2017 Iowa Statewide Waste Characterization

Christine Collier

SCS ENGINEERS

FUNDED BY:

IOWA DEPARTMENT OF NATURAL RESOURCES

Agenda

- Purpose of waste characterization study
- Background
- Waste sort process
- Results
- Resulting initiatives

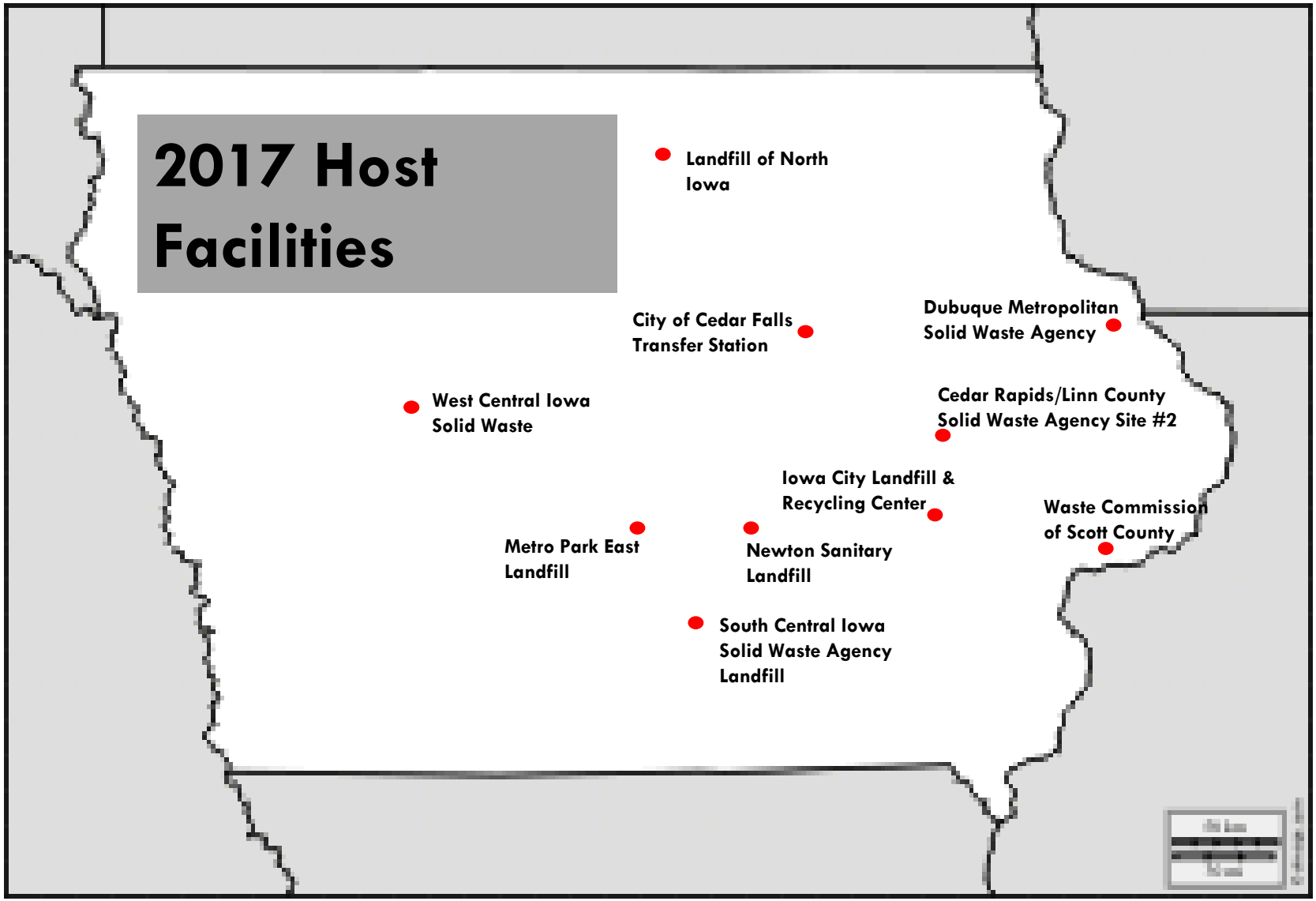
Why sort waste?

- Document impact of:
  - Diversion programs (recycling, waste bans)
  - Citizen education/awareness
- Provide data in support of:
  - Identifying efforts needed to meet state and local waste reduction and recycling goals
  - Improving program efficiencies
  - Strengthening economic development efforts
  - Focusing citizen education and awareness efforts

Previous Iowa Waste Sorts

- 1998
- 2005
- 2011

13 Participating Landfills and Transfer Stations

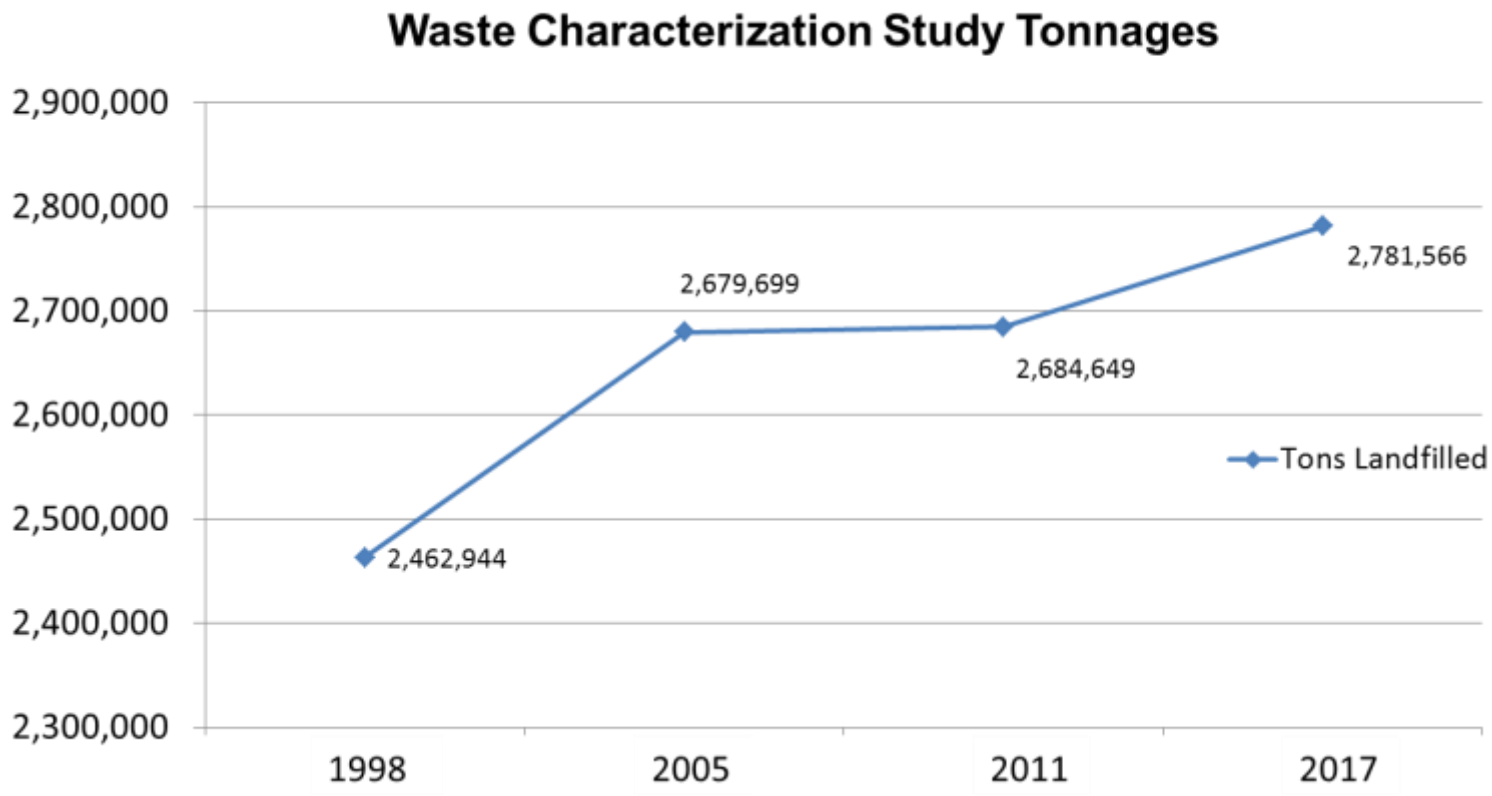


Background Information

Host Facility Study Participation

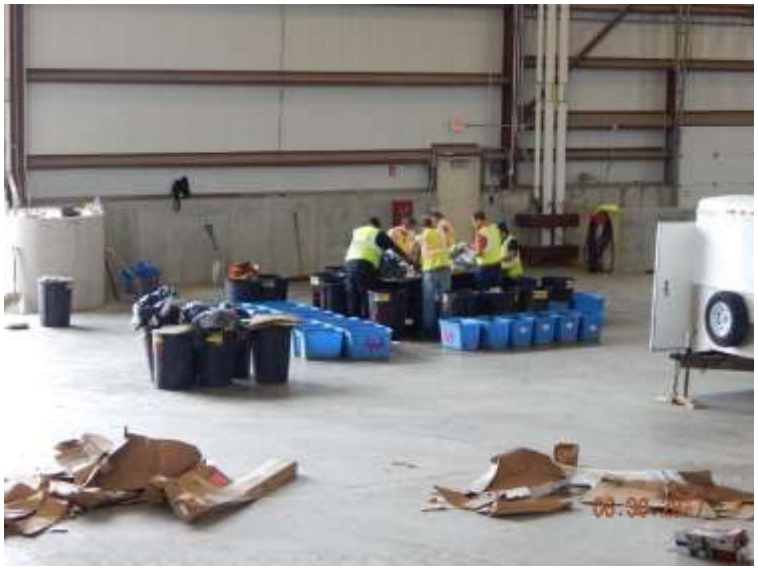
Host Facility	Study Year			
	2017	2011	2005	1998
City of Cedar Falls	X			
Cedar Rapids/Linn County Solid Waste Agency	X		X	
Dubuque Metropolitan Area Solid Waste Agency	X	X	X	
Iowa City Landfill and Recycling Center	X	X		X
Landfill of North Iowa	X			
Metro Waste Authority	X	X	X	
City of Newton	X			
South Central Iowa Solid Waste Agency Landfill	X	X		X
Waste Commission of Scott County	X	X		
West Central Iowa Solid Waste	X	X		

MSW Landfilled



Similarities to Previous Studies

- Waste generating sectors
- In-state wastes
- Host facility sort duration
- Targeted waste from transfer stations
- Site-Specific Sampling Plans
- Seasonal sampling & sorting events



2017 study waste designed to mirror previous studies

Differences from Previous Studies

- Material categories (minimal)
- Number of host facilities
- Number of samples
- Visual characterization of bulky wastes

Some differences between studies do exist

The Dirty Details

- Residential and industrial/commercial/institutional (ICI) sectors analyzed
- 524 solid waste samples collected
  - 275 samples of residential waste
  - 249 samples were from ICI generating sector
- Performed in May, June and July 2017

The Dirty Details

- 9 major material categories (61 subcategories)
  - Paper (8)
  - Plastic (11)
  - Metal (6)
  - Glass (6)
  - Organics (6)
  - Durables (4) (cell phones, monitors, tvs, appliances)
  - C&D (6)
  - Household hazardous materials (7)
  - Other (7)

The Process

Cedar Rapids/Linn County Solid Waste Agency

62,982	Other Waste - C&D, bulky, demo/clean-out waste	
179,732	Annual total tons	
50	Number of Samples at this site	

RESIDENTIAL			ICI		
%age	Tons	Direct Haul or Transfer	%age	Tons	Direct Haul or Transfer
100%	33,543	Direct Haul to Landfill	100%	83,207	Direct Haul to Landfill
100%			100%		
	33,543	TOTAL RES TONS		83,207	TOTAL ICI TONS
	29%	% Total		71%	% Total
	116,750		TOTAL RES/ICI TONS WASTE		
SAMPLING PLAN*					
	14	# of samples		36	# of samples
	14	Direct Haul to Landfill		36	Direct Haul to Landfill
# Samples	%	Major Haulers at Landfill	# Samples	%	Major Haulers at Landfill
9	62%	Cedar Rapids Solid Waste	7	20%	A-1 Disposal
3	19%	City of Marion	12	33%	ABC Disposal (some residential)
3	19%	Rudd Sanitation (some ICI)	8	24%	BFI Waste Systems (Republic)
			2	7%	Waste Management
			6	17%	Wilson Rubbish
15	100%	TOTAL	35	100%	TOTAL

* sampling plan adjusted slightly to 70% ICI waste and 30% residential waste

Develop a Sampling Plan

Always play it safe

Talk it out

The Process

Obtain a sample

Weigh the sample

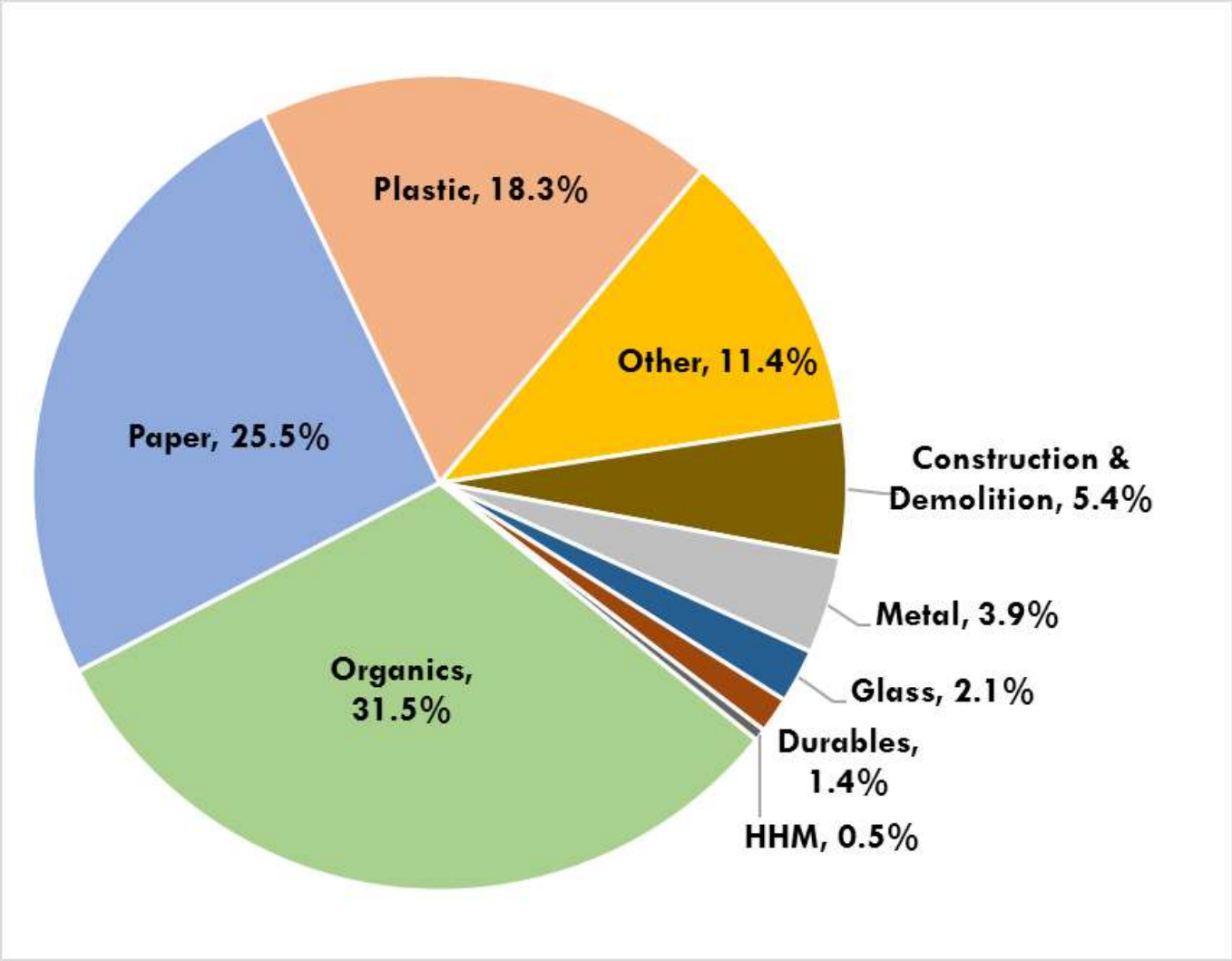
The Process

Sort it

Weigh and record it

You never know what you will find….

Overall Results



Top 5 Material Components

1998	2005	2011	2017
Food Waste 10.7%	**Food Waste** 10.6%	**Food Waste** 13.3%	**Food Waste** 20.0%
Non-Rec. Paper 10.3%	**OCC & Kraft Paper** 8.5%	**OCC & Kraft Paper** 9.0%	**Plastic Film** 8.7%
OCC & Kraft Paper 8.5%	**Mixed Rec. Paper** 7.0%	**Plastic Film** 6.7%	**Compostable Paper** 7.6%
Other Plastic Products 7.5%	**Plastic Film** 6.6%	**Compostable Paper** 6.1%	**Mixed Rec. Paper** 6.1%
Mixed Rec. Paper 5.4%	**Compostable Paper** 6.5%	**Untreated Wood** 5.4%	**OCC & Kraft Paper** 4.6%
Total Proportion of Top 5 Materials			
42.4%	39.2%	40.5%	47.0%

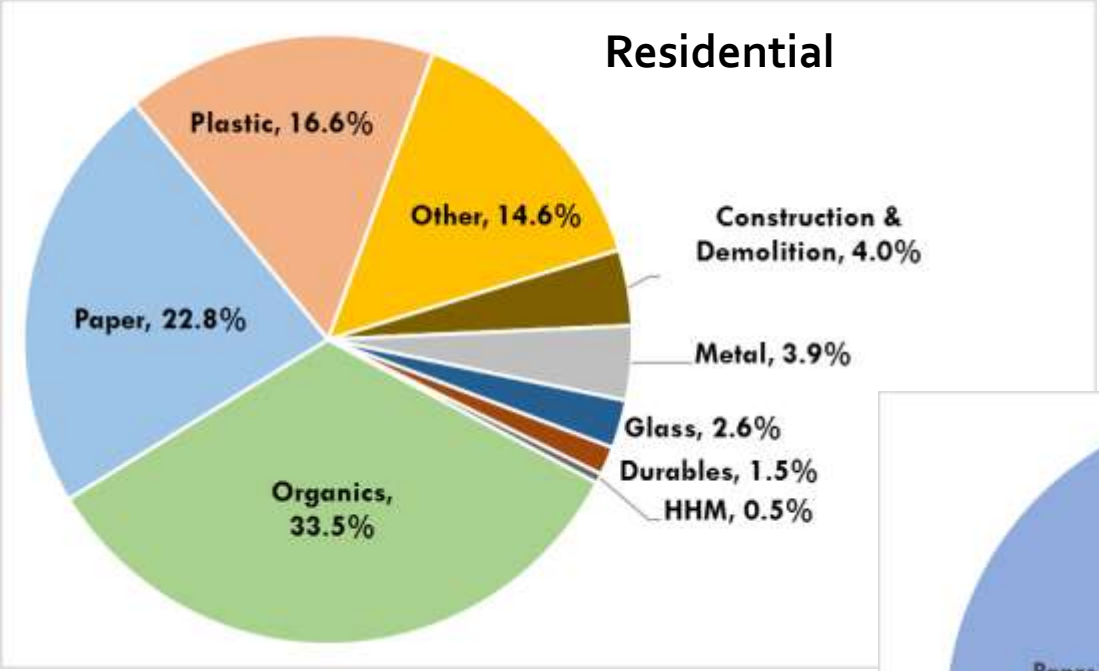
5 Materials Ranked in Top 10 for All Studies

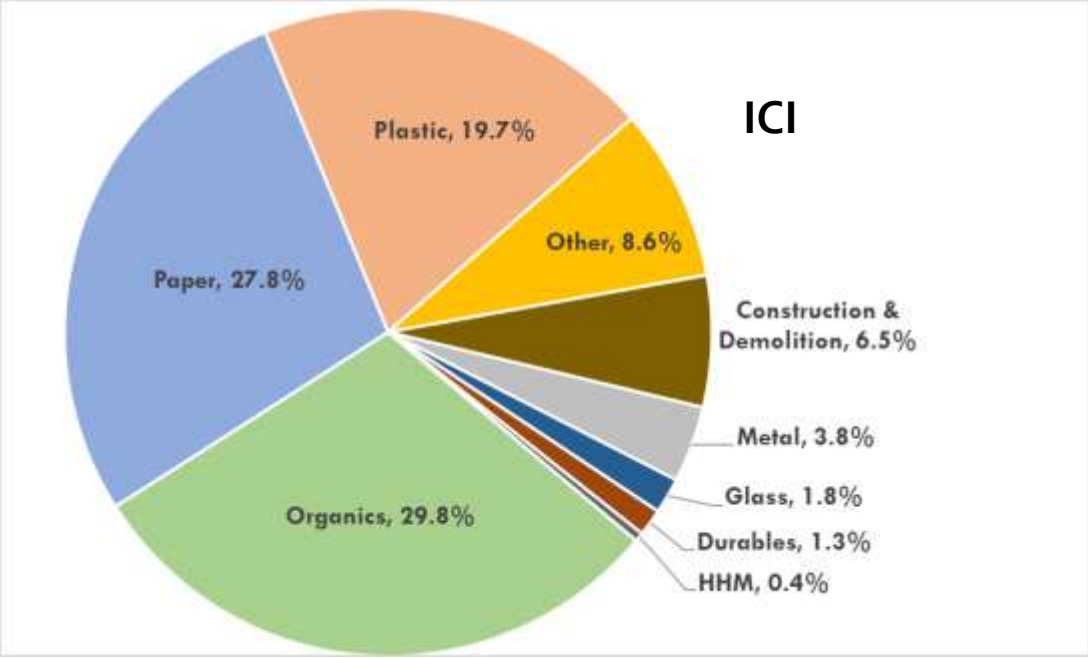
- Food waste
- Plastic film
- OCC and Kraft paper
- Textiles and leather
- Other plastic products

New Materials in Top 10 in 2017

- Other organics (e.g., cat litter, dirt, dog waste)
- Diapers

Residential & ICI Results

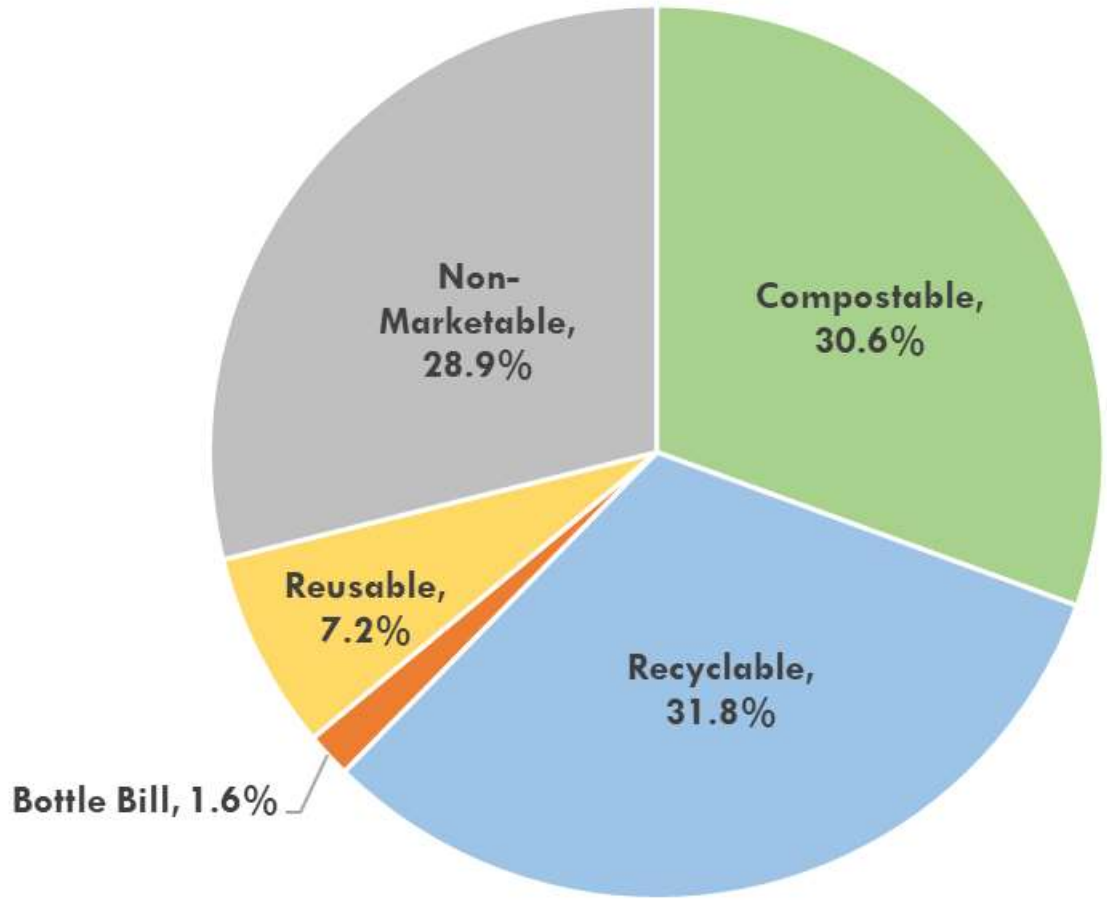




Trends Noted

Material Category	Overall MSW	Residential	I/C/I
Paper	--	Increase	--
Metal	--	--	--
Glass	Increase	--	--
Organic	Increase	--	Increase
C&D	Decrease	Decrease	Decrease
Plastic	--	Increase	--
Durable	--	--	--
Household hazardous materials	Increase	--	Increase
Other	--	--	--

Recoverability Analysis



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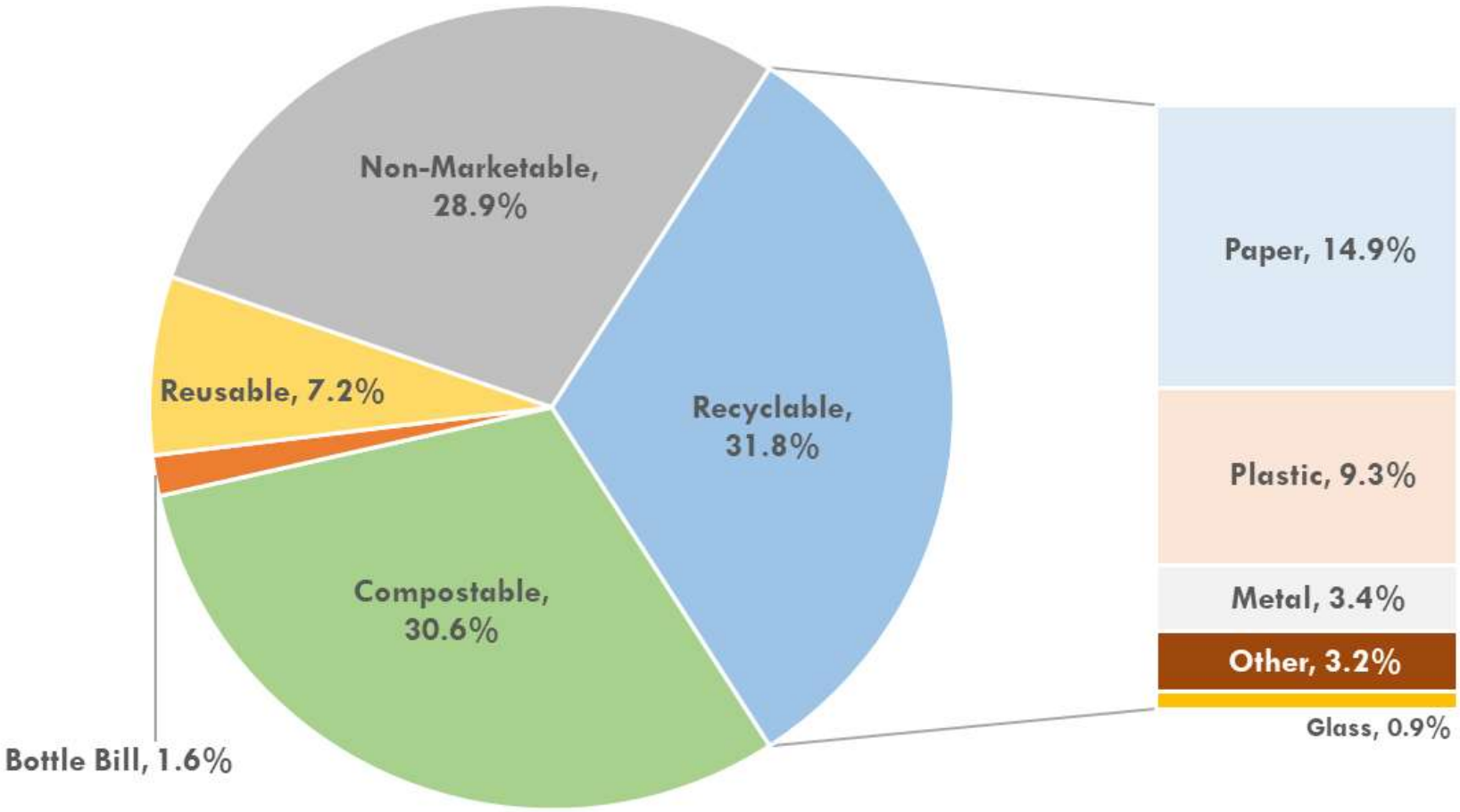

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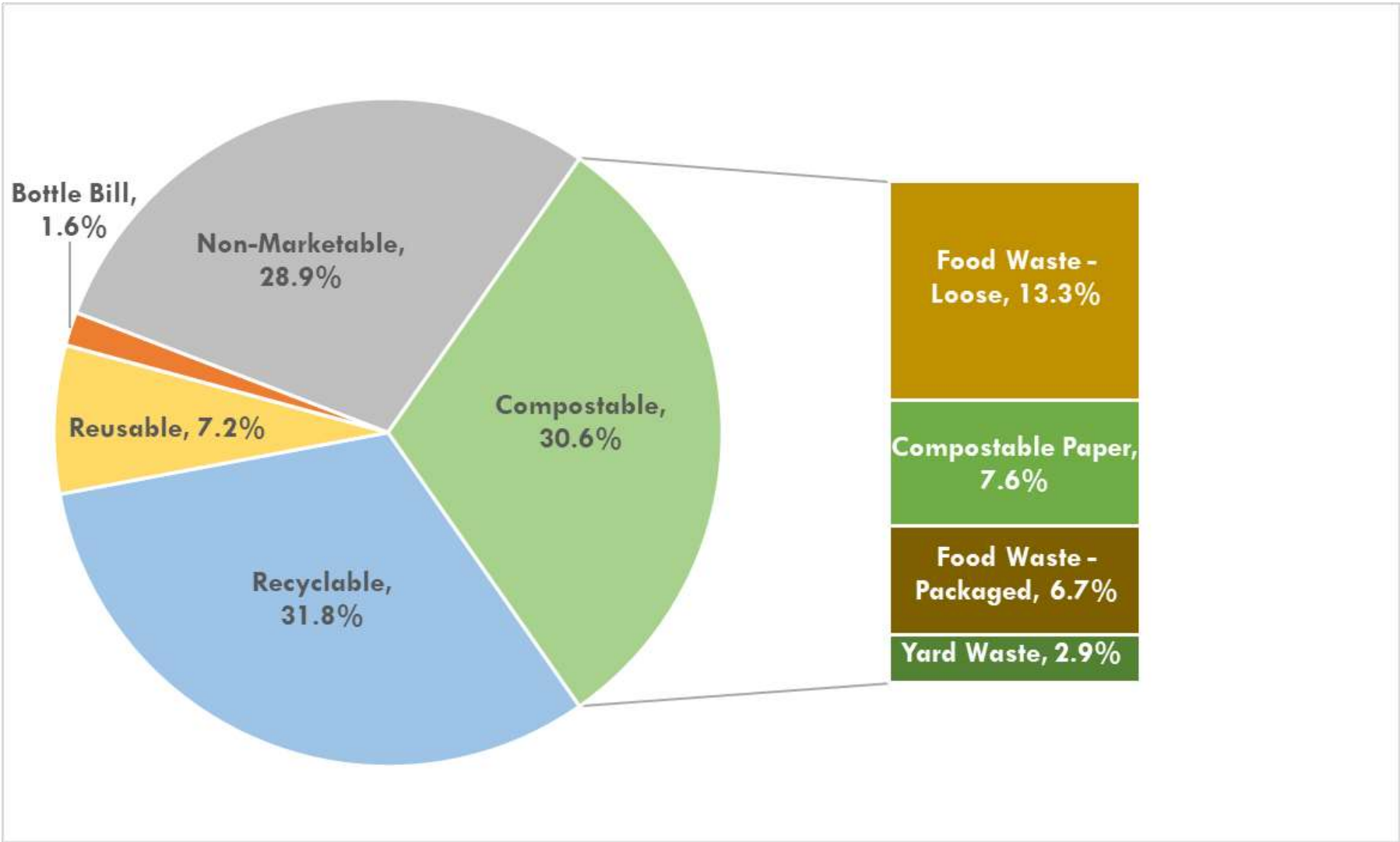

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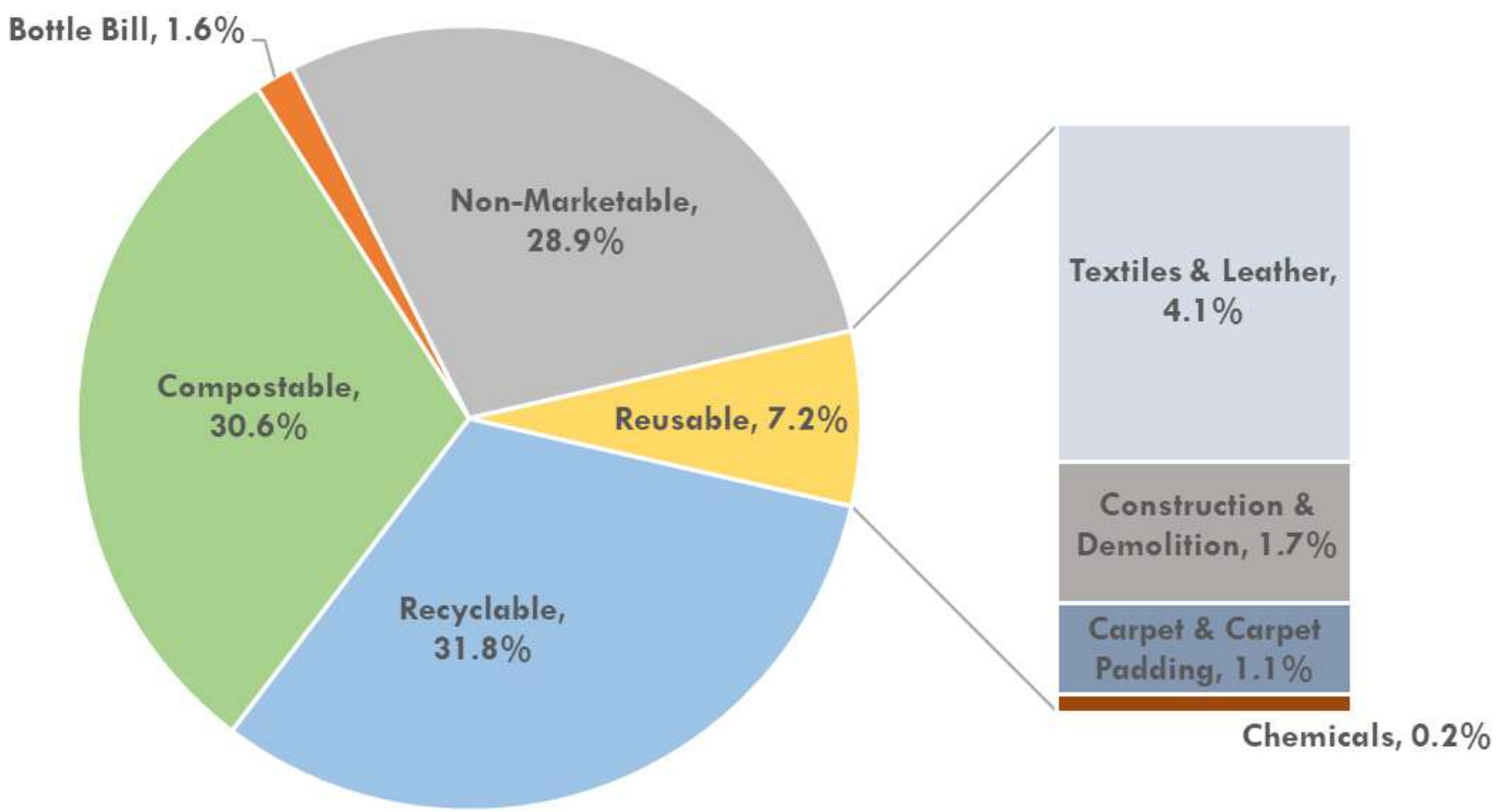
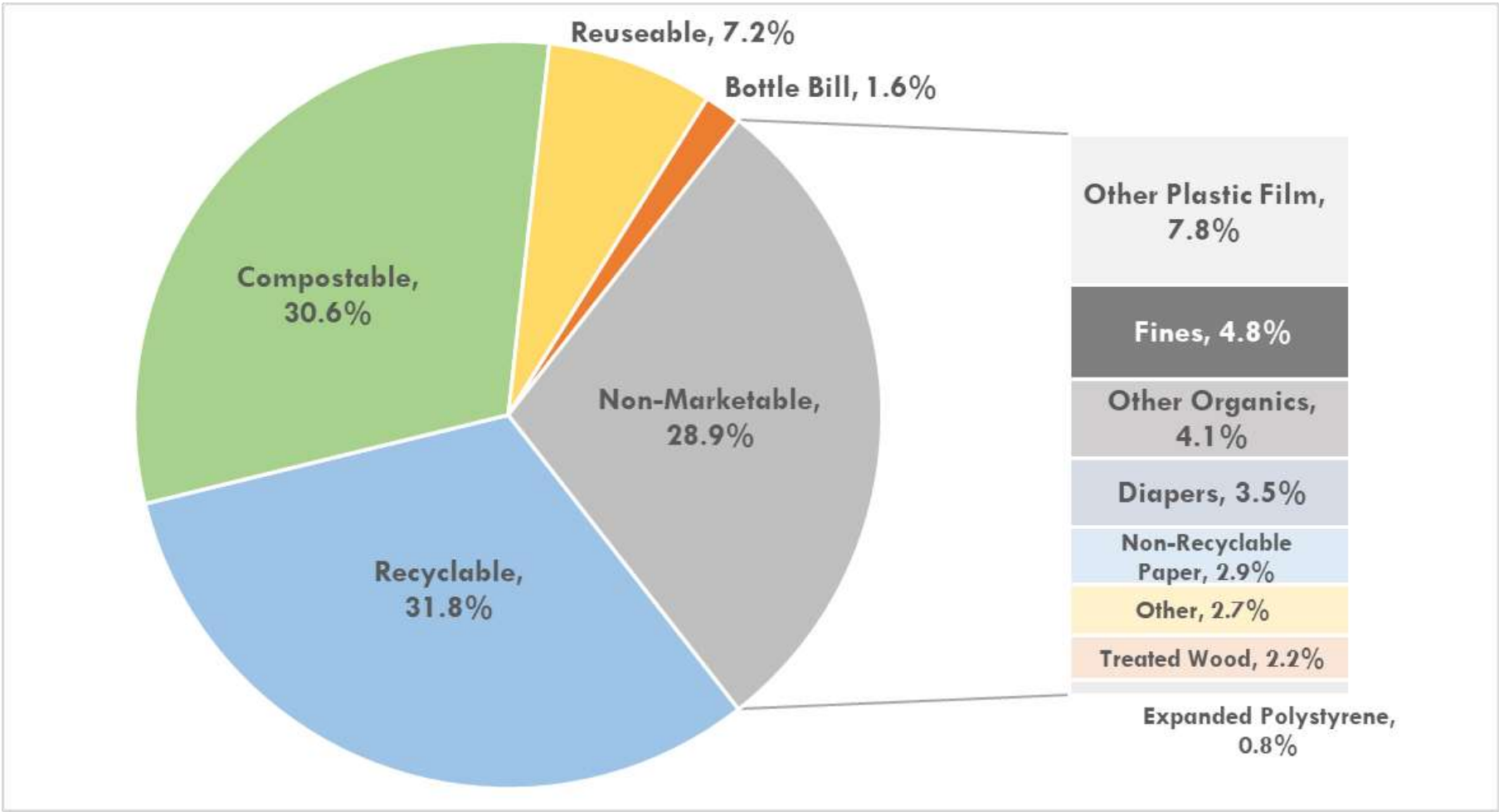


Non-Marketable Materials



Diversion Opportunities

- Approximately 70% can be diverted
  - Recyclable – 33.4%
  - Compostable – 30.6%
  - Reusable – 7.2%

- Diverting waste from disposal can:
  - Increase revenue
  - Create jobs
  - Reduce greenhouse gas emissions

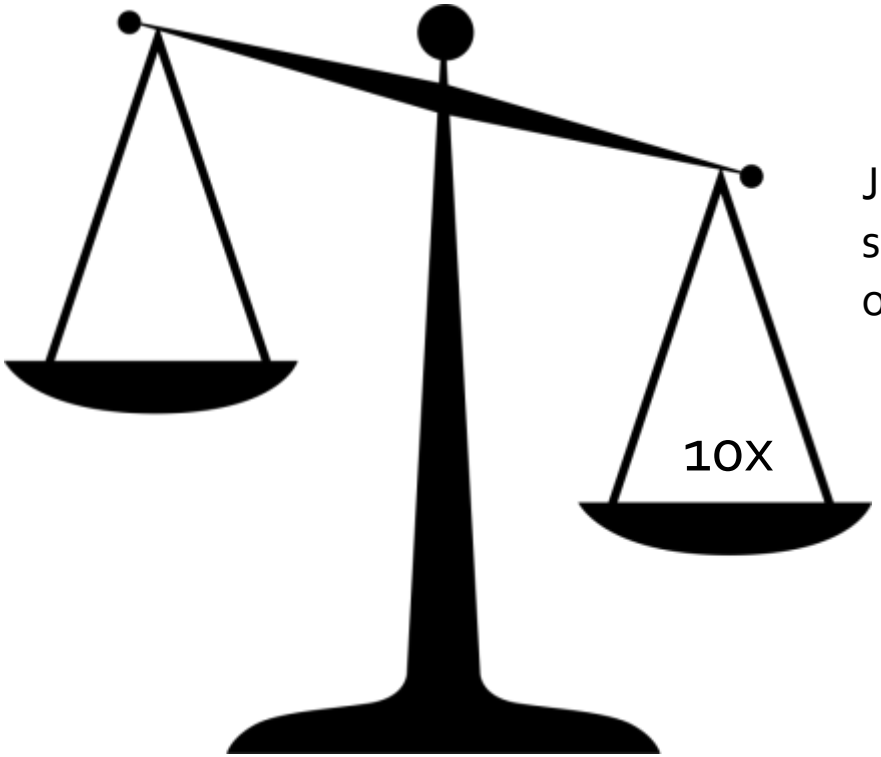
Estimated Economic Value of Diversion Opportunities

- Recyclable paper $20.4 MM

- Recyclable containers $39.9 MM

Job Creation Opportunities

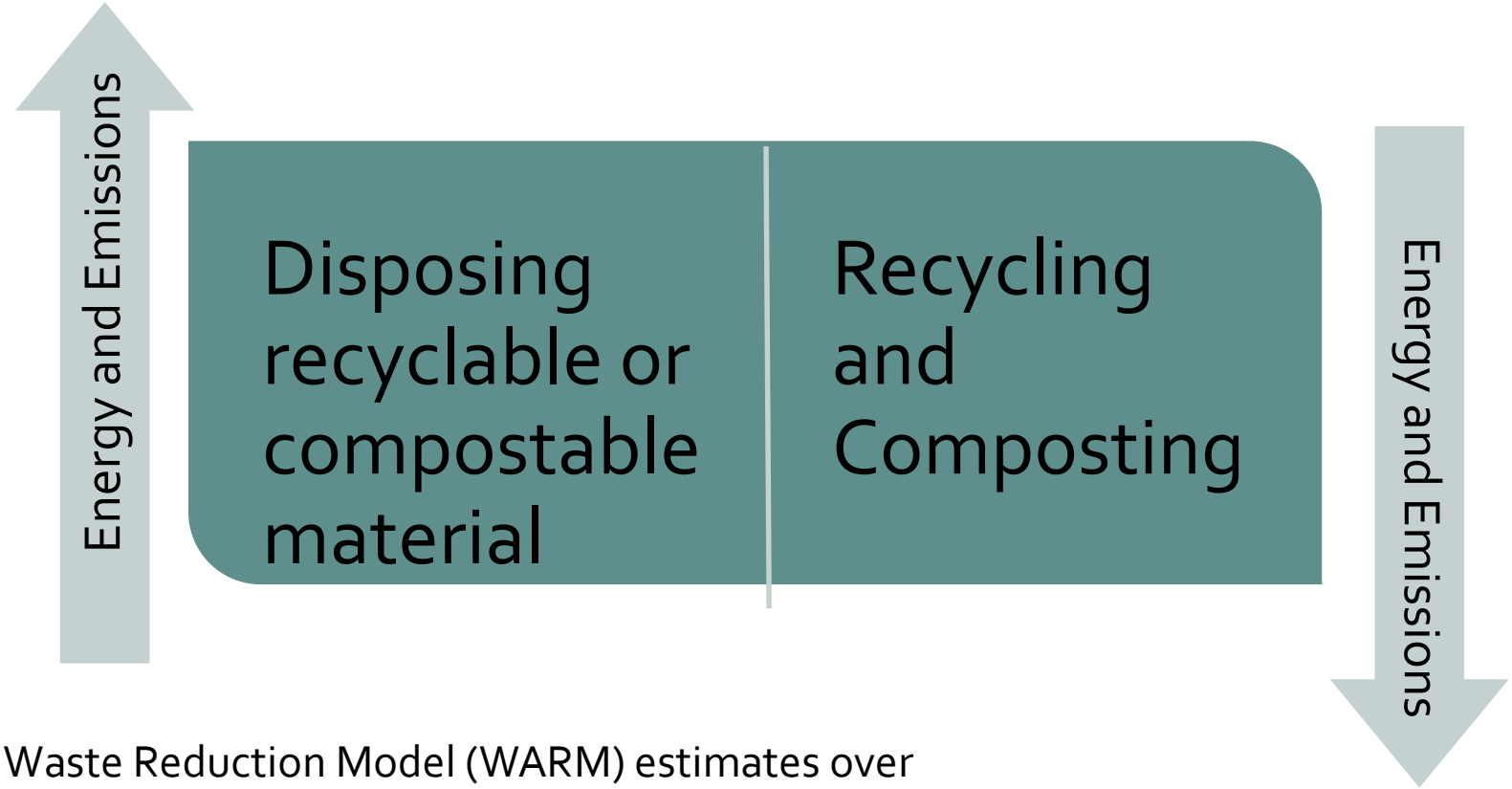
Jobs created by disposing of recyclable material



Jobs created by sorting and processing of recyclable materials

[1]Institute of Local Self-Reliance; Recycling Mean Business; 2002; access on October 23, 2017 from https://ilsr.org/recycling-means-business/

Greenhouse Gas Reduction Opportunities



USEPA's Waste Reduction Model (WARM) estimates over **1.4 MM metric tons of carbon dioxide equivalent** emissions can be reduced by recycling paper and containers and composting food waste

How IDNR and Participating Facilities Are Using the Data

- Compare to previous years to see trends
- Determine effectiveness of existing programs
- Make decisions to modify existing programs
- Develop education and outreach

2017 Waste Characterization Study

IDNR

- Scheduling a stakeholder meeting for March 30
  - Presentation on Waste Characterization Study and Hub and Spoke Recycling Study
  - Discussion on funding
  - Bulk of day: brainstorm/strategy discussion
- Food waste will be a priority partly as a result of the WCS

2017 Waste Characterization Study

Dubuque Metropolitan Area Solid Waste Agency

- Complete additional study to identify source separated organics generators, refine waste
- Plan infrastructure development
  - Upgrade compost facility?
  - Basis for business model for modifications to a WWTP digestor or establishment of a high solids digestor
- Education
  - Push for back to basics recycling with focus on paper and plastics
  - Glass will be socially driven, not enough there

2017 Waste Characterization Study

City of Iowa City

- Food Waste
  - Already discussing food waste reduction and composting efforts
  - Expand education programs and programs for business food waste
  - Residential food waste reduction and composting campaign
  - City sell compost bins at a discount, promote food waste reduction
  - 2014 EPA Project "Food: Too Good to Waste"
  - June 2016 staff presented curbside food waste collection

2017 Waste Characterization Study

City of Iowa City

- Food Waste
  - Code changes approved in November 2016
  - Slow roll-out of program began March 2017
  - Led to several changes on how services charged
    - Went from annual yard waste sticker to $2 monthly fee for all customers
    - Resulted in significant increase in revenue and move to offering two cart options to customers (25 and 96 gallons)

2017 Waste Characterization Study

City of Iowa City

- Cardboard Ban
  - Based on 2011 WCS results
  - Introduced to City Management in June 2016
  - City code approved by Council July 2017
  - In effect January 2, 2018
    - Subject to double charge
  - January 2.9 contaminated loads per day
  - February 1.4 contaminated loads per day

2017 Waste Characterization Study

- Implementing changes takes time
- Have data and basis to do so

2017 Iowa Waste Characterization Report

www.iowadnr.gov/FABA

WASTE PLANNING & RECYCLING

ENVIRONMENTAL PROTECTION > LAND QUALITY > WASTE PLANNING & RECYCLING

- Air Quality
- Land Quality
  - Emergency Planning (EPCRA)
  - Waste Planning & Recycling
    - Bottle Deposit Law
    - CFLs
    - Composting & Organics
    - Comprehensive Planning
    - Derelict Building Program
    - Illegal Dumping
    - Iowa Waste Exchange (IWE)
    - Low-Level Radioactive Waste
    - Mobile Education Exhibit
    - Pollution Prevention (P2)
    - Recycling
    - Solid Waste EMS
    - SWAP
    - Tires
  - Solid Waste
  - Underground Storage Tanks
  - Animal Feeding Operations
  - Flood Plain Management
  - Dam Safety

Waste Planning & Recycling

The Financial and Business Assistance (FABA) team at the DNR is committed to helping Iowa's environmental future in ways that positively impact our economy and society. The team is equipped to work with Iowa citizens, businesses and communities to provide financial and technical assistance resulting in cost-effective improvements, opportunities for increased productivity and positive environmental impacts. Working together, we can achieve a cleaner environment and stronger economy through sustainable use of natural resources and effective waste management and pollution prevention activities.

FABA Fact Sheet

DNR Contact
Jennifer Wright
515-725-8302
Jennifer.Wright@dnr.iowa.gov

+ Explore the programs offered by FABA

+ Studies & Reports

Statewide Waste Characterization Study

- 2011 Iowa Statewide Waste Characterization Study
- 2005 Iowa Statewide Waste Characterization Study
- 1998 Iowa Statewide Waste Characterization Study

Rural Iowa Hub & Spoke Recycling Project

- Rural Iowa Hub & Spoke Recycling Project Final Report
- Supplemental Map Information
- Iowa Pro Forma Model v9

Additional Studies & Guides

- Iowa Green Meetings & Events - Best Practices Manual
- Community Cleanup Event Guide
- Apartment and Condominium Recycling - Best Practices Manual
- State Park Recycling Study Final Report
- Waste Sort Protocol

+ Food Waste

Additional Resources:

Sign up for Financial and Business Assistance Updates

Online Databases:

- Solid Waste
- Iowa Waste Exchange (IWE)
- SWAP Projects

Become part of the Planet Patrol:

Check out the Planet Patrol series of short environmental videos by kids for kids (10 to 15 year olds).

For a copy of the DVD with the Planet Patrol & Trailer videos, please contact Amy Wilken at Amy.Wilken@dnr.iowa.gov or 515-725-8349.

The 2017 study will be posted here

Contact

Christine Collier, P.E.

SCS Engineers

ccollier@scsengineers.com

(515) 631-6161

2017 Iowa Waste Characterization Study

www.iowadnr.gov/FABA