

# Minnesota's recycling industries: Economic activity summary



Minnesota's recycling programs do an excellent job of keeping waste out of the solid waste disposal system. However, recycling is *more* than an alternative to waste disposal. It also conserves and reuses resources, creating new businesses in the process.

**M**innesota's recycling industry adds significant value to our state's economy. In order to document this economic activity, in 1996, the Office of Environmental Assistance (OEA) examined the role recycling has in Minnesota's economy. This first study of economic activity was limited to value-added recycling manufacturers, those businesses that re-manufacture recyclables into secondary materials such as paper, plastic, metals, and glass. (A full report on this study, *Minnesota's Value-Added Recycling Manufacturing Industries: An Economic and Environmental Profile* is available on the OEA web site at [www.moea.state.mn.us/berc/valueadd.cfm](http://www.moea.state.mn.us/berc/valueadd.cfm).)

Last year, the OEA reexamined the impact recycling has on Minnesota's economy. This study was conducted in order to measure current economic activity and to identify a more complete range of benefits from Minnesota's recycling industries. This latest study looks at value-added

manufacturing again, but also measures the economic activity related to collecting, processing, and marketing recyclables in Minnesota.

In comparing the 2000 to the 1996 data, Minnesota's valued-added recycling manufacturing industry continues to be a stable, growing and vibrant sector of the economy. Economic activity related to re-manufacture of secondary materials such as paper, plastic, metals, and glass remained steady between 1996 and 2000. Growth in the plastic lumber manufacturing area was noted but did not significantly increase overall economic activity.

Minnesota's information is part of a national effort the OEA participated in called the U.S. Recycling Economic Information (REI) Study. This effort represents a partnership among the OEA, the U.S.

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EPA, the National Recycling Coalition and 16 other states to document the economic activity associated with recycling on a national level. Together the OEA's new study for Minnesota and the U.S. Recycling Economic Information (REI) Study provide an overview of the economic activity generated by recycling in Minnesota and across the nation.

### Minnesota's value-added recycling manufacturers

More than two-thirds of the economic activity related to recycling in Minnesota is generated by re-manufacturing secondary materials into new products – *value-added recycling manufacturing*.

Minnesota's value-added manufacturers generated an estimated \$93 million in state tax revenue and employ an estimated 8700 people in direct jobs. These jobs in turn support another estimated 20,000 people downstream in indirect and induced jobs. All together these jobs, which pay an estimated \$1.19 billion in wages, represent a major force in the Minnesota economy.

**Estimated gross economic activity for Minnesota's value-added recycling manufacturing industry is \$3.48 billion.**

The largest segment of the value-added recycling industry is made up of manufacturers who use recycled paper, post-consumer paper and old corrugated cardboard (OCC) as a raw material source. Rock Tenn located in St. Paul and Liberty Paper located in Becker are major companies using this feedstock. Much of their raw material—recycled paper and OCC—comes from Minnesota recyclers.

### Minnesota's recycling collection infrastructure

Recycling begins with collection and processing programs, which are owned and operated by small and large companies and by local units of government. This is the face of recycling seen by the public and waste generators on the streets and in the alleys. Waste Management, BFI and Superior are major companies involved in the collection infrastructure.

Minnesota's recycling collection infrastructure generated an estimated \$35 million in state tax revenue on direct jobs. They employ an estimated 6100 people in direct jobs at the companies. (These direct jobs are included as part of the total number of indirect job supporting the value-added recycling manufacturing industry.) These jobs in turn support another estimated 18,500 people downstream in

### Value-added Recycling Manufacturers (for year 2000)

Economic activity indicator associated with Minnesota's value-added recycling manufacturers	Based on reported employment	Based on total estimated employment
<b>Direct jobs at the companies</b>	<b>6,509</b>	<b>8,700</b>
<b>Estimated indirect jobs:</b> Impacts on local suppliers statewide, unadjusted for displacement effects.	<b>6,542</b>	<b>8,331</b>
<b>Estimated induced jobs:</b> Long term effects on personal income and consumer spending, localized and statewide.	<b>9,085</b>	<b>11,611</b>
<b>Total estimated job impact:</b>	<b>22,136</b>	<b>28,642</b>
<b>Total estimated wages and salaries:</b> The monetary remuneration of employees, including compensation of officers, commissions, tips, and bonus and receipts-in-kind that represent income to the recipient.	<b>\$939 million</b>	<b>\$1.19 billion</b>
<b>Total estimated tax revenue on direct jobs:</b> Business/personal state income taxes, sales tax, excise tax and miscellaneous taxes, real estate taxes and business taxes.	<b>\$81 million</b>	<b>\$93 million</b>
<b>Total estimated value-added activity:</b> Contribution to Gross State Product analogous to GDP (gross domestic product), output excluding the intermediate inputs (primarily compensation and profit).	<b>\$1.32 billion</b>	<b>\$1.66 billion</b>
<b>Total estimated gross economic activity:</b> Amount of production in total sales, includes intermediate goods purchased as well as value-added (compensation plus profit).	<b>\$2.74 billion</b>	<b>\$3.48 billion</b>

Scenarios calculated using the Regional Economic Models, Inc. (REMI) Minnesota Forecasting and Simulation Model, January 2001, Minnesota Office of Environmental Assistance



Recycled flooring and decking products made from recycled paper, wood and plastic.



indirect and induced jobs. All together these jobs pay an estimated \$977 million in wages. It should be noted that some of these wages are part of \$1.19 billion in wages paid on the downstream value-added recycling manufacturing jobs.

**Estimated gross economic activity for Minnesota's recycling collection infrastructure is \$2.91 billion dollars.**

### National REI study highlights

In a similar study covering the whole nation, the REI study found that value-added manufacturers generated an estimated \$5.4 billion in federal tax revenue and employ nearly 760,000 people in direct manufacturing jobs in the United States. These jobs in turn support another estimated 1,938,000 people in indirect and induced jobs. Total wages from these 2.7 million jobs are more than \$100 billion.

**Estimated gross economic activity throughout the United States for the value-added recycling manufacturing industry is \$417 billion dollars.**

As a driver of economy activity, recycling compares favorably with other industries. According to the REI study, the average wage for the industry is \$36,000, approximately \$3,000 above the national average. The study also concludes that recycling stimulates technology development.

The recycling industry is growing both in Minnesota and nationally. The distribution of activity among secondary material types was similar between the Minnesota and nationwide figures. However, Minnesota has a particularly strong and active paper recovery business.



Forty-two percent of Minnesota's waste paper is recycled, helping to feed our eight major paper mills.

### Collection infrastructure (for year 2000)

Economic activity indicator associated with Minnesota's recycling	Based on reported employment	Based on total estimated employment
<b>Direct jobs at the companies</b>	4,532	6,104
<b>Estimated indirect jobs:</b> Impacts on local suppliers statewide, unadjusted for displacement effects.	5,122	6,650
<b>Estimated induced jobs:</b> Long term effects on personal income and consumer spending, localized and statewide.	9,048	11,821
<b>Total estimated job impact:</b>	18,702	24,575
<b>Total estimated wages and salaries:</b> The monetary remuneration of employees, including compensation of officers, commissions, tips, and bonus and receipts-in-kind that represent income to the recipient.	\$744 million	\$977 million
<b>Total estimated tax revenue on direct jobs:</b> Business/personal state income taxes, sales tax, excise tax and miscellaneous taxes, real estate taxes and business taxes.	\$26 million	\$35 million
<b>Total estimated value-added activity:</b> Contribution to Gross State Product analogous to GDP (gross domestic product), output excluding the intermediate inputs (primarily compensation and profit).	\$1.15 billion	\$1.50 billion
<b>Total estimated gross economic activity:</b> Amount of production in total sales, includes intermediate goods purchased as well as value-added (compensation plus profit).	\$2.24 billion	\$2.91 billion

Scenarios calculated using the Regional Economic Models, Inc. (REMI) Minnesota Forecasting and Simulation Model, January 2001, Minnesota Office of Environmental Assistance

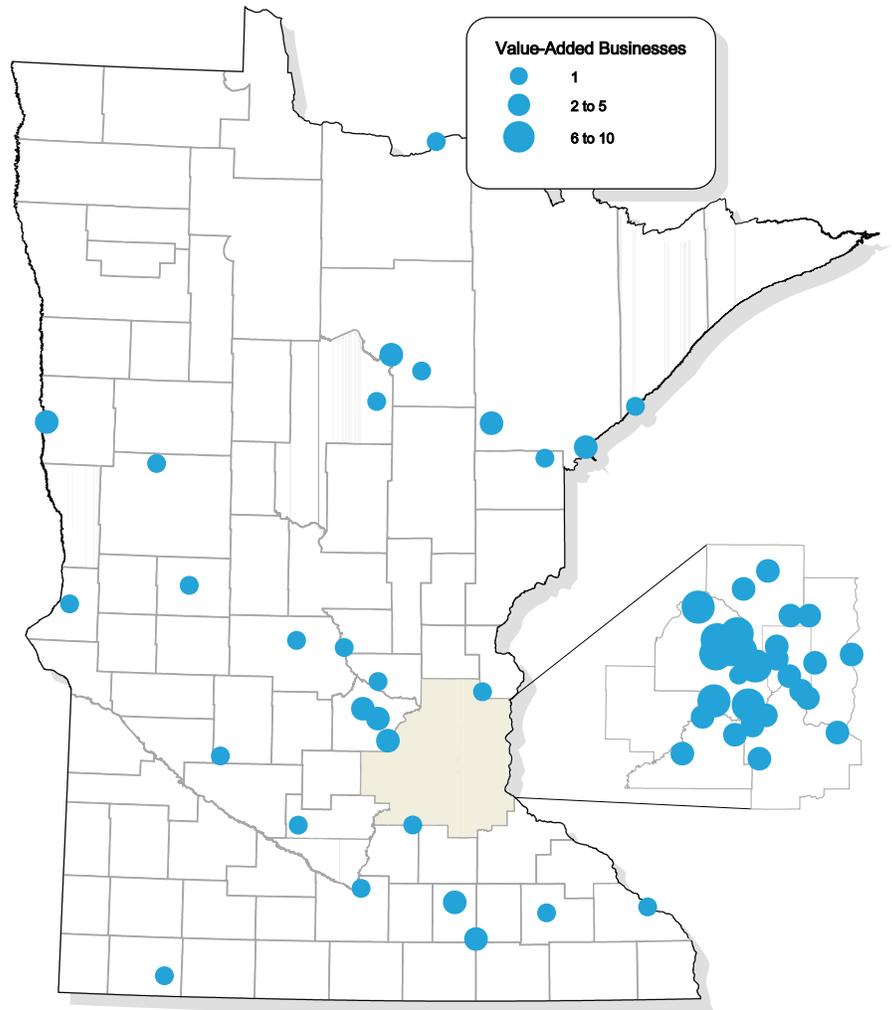
## Environmental Benefits

The recycling efforts of Minnesota residents and businesses are improving our environment every day. The results are clear—cleaner air and water, avoided material consumption, avoided energy consumption, more forested land and open space, and reduced greenhouse gases.

By inputting Minnesota's SCORE recycling data for 2000 into the environmental benefits calculator developed through a partnership with Recycling Association of Minnesota and the National Recycling Coalition, the OEA came out with the following data.

- ▶ **Recycling in Minnesota conserves energy and reduces greenhouse gas emissions.** The 1,341,248 tons of paper, glass, metals and plastic and other material recycled in 2000 saved nearly 22 trillion BTUs of energy—enough energy to power nearly 217,483 homes (equivalent to all of Ramsey County) for one year. In addition, recycling also resulted in reduction of net greenhouse gas emissions of 930,959 tons.
- ▶ **Recycling in Minnesota conserves natural resources.** By using recycled materials instead of trees, metal ores, minerals, oil and other raw materials harvested from the earth, recycling-based manufacturing conserves the world's scarce natural resources. For example, material consumption of natural resources for making steel was reduced by 486,585 tons as a result of recycling efforts.
- ▶ **Recycling in Minnesota reduces air and water pollution.** Last year, recycling reduced overall emissions excluding carbon dioxide and methane by 35,589 tons. In addition, waterborne wastes were reduced by 5,895 tons.

## Number of Value-Added Manufacturing Businesses by City



By the Yard, Inc. of Jordan, Minnesota, makes high quality outdoor furniture from recycled plastic milk jugs.



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# RECYCLING is WORKING in the United States

## Participating Organizations:

- U.S. Environmental Protection Agency
- National Recycling Coalition
- California Integrated Waste Management Board
- Delaware Economic Development Office
- Empire State Development (New York)
- Florida Department of Environmental Protection
- Illinois Department of Commerce and Community Affairs
- Indiana Department of Commerce
- Massachusetts Department of Economic Development
- Minnesota Office of Environmental Assistance
- Missouri Environmental Improvement and Energy Resources Authority
- Nebraska Department of Economic Development
- New Jersey Department of Environmental Protection
- Northeast Recycling Council
- Ohio Department of Natural Resources
- Pennsylvania Department of Environmental Protection
- Recycle Iowa (an initiative of the Iowa Department of Economic Development)
- Vermont Agency of Natural Resources
- Wisconsin Department of Natural Resources

The U.S. Recycling Economic Information (REI) Study is a groundbreaking national study that demonstrates the importance of recycling and reuse to the U.S. economy. The study, commissioned by the U.S. Environmental Protection Agency (EPA) and numerous states through a cooperative agreement with the National Recycling Coalition (NRC), clearly shows what many have known for a long time—that “Recycling is Working.”

By converting waste into valuable raw materials, recycling creates jobs, builds more competitive manufacturing industries, and adds significantly to the U.S. economy. Comprehensive national data on the economic impact of recycling and reuse is critical to the continued growth and success of the industry by:

- Demonstrating to the investment community that recycling is a viable, established industry with a proven track record.
- Assisting government agencies with strategic planning and policy decisions to ensure the continued growth of recycling.

- Identifying business opportunities for entrepreneurs based on emerging commodity areas and industry sectors.
- Providing recycling and reuse advocates with an important tool to help promote awareness and build support.

## Key Findings of the Study

### Recycling and Reuse Add Value to the U.S. Economy

The recycling and reuse industry is a significant force in the U.S. economy that makes a vital contribution to job creation and economic development. According to the study, the industry consists of approximately 56,000 establishments that employ

## Summary of Estimates of Direct Economic Activity

Annual Payroll and Estimated Receipts are in \$1,000. Throughput is in thousands of tons.

Data Type	Industry Sector				Industry Total
	Recycling Collection	Recycling Processing	Recycling Manufacturing	Reuse and Remanufacturing	
Establishments	9,247	12,051	8,047	26,716	56,061
Employment	32,010	160,865	759,746	169,183	1,121,804
Annual Payroll	956,875	3,826,360	29,181,749	2,747,498	36,712,482
Estimated Receipts	1,974,516	41,753,902	178,390,423	14,182,531	236,301,371
Estimated Throughput <sup>1</sup>	191,082	191,082	157,545	N/A	N/A

1. Throughput is amount of recovered material recycled and includes manufacturing scrap sent for recycling. It excludes materials prepared for fuel use and in-house process scrap returned to the manufacturing process. Throughput estimates are summed to avoid triple counting at collection, processing, and manufacturing stages.

over 1.1 million people, generate an annual payroll of nearly \$37 billion, and gross over \$236 billion in annual revenues. Within the industry, the economic impact of the recycling manufacturing sector far exceeds the recycling collection, processing, and reuse sectors.

**Local Recycling and Reuse Spur “Downstream” Economic Impacts**

Recycling businesses collect, process, and broker recovered materials as well as manufacture and distribute products made with recovered materials. Investment in local recycling collection and processing, as well as strong government policies, spurs significant private sector investment in recycling

manufacturing and promotes economic growth.

The study also tallied the impact of recycling on other support industries such as accounting firms and office supply companies for a grand total of 1.4 million jobs “indirectly” supported by the recycling and reuse industry. These jobs have a payroll of \$52 billion and produce \$173 billion in receipts. Spending by employees of the recycling and reuse industry leads to another 1.5 million jobs with a payroll of \$41 billion and produces receipts of \$146 billion. The recycling and reuse industry also generated roughly \$12.9 billion in federal, state, and local tax revenues, with 80 percent going to federal and state government.

**Contribution of Recycling and Reuse to Government Revenues**

(in \$ millions)

Industry Sector	Direct Effects Revenues				Total Effects Revenues			
	Federal	State	Local	Total	Federal	State	Local	Total
Recycling Collection	200	100	100	400	300	200	100	600
Recycling Processing	700	400	300	1,400	1,700	800	600	3,200
Recycling Manufacturing	5,400	2,600	2,100	10,000	20,500	9,900	7,800	38,200
Reuse/Remanufacturing	600	300	200	1,200	2,100	1,000	800	3,900
<b>Total</b>	<b>6,900</b>	<b>3,400</b>	<b>2,600</b>	<b>12,900</b>	<b>24,600</b>	<b>11,900</b>	<b>9,400</b>	<b>45,800</b>

**Other Benefits of Recycling**

Recycling is good for the economy and the environment. Recycling’s benefits are found at every stage of the life cycle of a consumer product—from the mining of raw materials through use and final disposal. By redirecting waste to serve as raw materials for industry, recycling provides a number of important benefits:

- Reducing pollution and conserving natural resources.
- Saving energy by reducing the need to extract and process “virgin” raw materials to manufacture new products.
- Reducing greenhouse gases such as carbon dioxide, methane, and nitrous oxide.
- Stimulating the development of greener technologies.
- Avoiding the cost of waste disposal in landfills and incinerators.

## Recycling is a Diverse Industry

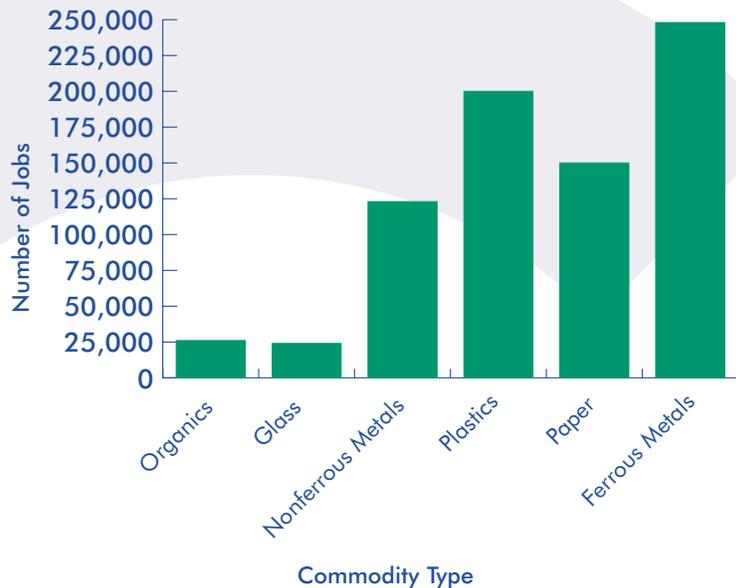
The recycling and reuse industry is an elaborate network of public sector institutions and private companies. In fact, the study identified 26 different types of recycling organizations (see below). Recycling is an integrated system that starts with curbside collection of materials by municipalities, involves processing of recycled materials, and leads to manufacturing of new products with recycled content.

Four major manufacturing industries account for over half of the economic activity of the industry: paper mills, steel mills, plastics converters, and iron and steel foundries. But the recycling industry also includes companies that are quickly finding a market niche, including computer demanufacturers, organics composters, and plastic lumber manufacturers.

## Types of Recycling and Reuse Organizations

- Private and government staffed collection centers
- Compost and miscellaneous organics producers
- Material recovery facilities
- Recyclable material wholesalers
- Glass container manufacturing plants
- Other glass product producers
- Nonferrous secondary smelting and refining mills
- Nonferrous foundries and product producers
- Paper and paperboard mills/deinked market pulp producers
- Paper-based product manufacturers
- Pavement mix producers (asphalt and aggregate)
- Plastics reclaimers and converters
- Rubber product manufacturers
- Steel mills
- Iron and steel foundries
- Other recycling processors/manufacturers

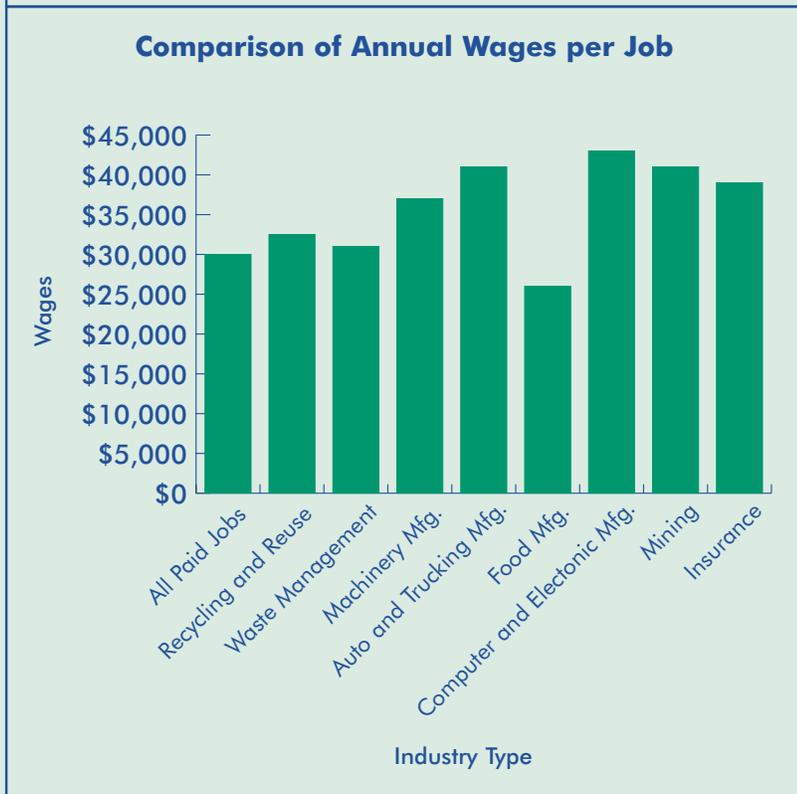
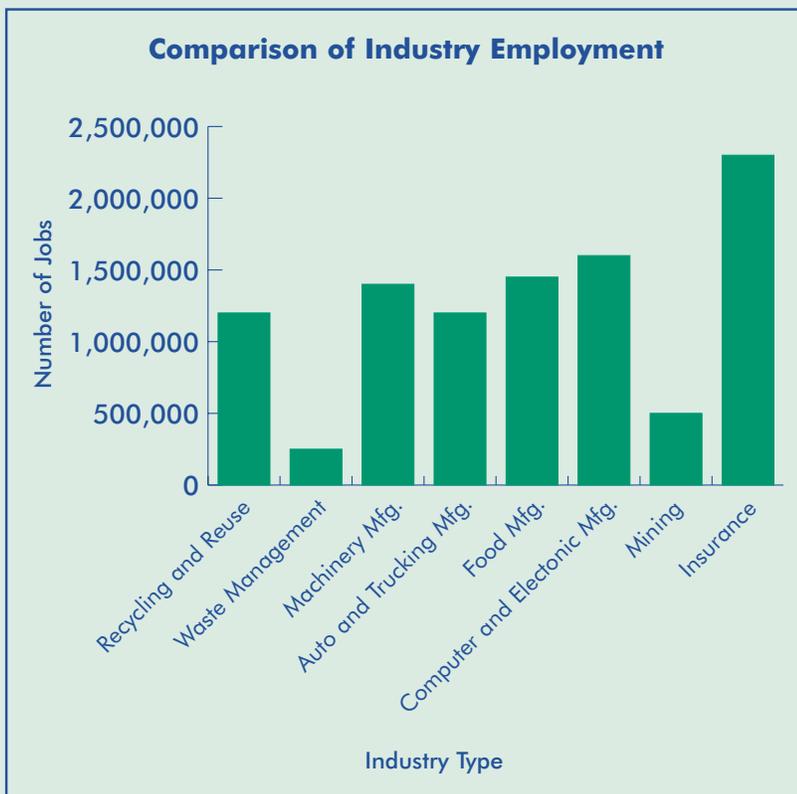
**Recycling Manufacturing Industry Employment by Major Material Group**



## About The Study

The multi-year REI project utilizes the best available data from 1997–1999. The national study was accomplished through a comprehensive analysis of both existing economic data and reasonable estimates based on targeted surveys of recycling businesses and sophisticated economic modeling. For the first time, the national study allows for sound economic comparisons across different regions and states in the country.

The study establishes an important benchmark of the economic impact of recycling and reuse. It lays the groundwork for future studies that could be conducted on a regular basis to track industry growth and trends.



### Recycling and Reuse are Competitive with Other Major Industries

The materials collected for recycling should not be considered waste or garbage—they are valuable commodities that contribute significantly to our growing economy. The increasing supply of recyclables fuels manufacturing industries and makes them more competitive and sustainable.

As a driver of economic activity, the recycling industry compares favorably to other key industries, such as automobile manufacturing and mining. Of particular significance is that recycling far outpaces the waste management industry because recycling adds value to materials, contributing to a growing labor force. Many of these jobs are in inner-city urban areas where job creation is vital to the economy. In these and other areas, recycling provides a large number of jobs that generally pay above the average national wage.

A large number of jobs are also supported by the reuse industry. These range from more traditional thrift shops and antique dealers, to modern businesses such as computer demanufacturers and pallet rebuilders. As a whole, the reuse industry employs nearly 170,000 workers in more than 26,000 establishments nationwide. It supports an annual payroll of \$2.7 billion and generates approximately \$14.1 billion in revenues.

#### For More Information

For additional information on the REI study, see the following:

- EPA's Jobs Through Recycling Program—[www.epa.gov/jtr](http://www.epa.gov/jtr)
- National Recycling Coalition—[www.nrc-recycle.org](http://www.nrc-recycle.org)