the complete economic impact of the recycling industry, we must also consider what are called "ripple effects." Ripple effects comprise indirect and induced impacts. The concept is fairly straightforward and often analysts refer to the idea of dropping a stone in a pond. The initial splash is the direct impact. The accompanying ripples are the "multiplier effects."

Consider a recycling facility. The plant hires workers and has a payroll. The operations of the plant are the direct expenditures. In the process of its operations, the firm may purchase goods and services from other companies. Those purchases are termed the "indirect impacts." For example, a recyclable materials processor purchases machinery from machinery manufacturers who in turn purchase raw materials, parts and services from other industries. Further, the recyclable materials processor provides processed feedstock to other manufacturers who then sell their

**TABLE 4: Multiplier Effects Example: Waste Management and Remediation, \$1 Million Output**

IMPACT TYPE	JOBS	LABOR INCOME	OUTPUT
Direct Effect	3.8	\$347,427	\$1,000,000
Indirect Effect	2.4	\$115,203	\$317,462
Induced Effect	2.8	\$105,795	\$338,148
Total Effect	9.0	\$568,424	\$1,655,610

IMPLAN estimates that a firm producing \$1 million in waste management services will have 3.8 employees. An additional 2.4 jobs will be supported by the suppliers to this firm. The induced effect, which represents the jobs generated by the spending of all of the employees in the supply chain is 2.8. The total effect is thus 9. This implies that a total of 2.37 jobs will be generated for every person employed in this sector. The \$1 million "multiplies" to a total of \$1,655,610, which implies an economic activity multiplier of 1.66 (rounded).

Other sectors that IMPLAN identifies as being impacted by this firm include food services and drinking places, employment services, real estate, physicians, dentists, and wholesale and retail trade. This is what is meant by the "ripple effect."

**TABLE 5: Economic Impact 2013**

IMPACT TYPE	JOBS	LABOR INCOME	OUTPUT
Direct Effect	22,400.76	\$1,293,016,387	\$8,363,868,833
Indirect Effect	18,249.48	\$888,971,964	\$3,023,323,182
Induced Effect	13,473.16	\$504,286,736	\$1,611,818,582
Total Effect	54,121.17	\$2,686,275,065	\$12,999,010,597

Our estimate of the direct employment in the industry is 22,400. **The total employment effect is calculated by IMPLAN to be 54,121 earning a labor income of \$2,686,275,065. The total economic activity in the state attributable to recycling is about \$13 billion.**

**Total state and local taxes from the total activity is estimated to be \$328,674,861.**

9 This could be in terms of revenue and/or material.

10 We are using a simplistic approach and are not accounting for survey error. A confidence interval could be calculated. The 95 percent confidence interval for the average number of employees (total) ranges from 101 to 25.

11 Between 2005 and 2013, manufacturing at the national level lost jobs.

product. The employees in turn spend their paychecks, which in turn generates additional impacts. These impacts are termed “induced impacts.”

As an example, consider \$1 million in output (direct impact) of a firm in the Waste Management and Remediation Services sector.<sup>12</sup> See Table 4.

## Expansion Impact 2014

The survey also asked whether the firms anticipate hiring more employees in 2014.

It is estimated that the 2013 impacts will be increased in 2014 an additional 2,807 jobs, paying \$139,331,858 and generating an additional economic contribution to the

state’s economy of \$674,233,376. This economic activity will also increase state and local taxes by \$17,047,725. By way of comparison, the economic expansions reported for 2013 by the S.C. Department of Commerce are presented in Appendix F.

**TABLE 6: Expansion Impact 2014**

IMPACT TYPE	JOBS	LABOR INCOME	OUTPUT
Direct Effect	1,161.88	\$67,066,243	\$433,817,595
Indirect Effect	946.56	\$46,109,245	\$156,813,888
Induced Effect	698.83	\$26,156,371	\$83,601,892
Total Effect	2,807.16	\$139,331,858	\$674,233,376

# Appendix A

## The Input – Output Model

This section presents a brief description of how regional input-output models are used to estimate economic impacts. Much of the material included is found in a more complete exposition written by Hefner (1997).<sup>13</sup>

The basis for impact analysis is the input-output (I-O) table. The table is constructed with data on detailed inter-industry flows throughout an economy and information on both final demands and total output. An I-O table is fundamentally an accounting relationship for an entire economy (national, state, or sub-state), with each industry represented as both a column and a row in a matrix. In simple terms, it is a set of recipes for production in a given economy. The table provides data on industry demands and supplies to all industries. The multipliers that are used in measuring economic impacts are calculated from the I-O table.

A simple numerical example containing hypothetical data of a two-sector economy input-output table is presented in Table 7.

In this example, the manufacturing sector delivers to final demand \$1,100 worth of goods. Final demand is the finished product that is used by a consumer. In addition, this sector provided \$400 of output to the construction sector and \$500 to itself. The total output of manufacturing is the row total, or \$2,000. From the column of manufacturing data, it is apparent that to produce the \$1100 of final goods, the manufacturing sector used \$500 worth of its own output and \$100 of output from the construction sector. These demands for goods to be used in the production of goods delivered to final demand are termed intermediate demands.

Wassily Leontief, 1973 Nobel Prize winner in economics, developed the mathematical technique to calculate what is now called the Leontief Inverse, which posits that changes in one economic sector cause a ripple effect into other sectors of the economy. The inverse allows researchers to determine the total effects of a change in final demand. For example, in our simple model below the manufacturing sector utilizes inputs from both its own sector and construction. Construction, in turn, to meet this increase in demand, uses inputs from manufacturing.

**TABLE 7: Hypothetical Input – Output Table**

	CON	MANU	FINAL DEMAND	TOTAL OUTPUT
Con	200	100	700	1,000
Manu	400	500	1,100	2,000

<sup>12</sup> IMPLAN sector 390.

<sup>13</sup> Hefner, Frank (1997). “Using Input-Output Models to Measure Local Economic Impacts.” International Journal of Public Administration, Volume 20 (Issues 8 and 9): pp. 1,469-1,487.

The Leontief inverse is a mathematical tool that calculates the total round-by-round changes in demands. The direct impact is the initial change in final demand. The total intermediate demands (the supplier chain) are the indirect impacts. By adding to this simple model a row for payments to labor by the firm (wages) and a column of

expenditure patterns (the marginal propensity to consume each type of product), the multipliers derived from the Leontief inverse will incorporate the direct, indirect and induced impacts. The induced impacts are additional expenditures resulting from increased earnings by local residents as a result of the increase in final demand.

**TABLE 8: Economic Impact Analysis – Terminology**

TERM	DEFINITION
<b>Direct effects</b>	Direct effects are the initial changes in sales, income and jobs in those businesses or agencies that directly receive the spending. This is the initial impact.
<b>Economic activity</b>	Sales of firms within the region.
<b>Income</b>	Labor income including wages and salaries, payroll benefits and incomes of sole proprietors.
<b>Indirect effects</b>	The impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy.
<b>Induced effects</b>	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect. For example, employees in a recycling facility live in the region and spend their incomes on housing, groceries, education, clothing and other goods and services.
<b>Jobs</b>	The number of jobs in the region supported by the economic activity associated with the economic activity. IMPLAN jobs include all full-time, part-time and temporary positions. Job estimates are not full-time equivalents, but include part-time positions. Seasonal jobs are adjusted to annual equivalents, thus 1 job lasting 12 months = 2 jobs lasting 6 months each = 3 jobs lasting 4 months each.
<b>Multipliers</b>	Multipliers capture the size of the total effects relative to the direct effects.
<b>Total Output</b>	<p>Sum of direct, indirect and induced effects.</p> <ul style="list-style-type: none"> <li>• Direct effects accrue largely to tourism-related businesses in the area.</li> <li>• Indirect effects accrue to a broader set of businesses that serve these firms.</li> <li>• Induced effects are distributed widely across a variety of local businesses that provide goods and services to households in the region.</li> </ul>



# Appendix B

## IMPLAN

In the mid-1970s, the U.S. Department of Agriculture's (USDA) Forest Service developed IMPLAN for community impact analysis. IMPLAN is a regional economic impact model.

The current IMPLAN input-output database and model is maintained and sold by MIG, Inc. (Minnesota IMPLAN Group). All economic impact models use data developed by the U.S. Department of Commerce and follow the methodology described previously.

According to the USDA's Natural Resources Conservation Service, more than 1,500 clients across the country use the IMPLAN model making the results acceptable in inter-agency analysis within the government. IMPLAN users range from federal, state and local governments, universities and private companies. In South Carolina, the model is used by university researchers at Clemson, the University of South Carolina, Coastal Carolina University and The Citadel.

In 2013, MIG was purchased by IMPLAN Group LLC and relocated from Minnesota to Huntersville, NC, just north of Charlotte.

# Appendix C

## About the Author

Frank Hefner, Ph. D., is a Professor of Economics and director of the Office of Economic Analysis at the College of Charleston. He received his B.A. Degree in Economics from Rutgers College and his M.A. and Ph.D. Degrees from the University of Kansas. He taught at Washburn University in Topeka while he was a research assistant in the Institute for Policy and Social Research at the University of Kansas and at the University of South Carolina where he served as a research economist in the Division of Research.

Hefner's research interests include regional economic development and forecasting. He participates in the Regional Advisory Committee of the S.C. Board of Economic Advisors. He is a past president of the Southern Regional Science Association. He has been quoted frequently in the press and has commented on economic conditions on local television and radio stations and before a number of organizations.

## Recent Consulting Projects

- Economic Impact of the S.C. Clinical and Translational Research Institute, 2011.
- Economic Impact of the Charleston School of Law, 2010.
- Economic Impact of Two Hospitals in Berkeley County, 2009-2010.
- Economic Impact of the Cruise Ship Industry (joint with John Crotts), 2009.

## Economic Impact Resume: Selected Works

- Hefner, Frank, Brumby McLeod, and John Crotts. (forthcoming) "Research Note: An Analysis of Cruise Ship Impact on Local Hotel Demand – An Event Study in Charleston, SC," *Tourism Economics*. (available at <http://dx.doi.org/10.5367/te.2013.0328>).
- Hefner, Frank, Impact Analysis for Film Production in South Carolina, South Carolina Council for Economic Development, April 29, 2008.
- Hefner, Frank, and Calvin Blackwell, "The Economic Impact of the Recycling Industry in South Carolina," *Southern Business Review*, Spring 2007, Vol. 32, No. 2, pp. 33-41.
- Hefner, Frank, and J. Michael Morgan, "The Economic Impact of a University: A Critical Review of the Issues," *Journal of Business, Industry, and Economics*, Vol. 7, Spring 2006, pp. 63-77.
- Hefner, Frank, John Crotts, and Julie Flowers "The Cost-Benefit Model as Applied to Tourism Development in the State of South Carolina, USA," *Tourism Economics*, June 2001, Vol. 7, No. 2, pp. 163-175.



# Appendix D



Dear Recycler,

South Carolina's recycling industry has grown and is projected to continue to grow. In 2006, the South Carolina Department of Health and Environmental Control and the Department of Commerce asked a team of researchers at the College of Charleston to measure the economic benefits of recycling activities on South Carolina's economy. The results are summarized on this web site: <http://recyclonomicssc.com/economicimpact.aspx>.

New Carolina - SC Council on Competitiveness has asked me to update the 2006 results.

Your firm has been identified as a member of South Carolina's recycling industry. We have included a short survey which will help us measure the total impact of all firms within the industry in the state. **Individual survey responses will be held confidential.** Results will be reported in total for the state.

We appreciate your participation in this study and thank you in advance for completing the enclosed survey. Please return using the enclosed envelope; e-mail to [hefnerf@cofc.edu](mailto:hefnerf@cofc.edu); or fax to Frank Hefner 843 -953-0754. We would appreciate a reply by January 24, 2014.

If you have any questions regarding the survey, please contact Frank Hefner at 843-953-8111 (or [hefnerf@cofc.edu](mailto:hefnerf@cofc.edu)).

Sincerely,

Frank Hefner  
Professor of Economics  
Department of Economics and Finance  
College of Charleston  
Charleston, SC 29424

(843) 953-8111

## *Cover Letter & Survey*

The cover letter and survey (on the following page) were formatted to fit on one page when mailed.

The sample in this Appendix is formatted to accommodate the margins in this document.

# South Carolina Recycling Industry Survey

Please answer each question to the best of your ability (best guess). Although answers will be confidential, skip any question you are uncomfortable with and answer the rest.

FACILITY INFORMATION	
NAICS Code:	
Which category best defines your role as a recycling company? (Check all that apply.)	
<input type="checkbox"/> Hauler	<input type="checkbox"/> Manufacturer
<input type="checkbox"/> Broker	<input type="checkbox"/> Processor
<input type="checkbox"/> Remanufacturer	<input type="checkbox"/> Reuse
<input type="checkbox"/> Recycling Equipment Manufacturer	
MATERIALS COLLECTED FOR RECYCLING	
1. Please check which types of materials your company recycles. (Check all that apply.)	
<input type="checkbox"/> Biomass/Wood	<input type="checkbox"/> Metals
<input type="checkbox"/> Petroleum	<input type="checkbox"/> Glass
<input type="checkbox"/> Electronics	<input type="checkbox"/> Organics
<input type="checkbox"/> Rubber	<input type="checkbox"/> Paper
<input type="checkbox"/> Construction/Demolition	<input type="checkbox"/> Textiles
<input type="checkbox"/> Miscellaneous	<input type="checkbox"/> Plastics
2. Total Number of Employees in 2013:	
3. Total Payroll (Total Annual) 2013: \$	
4. Percent of Your Business Engaged in Recycling:	
EXPANSION PLANS FOR RECYCLING	
1. How many more employees engaged in recycling do you plan to hire in 2014?	
2. Do you plan to invest in more plant capacity, equipment, or land in the next five years for recycling? <input type="checkbox"/> Yes <input type="checkbox"/> No	
3. Approximate the investment amount. \$	
INDUSTRY OUTLOOK <i>(The Next Five Years)</i>	
1. Is recycling a growing industry?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Estimate the growth as a percentage annual rate.	
3. Optional – Your Firm’s Name:	

**Thank you for your participation.** Return this survey by mail in enclosed envelope or e-mail to [hefnerf@cofc.edu](mailto:hefnerf@cofc.edu). You may also fax a copy to (843) 953-0754.

If you have any questions, please contact Frank Hefner at (843) 953- 8111 or [hefnerf@cofc.edu](mailto:hefnerf@cofc.edu).

# APPENDIX E

## Survey Results

N	NAICS Code	Implan Code	Total # Employees	Total Payroll	Average Payroll	Percent	Recycling Jobs
1			24	\$836,268	\$34,845	100	24.00
2			3	\$198,500	\$66,167	100	3.00
3	03714	213	445		\$0	100	445.00
4	313110	172	163		\$0	100	163.00
5			75	\$3,750,000	\$50,000	15	11.25
6	311991	69	577	\$19,000,000	\$32,929	98	565.46
7	562998	390	6	\$118,000	\$19,667	100	6.00
8			4		\$0	100	4.00
9	423930	319	10	\$31,500	\$3,150	100	10.00
10	42193	319	20		\$0	100	20.00
11			1	\$15,000	\$15,000	100	1.00
12	424610	319	120	\$6,000,000	\$50,000	19	22.80
13			1	\$54,000	\$54,000	100	1.00
14	3341	214	43		\$0	96	41.28
15	333249	207	15	\$800,000	\$53,333	65	9.75
16	3311	69	346	\$30,200,000	\$87,283	100	346.00
17	423930	319	40	\$1,713,945	\$42,849	100	40.00
18	229502		38	\$900,000	\$23,684	100	38.00
19			9	\$265,000	\$29,444	100	9.00
20	326299	152	45	\$1,419,697	\$31,549	100	45.00
21			1	\$32,400	\$32,400	25	0.25
22	321920	100	14	\$176,413	\$12,601	5	0.70
23			24		\$0	40	9.60
24			2	\$58,240	\$29,120	5	0.10
25			2		\$0	100	2.00
26			2	\$60,000	\$30,000	4	0.08
27			6	\$310,000	\$51,667	100	6.00
28			21		\$0	20	4.20
29	562920	390	6		\$0	100	6.00
30			2	\$150,000	\$75,000	99	1.98
31			6	\$40,000	\$6,667	100	6.00
32			2	\$23,000	\$11,500	70	1.40
33	423930	319	5	\$200,000	\$40,000	100	5.00
34	423930	319	7	\$160,000	\$22,857	100	7.00
35			14	\$750,000	\$53,571	90	12.60
36			23		\$0	15	3.45
37	562820	319	12	\$250,000	\$20,833	100	12.00
38	237310	39	185	\$7,855,042	\$42,460	20	37.00
39	321920	100	35	\$797,908	\$22,797	100	35.00
40			95	\$4,500,000	\$47,368	15	14.25
41			5		\$0	100	5.00
42			22		\$0	10	2.20
43			1	\$54,000	\$54,000	100	1.00
44			13		\$0	100	13.00
45			450		\$0	4	18.00
46	56292	390	2	\$20,000	\$10,000	100	2.00
47			15	\$400,000	\$26,667	100	15.00

## Distribution of Industries

- Other commercial manufacturing
- Alumina refining
- All other food manufacturing
- Wholesale trade
- Air purification and ventilation equipment manufacturing
- Other industrial machinery manufacturing
- Industrial machinery manufacturing
- Rubber product manufacturing
- Wood container and pallet manufacturing
- Waste management and remediation services
- Highway, street and bridge construction
- Wood container and pallet manufacturing

A total of 2,957 jobs were identified by sector through the survey. Of this amount, 2,026 were identified as being engaged in recycling activities.

# APPENDIX F

## S.C. Department of Commerce Recruitment Results 2013

### Totals

Jobs Recruited	Capital Investment Recruited	Projects
15,457	\$5,410,821,101	127

### By Category

Category	Jobs Recruited	Capital Investment Recruited	Projects
Manufacturing	10,442	\$4,455,395,613	107
Research & Development	57	\$32,800,000	3
Service	4,408	\$864,380,428	11
Warehousing & Distribution	550	\$58,245,060	6

NOTE: All non-manufacturing categories could be combined into "Service."

### By Objective

Objective	Jobs Recruited	Capital Investment Recruited	Projects
Expansion	6,386	\$2,806,126,669	73
New	9,071	\$2,604,694,432	54

### By Origin

Source	Jobs Recruited	Capital Investment Recruited	Projects
Domestic	11,697	\$3,084,203,790	84
Foreign	3,760	\$2,326,617,311	43

## Top 10 by Jobs for 2013

Company	County	Objective	Announced Investment	Announced Jobs	Announced Date
The Boeing Company (SC)	Charleston	Expansion	\$1,000,000,000	2,000	2013-04-09
Benefitfocus.com, Inc.	Berkeley	Expansion	—	1,200	2013-12-16
STARTEK Inc.	Horry	New	\$10,000,000	665	2013-12-16
Time Warner Cable	Lexington	Expansion	\$24,000,000	644	2013-01-04
Keer	Lancaster	New	\$218,000,000	501	2013-12-16
Element Electronics	Fairfield	New	\$7,500,000	500	2013-08-22
ZF Transmissions Gray Court	Laurens	Expansion	\$175,000,000	450	2013-07-26
JN Fibers, Inc.	Chester	New	\$45,000,000	318	2013-09-25
EcoDual	Beaufort	New	\$13,000,000	307	2013-06-20
Colgate-Palmolive Company	Greenwood	New	\$196,000,000	300	2013-10-07

## Top 10 by Capital Invested in 2013

Company	County	Objective	Announced Investment	Announced Jobs	Announced Date
The Boeing Company (SC)	Charleston	Expansion	\$1,000,000,000	2,000	2013-04-09
Google	Berkeley	Expansion	\$600,000,000	Not reported	2013-01-18
Keer	Lancaster	New	\$218,000,000	501	2013-12-16
Michelin North America	Anderson	Expansion	\$200,000,000	100	2013-01-24
Colgate-Palmolive Company	Greenwood	New	\$196,000,000	300	2013-10-07
ZF Transmissions Gray Court	Laurens	Expansion	\$175,000,000	450	2013-07-26
Harbor Freight Tools USA	Dillon	Expansion	\$75,000,000	200	2013-04-04
Essex Holdings Inc.	Marion	New	\$54,400,000	215	2013-03-27
Albert Weber - Weber Automotive Corporation	Charleston	New	\$51,000,000	84	2013-07-08
Fitesa	Greenville	Expansion	\$50,000,000	32	2013-11-07