

2008 EMPLOYMENT TRENDS IN N.C.'S RECYCLING INDUSTRY



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RESEARCH SUMMARY

This report presents findings from a 2008 employment study of recycling businesses in North Carolina. More than 535 private sector recycling businesses were surveyed and researched for employment data. The major findings include:

- N.C. supports 14,490 private sector recycling-related jobs.
- Private sector recycling jobs have increased 13.4 percent since 2003.
- N.C. recycling businesses support an annual payroll of \$376.8 million.
- Forty-five percent of recycling businesses surveyed anticipate creating more jobs during the next two years.
- Thirty-nine percent of businesses surveyed report manufacturing a product using recycled materials.
- Recycling businesses target a wide variety of recyclables for collection, processing or use in manufacturing. No single recycling commodity dominates the market.

BACKGROUND

From September 2007 through May 2008, the N.C. Recycling Business Assistance Center in the Division of Pollution Prevention and Environmental Assistance conducted a recycling business jobs survey to determine a current estimate of private sector recycling-related employment in North Carolina. The study was a follow-up to previous studies conducted in 1994, 2000 and 2004.

METHODOLOGY

For this study a recycling business was defined as a company involved in the recovery, reuse or remanufacture of materials. This included the collection, processing, manufacturing, reuse or composting of post-consumer or post-industrial materials. A recycling-related employee was defined as an employee who dedicates any time to recycling-related activities or whose position would not exist without the recycling component of the business. To avoid overestimating full-time employment, businesses were asked to calculate the full-time equivalency of a part-time employee by dividing the part-time employee's average weekly hours by 40.

Study Bounds

Since the goal of the research was to accurately quantify the number of private sector recycling-related jobs in North Carolina, only material flows and jobs that occur within the state borders were considered. The study only included direct economic impacts and excluded indirect or induced measurements. Therefore, businesses such as recycling equipment manufacturers and distributors were excluded.

DATA COLLECTION

Primary Data

The Recycling Business Assistance Center maintains a free, online Recycling Markets Directory of recycling companies that collect, transport, broker, process or remanufacture recovered materials in North Carolina. This directory provides essential links between businesses, industries and local governments searching for markets for recyclables and the companies that

accept the materials for recovery. While the RMD includes national markets in addition to N.C.-based markets, only N.C. companies were surveyed for this study (in addition to the N.C. based locations of national companies).

Every recycling business or organization in North Carolina listed in the RMD received the recycling business survey. The primary data sample included 535 North Carolina-based recycling business operations.

Business Survey Design

The instrument used for the study was an online tool called Survey Monkey. Survey questions from previous recycling employment studies were modified for integration into the online survey tool. In addition to recycling employment questions, it also included recycling tonnages, recyclable materials and hourly wage questions. Recycling businesses with e-mail addresses received an e-mail including instructions, a password and a company identification number to ensure respondent confidentiality.

The survey was also used for companies without e-mail addresses. However, those companies received a printed copy of the survey, a cover letter with instructions and a pre-addressed stamped envelop for the completed survey. See Appendix A for the final survey administered.

Business Survey Implementation

All 535 recycling businesses received an invitation to participate in the 2008 Recycling Business Employment Study update. Businesses with e-mail received a link to the survey in October 2007. Companies that did not respond to the initial Web-based survey invitation were sent additional e-mail notices in November and December until the survey was closed on Dec. 10, 2007. Data from responders was collected and stored.

Businesses without e-mail addresses were mailed the printed survey in mid-October with instructions and a pre-labeled self-addressed stamped envelope. DPPEA staff entered returned surveys manually into the online survey instrument.

Unresponsive businesses were placed on a list to obtain data via secondary data sources or to obtain employment data only by direct phone call to the business. Other survey questions were not addressed during this data collection effort.

Secondary Data: Recycling Employment

Two secondary sources of employment data were used for this study: (1) the Employment Security Commission of N.C. database, and (2) the online Harris Directory database, Selectory. The ESC database lists company name, North American Industry Classification System code classification, employment and address for N.C. businesses as reported in the second quarter of 2007. Operated by Dun & Bradstreet, the online Harris Directory, Selectory, is a comprehensive database of U.S. company profiles, including number of employees.

Unresponsive businesses from the Recycling Business Survey were queried for employment data only with these two secondary databases. Once the overall employment number was obtained for each business, industry experts in DPPEA estimated the percentage of recycling-related employees.

Additional Data

While the Recycling Markets Directory is a great resource for recycling-related businesses, it is not inclusive. Not every recycling business in the state has elected to list their business in the directory. Some business may not be aware that the RMD exists and RBAC staff may not be aware of every recycling business in the state. Finally, the RMD is not a venue for all N.C. recycling-based companies to self-list. With access to the N.C. ESC database there was an opportunity to find additional recycling companies not listed in the RMD and gather additional employment data for the study.

The N.C. ESC dataset included NAICS codes for each business listing. As there is no general classification number for the recycling industry, the ESC database was queried for a variety of classification codes used by various recycling-related sectors. Those included NAICS code 423930 (Recyclable Material Merchant Wholesalers), NAICS code 321920 (Container and Pallet Manufacturing), and NAICS code 562111 (Waste Haulers). A general query for “recycling” or “recycle” in the company name field was also performed. Businesses identified were checked against RMD companies to avoid double counting. To avoid overestimating recycling-employment data, it was conservatively assumed that 10 percent of total employment for NAICS code 321920 (Waste Haulers) and 66 percent employment of NAICS code 321920 (Container and Pallet Manufacturing) was dedicated to recycling.

From staff contact and interaction, 17 additional recycled-content manufacturing companies not listed in the RMD were included in the study. Many of these businesses were featured in previous publications, “Recycling Means Business,” and “Made in N.C.,” written by RBAC staff. Employment data for these companies was obtained from the ESC database and the Selectory Business Database. To avoid overestimating recycling employment data, industry experts in RBAC estimated the percentage of recycling-related employees.

RECYCLING BUSINESS SURVEY RESULTS

Unlike employment studies conducted in previous years, the 2008 employment study made a significant effort to obtain real employment data from primary and secondary sources instead of extrapolating data to estimate a statewide recycling employment figure. The primary study sample included 535 N.C. businesses listed in the RMD. Out of the 535 businesses surveyed, 185 responded to the survey either through the Web-based survey or via the mail survey. For the remainder of the RMD businesses not responding to the survey, employment data only was obtained through the N.C. ESC database, Selectory and through phone calls to the businesses. Data could not be found for only 36 of the 535 N.C. RMD companies in the initial survey sample. Although this year’s survey used a more labor-intensive process, the response rate for employment data was a very high 93 percent as noted in Table 1.

Table 1. Recycling Business Survey Response Rate

		Completed	Sent	Response Rate
RMD Businesses Surveyed	Web-Mail	185	535	34.6%
RMD Businesses Other	ESC/HDB/Phone	314		58.7%
TOTAL		499	535	93.3%

As previously discussed, additional recycling employment data was included for recycling-related businesses not listed in the RMD. Since the N.C. ESC database includes NAICS codes for each business listing, several recycling-related NAICS codes were queried including NAICS code 423930 (Recyclable Material Merchant Wholesalers), NAICS code 321920 (Container and Pallet Manufacturing), and NAICS code 562111 (Waste Haulers). A general query for “recycling” or “recycle” in the company name field was also conducted. Seventeen additional recycled-content manufacturing companies not listed in the RMD were also included in the study. Based on data collected from the RMD business survey and combining data from additional sources (Recyclable Material Merchant Wholesalers, Pallet Manufacturers, Waste Haulers, Companies with “Recycling” or “Recycle” in the company name and 17 recycled-content manufacturers) it is estimated that there are 14,490 employees in the state of North Carolina directly related to recycling. See Table 2 for the breakdown of total recycling employment data.

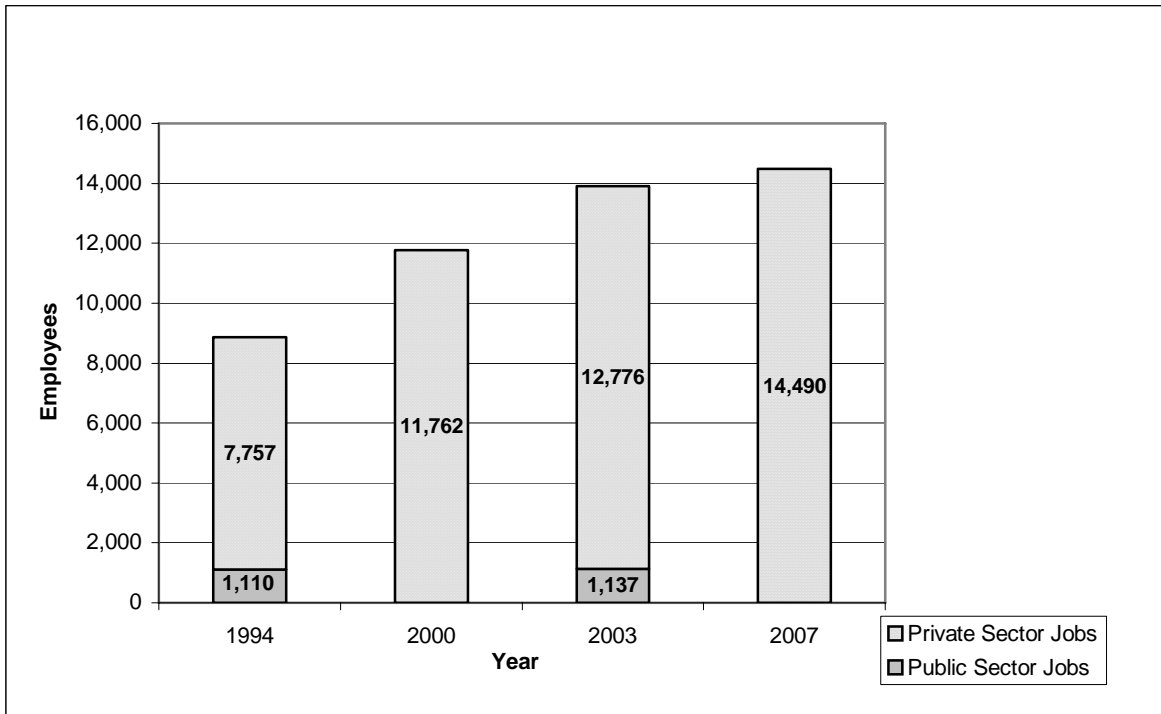
Table 2. 2008 N.C. Recycling Employment

Recycling Business Study Sample	Data Source	FTE-R
RMD Businesses (535)	Web-Mail-Phone	10,561
Recycled Content Manufacturers (17)	ESC, Harris Infosource	1,160
NAICS-562111 (Waste Haulers)	ESC	208
NAICS-321920 (Pallet Manufacturers)	ESC	1,171
NAICS-423930 (Recyclable Material)	ESC	915
"Recycler"/"Recycling" in company name	ESC	475
	TOTAL	14,490

Employment Data Comparisons to Prior Studies

The 2007 study was a follow-up to previous studies conducted in 1994, 2000 and 2004. As Graph 1 indicates, recycling employment continues to rise. Although the employment growth from 2003 to 2008 is slight, the 2003 study as well as the 1994 study included a public sector recycling related employment component. The 2000 and 2008 studies did not.

Graph 1: N.C. Recycling Employment Trend



Additional Recycling Business Survey Data

In addition to employment data, the businesses responding to the recycling business survey also provided information on hourly wage data, recyclable materials targeted, recycled material products manufactured and anticipated job creation. Survey respondents reported an average hourly wage of \$12.50 or a total N.C. recycling business payroll of \$376.8 million. When asked if the business planned on creating new jobs, 84 businesses or 45 percent estimated that 339 new jobs would be created during the next two years. Survey respondents stated that 834 new jobs have been created since 2003 and only 176 jobs have been terminated during the same time-frame for a net total of 658 jobs created.

Recycling businesses target a wide variety of recyclables for collection, processing or utilization in manufacturing. No single recycling commodity dominates the market in N.C. Surveyed businesses reported targeting the following common recyclable materials: aluminum cans, PETE plastic, HDPE plastic, other plastic, glass, newspapers, corrugated cardboard, office paper, mixed paper, other paper, magazines, textiles, other metal scrap, electronics, construction and demolition materials, woody and organic materials. In addition, surveyed businesses were given the opportunity to write-in other recyclables targeted. Table 3 includes a listing of “other” recyclables.

Table 3: “Other Recyclables” Collected, Processed or Utilized

Antifreeze, oil filters, used oil	Lamps and ballasts
Appliances	Petroleum impacted soils, scrap battery magnesium powder, scrap kaolin spoil clay
Automobile scrap	Polystyrene, polyurethane, polypropylene, polyethylene
Bakery waste	Post industrial plastic scrap
Batteries / sealed lead	Poultry offal
Carpet and carpet pad	Pre-consumer waste paper, deinked pulp from pre- and post-consumer waste paper
Chipboard, SBS board	Restaurant grease
Computer equipment	Rubber and rubber dust
Copper, aluminum, tin, iron, steel, lead	Steel cans
Dye	Textile yarn cones
Food waste	Tires
Furniture and building supplies	Vegetable oil and fats
Gypsum drywall	Wood chips
Houses	Wood pallets, used pallets, wood crates
Ink cartridges	Wood waste

The number of products using recycled material manufactured by N.C. businesses is diverse and numerous. Thirty-nine percent of businesses responding to the survey reported manufacturing a product using recycled materials. Table 4 includes a listing of recycled material products N.C. businesses reported manufacturing.

Table 4: Manufactured Recycled Material Products List

100% Recycled paperboard	Poultry meals and inedible fats
Automotive antifreeze/coolant	Precast cement building materials
Biodiesel	Reconditioned textile cones
Boiler fuel	Recycled dyes
Brick and brick landscape nuggets	Refurbished computers
Colored mulch	Repaired/remanufactured pallets, crates, boxes
Compost	Rubber mulch & playground rubber
Cookie meal	Rubber wheels
Ductile iron components	Soil amendments
Furniture and flooring	Steel plates
Glass beads for highway safety	Survey stakes and material
Glass cullet	Top soil
Hydro mulch	Wiping cloths
Personal paper products	Wood flooring

Businesses surveyed were also asked to quantify the tonnage of recyclables collected, processed, brokered and used in manufacturing. However, tonnage data was inconclusive and was not able to be reported as a total quantity for the report.

CONCLUSION

In Summary, the N.C. recycling economy continues an upward growth trend. In 2008, there are an estimated 14,490 private sector recycling-related jobs in the state involved in the collection, processing, manufacturing, reuse or composting of post-consumer or post-industrial materials. N.C. recycling businesses are strong, diverse and use a large variety of recyclable or discarded materials that become feedstock for a wide variety of products.