

## EXECUTIVE SUMMARY

### OVERVIEW

This report presents the results of the Florida Recycling Economic Information (REI) Study commissioned by the Florida Department of Environmental Protection (FDEP). This study was conducted by R. W. Beck, Inc. as part of the National Recycling Coalition's U. S. Recycling Economic Information (US REI) Study, and data from the Florida REI study was incorporated into the US REI Study results. The Florida REI study conforms to the methodology developed by the Northeast Recycling Council for gathering economic data on the recycling and reuse industries.<sup>1</sup> This Executive Summary contains the results of the study. The remainder of the report is dedicated to a complete and thorough documentation of the results and the methodology used in producing them.

This study had two primary goals:

1. Document the size of the recycling and reuse industries in Florida; and
2. Contribute REI data to the US REI Study.

To achieve the two goals, the project approach included the following steps:

- A review of existing sources of recycling and reuse data;
- Creation of a database of recycling and reuse businesses and surveying them to gather primary data for categories where little or no existing information was otherwise found;
- Deriving estimates using limited existing information for categories with insufficient existing data or incomplete/unavailable lists of establishments;
- Conducting limited surveys to gather supplemental intermediate input data for economic modeling; and
- Conducting economic modeling to estimate the total economic values.

### SUMMARY OF DIRECT RESULTS

Twenty-six recycling and reuse industry categories are used in this study and can be grouped into the following two sectors based on the general types of activities undertaken:

- Recycling; and
- Reuse and Remanufacturing.

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<sup>1</sup> Northeast Recycling Council, *Recycling Economic Information Study*, June 2000.

Direct industry size data was determined for each category by one of three methods:

- Utilizing existing data from a variety of sources including the U.S. Census Bureau, publications of trade associations, and periodicals;
- Surveying establishments and performing a statistical analysis of results; or
- Deriving estimates using limited existing information.

Table ES-1 presents the estimates of direct economic activity, by category and sector, for Florida. As shown in the table, Florida hosts nearly 3,700 recycling and reuse establishments employing approximately 32,000 people generating an annual payroll of \$765 million and \$4.4 billion in annual revenues.

Over half of the economic activity for the recycling and reuse industries is accounted for by the following four categories:

- Recyclable material wholesalers;
- Paper, paperboard, and deinked market pulp mills;
- Plastics converters; and
- Retail used merchandise sales.

These four categories alone account for approximately 55 percent of all employees and wages and 72 percent of total receipts.

A noticeable distinction exists between the recycling and reuse sectors regarding the size of establishments and average annual payroll. The recycling establishments have an average of 18 employees each, with an average annual payroll per employee of \$28,000. Comparatively, the reuse sector is made up of smaller establishments (an average of 5 employees per establishment) with an average annual payroll of \$16,000 per employee. Although the reuse and remanufacturing sector comprises 69 percent of total establishments, it makes up only 36 percent of total employees, 25 percent of payroll, and 22 percent of receipts.

These figures are thought to represent the minimum amount of reuse and remanufacturing captured by the methodology, however, because remanufacturing activities are often included with traditional manufacturing industries that were not included in this study. Several years ago Professor Robert T. Lund of Boston University estimated remanufacturing activities on a national level,<sup>2</sup> although state or regional estimates were not attempted. Extrapolating figures from his study down to Florida indicated that reuse and remanufacturing categories might be as much as 50 to 60 percent of total jobs, wages, and receipts for all categories.

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<sup>2</sup> Professor Robert T. Lund, *The Remanufacturing Industry: Hidden Giant*, 1996.

# Florida Recycling Economic Information Study

**Table ES-1**  
**Summary of Direct Estimates of Economic Activity**

Annual Payroll and Estimated Receipts are in \$1,000. Throughput is in thousands of tons. Throughput estimates are not summed due to the potential for triple counting at the collecting, processing, and manufacturing stages.

(D) - Data not disclosed due to a limited number of establishments in this business category and the need to avoid revealing data that could identify a single business. Data for multiple disclosure categories are included in totals.

Business Category	Data Type	Estimates of Total Recycling and Reuse-Related Economic Activity
<b>Recycling Industry Economic Activity</b>		
1. Government Staffed Collection	Establishments	107
	Employment	1,110
	Annual Payroll	27,750
	Estimated Receipts	31,870
	Estimated Throughput	865
2. Private Staffed Collection	Establishments	208
	Employment	2,150
	Annual Payroll	53,750
	Estimated Receipts	61,867
	Estimated Throughput	8,181
3. Compost and Miscellaneous Organics Producers	Establishments	56
	Employment	321
	Annual Payroll	9,515
	Estimated Receipts	36,003
	Estimated Throughput	1,725
4. Materials Recovery Facilities (MRF's)	Establishments	95
	Employment	2,218
	Annual Payroll	32,342
	Estimated Receipts	123,270
	Estimated Throughput	540
5. Recyclable Material Wholesalers	Establishments	408
	Employment	4,164
	Annual Payroll	99,419
	Estimated Receipts	1,106,807
	Estimated Throughput	6,781
6. Glass Container Manufacturing Plants	Establishments	3
	Employment	998
	Annual Payroll	42,750
	Estimated Receipts	94,406
	Estimated Throughput	114
7. Glass Product Producers (other recycled uses)	Establishments	0
	Employment	0
	Annual Payroll	0
	Estimated Receipts	0
	Estimated Throughput	0
8. Nonferrous secondary smelting and refining mills	Establishments	5
	Employment	116
	Annual Payroll	3,886
	Estimated Receipts	54,587
	Estimated Throughput	12
9. Nonferrous product producers	Establishments	7
	Employment	682
	Annual Payroll	17,910
	Estimated Receipts	10,035
	Estimated Throughput	41
10. Nonferrous foundries	Establishments	36
	Employment	416
	Annual Payroll	10,256
	Estimated Receipts	35,790
	Estimated Throughput	3

*(continued)*

<b>Business Category</b>	<b>Data Type</b>	<b>Estimates of Total Recycling and Reuse-Related Economic Activity</b>
11. Paper and Paperboard Mills/Deinked Market Pulp Producers	Establishments	9
	Employment	3,156
	Annual Payroll	146,069
	Estimated Receipts	1,047,174
	Estimated Throughput	1,140
12. Paper-based Product Manufacturers	Establishments	8
	Employment	244
	Annual Payroll	4,935
	Estimated Receipts	15,077
	Estimated Throughput	51
13. Pavement Mix Producers (asphalt and aggregate)	Establishments	2
	Employment	19
	Annual Payroll	371
	Estimated Receipts	3,544
	Estimated Throughput	63
14. Plastics Reclaimers	Establishments	24
	Employment	402
	Annual Payroll	9,512
	Estimated Receipts	33,864
	Estimated Throughput	63
15. Plastics Converters	Establishments	123
	Employment	2,925
	Annual Payroll	69,219
	Estimated Receipts	541,311
	Estimated Throughput	29
16. Rubber Product Manufacturers	Establishments	8
	Employment	337
	Annual Payroll	15,833
	Estimated Receipts	34,833
	Estimated Throughput	8
17. Steel mills	Establishments	1
	Employment	(D)
	Annual Payroll	(D)
	Estimated Receipts	(D)
	Estimated Throughput	(D)
18. Iron and Steel foundries	Establishments	19
	Employment	477
	Annual Payroll	16,602
	Estimated Receipts	58,966
	Estimated Throughput	43
19. Other Recycling Processors/Manufacturers	Establishments	16
	Employment	516
	Annual Payroll	7,205
	Estimated Receipts	48,433
	Estimated Throughput	101
<b>Recycling Industry Subtotals</b>	<b>Establishments</b>	<b>1,135</b>
	<b>Employment</b>	<b>20,251</b>
	<b>Annual Payroll</b>	<b>567,324</b>
	<b>Estimated Receipts</b>	<b>3,337,838</b>
	<b>Estimated Throughput</b>	<b>N/A</b>

(continued)

# Florida Recycling Economic Information Study

Business Category	Data Type	Estimates of Total Recycling and Reuse-Related Economic Activity
<b>Reuse and Remanufacturing Industry Economic Activity</b>		
20. Computer and Electronic Appliance Demanufacturers	Establishments	4
	Employment	49
	Annual Payroll	808
	Estimated Receipts	4,038
	Estimated Throughput	N/A
21. Motor Vehicle Parts (used)	Establishments	497
	Employment	2,999
	Annual Payroll	62,383
	Estimated Receipts	307,764
	Estimated Throughput	N/A
22. Retail Used Merchandise Sales	Establishments	1,899
	Employment	7,415
	Annual Payroll	101,616
	Estimated Receipts	530,138
	Estimated Throughput	N/A
23. Tire Retreaders	Establishments	137
	Employment	663
	Annual Payroll	14,063
	Estimated Receipts	74,013
	Estimated Throughput	N/A
24. Wood Reuse	Establishments	4
	Employment	70
	Annual Payroll	1,832
	Estimated Receipts	4,422
	Estimated Throughput	N/A
25. Materials Exchange Services	Establishments	1
	Employment	(D)
	Annual Payroll	(D)
	Estimated Receipts	(D)
	Estimated Throughput	N/A
26. Other Reuse	Establishments	6
	Employment	387
	Annual Payroll	7,008
	Estimated Receipts	35,625
	Estimated Throughput	N/A
<b>Reuse Industry Subtotals</b>	<b>Establishments</b>	<b>2,548</b>
	<b>Employment</b>	<b>11,583</b>
	<b>Annual Payroll</b>	<b>187,709</b>
	<b>Estimated Receipts</b>	<b>955,999</b>
	<b>Estimated Throughput</b>	<b>N/A</b>

<b>GRAND TOTALS</b>	<b>Establishments</b>	<b>3,683</b>
<b>Recycling and Reuse/Remanufacturing</b>	<b>Employment</b>	<b>32,138</b>
	<b>Annual Payroll</b>	<b>765,176</b>
	<b>Estimated Receipts</b>	<b>4,374,479</b>

Another interesting observation can be made by comparing recycling categories that are primarily local establishments performing collection, sorting, and densification activities to those that source material from large distances for downstream processing, conversion, or manufacturing operations. Local collection and processing (baling, grading, densifying, etc.) includes:

- Government staffed residential curbside collection;
- Privately-staffed residential curbside collection;
- Compost and miscellaneous organics products producers;
- Materials recovery facilities; and
- Recyclable material wholesalers.

Establishments in the remaining recycling categories are considered to be downstream processors of recycled materials and tend to utilize recycled materials in manufacturing. When the two groups are compared, “local” collection and processing make up about 49 percent of total recycling employment and 41 percent of receipts whereas non-local downstream processing makes up the remaining 51 percent of employment and 59 percent of receipts. This indicates that public and private investment in local recyclables collection and processing infrastructure pays great dividends in downstream private recycling economic activity. Public policy in the form of state or local laws and regulations that require collection of recyclables or that discourage disposal (e.g. disposal taxes, material specific bans, etc.), directly affects these local public and private sector establishments and indirectly the larger recycling and reuse industry as a whole.

## **SUMMARY OF INDIRECT AND INDUCED ECONOMIC ACTIVITY**

In addition to the twenty-six categories of direct recycling and reuse establishments, the study estimated data for four specific categories of support businesses that provide goods or services to recycling and reuse industry establishments as shown in Table ES-2. The general category Other Indirect Establishments shown in the table includes all other indirect establishments that provide goods or services (such as office supply companies, accounting firms, legal firms, building and landscape maintenance firms, etc.).

**Table ES-2**  
**Estimates of Indirect Economic Activity of Select Support Business Categories**  
 (Annual Payroll and Estimated Receipts are in \$1,000)

Business Category	Data Type	Value
Recycling and Reuse Equipment Manufacturers [1]	Employment	983
	Annual Payroll	29,075
	Estimated Receipts	217,230
Consulting/Engineering [2]	Employment	165
	Annual Payroll	5,721
	Estimated Receipts	12,764
Brokers [2]	Employment	72
	Annual Payroll	6,231
	Estimated Receipts	9,862
Transporters [2]	Employment	1,873
	Annual Payroll	56,965
	Estimated Receipts	197,088
Other Indirect Establishments [2]	Employment	14,201
	Annual Payroll	447,409
	Estimated Receipts	1,143,337
<b>Support Businesses Totals</b>	<b>Employment</b>	<b>17,294</b>
	<b>Annual Payroll</b>	<b>545,401</b>
	<b>Estimated Receipts</b>	<b>1,580,281</b>

Notes:

[1] Data for Recycling and Reuse Equipment Manufacturers are based on a statistical analysis of survey results.

[2] Data come from modeling output and reflect the indirect activity stimulated by the 26 direct categories of recycling and reuse establishments targeted by this study for direct data.

The study also estimated other economic activity produced in Florida's economy attributable to the recycling and reuse industry using economic modeling. Furthermore, state government tax revenues arising from the recycling and reuse industry were also estimated. Table ES-3 shows summarized state government tax revenues for the direct economic activity of the 26 business categories.

**Table ES-3**  
**Summary of Recycling & Reuse Industry**  
**Direct Effects on State Government Revenues**  
 (in \$ Millions)

Recycling Collection	6.36
Recycling Processing	12.23
Recycling Manufacturing	27.70
Reuse/Remanufacturing	15.77
<b>Total</b>	<b>62.07</b>

## CONCLUSIONS

The estimates of direct economic activity presented here reveal that recycling and reuse activities significantly contribute to the economy of Florida. As a reference, comparisons to several other industries and business types can be made. For example, although Florida's recycling and reuse industry employs only one-fifth the number of people as fast food restaurants, the total payroll is more than half that of fast food restaurants. Recycling and reuse in Florida employ five times the number of people employed in convenience stores and has a total payroll ten times larger. The results of the economic

modeling estimate that nearly 1 percent of jobs and total value added in Florida can be attributed to the recycling and reuse industry (including down-stream effects).

As noted previously, investments at the local level in collection and processing of recyclables and public policies that favor recycling and reuse certainly enable large private sector investments in downstream processing and manufacturing.

Results of the follow-on national REI study should be reviewed upon its completion to evaluate the contribution of recycling and reuse to the economy in Florida as compared to the remainder of the U.S. and other individual states of similar make-up in order to gain insight on the influence of public policies on states' recycling and reuse industries. However, further study is necessary to rigorously assess the impact of public policy on recycling economic activity and to document the growth over the baseline in this report.