Economic Impact Study

U.S.- Based Scrap Recycling Industry 2017





Prepared for the **Institute** for Scrap Recycling

Executive Summary

Scrap recycling is a major U.S.-based industry dedicated to transforming end-of-life products and industrial scrap into new commodity grade materials and driving economies by making the old new again. Recognized as one of the world's first green industries, scrap recycling creates and supports jobs and has a positive impact on the environment by reducing greenhouse gas emissions, saving energy, and protecting our natural resources.

"Recognized as one of the world's first green industries..."

In 2017, the Institute of Scrap Recycling Industries (ISRI), Inc. retained

the independent economic consulting firm of John Dunham & Associates to perform an economic impact analysis to document the size and scope of the scrap recycling industry in the United States and document its significant contribution to the U.S. economy, in terms of employment, tax generation, and overall economic benefit.



The U.S. scrap recycling industry is not only a thriving economic engine, but also a pivotal player in environmental protection, resource conservation, and sustainability. The industry recycled more than 130 million metric tons of materials in 2015, transforming outdated or obsolete scrap into useful raw materials needed to produce a range of new products.¹ Recycling reduces greenhouse gas emissions by significantly saving the amount of energy needed to manufacture the products that we buy, build, and use every day. The energy saved by recycling may then be used for other purposes, such as heating our homes and powering our automobiles.

In addition to being an environmental steward, the study confirmed that the U.S. scrap recycling industry plays a prominent role as an economic leader, job creator, and major exporter. Specifically, the study found that the people and firms that purchase, process, and broker old materials to be manufactured into new products in America provide 534,506 adults with good jobs in the United States² and generate approximately \$116.97 billion annually in economic activity.



	Direct	Supplier	Induced	Total	
Jobs	155,632	175,587	203,287	534,506	
Wages	\$11,908,224,800	\$11,679,223,300	\$10,722,931,500	\$34,310,379,600	
Economic Impact	\$43,816,864,000	\$38,604,351,600	\$34,544,879,500	\$116,966,095,100	

Data from The ISRI Scrap Yearbook 2016, Institute of Scrap Recycling Industries, Inc.

² Based on the Economic Impact of the Scrap Recycling Industry in the United States (2017), produced for the Institute of Scrap Recycling Industries, Inc. by John Dunham & Associates, 2017.

Summary of Findings

Employment: Source of Green Jobs

While many in the public policy world talk about the need for more *green jobs*, the scrap recycling industry has already been creating these environmentally-friendly jobs and other opportunities here in the United States for decades. The study found that in 2017, 155,632 jobs are being directly supported by recycling and brokerage operations of the scrap industry in the United States.³ These are good jobs paying an average of \$76,515 in wages and benefits to American workers. In addition to this, jobs throughout the U.S. economy are indirectly supported by the scrap recycling



industry through suppliers and the indirect impact of the industry's expenditures.⁴



U.S. Scrap Recycling Industry Facilities

These are real people with real jobs — not only in firms that process scrap materials into new, usable commodity inputs, but in firms that supply the industry with recycled materials, like auto yards and independent peddlers, as well as firms that supply machinery, trucks, and services to processors. In addition, thousands of people in industries seemingly unrelated to scrap materials recycling, from servers in restaurants, to construction workers, to teachers in local schools, depend on the re-spending of the wages and taxes paid by scrap recycling industry to their workers and suppliers.

The economic benefits generated by the scrap recycling industry are widespread. Not only are scrap facilities located in every state throughout the country and in both urban and rural communities, but the firms that supply materials, goods and services to processors and brokers are also located in every part of the country. This means that the U.S. scrap recycling industry provides good-paying jobs in every state of the country. The study results are broken down by state, congressional district, state legislative district, and city at **ISRI.org/JobStudy**.

- 3 This includes firms involved in the purchasing, processing, and brokering of scrap materials including ferrous and nonferrous metals, paper, electronics, rubber, plastics, glass, and textiles.
- 4 Direct impacts are those associated with scrap processors and brokers. Supplier impacts are associated with firms providing goods and services to scrap recyclers and brokers, including peddlers, and induced impacts are those resulting from the re-spending of wages by workers in the direct and supplier sectors.

Overall Economic Activity

The activities of the scrap recycling industry in the United States generate nearly \$117 billion annually in economic benefits here at home. All told, the U.S. scrap recycling industry accounts for 0.63 percent of the nation's total economic activity,⁵ making it similar in size to the book publishing industry, the dental industry, and the automotive repair industry.

Tax Revenues to Federal, State, and Local Governments

The scrap recycling industry generates substantial revenues for state and local governments throughout the United States, as well as for the federal government.

- The industry generates about \$4.95 billion in state and local revenues annually, revenues that are used to help communities and people throughout the country.



- Another \$8.26 billion in federal taxes are paid annually by the industry and its employees.

Export Activities: Creating Thousands of Jobs in the United States

Scrap commodities are among the nation's largest exports by value, and overall, exports account for 25 percent of the industry's economic activity. These exports create approximately 134,415 good green jobs in the United States and help strengthen the national economy. According to the study, in 2017, 40,643 jobs are directly supported by the export activities associated with the processing and brokerage operations of scrap recyclers operating in the United States.⁶

This is because scrap materials that are intended for export must be collected, separated, and prepared



for transport out of the United States. The steps in this process provide well-paying U.S. jobs. In fact, were it not for these export markets, many materials, including post-consumer paper and electronics would probably not be recycled at all simply because there is not sufficient demand for them in the United States.⁷ By opening up new markets, the nation's recyclers create demand for materials that might otherwise end up in landfills.

In the case of electronic products, for example, there simply is not enough demand in the United States for the more expensive post-consumer materials, including gold and titanium, that may be smelted out of circuit boards, capacitors, and other electronic

parts. On the other hand, countries like India, where demand for gold is particularly high, see value in these materials.⁸

	Direct	Supplier	Induced	Total	
Jobs	40,643	42,631	51,141	134,415	
Wages	\$3,086,191,900	\$2,906,678,300	\$2,753,032,800	\$8,745,903,000	
Economic Impact	\$10,578,012,800	\$9,490,947,100	\$8,779,920,000	\$28,848,879,900	

Summary Table: Economic Impact of U.S. Scrap Recycling Exports

5 Bureau of Economic Analysis. GDP based on third quarter 2016 value of \$18.555 trillion, see: Gross Domestic Product by State: Third Quarter 2016, February 2, 2017.

6 This includes firms involved in the purchasing, processing, and brokering of scrap materials including ferrous and nonferrous metals, paper, electronics, rubber, plastics, glass, and textiles.

One reason that so much waste paper is sent to China for reprocessing is that wood pulp is very expensive in Asia. In the United States, on the other hand, integrated paper manufacturers use a mixture of pre- and post-consumer recycled paper as well as wood pulp from specially raised forests to manufacture paper products.
India accounted for just over one-quarter of world gold demand in the 2016. Together, India accounted for about 56 percent of world demand. The United States, on the

8 India accounted for just over one-quarter of world gold demand in the 2016. Together, India and China accounted for about 56 percent of world demand. The United States, on the other hand accounted for just about 5 percent. See: Gold Demand Trends Full Year 2014, World Gold Council, May 2017.

The scrap industry is the first link in the global supply chain for the growing demand of all manner of commodities ranging from iron and steel to paper; nonferrous metals such as aluminum, copper, and zinc; plastics; electronics; rubber; and more. The result is economic and environmental sustainability for our nation and our world through the supply of high quality, environmentally-friendly and energy-saving raw materials to the global marketplace.



"The scrap industry is the first link in the global supply chain for the growing demand of all manner of commodities..."

nearly \$17.5 billion in commodity-grade scrap products to more than 150 countries, significantly helping the U.S. balance of trade.⁹ In fact, in terms of volume, scrap materials are among the nation's largest commodity exports, in line with other important commodity export products like grain and corn, cotton, timber, and petroleum. The scrap materials processed in the United States are exported to other countries for manufacture into new products. Rather than encouraging the use of virgin materials, America's recycled materials help reduce worldwide energy demand

and greenhouse gases as well as the need to mine and harvest virgin materials.

Economic Benefits of Exporting Scrap Commodities Are No Different Than Those That Occur Exporting Any Other Product

International trade is an important part of the American economy. In 2016, nearly \$2.21 trillion in goods and services were exported from the United States, and about \$2.71 trillion were imported.¹⁰ More than 41 million Americans work for companies that engage in international trade, according to the U.S. Chamber of Commerce, and one in two jobs depend on exports.¹¹ The U.S. International Trade Association projects that U.S. exports supported an estimated 11.50 million jobs in 2015.¹²

To suggest that the export of recycled commodities would somehow destroy jobs in the United States is no different than stating that the export of corn, or of coal, or of cotton, somehow takes away American jobs.



9 Sources: U.S. Census Bureau/U.S. International Trade Commission: https://dataweb.usitc.gov

- 10 U.S. International Trade in Goods and Services: March 2017, Press Release, U.S. Census Bureau, Bureau of Economic Analysis, May, 11, 2017. Available on-line at: www.census.gov/foreign-trade/Press-Release/current_press_release/index.html#ft900
- 11 The Benefits of International Trade (2016), U.S. Chamber of Commerce, accessed May 2017, Available on-line at: www.uschamber.com/international/international-policy/benefits-international-trade-0
- 12 Jobs Supported by Exports 2015: May 11, 2017, International Trade Association. Available on-line at: www.trade.gov/mas/ian/build/groups/public/@tg_ian/documents/webcontent/tg_ian_005503.pdf

What is the Economic Impact in your Area?



Economic Impact of the Scrap Recycling Industry, 2017 — All Industries

	Direct Jobs	Wages	Output	Suppliers Jobs	Wages	Output	Induced Jobs	Wages	Output	Total Jobs	Wages	Output
Alabama	2,581	\$186,661,800	\$797,640,100	3,050	\$173,118,100	\$614,300,800	3,122	\$137,244,900	\$492,910,100	8,753	\$497,024,800	\$1,904,851,00
Alaska	238	\$23,759,400	\$62,755,500	250	\$20,809,700	\$75,374,700	290	\$17,089,200	\$56,902,100	778	\$61,658,300	\$195,032,3
Arizona	2,694	\$227,999,900	\$724,472,200	2,793	\$172,048,700	\$596,937,500	3,716	\$185,199,200	\$596,093,100	9,203	\$585,247,800	\$1,917,502,8
Arkansas	1,191	\$69,164,700	\$311,277,900	1,132	\$59,383,600	\$227,838,400	1,223	\$52,228,600	\$199,411,900	3,546	\$180,776,900	\$738,528,2
California	14,989	\$1,209,537,400	\$3,927,044,700	16,420	\$1,212,685,500	\$3,891,573,800	19,730	\$1,209,294,800	\$3,683,453,400	51,139	\$3,631,517,700	\$11,502,071,9
Colorado	1,661	\$115,871,900	\$366,568,300	1,891	\$130,453,000	\$427,909,500	2,161	\$116,852,500	\$370,667,400	5,713	\$363,177,400	\$1,165,145,2
Connecticut	1,810	\$146,024,200	\$435,210,200	1,653	\$138,751,800	\$405,395,400	2,105	\$136,260,500	\$389,407,100	5,568	\$421,036,500	\$1,230,012,7
Delaware	273	\$18,903,100	\$58,676,300	259	\$18,395,000	\$59,293,500	295	\$16,240,900	\$55,288,500	827	\$53,539,000	\$173,258,3
District of Columbia	32	\$1,744,600	\$6,288,200	37	\$3,836,600	\$9,431,300	24	\$1,937,100	\$4,640,600	93	\$7,518,300	\$20,360,1
Florida	9,086	\$673,581,000	\$2,800,715,700	12,893	\$745,431,900	\$2,555,912,000	13,893	\$670,417,000	\$2,203,962,000	35,872	\$2,089,429,900	\$7,560,589,7
Georgia	5,627	\$371,392,100	\$1,628,712,300	7,328	\$452,825,000	\$1,501,187,200	7,701	\$382,484,600	\$1,259,701,200	20,656	\$1,206,701,700	\$4,389,600,7
Hawaii	719	\$54,472,900	\$163,359,500	685	\$36,582,700	\$120,528,400	846	\$41,861,800	\$132,574,200	2,250	\$132,917,400	\$416,462,1
Idaho	611	\$63,501,000	\$154,507,400	657	\$34,890,300	\$121,267,200	888	\$36,743,000	\$129,913,000	2,156	\$135,134,300	\$405,687,6
Illinois	7,763	\$728,312,600	\$2,072,461,200	7,663	\$574,851,500	\$1,803,249,900	10,851	\$614,275,800	\$1,905,749,900	26,277	\$1,917,439,900	\$5,781,461,0
	5,360	\$363,205,200	\$1,690,432,800	5,526	\$319,646,800	\$1,138,240,800	6,309	\$290,133,900	\$1,015,441,700	17,195	\$972,985,900	\$3,844,115,3
Indiana												
lowa	1,778	\$96,139,500	\$351,360,600	1,577	\$87,446,800	\$309,818,200	1,884	\$83,939,900	\$316,945,000	5,239	\$267,526,200	\$978,123,8
Kansas	952	\$59,188,900	\$213,853,200	938	\$52,192,300	\$189,554,300	1,102	\$48,482,400	\$185,943,900	2,992	\$159,863,600	\$589,351,4
Kentucky	2,394	\$169,691,100	\$869,015,200	2,940	\$169,289,100	\$612,534,000	3,012	\$135,658,300	\$464,709,500	8,346	\$474,638,500	\$1,946,258,7
Louisiana	1,512	\$105,974,600	\$364,395,800	1,610	\$102,961,300	\$367,101,600	1,792	\$84,381,300	\$298,766,600	4,914	\$293,317,200	\$1,030,264,0
Maine	628	\$32,528,900	\$122,265,800	707	\$35,966,900	\$120,684,100	712	\$32,035,300	\$108,126,600	2,047	\$100,531,100	\$351,076,
Maryland	1,932	\$137,479,500	\$438,185,600	1,830	\$124,849,500	\$397,529,100	2,183	\$122,639,000	\$383,140,400	5,945	\$384,968,000	\$1,218,855,
Massachusetts	3,194	\$283,038,100	\$852,254,600	2,885	\$239,506,700	\$656,046,200	3,868	\$256,743,400	\$687,693,900	9,947	\$779,288,200	\$2,195,994,
Michigan	5,752	\$427,986,800	\$1,417,271,300	6,009	\$383,063,200	\$1,255,593,900	7,484	\$367,015,700	\$1,196,456,900	19,245	\$1,178,065,700	\$3,869,322,
Minnesota	3,970	\$275,606,700	\$990,649,900	4,241	\$290,254,600	\$930,863,100	5,280	\$282,655,400	\$888,623,100	13,491	\$848,516,700	\$2,810,136,
Mississippi	1,314	\$99,237,000	\$499,467,600	1,802	\$88,233,700	\$340,511,200	1,659	\$64,455,500	\$250,588,000	4,775	\$251,926,200	\$1,090,566,8
Missouri	2,879	\$182,001,700	\$614,427,100	2,827	\$168,673,200	\$577,998,000	3,514	\$166,180,600	\$569,698,700	9,220	\$516,855,500	\$1,762,123,
Montana	359	\$20,868,000	\$80,797,400	417	\$23,627,600	\$91,515,900	434	\$17,891,900	\$63,690,200	1,210	\$62,387,500	\$236,003,
Nebraska	804	\$50,926,300	\$182,776,100	790	\$44,687,000	\$163,450,400	945	\$42,152,800	\$170,906,400	2,539	\$137,766,100	\$517,132,9
Nevada	1,240	\$92,198,200	\$274,976,800	1,256	\$76,566,900	\$254,178,600	1,433	\$71,374,300	\$234,210,000	3,929	\$240,139,400	\$763,365,4
New Hampshire	634	\$45,130,900	\$143,147,400	625	\$40,336,300	\$118,185,700	763	\$40,768,100	\$118,440,100	2,022	\$126,235,300	\$379,773,2
	5,651											
New Jersey		\$489,120,600	\$1,781,754,600	5,237	\$430,687,700	\$1,288,179,100	6,731	\$424,757,000	\$1,239,882,800	17,619	\$1,344,565,300	\$4,309,816,5
New Mexico	409	\$34,067,700	\$96,911,600	443	\$26,837,900	\$101,792,100	531	\$23,828,700	\$85,614,600	1,383	\$84,734,300	\$284,318,3
New York	6,717	\$530,574,000	\$1,728,854,800	6,529	\$568,885,200	\$1,627,327,500	7,486	\$517,523,300	\$1,500,443,500	20,732	\$1,616,982,500	\$4,856,625,
North Carolina	5,308	\$319,026,600	\$1,377,033,200	6,198	\$359,744,400	\$1,278,450,500	6,555	\$315,505,000	\$1,086,184,900	18,061	\$994,276,000	\$3,741,668,6
North Dakota	326	\$23,852,300	\$83,731,000	325	\$23,463,300	\$75,257,100	371	\$19,197,200	\$64,218,500	1,022	\$66,512,800	\$223,206,6
Ohio	8,376	\$628,080,000	\$2,537,825,500	10,003	\$641,625,800	\$2,214,870,500	11,719	\$572,732,400	\$1,949,230,000	30,098	\$1,842,438,200	\$6,701,926,0
Oklahoma	1,150	\$70,401,600	\$262,608,700	1,363	\$81,650,100	\$299,916,100	1,446	\$66,919,700	\$241,563,700	3,959	\$218,971,400	\$804,088,5
Oregon	3,619	\$283,353,800	\$1,094,016,000	4,595	\$289,693,900	\$903,815,600	5,092	\$247,166,300	\$769,448,900	13,306	\$820,214,000	\$2,767,280,
Pennsylvania	6,244	\$466,807,200	\$1,500,803,700	6,097	\$438,694,800	\$1,376,492,700	7,858	\$440,544,100	\$1,346,385,200	20,199	\$1,346,046,100	\$4,223,681,6
Rhode Island	625	\$44,935,200	\$147,696,100	574	\$36,515,000	\$109,126,100	726	\$38,583,800	\$117,771,400	1,925	\$120,034,000	\$374,593,
South Carolina	3,398	\$284,164,800	\$823,669,500	3,177	\$186,532,600	\$647,388,000	4,054	\$179,057,000	\$619,730,800	10,629	\$649,754,400	\$2,090,788,
South Dakota	447	\$20,197,500	\$80,890,400	445	\$22,110,700	\$84,892,700	506	\$20,874,400	\$85,004,900	1,398	\$63,182,600	\$250,788,0
Tennessee	4,107	\$330,159,300	\$1,476,850,400	5,355	\$331,436,300	\$1,115,504,100	5,898	\$299,753,300	\$953,355,500	15,360	\$961,348,900	\$3,545,710,
Texas	10,640	\$820,939,100	\$2,978,321,300	12,993	\$950,333,200	\$3,240,738,400	14,554	\$793,482,200	\$2,631,216,300	38,187	\$2,564,754,500	\$8,850,276,0
Utah	1,106	\$92,469,900	\$293,058,800	1,287	\$75,247,200	\$270,462,800	1,549	\$70,043,600	\$248,557,000	3,942	\$2,364,734,300	\$8,850,276,
Vermont	624	\$34,411,600	\$129,165,200	570	\$29,126,100	\$96,737,200	677	\$31,043,900	\$98,941,200	1,871	\$94,581,600	\$324,843,6
Virginia	2,788	\$183,462,800	\$706,502,900	2,734	\$190,640,700	\$609,242,600	3,147	\$167,563,800	\$542,444,900	8,669	\$541,667,300	\$1,858,190,
Washington	4,729	\$479,904,800	\$1,966,835,300	6,771	\$492,524,100	\$1,627,340,400	7,212	\$395,988,400	\$1,264,765,400	18,712	\$1,368,417,300	\$4,858,941,
West Virginia	838	\$53,297,500	\$245,947,600	1,081	\$69,135,700	\$265,843,400	1,011	\$46,004,700	\$161,169,200	2,930	\$168,437,900	\$672,960,2
Wisconsin	4,355	\$374,203,700	\$1,847,289,100	6,882	\$393,946,800	\$1,349,112,500	6,729	\$316,121,600	\$1,060,011,300	17,966	\$1,084,272,100	\$4,256,412,9
Wyoming	198	\$12,666,800	\$42,131,600	237	\$19,026,500	\$87,857,500	216	\$11,603,400	\$44,884,000	651	\$43,296,700	\$174,873,
Total	155.632	\$11.908.224.800	\$43,816,864,000	175.587	\$11.679.223.300	\$38.604.351.600	203.287	\$10.722.931.500	\$34,544,879,500	534.506	\$34.310.379.600	\$116,966,095,

John Dunham & Associates: 2017

Study Methodology

The Scrap Recycling Industry Economic Impact Study estimates the economic contributions made by the various components of the scrap processing industry to the U.S. economy in 2017. John Dunham & Associates conducted this research, which was funded by the Institute of Scrap Recycling Industries, Inc. (ISRI). This work used standard econometric models maintained by the IMPLAN Group LLC.¹³ Data came from industry sources, government publications, and Infogroup.

The study defines the scrap recycling industry as firms in the private sector involved in the processing and brokerage of scrap metals, plastics, rubber, paper, textiles, glass, and electronics. The study measures the number of jobs in the sector, the wages paid to employees, the value added, and total output.

The study also estimates taxes paid by the industry and its employees. Federal taxes include industryspecific excise and sales taxes, business and personal income taxes, FICA, and unemployment insurance. State and local tax systems vary widely. Direct retail taxes include state and local sales taxes, license fees, and applicable gross receipt taxes. Processors pay real estate and personal property taxes, business income taxes, and other business levies that vary in each state and municipality. All entities engaged in business activity generated by the industry pay similar taxes.

The economic impact study begins with an accounting of the direct employment in the processing of recycled scrap materials and the materials brokerage sectors. The data come from a variety of government and private sources. It is sometimes mistakenly thought that initial spending accounts for all of the impact of an economic activity or a product. For example, at first glance it may appear that consumer expenditures for a product are the sum total of the impact on the local economy. However, one economic activity always leads to a ripple effect whereby other sectors and industries benefit from this initial spending. This interindustry effect of an economic activity can be assessed using multipliers from regional input-output models.

Industries are linked to each other when one industry buys from another to produce its own products. Each industry in turn makes purchases from a different mix of other industries, and so on. Employees in all industries extend the economic impact when they spend their earnings. Thus, economic activity started by the scrap recycling industry is linked to other industries in the state and national economies. The activities required to process a ton of scrap iron; from sorting, to cutting to baling, to shipping, generate the direct effects on the economy. Regional (or indirect) impacts occur when these activities require purchases of goods and services, such as machinery or electricity, from local or regional suppliers. Additional induced impacts occur when workers involved in direct and indirect activities spend their wages. The ratio between induced economic and direct impact is termed the multiplier.

Once the direct impact of the industry has been calculated, the impact of supplier firms, and the "Induced Impact" of the re-spending by employees of industry and supplier firms, is calculated using an input/output model of the United States. The study calculates the impact on a national basis, by state, by congressional and state legislative districts, and by city.

This method of analysis allows the impact of local production activities to be quantified in terms of final demand, earnings, and employment in the states and the nation as a whole. In the case of the ISRI model, only the most conservative estimate of the induced impact has been used.

Additional detail on the methodology used for this study can be found in ISRI.org/JobStudy.

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Scrap Recycling Industry Impact Summary and Methodology John Dunham and Associates, 2017 (guerrillaeconomics.com)