



Indiana Department of Environmental Management

2016 Recycling Activity Summary

Overview of 2016 data reported by municipal solid waste recyclers required to report recycling activities to meet the 50 percent recycling goal mandated by the Indiana legislature.

Office of Program Support
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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2016 Recycling Activity Summary

The Indiana Department of Environmental Management (IDEM) is responsible for providing a summary of the information collected from municipal solid waste recyclers, which are legislatively required to report their recycling activity. This report fulfills that requirement by presenting an overview of 2016 state recycling data results. The report also evaluates Indiana's progress in achieving a 50 percent state recycling goal.

Indiana's 2016 recycling rate is 16.7 percent, up five percent from last year. The total shipments of recyclables as reported on Recycling Activity Reports (not including shipments to in-state recycler facilities) increased from 467,318 tons in 2015 to 899,728 tons in 2016 shown in TABLE 6 and Figure 2. Also, the number of reporting facilities increased from 115 to 144, or by 25 percent.

Terms and reporting requirements

The municipal solid waste (MSW) stream results from the operation of residential, municipal, commercial, or industrial establishments and community activities.

IC 13-11-2-133 states:

“...municipal waste means any garbage, refuse, industrial lunchroom or office waste, and other similar material resulting from the operation of residential, municipal, commercial, or institutional establishments and community activities.”

Recycling then is the recovery of municipal waste materials (garbage, refuse, industrial lunchroom waste, office waste, or other similar material) from the waste stream for use or reuse, conversion into raw materials, or for use in the production of new products.

A recycler must report, in tons, the types of recyclable material that it ships to in-state recycler facilities, in-state manufacturers/end users, or out-of-state destinations.

IC 13-20-25 requires reporting the following types of recyclable materials:

- 1) Glass
- 2) Metal, including white goods (ferrous)
- 3) Metal (non-ferrous)
- 4) Paper and cardboard (all grades)
- 5) Plastic and plastic products
- 6) Single stream recyclable materials, and
- 7) Any other distinct type of recyclable material not specified in 1) through 6).

Recycling activities are required to be reported to IDEM during a calendar year (January 1 – December 31), either on an annual basis or on a quarterly basis. Reports are to be submitted for each facility owned or operated by the recycler where recycling activities are conducted. A recycler is defined as the owner or operator of a facility where recycling may occur, including a landfill, an incinerator, a material recovery facility (MRF) or a solid waste management district.

A recycler is also defined as a recyclable materials broker who arranges the collection, transportation, delivery, recycling or reuse of recyclable materials.

Persons managing wastes not defined as municipal, such as those involved in automotive scrap metal processing, automotive salvage, or industrial wastes, are not required to report but may do so voluntarily. IDEM has included in this summary a review of all waste reported, but does not include non-MSW in calculations toward meeting the 50 percent recycling goal.

The next section discusses the collection method of the information and the data reported.

Reporting methods/data collection

The information recyclers are required to report includes:

- 1) Name and location of the recycler's establishment
- 2) Principal business activity conducted
- 3) Type of operation
- 4) Type of materials, including: glass, metal, paper, plastic, single stream (mixed), and other
- 5) Quantity, in tons, for each type of recyclable that was transported from the reporting recycler's establishment, or in the case of a recycler who is a broker, the amount of materials transported or delivered by arrangement of the recycler, and
- 6) Where the material was transported, which would include shipments to other in-state recycler facilities, or persons in Indiana that use the raw materials or reuse the product without further recycling, and out-of-state shipments.

IDEM's Solid Waste and Recycling Data Reporting Program, via a web-based tracking system, aggregates data and generates reports. Facility registrations are categorized by organization type for IDEM administration purposes, which include landfill, transfer station, waste-to-energy plant, composting facility, processing facility, waste tire facility or recycler facility. The latter registration type is for facilities not included in the other categories. For a listing of registered facilities see TABLE 1.

Reporting results

The 2016 Recycling Activity Reports were submitted by 144 facilities. Facility registration is categorized by type and principal business activity, as shown in TABLE 1 and TABLE 2, respectively. The report tracked shipments to destination facilities, as defined:

- a) Recycler Facility - This refers to a recycling facility such as a MRF with intermediate consolidating, sorting, shredding, or baling operations. The reporting included the location of the receiving recycler facility (name/city/state).
- b) Broker - This refers to shipments transported through a broker to final destinations. The reporting included the principal address of the broker (name/city/state).
- c) Manufacturer/end user - This refers to a production facility of basic products that used the recyclables as a raw material without further offsite recycling. Examples include glass container mills, foundries, steel mini-mills, smelting and refining operations, plastic processors for flake and pellets, and pulp and paper mills. Reporting included the location of the receiving manufacturer/end user (state or foreign country).

TABLE 1: Number of Facilities Submitting Recycling Activity Reports as Registered by Organization Type

Organization Type	Number of Facilities Submitting Reports
Recycler Facility	87
Transfer Station	34
Compost Facility	10
Landfill	7
Waste-to-Energy Plant (Incinerator)	1
Processing Facility	1
Waste Tire Facility	4
Total	144

TABLE 2: Number of Facilities Submitting Recycling Activity Reports by Principal Business Activity

Principal Business Activity	Number of Facilities Submitting Reports
Solid Waste Management Company	51
Solid Waste Management District / Government	76
Business	14
Not-for-Profit	2
College / University	1
Total	144

The shipments of recyclables (tons) by material type and destination category are listed in TABLE 3.

The category of “Other” shown in TABLE 3 is included, per statute, to measure any other distinct type of recyclable material considered municipal solid waste. The largest portion of this category was made up of wood waste. An additional category of “Non-MSW Material” is included to also allow registrants to record amounts of other recyclables not considered municipal solid waste, such as construction and demolition (C&D) debris, and non-hazardous industrial materials. Non-MSW recyclable materials are not included in MSW recycling measurement calculations.

TABLE 3: Shipments of Recyclables by Material Type and Destination

MATERIAL TYPE	SHIPMENTS OF RECYCLABLES BY DESTINATION			
	In-State Recycler Facilities (Tons)	Broker Arranged Shipments (Tons)	In-State Manufacturers / End Users (Tons)	Out-of-State Destinations (Tons)
Glass	6,110	1,446	969	14,521
Metal, including white goods (ferrous)	28,041	201	317	1,000
Metal (non-ferrous)	2,212	350	5	2,439
Paper and cardboard (all grades)	55,978	133,264	178,168	317,062
Plastic	3,768	6,226	271	12,055
Single Stream/Mixed	124,771	873	0	68,637
Other	68,973	355	153,500	8,069
Total	289,853	142,715	333,230	423,783
Non-MSW Material	13,634	562	30,311	4,326
Grand Total	303,487	143,277	363,541	428,109

The next section specifies and analyzes only the MSW recycling data reported to determine where Indiana is in reaching a 50 percent recycling goal.

Reviewing recycling numbers

Shipments of recyclable materials to in-state recycler facilities are important to understand community efforts in the collection of recyclables from curbside and drop-off sites. However, any shipments to in-state recycler facilities, for example, from a solid waste management district, are also required to be reported by the receiving recycler facility that sorts and bales the recyclables for shipment to end use markets. (For further breakdown of data by county origins, regarding the amount of MSW recyclables generated and their destination facilities see Appendix A.)

Double counting is avoided in the Recycling Activity Reports by only counting recyclables that are shipped to an end use market or out-of-state market as listed in TABLE 4. In 2016, the total amount of MSW recyclables reported was **899,728 tons**.

TABLE 4: Shipments of Recyclables by Material Type and Destination

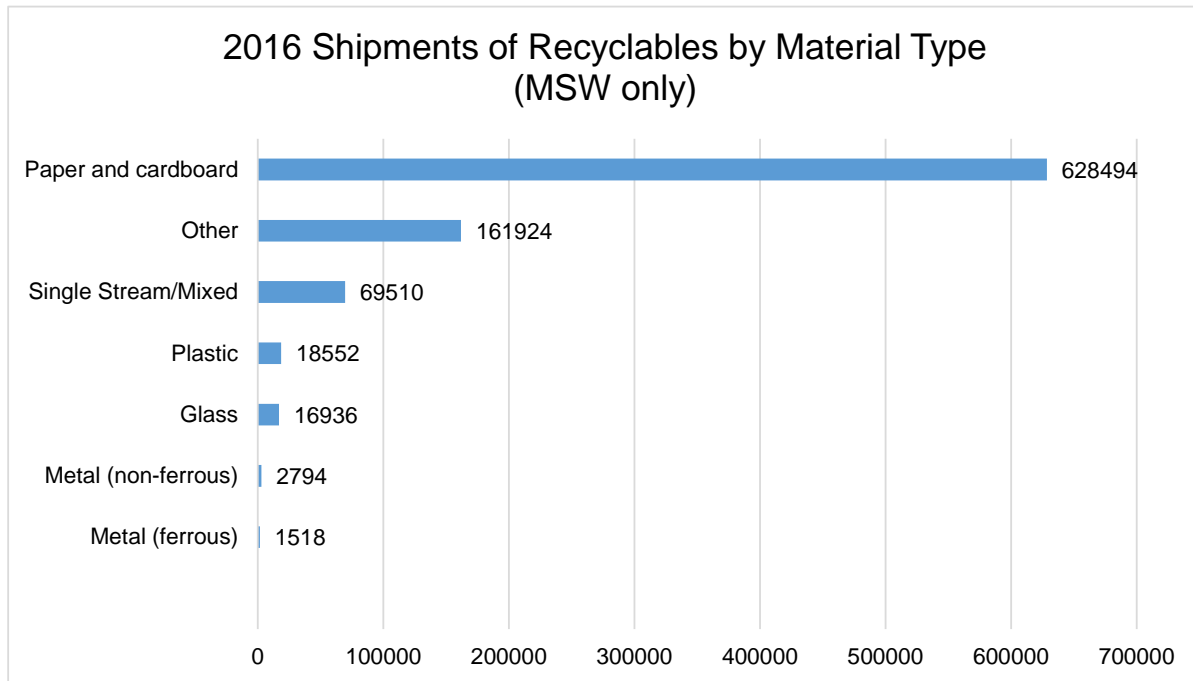
MATERIAL TYPE (MSW only)	SHIPMENTS OF RECYCLABLES BY DESTINATION			
	Broker Arranged Shipments (Tons)	In-State Manufacturers / End Users (Tons)	Out-of-State Destinations (Tons)	Total (Tons)
Glass	1,446	969	14,521	16,936
Metal, including white goods (ferrous)	201	317	1,000	1,518
Metal (non-ferrous)	350	5	2,439	2,794
Paper and cardboard (all grades)	133,264	178,168	317,062	628,494
Plastic and plastic products	6,226	271	12,055	18,552
Single Stream/Mixed	873	0	68,637	69,510
Other	355	153,500	8,069	161,924
Total	142,715	333,230	423,783	899,728

Specifically:

- The Broker Arranged Shipments category allowed recycler facilities to report transactions with a broker and allows staff to compare these amounts to the amounts that brokers reported. The tonnage is counted toward a recycling rate measurement. So far, this category has worked as a fail-safe, as no brokers reported. (Per the statute, brokers are recyclers and should submit a Recycling Activity Report).
- Knowing the shipments of recyclables to in-state manufacturers/end users helps to discern long-term infrastructure needs. This tonnage was counted for recycling rate measurement.
- Shipments of recyclables to out-of-state destinations were compiled from recycler facilities and manufacturers/end users. This tonnage was counted for recycling rate measurement.

Shipments by material types alone are shown in Figure 1.

Figure 1: Total Shipments of Recyclables by Material Type (Tons)



Looking at the MSW recycling data, 70 percent of the tonnage consisted of paper/cardboard, 18 percent was other, including wood waste, and eight percent was single stream (mixed) recyclables. The least amount of tonnage included metal (both ferrous and non-ferrous), plastic, and glass, which accounted for less than four percent of the recyclable materials shipped.

A recycling rate can be calculated to determine how Indiana is meeting its recycling goal by estimating the overall MSW generated against the materials reported as recyclable.¹ The measurement standard established by the U.S. Environmental Protection Agency (U.S. EPA) is:

$$\text{Recycling Rate (\%)} = \frac{\text{MSW recovered for recycling and composting (tons)}}{\text{MSW Generation (tons)}} \times 100$$

The overall MSW generated is the sum of tonnage amounts as reported in TABLE 5 for each of the waste management classifications. Tonnage estimates from Indiana origins are given with supporting data references.

¹ Standardized definitions for determining a recycling rate are described in the U.S. EPA publication, "Measuring Recycling: A Guide for State and Local Governments (<http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=100011CF.txt>). Also, EPA's most recent report, "Advancing Sustainable Materials Management: 2014 Fact Sheet," gives national statistics for MSW generation, recycling, and disposal (https://www.epa.gov/sites/production/files/2016-11/documents/2014_smmfactsheet_508.pdf).

TABLE 5: Indiana MSW Generation and Classification

Classification	Tons	Data Reference
Disposal through Landfilling (in-state)	5,640,216	The data are aggregated from IDEM Solid Waste Land Disposal Facility reports. This is the total amount of MSW from Indiana origins received at in-state landfills for disposal. It does not include non-hazardous industrial process wastes, and construction and demolition (C&D) debris.
Disposal through Landfilling (out-of-state)	296,530	This amount was estimated from Solid Waste Processing Facility reports from transfer stations as reported for waste sent for disposal at out-of-state landfills.
Energy from Waste	421,102	The data are aggregated from Solid Waste Processing Facility reports. This is the total amount of MSW from Indiana origins received at the Indianapolis Resource Recovery facility for disposal. It does not include non-hazardous industrial process wastes, and C&D debris.
Recycling	899,728	The data are aggregated from Recycling Activity Reports. This is the total amount of recyclables from MSW as reported by shipments to (a) in-state manufactures/end users, (b) out-of-state destinations, and (c) arranged through brokers.
Composting	340,217	The data are aggregated from Registered Composting Facility Reports. This is the total estimated amount of waste received at Indiana compost facilities including yard trimmings, food waste, and other organic materials. It does not include wood waste processed into mulch.
E-waste	32,500	The data are aggregated from IDEM, Electronics Recycling Annual Report and E-cycle Collector/Recycler Registration reports. The data is for all types of e-waste including covered electronic devices for Indiana's E-Cycle program. Total shipments are tracked by destination categories.
Total	7,630,293	

Because the recycling rate equation includes composting as part of recycling, information is reviewed and included from other IDEM reports, in addition to the recycling activity reports. These include:

1. Solid Waste Land Disposal Facility Report
2. Solid Waste Processing Facility Report
3. Registered Composting Facility Report
4. Annual Tire Report
5. Electronics Recycling Annual Report and E-cycle Collector / Recycler Registration (E-waste)

In 2016, E-waste reporting was made available online and these numbers were also included in determining the total amount of recyclables from MSW. With this in mind, the calculation is made accordingly:

MSW recovered for recycling and composting = 899,728 + 340,217 + 32,500 = 1,272,445 tons

The 2016 Indiana Recycling Rate then is calculated as:

$$(1,272,445) \text{ (tons)} / 7,630,293 \text{ (tons)} \times 100 = 16.7\%$$

Discussion of results

Indiana's 2016 recycling rate is 16.7 percent, up five percent from last year. The increases may be explained by several factors:

- Twenty-nine more facilities submitted Recycling Activity Reports.
- Recyclable materials collection increased.
- Assisted facilities in discerning which reports to complete.
- Additional convenience of reporting for facilities with the creation of the electronic E-waste reports.

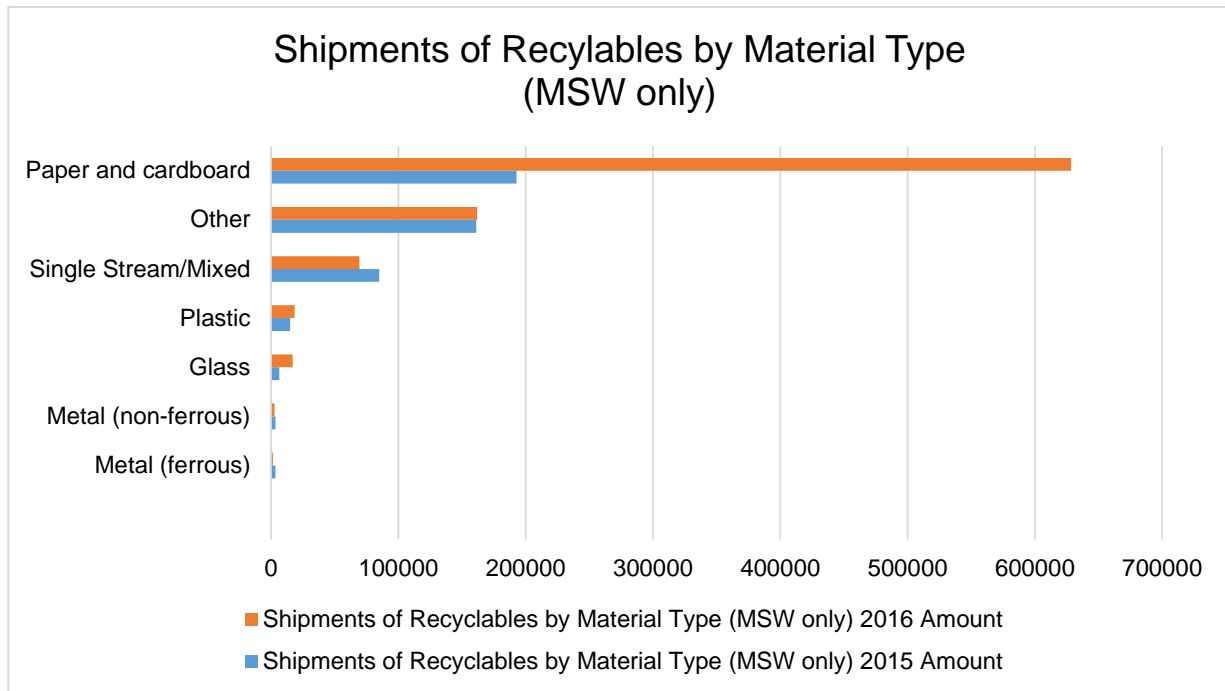
TABLE 6: Total Shipments of Recyclables by Material Type (2015 Compared to 2016)

Material Type (MSW only)	2015 (Tons)	2016 (Tons)
Glass	6,432	16,936
Metal, including white goods (ferrous)	3,379	1,518
Metal (non-ferrous)	3,479	2,794
Paper and cardboard (all grades)	192,838	628,494
Plastic and plastic products	15,002	18,552
Single Stream/Mixed	84,968	69,510
Other	161,220	161,924
Total	467,318	899,728

The total shipments of recyclables as reported on Recycling Activity Reports (not including shipments to in-state recycler facilities) increased from 467,318 tons in 2015 to 899,728 tons in 2016 shown in TABLE 6 and Figure 2. Also, the number of reporting facilities increased from 115 to 144. The 29 newly registered facilities, in 2016, reported shipments of 347,383 tons, or approximately 80% of the increase. It's worth noting that of the 432,410 tons of increased recyclable material reported in 2016, an increase of 85,027 tons was in addition to the amount contributed to the newly registered facilities. So, there was a slight increase in the amount of recyclable materials reported in 2016 than was reported in 2015.

As shown below in Figure 2, paper and cardboard recycling in 2016, increased by 435,656 tons from the amount reported in 2015.

Figure 2: Total Shipments of Recyclables by Material Type and Year



Although two years of comparable data may be too soon to note any trends in collection methods of materials, the increase in the shipment numbers does indicate that there was some success in providing outreach regarding the required reporting of recycling activities.

Reporting changes and challenges

The most difficult step toward knowing the success of recycling is identifying the universe of companies and materials. IDEM began building a user friendly data system for customers in 2015. Challenges included getting familiar with the on-line reporting system and getting the word out to recyclers, communities, and the solid waste management industry as a whole.

During 2016, changes and clarifications made to improve the quality of data and increase reporting compliance, included:

- Conducting outreach activities at the Indiana Recycling Coalition Conference, 2016 Waste-Con Conference, Pollution Prevention Conference, and Association of Indiana Solid Waste Management Districts Conference to reach recyclers, including voluntary reporting entities.
- Working with compost, tires, and e-waste entities to make sure they were reporting information through the correct reporting mechanism and not double reporting through the Recycling Activity Report.
- Updating all narratives on the IDEM website regarding reporting requirements.
- E-mailing notices and reminders to Re-TRAC members to submit a Recycling Activity Report. This included noting brokers listed in recyclers' reports who may not have known they were also required to report and then informing them about Re-TRAC registration and reporting requirements.

- Contacting SWMDs who did not report in 2015 and working with the Association of Indiana Solid Waste Management Districts about the reporting of recycling activities.
- Participating in the U.S. EPA, Region 5 Stakeholders meeting on Sustainable Materials Management (SMM) in the Midwest. The discussion focused on economic development of recyclables in the Midwest and included topics on messaging and education, policy and incentives, and data.

Outreach between IDEM and business and community leaders should continue in order to better understand challenges in the following: (a) reporting of recycling activity at distribution centers; (b) understanding how recyclers are interpreting recycling categories and definitions; and (c) highlighting Indiana's manufacturing base that uses recyclables. In this way, accurate recycling numbers will help markets understand where materials are available or know where more work with collectors needs to be done to keep commodities separate from trash.

Conclusion

IDEM is striving to provide accurate data regarding recycling. The move from waste diversion estimates to actual recycling numbers tends to provide a lower, more accurate percentage. The information provided is a conservative account and as the agency continues to better understand the regulated community, the numbers should not only increase, but remain true to bettering recycling goals throughout the state.

APPENDIX A.

APPENDIX A: AMOUNT OF RECYCLABLES GENERATED FROM EACH COUNTY FOR SHIPMENT

County Location of Reporting Facilities	Shipments to In-State Recycler Facilities (tons)	Shipments through a Broker (tons)	Shipments to In-State Indiana Manufactures/ End Users	Shipments to Out-of-State Destinations (tons)
Adams	686		60	30
Allen	33,027	9,861	10,669	47,563
Bartholomew	7,048			1,799
Benton	7	260		
Blackford				
Boone	117		21,697	
Brown	399			182
Carroll	372			
Cass	511			
Clark				2,400
Clay		926		
Clinton	0			
Crawford	15			282
Daviess	42			
DeKalb	305			
Dearborn	389	1,373		184
Decatur	5,481			
Delaware	691	4,207	4,270	2,207
Dubois	2,751			321
Elkhart	6,672	34,914	17,199	14,434
Fayette				
Floyd				610
Fountain	432			
Franklin				2,532
Fulton		305	696	43
Gibson	367			15
Grant				
Greene				
Hamilton	1,527		41,951	
Hancock		2		
Harrison	822			
Hendricks	15,996		19,098	67,812
Henry	915			
Howard	11,648			
Huntington	1,203			
Jackson	725			871
Jasper	94			624
Jay	392			
Jefferson	478	629		846

Jennings				
Johnson	1,623			
Knox	1,009			16
Kosciusko	2,805			
La Porte	17,062		2,012	1,298
Lagrange				
Lake	75,791	1,728	12,000	146,660
Lawrence	347	574	121	
Madison	3,345	7,843		52
Marion	18,566	35,254	81,134	98,332
Marshall	311			5
Martin		2,379		
Miami	1,268			
Monroe	6,648	4,756		
Montgomery	8,560			419
Morgan	887			
Newton				322
Noble				
Ohio				
Orange				
Owen				
Parke				
Perry	145	643		
Pike	314			
Porter	3,936		110,479	24,517
Posey	50	802		67
Pulaski	436		325	129
Putnam	1,549			
Randolph	796			
Ripley				
Rush		211		
Scott				
Shelby	1,057	4,777		814
Spencer	115	507	90	203
St. Joseph	15,252	3,292	5,047	1,231
Starke	1,165			
Steuben	4,059			
Sullivan				
Switzerland				
Tippecanoe	6,775			4,934
Tipton	306			
Union				
Vanderburgh	5,797	24,983	6,200	306
Vermillion				
Vigo	2,288	639		
Wabash	5,500			
Warren	30	373		
Warrick	331	1,477		

Washington	334			
Wayne	164			221
Wells	365			
White	513		182	842
Whitley	7,242			
Out of State				660
Total	289,853	142,715	333,230	423,783

Note: The data are aggregated from Re-TRAC 2016 Recycling Activity Reports for Recyclables from municipal solid waste (MSW). The data are aggregated by county location of each reporting facility. The amount of recyclables is blank if the county was part of a multiple solid waste management district, had no reporting facilities, or submitted no data.