

# THE UNTAPPED JOB POTENTIAL OF INDIANA'S RECYCLING INDUSTRY

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Prepared for  
Indiana Recycling Coalition

Prepared by  
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**FOR PUBLIC AFFAIRS**



# THE UNTAPPED JOB POTENTIAL OF INDIANA'S RECYCLING INDUSTRY

The study recognizes the importance of giving economic value to materials commonly thrown away (e.g., paper, glass, plastics, metals and durable goods), and views any recyclable material as a significant economic commodity that can create a strong workforce and stimulate job growth. Existing waste diversion studies show a direct correlation between recycling and job creation. The Tellus Institute study titled, “More Jobs, Less Pollution” (2011), the R.W. Beck report, “The U.S. Recycling Economic Information Study” (2001) and the recent New Mexico Recycling Coalition study titled, “Adding 5,000 Jobs to New Mexico’s Economy” (2013) are among the most frequently referenced jobs studies in this policy area. These jobs studies provide important economic job growth metrics, which this study uses to estimate the potential job growth opportunities that would be created through higher statewide recycling rates in Indiana.

This study uses the best available materials recovery data found in the Purdue-Calumet University statewide report “Municipal Solid Waste Characterization Study for Indiana” (2012) and the U.S. Environmental Protection Agency’s “2010 Facts and Figures” report to assess realistic job growth opportunities in Indiana. Three waste diversion rates are used in the study to show differences in job growth opportunities if Indiana were to divert 10%, 25% or 50% of the municipal solid waste (MSW) landfilled and incinerated in the state.

The study includes a count of existing recycling-related jobs in the state of Indiana. Information on the number and variety of these jobs was gathered through Internet, telephone, and email inquiries. Three studies were used to help inform the scope and methodology of counting current recycling-related jobs in Indiana including the study from the

North Carolina’s environmental management agency titled, “Employment Trends in North Carolina’s Recycling Industry” (2010), the Southeast Recycling Development Council (SERDC) study titled, “Mapping Demand for Recycled Content Material” (2011) and the recent 2013 EPA Region 5 draft list and map of manufacturers that use recycled material feedstock.

Special attention was given to documenting the current number of electronic-waste (e-waste) jobs within Indiana’s economy, a byproduct of the 2009 Indiana Electronic Waste Law (Indiana Code 13-20-5).

Environmental benefits resulting from the increased statewide diversion rates were also documented using EPA’s WARM model that reports reductions in climate changing eCO<sub>2</sub> greenhouse gas emissions as a result of increased recycling practices.

The Indiana Recycling Coalition (IRC) commissioned this report to provide valuable data that demonstrates the important economic benefits associated with recycling. Perhaps most importantly, this study shows that increased recycling leads to the creation of new jobs. In support of its mission statement, the IRC believes policies that provide new funding for recycling infrastructure and education, and the reinstatement of existing Indiana Recycling Fund dollars will lead to increased recycling, which in turn, will create thousands of new jobs for Hoosiers.

The IRC will continue to work with policy stakeholders to identify additional solutions to advance recycling. The IRC looks forward to future discussions on these issues. Recycling is not just good for our environment. Recycling creates local jobs and supports a stronger workforce in Indiana.

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# INDIANA: WHAT ARE WE THROWING AWAY?

Before examining the impact of recycling on job creation, it is important to understand the composition of the current municipal solid waste (MSW) that is going to landfills and incinerator facilities in Indiana. This involves characterizing the discarded waste, reporting its tonnage and evaluating the potential of each discarded material to be diverted through recycling and composting. This profile of the Indiana MSW by material type is an essential starting point for estimating the job growth potential that could occur if the state significantly increased its recycling and compost activities rather than throwing it all away.

**Over 92% of what gets thrown away in Indiana is valuable recyclable and compostable material.**

## KEY FINDINGS

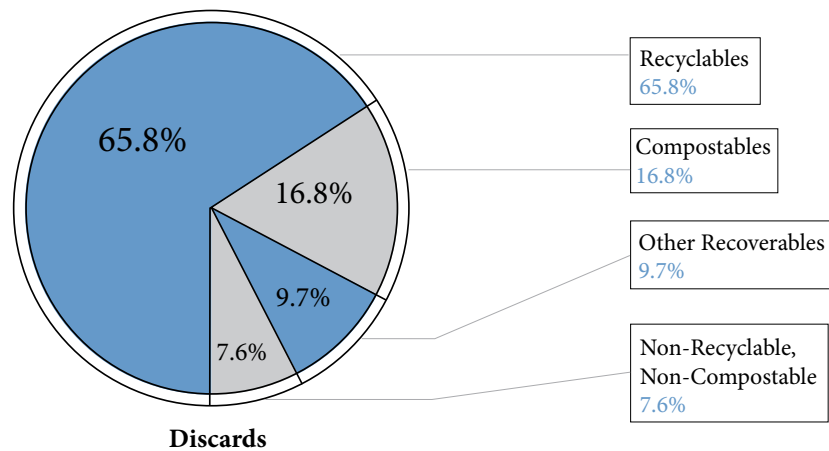
- ➡ Hoosiers send about 6 million tons of material to their landfills and incinerator facilities each year. **Less than 10 percent of what gets discarded is considered to be a non-recyclable, non-compostable material (it's truly trash).** Paper and paperboard, plastics and food scraps constitute the largest share of the total waste (over 50 percent) amounting to 3.2 million tons of discarded material annually. **Most of what gets landfilled and incinerated by Hoosiers, about 5.5 million tons, is comprised of recyclable and compostable materials.**
- ➡ **A further assessment of Indiana's waste data reveals that about 66 percent of what's landfilled or incinerated is not just garbage but a valuable commodity that manufacturers refer to as "recycled content feedstock".** Increasing Indiana's recycling rate could result in substantially more paper, plastic, metals, and glass cullet each year worth millions of dollars to Indiana manufacturers as recycled feedstock.
- ➡ Overall, a total of 8.6 million tons of materials is sent to Indiana landfills and incinerator facilities each year<sup>1</sup>. Approximately 30 percent of this waste is imported from other states (Illinois, Ohio, Michigan and Kentucky). About 2.2 million tons is from Illinois and this constitutes roughly one quarter of all the landfilled/incinerated material in the state of Indiana each year. **Most of Indiana's 2.6 million annual tons of imported waste has the potential to be recycled and composted, but almost all of it is buried in our statewide landfill facilities.**

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<sup>1</sup> Abramowitz and Sun. 2012, Purdue-Calumet University "Municipal Solid Waste Characterization Study For Indiana".

## TOTAL MATERIALS DISCARDED IN INDIANA MUNICIPAL SOLID WASTE FACILITIES<sup>1</sup> (IN PERCENT OF TOTAL DISCARDS)

8.6 million tons discarded with imports



<i>Estimated Amount of Municipal Solid Waste Landfilled/Incinerated in Indiana Annually</i>				
	IN-STATE WASTE		TOTAL WASTE DISCARDED	
	INDIANA WASTE		INDIANA WASTE + IL, OH, MI, KY IMPORTS	
MATERIALS	Amount (tons)	Percentage	Amount (tons)	Percentage
<b>Recyclables</b>	<b>3,990,566</b>	<b>66.5%</b>	<b>5,659,100</b>	<b>65.8%</b>
Paper and Paperboard	1,679,670	28.0%	2,302,664	26.8%
Plastic	1,002,396	16.7%	1,384,406	16.1%
Metals	350,578	5.8%	487,879	5.7%
Glass	172,251	2.9%	256,067	3.0%
Other				
Wood	406,093	6.8%	648,110	7.5%
Textiles & Leather	338,794	5.6%	532,862	6.2%
Rubber	40,784	<1.0%	47,112	<1.0%
<b>Compostables</b>	<b>1,015,906</b>	<b>16.9%</b>	<b>1,447,441</b>	<b>16.8%</b>
Food Scraps	591,557	9.9%	937,119	10.9%
Yard Trimmings	424,349	7.1%	510,322	5.9%
<b>Other Recoverables: Specialty Materials</b>	<b>569,405</b>	<b>9.5%</b>	<b>837,967</b>	<b>9.7%</b>
Construction & Demolition Debris**	324,662	5.4%	517,260	6.0%
Durable Goods	209,325	3.5%	272,332	3.2%
Household Hazardous Materials	35,418	<1.0%	48,375	<1.0%
<b>Non-Recyclable, Non-Compostable</b>	<b>421,083</b>	<b>7.0%</b>	<b>656,010</b>	<b>7.6%</b>
Super Fine Mix	163,955	2.7%	260,353	3.0%
Diapers	190,987	3.2%	255,175	3.0%
Paper, Non-recyclable, Non-compostable	65,652	1.1%	139,445	1.6%
Sharps	489	<1.0%	1,037	<1.0%
<b>Total Discards</b>	<b>5,996,960 tons</b>	<b>100%</b>	<b>8,600,518 tons</b>	<b>100%</b>

\*\* Construction & Demolition Debris totals do not include materials found in designated construction & demolition landfills.

# INDIANA: RECYCLING = JOBS

The study uses nationally recognized economic job growth metrics to estimate the number of jobs created per 1,000 tons of municipal solid waste (MSW) managed through waste disposal and recycling activities.

Current metrics indicate that discarding waste is not labor intensive and creates only 0.76 jobs per 1,000 tons of materials handled through collection and landfilling/incineration. Waste disposal companies typically use capital intensive equipment that can manage many tons of MSW with very few workers.

By contrast, the collection and processing of recyclable/compostable materials is far more labor intensive. Collecting and sorting recyclable material requires three to four times more employees than landfilling/incinerating the same material. Manufacturers that use recycled feedstock are the primary drivers of recycling-related jobs and job creation varies considerably according to the recycled material used and the sector.

**On average, recycling creates 10 times more jobs than sending waste to the landfill.**

## *Direct Job Multiplier Table*

	DISCARDED	DIVERTED
	Total Waste Collection, Landfill, and Incineration	Recycling Collection, Processing, and Manufacturing
<b>MATERIALS</b>	<i>Jobs Created/1,000 tons</i>	
<b>Recyclables</b>		
Paper & Paperboard	0.76	7.39
Plastics	0.76	13.53
Metals		
Ferrous	0.76	7.35
Aluminum	0.76	20.86
Other Nonferrous	0.76	20.86
Glass	0.76	11.08
Other		
Wood	0.76	6.03
Textiles	0.76	5.73
Rubber	0.76	12.47
<b>Compostables</b>		
Food Scraps	0.76	2.48
Yard Trimmings	0.76	2.48

## KEY FINDINGS

- ➔ Data from the job multiplier table indicate that **recycling (including composting) creates, on average, ten times more jobs than garbage collecting, landfilling and incineration.**
- ➔ The Indiana MSW data indicate that there are significant opportunities for diverting more waste through recycling and composting. Job growth metrics suggest that **increasing Indiana’s MSW diversion rate would lead to thousands of new jobs for Hoosiers.**
- ➔ If Indiana were to increase its diversion (recycling/composting) rate of in-state waste by 10%, job multiplier data suggest that Hoosiers would see the creation of 3,877 new jobs. A 25% increase in the diversion rate would create 9,908 new jobs, and **a 50% increase in the state’s diversion rate of in-state waste would lead to almost 20,000 new Indiana jobs.**
- ➔ Since the collection and processing requirements for managing in-state MSW may be different from the waste imported into the state, job creation estimates for diverting in-state waste are reported separately from the total MSW results with imports. If Indiana were to increase its diversion (recycling/composting) rate of total waste discarded by 10%, job multiplier data suggest that Hoosiers would see the creation of 5,497 new jobs. A 25% increase in the diversion rate would create 13,991 new jobs, and **a 50% increase in the state’s diversion rate of total waste discarded would lead to almost 28,000 new Indiana jobs.**

### ***Estimated Direct Jobs in Indiana:***

#### *Potential Jobs Created by Redirecting Waste to Recycling and Composting Businesses*

	10% Increase Diversion Rate		25% Increase Diversion Rate		50% Increase Diversion Rate	
	In-State Waste	Total Waste Discarded	In-State Waste	Total Waste Discarded	In-State Waste	Total Waste Discarded
<b>MATERIALS</b>	<i>Jobs Created/1,000 tons</i>					
<b>Recyclables</b>						
Paper & Paperboard	1,242	1,700	3,289	4,510	6,577	9,013
Plastics	1,353	1,867	3,396	4,682	6,778	9,363
Metals	351	523	889	1,302	1,759	2,617
Glass	187	288	477	709	953	1,418
Other						
Wood	247	392	615	977	1,224	1,954
Textiles	195	304	488	763	966	1,524
Rubber	50	62	124	150	250	300
<i>Sub Total</i>	<i>3,625</i>	<i>5,136</i>	<i>9,278</i>	<i>13,093</i>	<i>18,507</i>	<i>26,189</i>
<b>Compostables</b>						
Food Scraps	147	234	367	581	734	1,163
Yard Trimmings	105	127	263	317	526	633
<i>Sub Total</i>	<i>252</i>	<i>361</i>	<i>630</i>	<i>898</i>	<i>1,260</i>	<i>1,796</i>
<b>Total Jobs Created in Indiana (FTE)</b>	<b>3,877</b>	<b>5,497</b>	<b>9,908</b>	<b>13,991</b>	<b>19,767</b>	<b>27,985</b>

# INDIANA: MANUFACTURERS THAT USE RECYCLED FEEDSTOCK

The Solid Waste Management Fund (SWMF), more commonly referred to as the Indiana Recycling Fund of 1990, was established by state lawmakers for the specific purpose of building more robust in-state recycling programs and investing in Hoosier businesses who wanted to make large capital investments in the state's recycled commodity processing and manufacturing infrastructure. The intent of the program is to increase the state's waste diversion rate while creating new recycling opportunities (including job creation) that support commodity manufacturers who use recycled content feedstock in their products.

The Recycling Fund is generated from the state's fifty cent disposal fee collected from every ton of municipal solid waste (MSW) that is landfilled or incinerated in Indiana. The 2013 Indiana General Assembly approved a one million dollar annual appropriation to fund the program. Collectively, these efforts indicate legislative support for an increase in recycling and providing financial support for Hoosier commodity manufacturers who use recycled content feedstock.

**The study found 77 Indiana manufacturers that use recycled feedstock. These manufacturers employ over 30 thousand Hoosiers in recycling-related jobs.**

## KEY FINDINGS

- ➔ **A statewide count conducted as part of this jobs study identified 77 Hoosier manufacturers that use and depend on recycled content feedstock to make new consumer products.** The study also found that there is a manufacturer of each major commodity sector that uses recycled feedstock (paper, plastics, metals and glass) in the state of Indiana.
- ➔ **Based on the data collected, it is estimated that there are over 30 thousand Hoosiers currently working in manufacturing jobs that use and depend on recycled content feedstock.<sup>2</sup>**
- ➔ The study found that most manufacturers are using recycled feedstock from post-consumer sources and industrial trimmings/scrap. Many of the manufacturers reported that they are not operating at full capacity. Additional recycled feedstock could be used if available. **These findings suggest that there is a market demand for additional recycled feedstock that could be met by diverting more waste from Indiana's landfills and incinerator facilities.**

<sup>2</sup>The study counted Indiana manufacturing jobs that use recycled feedstock to make new consumer products and excludes from the count processors and MRFs. Adapted from the study by Sagar (2011) and Tellus (2011).



# ECONOMIC BENEFITS OF USING RECYCLED FEEDSTOCK

## Manufacturing Jobs Using Recycled Feedstock <sup>2</sup>

### RECYCLING SUPPORTS INDIANA JOBS

Indiana manufacturers that use recycled feedstock support over thirty thousand full-time Hoosier jobs.

**Direct Hoosier Jobs = 30,447 FTE**

Indiana Manufacturers	Number of Jobs
Paper	819
Plastics	2,346
Metals	24,313
Glass	1,881
Other	1,088
<b>Total</b>	<b>30,447</b>

Recycled Feedstock Commodity	Type of Indiana Manufacturers Included
<b>Paper</b>	Paper mills that produce paper, corrugated cardboard, tube and coreboard, and other paper products. Examples: producers of fiberboard/paperboard packaging, corrugated packaging, paper tableware products, cellulosic insulation, and egg cartons.
<b>Plastic</b>	Manufacturers that shred plastic to produce plastic flakes to make new consumer goods; Manufacturers that extrude and pelletize plastic to produce plastic pellets to make new consumer goods; Manufacturers that use blow molding to produce containers; Manufacturers that use film molding to produce plastic bags and film; Manufacturers that use injection molding to produce miscellaneous plastic items. Examples: producers of plastic bottles, foam containers, coolers, pallets, auto/truck parts, single-use food containers, and plastic lumber.
<b>Metals</b>	Nonferrous product producers including extrusion and rolling for pipe, coil, sheet, tubing, and other products. Steel mills and foundries producing slab, bar, sheet, billet, and other shapes; Rolling mills producing pipe, cable, beam, bolt, and other shapes. Examples: producers of aluminum billet/logs, 3000 series alloys, producers of steel plate, coil, wire, and nail.
<b>Glass</b>	Manufacturers using recycled glass and glass cullet to produce containers and other glass products. Examples: producers of glass containers (i.e. bottles and jars), fiberglass insulation, flexible fiberglass air duct systems, and ceramic tile.
<b>Misc.</b>	Manufacturers that shred forklift tires to produce mulch, wood pallet manufacturers, and producers of wood mulch from scrap wood pallets.






\*Table adapted from 2013 EPA Region 5 draft list and map of manufacturers that use recycled material feedstock.

# INDIANA: ACHIEVEMENTS OF THE STATE'S E-WASTE LAW

The Indiana Electronic Waste Law of 2009 holds manufacturers of video display devices (e.g., televisions, monitors and laptops) responsible for collecting and recycling 60% (by weight) of the volume of products they sold in the previous year in Indiana. Additionally, the state's e-waste law as of January 1, 2011 bans households, small businesses and public schools from disposing electronic waste in the trash. The intent of the law is to safely recycle more electronic devices as opposed to having these items landfilled/incinerated or shipped overseas to unsafe manufacturing environments in other countries.

## KEY FINDINGS

**In 2012, 61 Indiana businesses helped recycle over 39,000 tons of e-waste. Over half reported starting their businesses following the enactment of the 2009 Indiana E-Waste Law.**

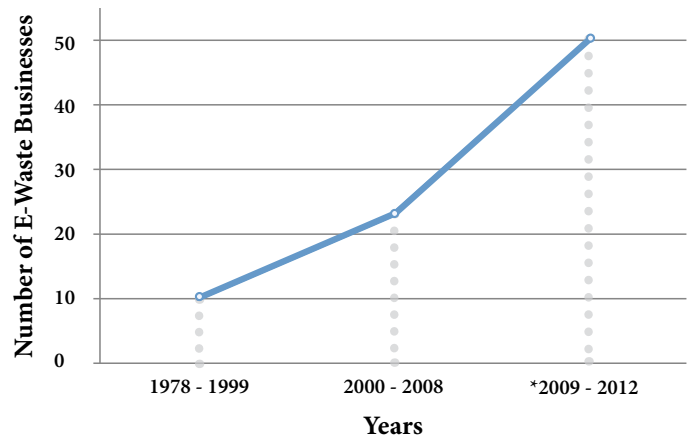
-  **The study identified 61 Indiana businesses that help recycle electronic waste.** Over half started their e-waste collection business within the last four years after the state enacted its e-waste law in 2009.
-  **The study found the total amount of e-waste collected and recycled by Indiana e-waste businesses exceeded 39 thousand tons in 2012.** Three companies accounted for over half of this total. They reported that each collected and processed over 5 thousand tons (10 million pounds) that year.
-  **The study found that the new e-waste law provides statewide economic benefits that have led to the creation of new recycling sector jobs.** The study found 30 percent of Indiana e-waste businesses had hired additional employees as a result of the 2009 Indiana E-Waste Law. **There are an estimated 1,384 Hoosiers working in jobs directly related to e-waste recycling.**
-  The study found that small businesses have rapidly entered the sector. About 90 percent of Indiana's e-waste businesses employ fewer than 50 employees. Four Indiana companies reported that they each had over 100 workers dedicated to e-waste recycling. **Continued program support from the state can help grow the Indiana e-waste business sector, creating even more Hoosier jobs.**
-  **The study found that Indiana's e-waste law supports the efforts to lower greenhouse gas emissions.** Using EPA's model, the 39 thousand tons of e-waste recovered by Indiana businesses in 2012 prevented the release of 92 thousand metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>E). This reduction in climate-changing greenhouse gases is comparable to the annual emissions from 19 thousand passenger vehicles.

# CHARACTERISTICS OF INDIANA E-WASTE BUSINESSES

## Year Established E-Waste Collection Business

Year Established	Number of E-Waste Businesses	Percentage
1978-1999	10	20%
2000-2008	13	26%
*2009-2012	27	54%
<b>Total (N = 61)</b>	<b>50</b>	<b>100%</b>

\*2009: Indiana Electronic Waste Law Established



## Size of Indiana E-Waste Businesses

Number of Employees (FTE)	Number of E-Waste Businesses	Percentage
<10	35	59%
10 - 49	20	34%
50 - 99	0	0%
100+	4	7%
<b>Total (N = 61)</b>	<b>59</b>	<b>100%</b>

## E-WASTE RECYCLING IN THE HOOSIER STATE:

### REDUCES WASTE

Total amount collected and processed by Indiana e-waste businesses:

**39,550 tons recycled in 2012**

### SUPPORTS A STRONGER WORKFORCE

Recycling e-waste supports over one thousand full-time Hoosier jobs.

**Direct jobs = 1,384 FTE**

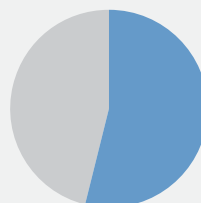
### LOWERS GREENHOUSE GAS EMISSIONS

Recycling over 39,000 tons of e-waste prevented the release of 92,000 MTCO<sub>2</sub>:

**Equivalent to the annual emissions of 19,000 passenger vehicles.**

### CREATES LOCAL BUSINESSES

Many of Indiana's current e-waste businesses reported starting their business after the state enacted its 2009 E-Waste Law.



**Over 50% reported starting new e-waste businesses.**

# ACKNOWLEDGEMENTS

Special thanks go out to the Indiana Recycling Coalition (IRC) for commissioning this study and its Executive Director, Carey Hamilton, for her invaluable contributions to the study's content and vision. It has truly been a pleasure to work with the IRC and Ms. Hamilton on this project. Thanks to Ms. Hamilton's dedicated leadership the IRC continues to work with public officials, businesses, and local organizations to realize the economic and environmental benefits of recycling in the Hoosier state. Additional thanks go to the staff at the Bowen Center for Public Affairs at Ball State University. The facilities and support of the Bowen Center staff were invaluable in the completion of this study. The Bowen Center's Laura Merriman provided important contributions to the report's copy editing and design and I'm truly thankful for her service and time.

■ Stacy Wheeler, *Principal Consultant*  
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# APPENDIX I

## Direct Job Multiplier Table

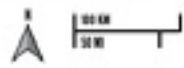
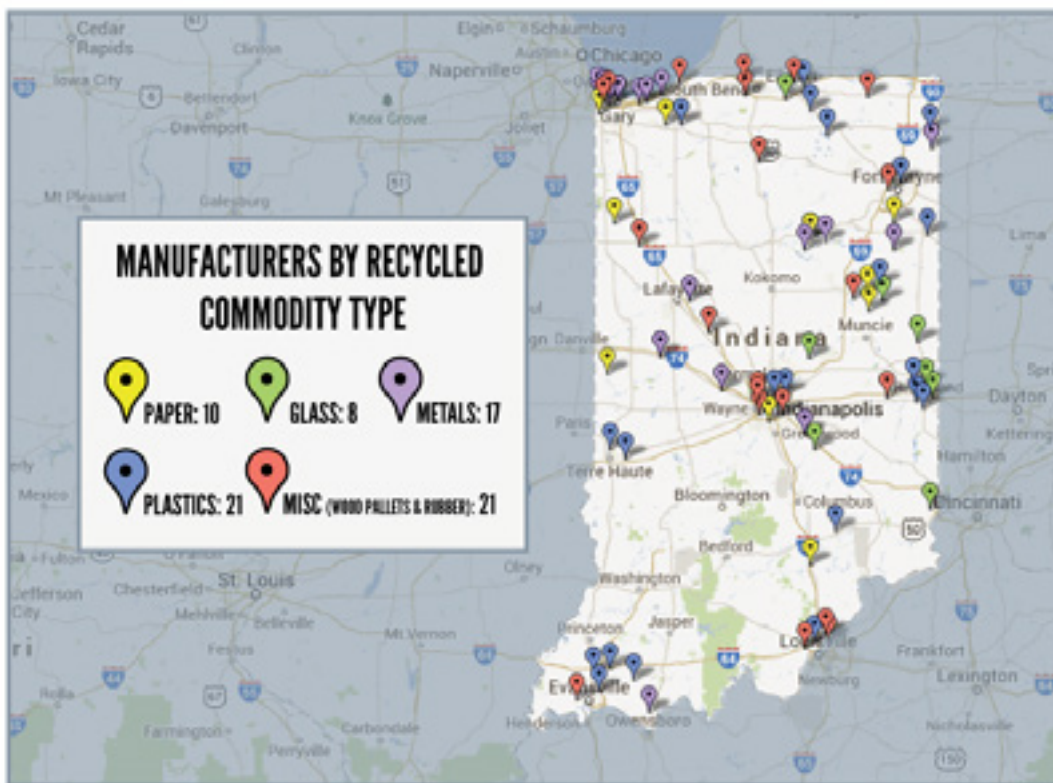
	DISCARDED	DIVERTED		
	Total Waste Collection, Landfill, and Incineration	Collection	Processing	Manufacturing
<b>MATERIALS</b>	<i>Jobs Created/1,000 tons</i>			
<b>Recyclables</b>				
Paper & Paperboard	0.76	1.23	2	4.16
Plastics	0.76	1.23	2	10.3
Metals				
Ferrous	0.76	1.23	2	4.12
Aluminum	0.76	1.23	2	17.63
Other Nonferrous	0.76	1.23	2	17.63
Glass	0.76	1.23	2	7.85
Other				
Wood	0.76	1.23	2	2.8
Textiles	0.76	1.23	2	2.5
Rubber	0.76	1.23	2	9.24
<b>Compostables</b>				
Food Scraps	0.76	1.23	1.25	N/A
Yard Trimmings	0.76	1.23	1.25	N/A

\*Job multipliers are based on national information and do not apply specifically to any one state. Job multipliers are conservative estimates of job growth per 1,000 tons of material handled. The study used more conservative job multipliers for diverted collected materials category as recommended by the Tellus Institute study. The study used Kristen Brown's updated job multipliers for food scraps and yard trimmings. Job multipliers are from the following studies: R.W. Beck (2001); Tellus Institute (2011); Kristen Brown (2013).

# APPENDIX II

## DEMAND FOR RECYCLED CONTENT MATERIAL IN INDIANA

*This map highlights key manufacturers who look to recycled materials to make their products.*



Sources:  
"The Untapped Job Potential of Indiana's Recycling Industry"  
Bowen Center for Public Affairs, Ball State University, July 31, 2013.  
Google Maps 2013

# FOR ADDITIONAL INFORMATION, CONTACT

## THE UNTAPPED JOB POTENTIAL OF INDIANA'S RECYCLING INDUSTRY

### INDIANA RECYCLING COALITION

The Indiana Recycling Coalition is a not-for-profit, 501 (c)(3) corporation representing concerned citizens, state and local government officials, business, industry and environmental groups since December of 1989.

The mission of the Indiana Recycling Coalition is to support source reduction, reuse, composting, and recycling activities in Indiana. The Indiana Recycling Coalition supports policies and programs that advance sustainable materials management. The goal of this support is to conserve our natural resources, reduce energy use, encourage environmental responsibility and create green jobs through recycling.

Indiana Recycling Coalition, Inc.  
Phone: 317.632.5915  
[www.indianarecycling.org](http://www.indianarecycling.org)



### BOWEN CENTER FOR PUBLIC AFFAIRS

The Bowen Center for Public Affairs is a freestanding center at Ball State University in the College of Sciences and Humanities and is allied with the Department of Political Science. The mission of the Bowen Center for Public Affairs is to promote civic engagement, public service, and effective public policy by providing non-partisan educational and professional opportunities.

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