



Indiana Department of Environmental Management

2018 Recycling Activity Summary

Overview of 2018 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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2018 Recycling Activity Summary

The Recycling Activity Summary provides information collected from municipal solid waste (MSW) recyclers. The recyclers are legislatively required to report recycling activities under IC 13-20-25. The Indiana Department of Environmental Management (IDEM) provides the report to fulfill its requirement to report and provide an overview of 2018 state recycling data results. In the report, IDEM also evaluates Indiana's progress in achieving a 50 percent recycling goal.

Indiana's 2018 recycling rate was 20 percent, up from 16.8 percent in 2017. The total MSW recovered for recycling and compost was 1,751,426 tons, an increase of 371,807 tons from the previous year. Waste disposal increased by 175,804 tons for a total of 7.0 million tons. Specifically, total reported shipments of recyclables from recycling activity reports were 1,281,199 tons. The final destination of MSW generation consisted of 75 percent for landfills, 5 percent for waste-to-energy, and 20 percent for recycling and composting.

Terms and reporting requirements

The goal of the state is to recycle at least 50 percent of its municipal waste. By definition, the MSW 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 (IC 13-20-25-6) is the recovery of recyclable materials from the MSW stream (garbage, refuse, industrial lunchroom waste, office waste, or other similar material) for use or reuse, conversion into raw materials, or for use in the production of new products.

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.

Recyclers must report, in tons, the types of recyclable material from Indiana origins 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. Recyclers must submit reports for each facility owned or operated by the recycler where they conduct recycling activities.

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 recycling of these wastes but may do so voluntarily. IDEM has included in this summary a review of all materials reported, but does not count recycling of non-MSW materials towards the 50 percent recycling goal.

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

Reporting method/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.

Recyclers submit a recycling activity report through IDEM's Solid Waste and Recycling Data Reporting Program, a web-based materials management system for aggregating data. The reporting tracks shipments of recyclables sent to destination categories, as defined:

- 1) 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).
- 2) Broker - This refers to shipments transported through a broker to final destinations. The reporting included the principal address of the broker (name/city/state).
- 3) 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 included 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).

Facility registrations are categorized for IDEM administration purposes. This includes landfill, transfer station, waste-to-energy plant, composting facility, processing facility, waste tire facility or recycler facility. The latter type is for facilities not included in the other categories.

In addition, other reports are submitted to IDEM for tracking MSW data, which include:

- 1) Solid Waste Land Disposal Facility Report
- 2) Solid Waste Processing Facility Report
- 3) Registered Composting Facility Report

- 4) Electronics Recycling Annual Report and E-cycle Collector / Recycler Registration (E-waste)
- 5) Annual Tire Report

Reporting results

IDEM received recycling activity reports from 149 Indiana facilities with shipments of recyclables. The facilities are grouped by registration type and principal business activity, as shown in TABLE 1 and TABLE 2, respectively.

TABLE 1: Number of Indiana Facilities Submitting Recycling Activity Reports by Registration Type

Registration Type	Number of Facilities Submitting Reports
Recycler Facility	90
Transfer Station	33
Compost Facility	10
Landfill	7
Waste-to-Energy Plant (Incinerator)	0
Processing Facility	8
Waste Tire Facility	1
Total	149

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

Principal Business Activity	Number of Facilities Submitting Reports
Solid Waste Management Company	53
Solid Waste Management District / Government	76
Business	17
Not-for-Profit	2
College / University	1
Brokers	0
Total	149

The shipments of recyclables (tons) by material type and destination are given in TABLE 3. Compost and electronic waste (e-waste) are not listed since their recycling amounts are given in separate reports (see TABLE 5). The category of “Other” measures any other distinct type of recyclable material from MSW. The largest portion of this category was made up of wood waste, which may be used for mulch or animal bedding. Appendix A provides a detailed breakdown of the amount of MSW recyclables generated for shipment.

Another category of recycling from non-MSW (per statute) is listed as “Non-MSW Materials.” It allows registrants to voluntarily record amounts of other recyclable materials from non-municipal solid waste, such as scrap metal and aggregate from construction and demolition (C&D) debris, auto bodies, and non-hazardous industrial materials. The reported amounts consist mainly of aggregates.

TABLE 3: Shipments of Recyclables by Material Type and Destination (2018)

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	5,131	7,204	126,855	72,361
Metal, including white goods (ferrous)	28,087	2,703	11,255	20,663
Metal (non-ferrous)	4,660	213	1,113	21,010
Paper and cardboard (all grades)	34,000	150,548	218,265	198,269
Plastic	3,418	4,134	6,206	23,481
Single Stream/Mixed	94,161	5,374	10,373	109,771
Other	7,674	9,320	214,104	67,977
Total	177,131	179,496	588,171	513,532
Non-MSW Materials	361,058	72	38,248	5,017
Grand Total	538,189	179,568	626,419	518,549

* Shipments to out-of-state recycler facilities and/or manufacturers/end users.

The next section analyzes only the MSW recycling data to determine compliance with Indiana's 50 percent recycling goal. Shipments of recyclables to in-state recycler facilities in TABLE 3 are excluded since the tonnage amounts also are required to be reported by the receiving facilities that sorts and bales the recyclables for shipment to end use markets. However, they help IDEM understand community collection efforts for curbside and drop-off sites.

Reviewing recycling numbers and MSW recycling rate

Double counting of recyclables is avoided by only including recyclables with shipment destinations as shown in TABLE 4. In 2018, the total amount of reported MSW recyclables for end use markets was **1,281,199 tons**.

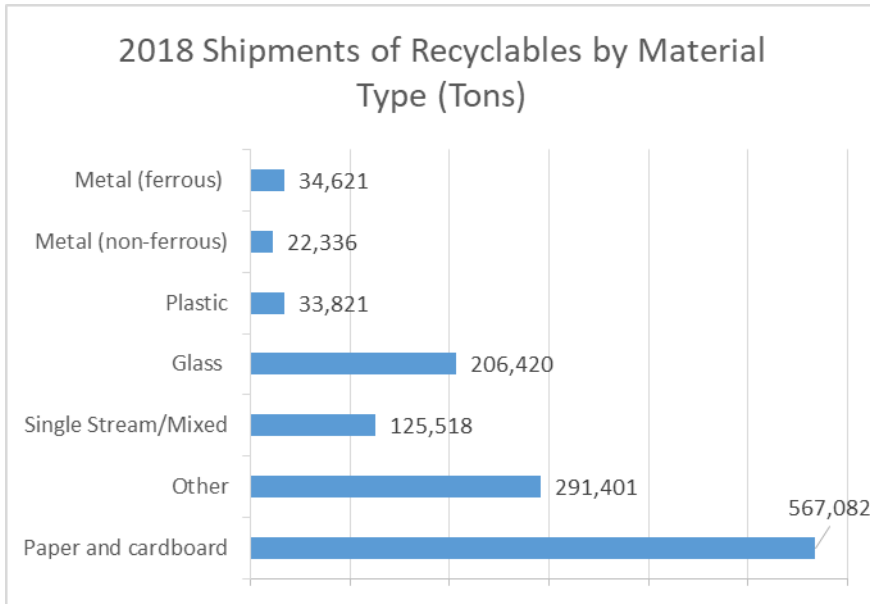
TABLE 4: Shipments of Recyclables by Material Type and Destination (2018) for Recycling Rate

MATERIAL TYPE	SHIPMENTS OF RECYCLABLES BY DESTINATION			
	Broker Arranged Shipments (Tons)	In-State Manufacturers / End Users (Tons)	Out-of-State Destinations* (Tons)	Total (Tons)
Glass	7,204	126,855	72,361	206,420
Metal, including white goods (ferrous)	2,703	11,255	20,663	34,621
Metal (non-ferrous)	213	1,113	21,010	22,336
Paper and cardboard (all grades)	150,548	218,265	198,269	567,082
Plastic and plastic products	4,134	6,206	23,481	33,821
Single Stream/Mixed	5,374	10,373	109,771	125,518
Other	9,320	214,104	67,977	291,401
Total	179,496	588,171	513,532	1,281,199

* Shipments to out-of-state recycler facilities and/or manufacturers/end users.

Total shipments of recyclables recovered from the MSW stream by material types alone and percentages are shown in Figure 1 and Figure 2, respectively. The percent destination of recyclables (tons) is shown in Figure 3.

Figure 1: Shipments of Recyclables by Material Type



Looking at the percentage of recyclables shipments, 44 percent of the total tonnage consisted of paper/cardboard, 23 percent was other, including wood waste, 16 percent was glass, and 10 percent was single stream (mixed) recyclables. The least amount of tonnage included metal (both ferrous and non-ferrous) and plastic, which accounted for about seven percent of the recyclable materials shipped.

Figure 2: Percentage of Recyclables Shipments by Material Type

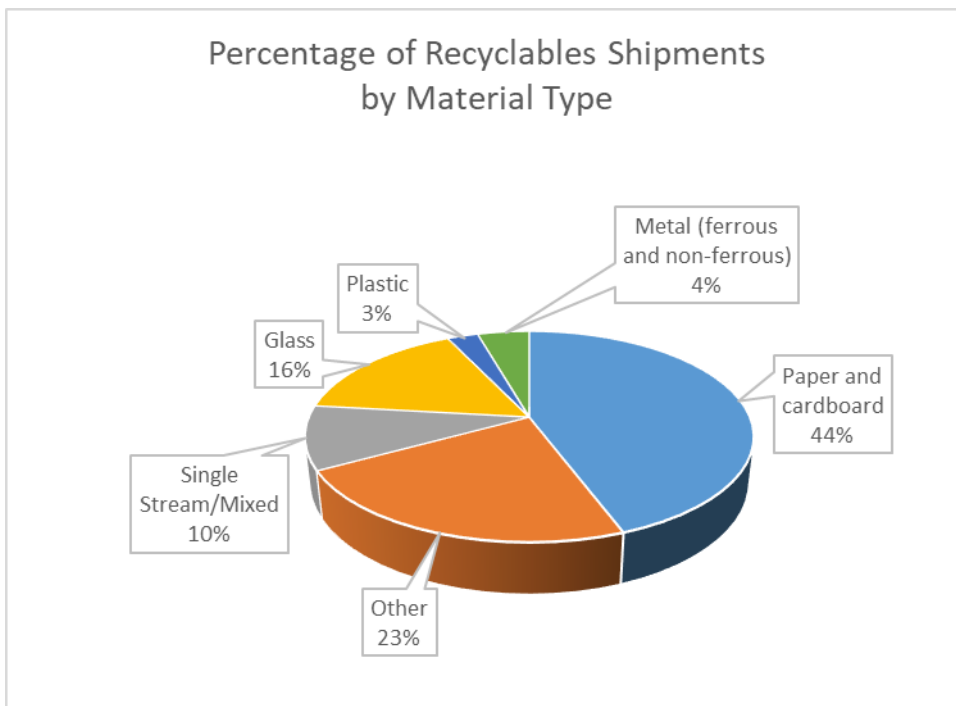
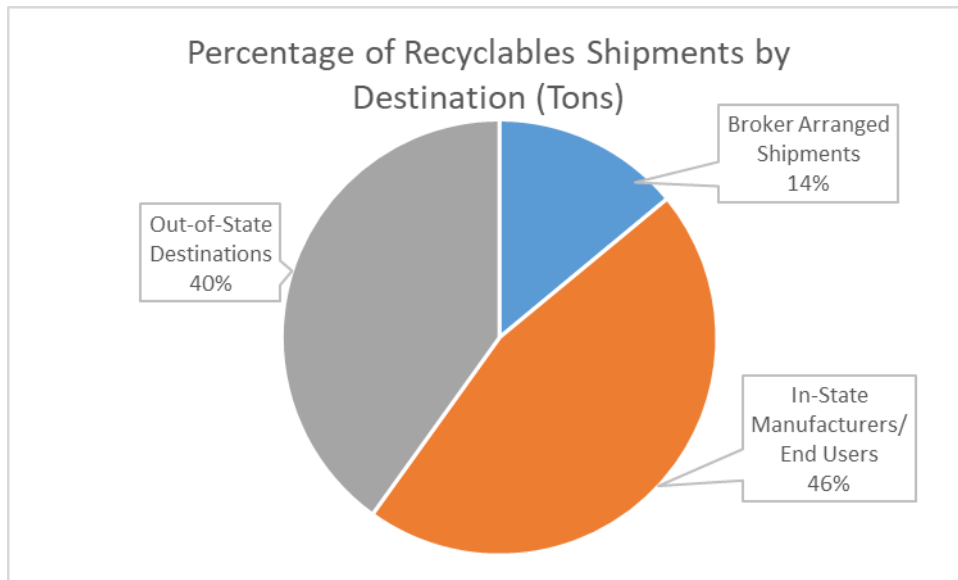


Figure 3: Percentage of Recyclables Shipments by Destination



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:

$$\text{Recycling Rate (\%)} = \text{MSW Recovered for Recycling and Composting (tons)} / \text{MSW Generation (tons)} \times 100$$

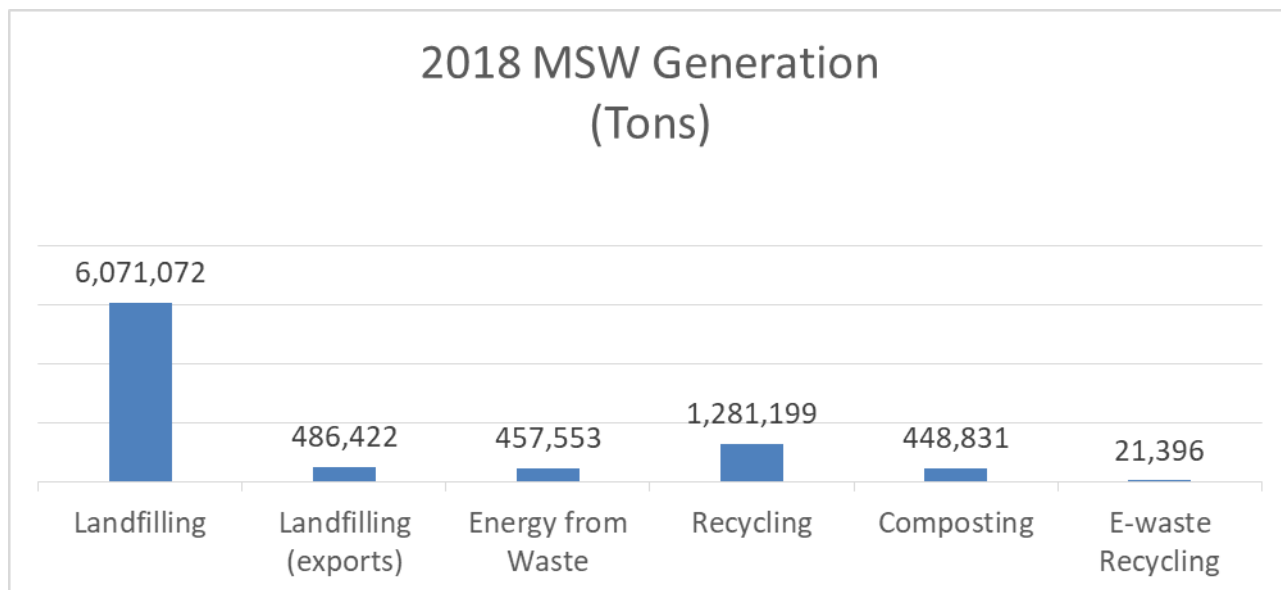
The MSW generation is the sum of tonnage amounts as shown in TABLE 5 and Figure 4 for each of the waste management classifications. Tonnage estimates from Indiana origins are given with supporting data references.

TABLE 5: Indiana MSW Generation and Classification Data (2018)

Classification	Tons	Data Reference
Disposal through Landfilling (in-state)	6,071,072	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)	486,422	This amount was estimated from Indiana exports of MSW as reported by neighboring states. Other supporting data included Solid Waste Processing Facility reports of waste sent for disposal at out-of-state landfills from Indiana transfer stations.
Energy from Waste	457,553	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	1,281,199	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	448,831	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 Recycling	21,396	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	8,766,473	

Figure 4: Indiana 2018 MSW Generation by Classification



The total recycled is the sum of recycling, composting, and e-waste amounts. With this in mind, the calculation is made accordingly:

$$\begin{aligned} &\text{MSW Recovered for Recycling and Composting} \\ &= 1,281,199 + 448,831 + 21,396 = 1,751,426 \text{ tons} \end{aligned}$$

The 2018 Indiana Recycling Rate then is calculated as:

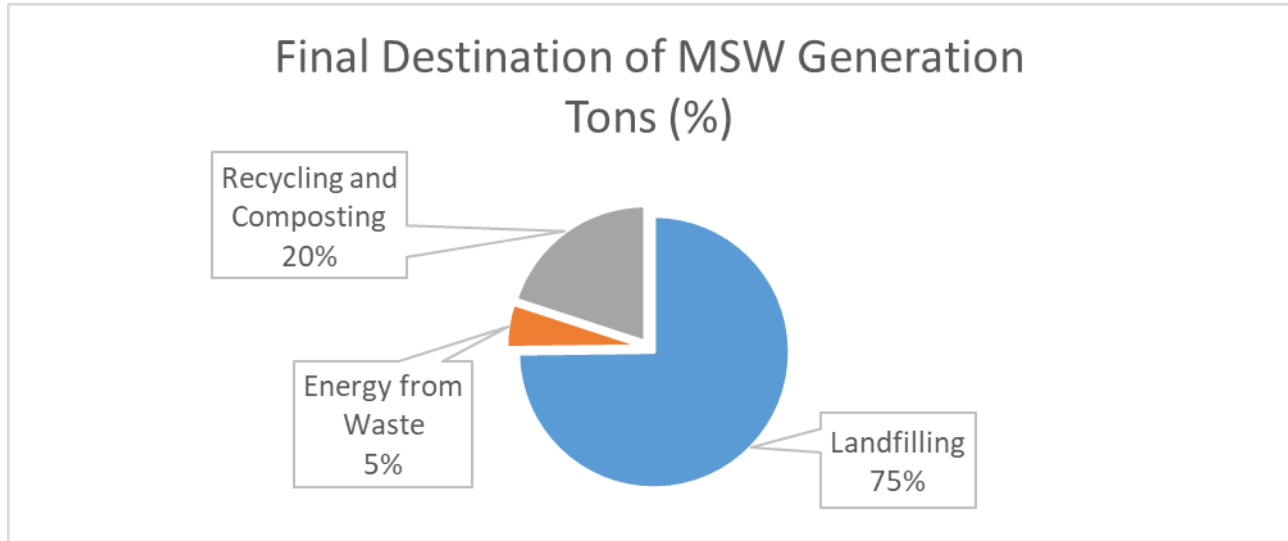
$$(1,751,426 \text{ tons} / 8,766,473 \text{ tons}) \times 100 = \mathbf{20.0\%}$$

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: 2015 Fact Sheet," gives national statistics for MSW generation, recycling, and disposal (https://www.epa.gov/sites/production/files/2018-07/documents/2015_smm_msw_factsheet_07242018_fnl_508_002.pdf).

Discussion of results

Indiana's 2018 recycling rate was 20 percent, up from 16.8 percent in 2017. The total MSW recovered for recycling and compost was 1,751,426 tons, an increase of 371,807 tons from last year. Waste disposal increased by 175,804 tons for a total of 7.0 million tons. Specifically, total reported shipments of recyclables from recycling activity reports were 1,281,199 tons. The overall materials management of MSW generation is shown in Figure 5.

Figure 5: Overall Materials Management of MSW Generation (2018)



More material is being recycled and the recycling rate is trending upward as shown in Figure 6 and TABLE 6. However, the per capita MSW generation (lbs/person/day) increased from 6.8 to 7.2 in the last year. Recycling has circular economy benefits while source reduction efforts can help to not produce waste in the first place.

Figure 6: Recycling Rate and per Capita MSW Generation

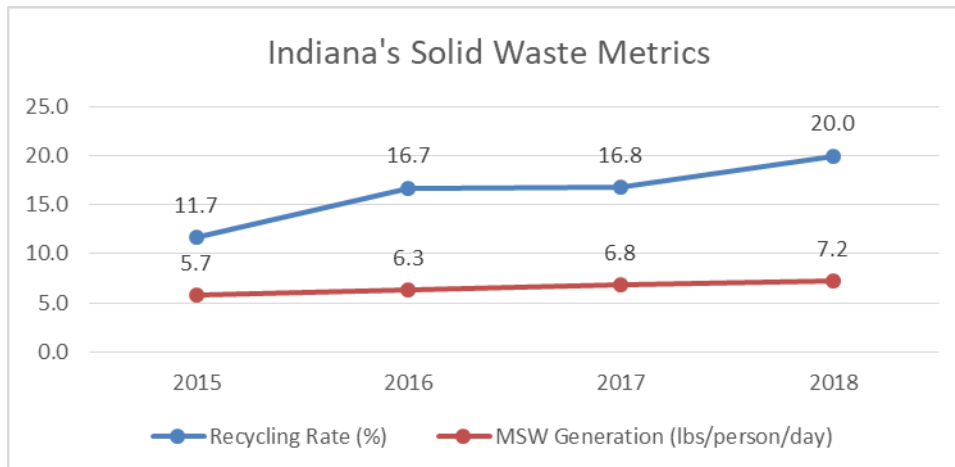
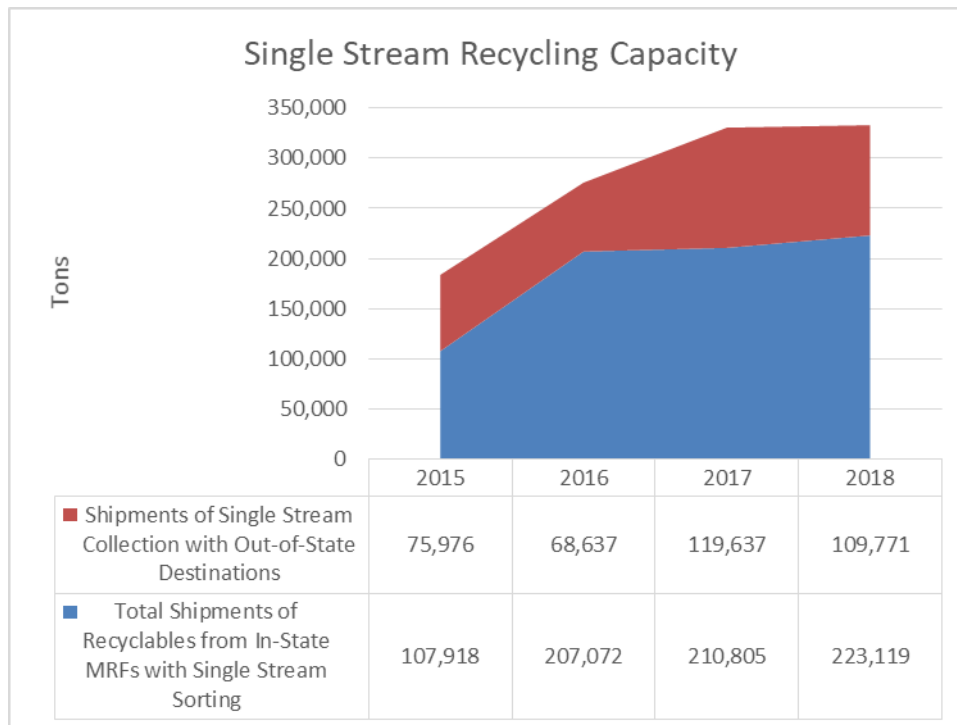


TABLE 6: Shipments of Recyclables from MSW by Material Type and Year

Material Type	2015 (Tons)	2016 (Tons)	2017 (Tons)	2018 (Tons)
Glass	6,432	16,936	70,535	206,420
Metal, including white goods (ferrous)	3,379	1,518	1,601	34,621
Metal (non-ferrous)	3,479	2,794	2,757	22,336
Paper and cardboard (all grades)	192,838	628,494	485,608	567,082
Plastic and plastic products	15,002	18,552	20,080	33,821
Single Stream/Mixed	84,968	69,510	136,047	125,518
Other	161,220	161,924	216,896	291,401
Total	467,318	899,728	933,524	1,281,199

Indiana has seven in-state MRFs that sort single stream recyclables for end-use markets. Total shipments of sorted recyclables were 223,119 tons in 2018 consisting of paper (76%), glass (9%), plastic (7%) metals (3%), and other (5%). Also, more than 100,000 tons of single stream recyclables were sent to out-of-state MRFs such as consolidated at transfer stations or having direct hauls from border locations. The statewide recycling capacity for curbside, single stream collection was about 333,000 tons in 2018 as shown in Figure 7.

Figure 7: Indiana Recycling Capacity for Single Stream Collection



Shipments of recyclables from solid waste management districts totaled 124,479 tons, of which destinations consisted of Indiana recycler facilities (50.9%), brokers (12.5%), Indiana manufacturers/end users (1.3%), and out-of-state (35.3%). This includes recyclables collected by contract services for the districts. Compost material and e-waste amounts are not included. They are reported separately in Re-TRAC via the Registered Composting Facility Report and the Electronics Recycling Annual Report and E-Cycle Collector/Recycler Registration, respectively.

Other reporting highlights include:

- 1) Glass shipments almost tripled from last year to 206,420 tons. Much of the increase was from shipments to in-state manufacturers/end users such as for fiberglass insulation and glass container mills.
- 2) Paper and cardboard tonnage was 567,082 tons. The total shipments are about 50/50 from single stream and source-separated collection. The latter is mainly from the commercial/institutional/industrial sectors.
- 3) The number of reporting facilities was 149, up by 9 from 2017. This included 5 first-time reports and facilities that failed to report from last year. Reports from facilities with no shipments of recyclables are generally not included.
- 4) Recycled metal amounts jumped from 4,358 tons in 2017 to 56,957 tons. This was mainly from facilities with first-time reporting.

Reporting challenges

The most difficult step in determining 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 communicating to recyclers, communities, and the solid waste management industry as a whole about Indiana's measurement approach and mandatory reporting requirements for recyclables.

IDEM works with partners across the state to promote recycling. Projects include:

- 1) Partnering with the Indiana Recycling Coalition (IRC) on a research study. The IRC, in partnership with Purdue University, has received a grant from the Wabash Heartland Innovation Network (WHIN) to collect and analyze data on recycling collection infrastructure for a ten county region in Northwestern Indiana. IDEM is providing support for the project by providing existing data, as well as using the opportunity to deepen relationships with partners, particularly solid waste districts.
- 2) Participation in the Indiana Food Scrap Initiative (IFSI). IFSI is a multi-stakeholder driven initiative to eliminate food waste in Indiana directed by the IRC.
- 3) Providing technical assistance to Solid Waste Management Districts, schools, and municipalities to support recycling efforts and increase recycling rates.
- 4) Coordinating an Indiana recycling economic and infrastructure study approved by the Recycling Market Development Board to better understand our strengths and weaknesses in the recycling industry.

Conclusion

IDEM strives to provide accurate data regarding recycling and waste material management. The reporting of actual recycling numbers by recyclers provides credibility in achieving recycling goals and helps to determine long term infrastructure needs for sustainable materials management. The information provided is a conservative account and as the agency continues to better understand the

recycling community, the numbers should not only increase, but help recognize recycling efforts 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 Manufacturers / End Users (Tons)	Shipments to Out-of-State Destinations (Tons)
Adams	244	420	53	
Allen	18,069	10,535	21,777	73,575
Bartholomew	1,980			342
Benton	3			236
Blackford			125,842	58,491
Boone	134		27,556	
Brown	338			86
Carroll	116			
Cass	531			
Clark				22,249
Clay				
Clinton				
Crawford	18			260
Daviess	41			
DeKalb				
Dearborn		776		556
Decatur	3,628	1,568		
Delaware	408	1,345	7,628	403
Dubois	43			
Elkhart	4,853	56,981	113,100	59,929
Fayette				
Floyd				565
Fountain				
Franklin				
Fulton		273	77	64
Gibson	391			514
Grant	234			
Greene	595			
Hamilton	1,878		29,252	
Hancock	26	117		
Harrison				
Hendricks	18,199		14,383	101,141
Henry	837			
Howard	1,948			
Huntington	1,035			
Jackson	1,743		4,336	2,376
Jasper	45		62	457

Jay	379			
Jefferson	502	631	276	1,507
Johnson	2,107			
Knox	646		248	47
Kosciusko	2,476			
La Porte	7,819	98		442
Lake	516	4,293	71,006	65,194
Lawrence	271	553	11,000	
Madison	2,730	6,565	209	
Marion	19,626	52,927	32,168	88,881
Marshall	368			
Martin		1,663	45	152
Miami	1,505			
Monroe	7,205	3,304		
Montgomery	11,928	108	1	899
Morgan	1,252			
Newton	250			
Noble	8,927			
Ohio				
Orange				
Owen				
Parke				
Perry	114	66		
Pike	166			
Porter	3,427	106	121,037	24,794
Posey	85	729		69
Pulaski	215	691	116	
Putnam	1,458			
Randolph	970			
Ripley				
Rush	138			
Scott				
Shelby	809	2,234		3,662
Spencer	143	798		131
St. Joseph	14,123	4,811	1,426	1,49
Starke	246			
Steuben	3,482			
Sullivan				
Switzerland				
Tippecanoe	6,906			2,265
Tipton	513			1
Union				
Vanderburgh	37	26,225	5,768	635
Vermillion				
Vigo	2,161	965		
Wabash	5,189			
Warren				434
Warrick	950			575

Washington	353			
Wayne	679			180
Wells	34			161
White	86	174	175	850
Whitley	8,382			
Grand Total	177,131	179,496	588,171	513,532

Note: The data are aggregated from Re-TRAC, 2018 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.