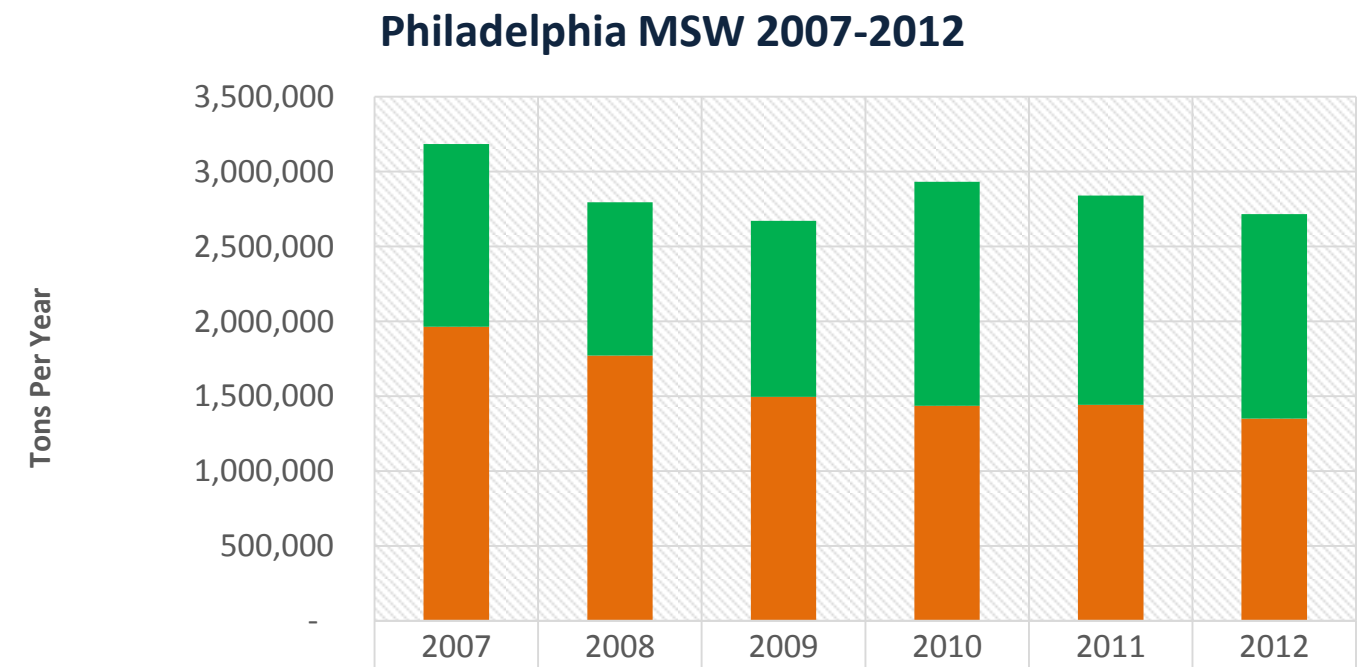
Overview of Solid Waste & Recycling Metrics and Data Management

Presented to: City of Philadelphia Solid Waste & Recycling Advisory Committee

April 18, 2014

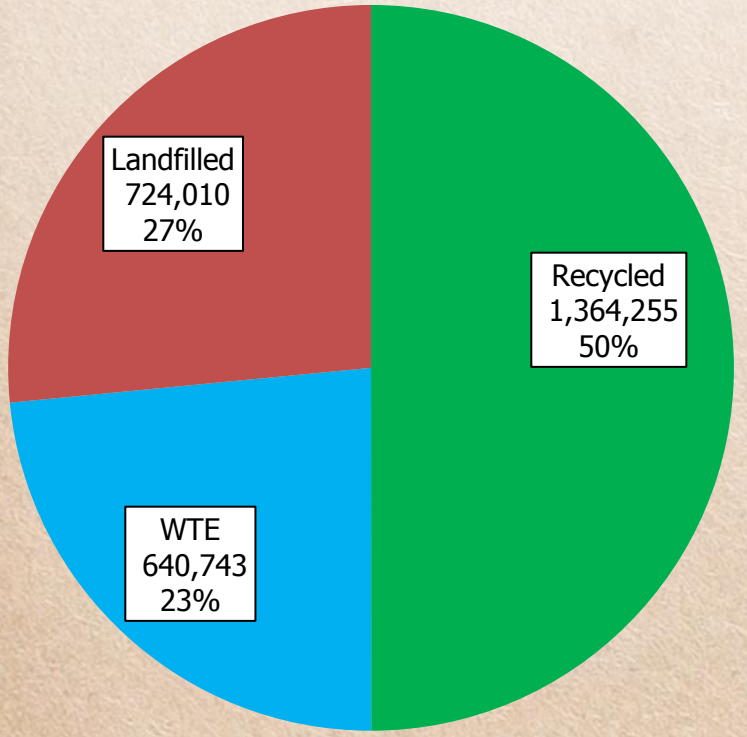
Solid Waste Management Trends in Philadelphia (by calendar year)



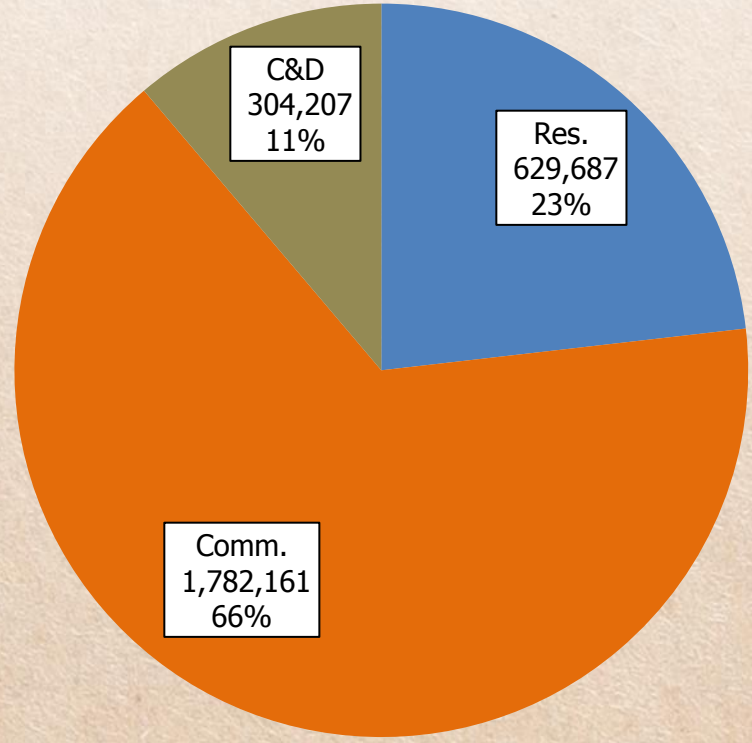
	2007	2008	2009	2010	2011	2012
Recycled & Composted	1,221,029	1,025,394	1,175,842	1,493,955	1,396,987	1,364,255
Disposed	1,964,247	1,771,033	1,495,412	1,437,419	1,443,037	1,351,800

"All-in" MSW Management in Philadelphia 2012

Philadelphia MSW 2012 as Managed



Philadelphia MSW 2012 by Sector



Determining MSW Generation & Recycling Rates:

MSW Generation = +

Recycling Rate = / +

Michael A. Nutter, Mayor
David J. Perri, P.E., Streets Commissioner

What Counts towards the State's 35% Recycling Goal?

Act 101 Recyclables include:

- ✓ Newspaper, mixed paper, magazines, cardboard, etc.
- ✓ Steel cans
- ✓ Aluminum cans
- ✓ Glass bottles & jars
- ✓ Plastic containers
- ✓ Commingled materials
- ✓ Single-stream materials

Non-Act 101 Recyclables include:

- ✓ Yard waste, wood waste
- ✓ Food waste
- ✓ C&D debris
- ✓ Scrap metals
- ✓ Textiles
- ✓ Auto parts
- ✓ Batteries
- ✓ Electronics

Tonnage Data Sources:

Solid waste disposal tonnage sources:	Recyclables tonnages sources:
• DEP facility reports (includes C&D) • Streets Department (residential)	• Streets Dept. (residential, institutional) • Survey of MRFs, recyclables processors & private haulers

- 100+ MRF & private hauler surveys
- Standard survey form (DEP developed)
- Residue subtracted
- Must be “auditable”
- Materials destination ID’d (to protect against double-counting)
- Data reported primarily by weight; some volume-to-weight conversions
- Occasional “averaging” necessary

Act 101 Reporting Process

- Reporting forms and instructions distributed to processors & haulers in mid-January.
- Disposal tonnages reported quarterly to DEP by facility owner/operator.

CITY OF PHILADELPHIA

DEPARTMENT OF STREETS
7th Floor - Municipal Services Building
1401 JFK Boulevard
Philadelphia, PA 19102-1676

DAVID J. PERRI, P.E.
Commissioner

DONALD CARLTON
Deputy Commissioner

January 13, 2014

Dear Environmental Professional:

We're writing once again to request that your firm report the quantity and type of recyclable materials collected for

Form FM-12 Rev. 11/06/13	ANNUAL RECYCLING REPORT For Waste/Recycling Hauler, Document Destruction Company, or Other Company Transporting Recyclables Generated in PA	For the period: Jan. 1, 20__ to Dec. 31, 20__ Due: February 1, 20__ To: Insert Municipal Contact Info Here

Collector Name:		
Address:	City:	Zip Code:
Email:	Telephone:	Fax:

Please **complete** one form for each municipality where you collected recyclables.

Municipality: _____ County: _____

1. CHECK the box in front of each post-consumer* material that you collected for recycling from the municipality above.
2. ENTER the weight (in tons) of material recycled in the correct column. Subtract processing residue.**

ACT 101 Recyclable Material Type (see page 2 for Other Recyclables)		Residential Tons***	Res. Drop-Off Tons ***	Commercial/ Institutional Tons	Com. Drop-Off Tons	Name of Processing Facility or Market
Single Stream:	ISS11					

Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Waste Management
Division of Reporting and Fee Collection

County Waste Destinations
In Tons (2000 lbs.) of Waste

Note: This reports does not show waste shipped from Pennsylvania counties to out-of-state disposal facilities, nor does it show waste collected for recycling.

For Year: 2013

County : PHILADELPHIA

Permit	Disposal Facility Receiving Waste	Waste Type:	Municipal	Residual	Sewage Sludge	Infectious	Contruction	Ash Residu	Asbestos	Total
100020	IESI PA BETHLEHEM LANDFILL CORP.		0	0	0	0	2113.9	0	0	2113.9
100113	MODERN LANDFILL		257302	0	0	0	0	0	57.1	257359.1
100346	PIONEER CROSSING LANDFILL		93.5	216.9	0	2537.5	0	0	3.2	2851.1
100620	ALLIED WASTE SYSTEMS IMPERIAL LANDFI		0	0	0	0	0	0	452.7	452.7
100739	WESTERN BERKS COMMUNITY LANDFILL		14.2	14.4	760.5	0	0	0	215.9	1005
100758	HARRISBURG MATERIALS ENERGY RECYC		761.6	0	0	0	0	0	0	761.6
100944	CHESTER COUNTY SWA LANCHESTER LAN		0	0	0	0	1.4	0	63	64.4
100945	CUMBERLAND COUNTY LANDFILL		2707	1900.4	0	0	0	0	1091.4	5698.8
101247	KEYSTONE SANITARY LANDFILL		256.6	0	0	0	0	0	0	256.6
101397	ADVANCED DISPOSAL SERVICES GREENT		210.1	1028.8	0	0	0	0	0	1238.9
101494	TULLYTOWN RESOURCE RECOVERY FACIL		40864.8	4847.3	1319.6	3047.8	803.4	0	3.1	50886
101509	CONNESTOGA LANDFILL		117688.8	22633.8	0	234.2	13224.3	146.6	276.4	154204.1
101615	COMMONWEALTH ENVIRONMENTAL SYST		0	0	0	0	78.7	0	0	78.7
101680	G.R.O.W.S. NORTH		255641.5	6731	5960.5	1717.4	5463.9	0	233.2	275747.5
400558	COVANTA PLYMOUTH RENEWABLE ENERG		16247.4	811.9	0	0	0	0	0	17059.3
400561	YORK COUNTY RESOURCE RECOVERY CE		19183.4	0	0	0	0	0	0	19183.4
400592	LCSWMA RESOURCE RECOVERY FACILITY		0	151.7	0	0	0	0	0	151.7
400593	COVANTA DELAWARE VALLEY		289364.5	5191.3	0	0	0	0	0	294555.8
400633	WHEELABRATOR FALLS INC		316111.5	1182.5	0	0	51.5	0	0	317345.5
		Waste Totals:	1316446.9	44710	8040.6	7536.9	21757.1	146.6	2396	1401014.1

Please Use Recycled Paper

Phone: 717-783-9258
Printed: 2/10/2014

Also visit our Internet WWW Site at: http://www.dep.state.pa.us

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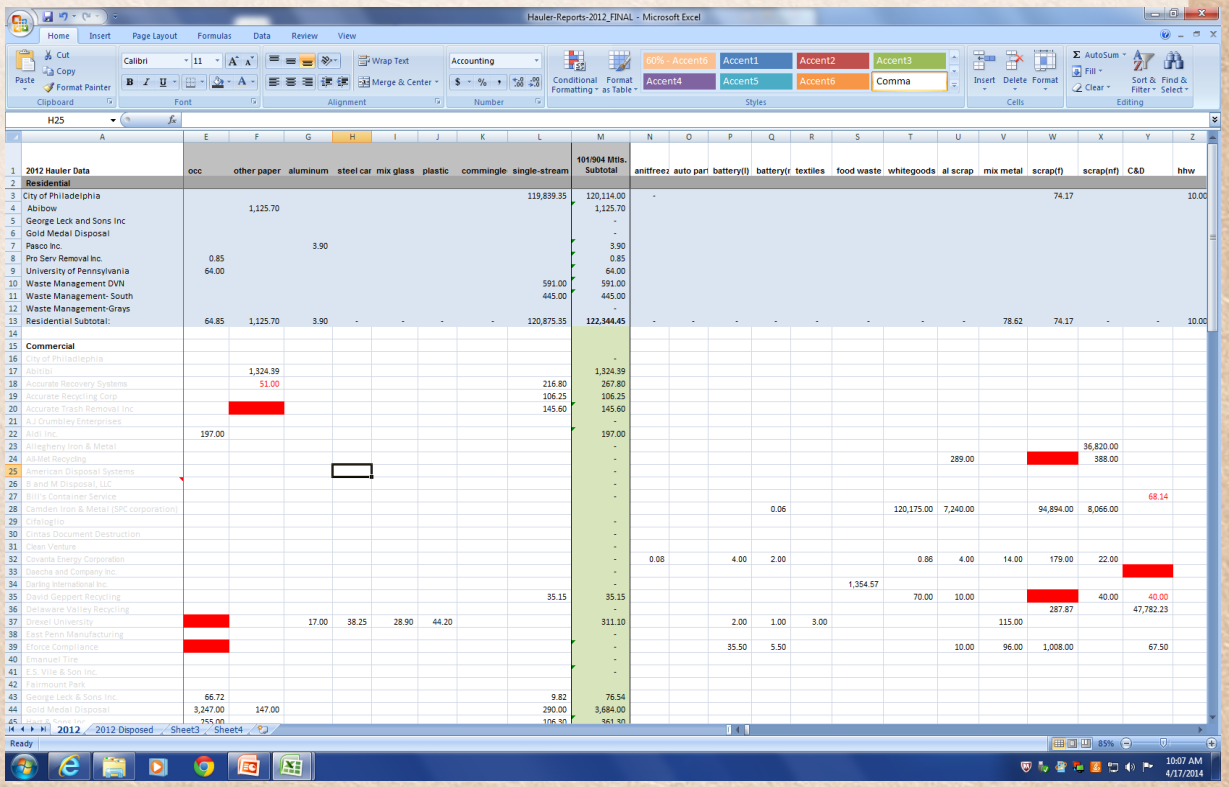
Act 101 Reporting Process (cont.)

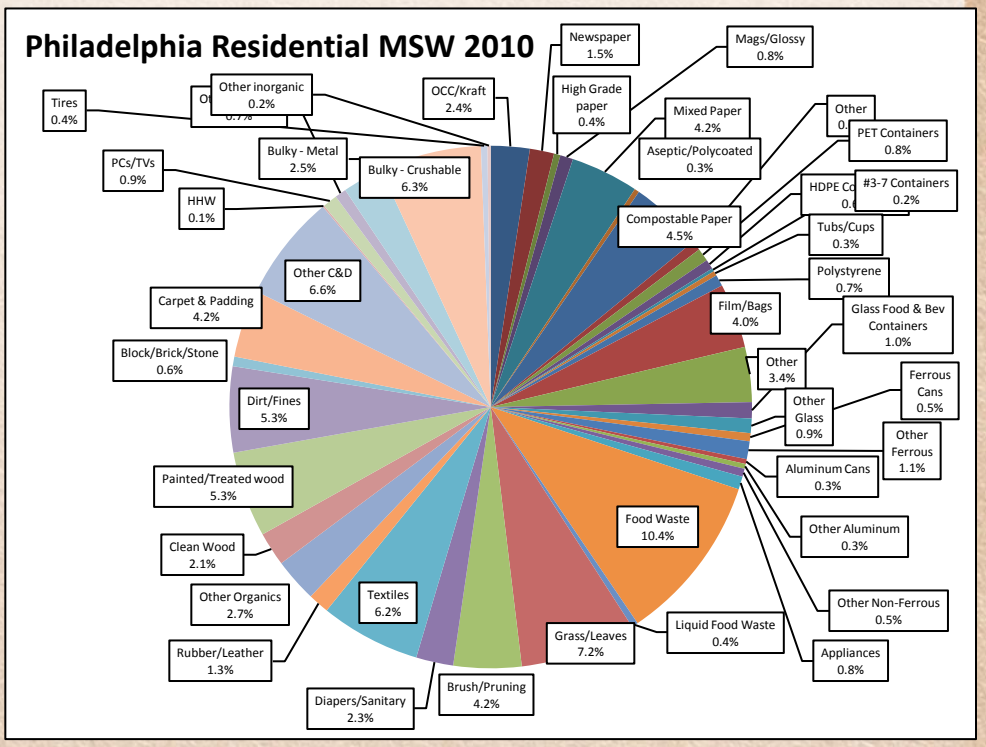
- Data compiled & managed by Recycling Office
- Reports back-up Act 101, Sect. 904 grant application to DEP (<u>done manually</u>)
- Entered into Re-TRAC™
- Reporting process takes 8-10 months.



2012 Hauler Data	occ	other paper	aluminum	steel car	mix glass	plastic	commingle	single-stream	101/904 Mtls. Subtotal	anitfreez	auto parl	battery(l)	battery(r	textiles	food waste	whitegoods	al scrap	mix metal	scrap(f)	scrap(nf)	C&D	hhw
Residential																						
City of Philadelphia								119,839.35	120,114.00	-									74.17			10.00
Abibow		1,125.70							1,125.70													
George Leck and Sons Inc									-													
Gold Medal Disposal									-													
Pasco Inc.			3.90						3.90													
Pro Serv Removal Inc.	0.85								0.85													
University of Pennsylvania	64.00								64.00													
Waste Management DVN								591.00	591.00													
Waste Management- South								445.00	445.00													
Waste Management-Grays									-													
Residential Subtotal:	64.85	1,125.70	3.90	-	-	-	-	120,875.35	122,344.45	-	-	-	-	-	-	-	-	78.62	74.17	-	-	10.00
Commercial																						
City of Philadelphia									-													
Abitibi		1,324.39							1,324.39													
Accurate Recovery Systems		51.00						216.80	267.80													
Accurate Recycling Corp.								106.25	106.25													
Accurate Trash Removal Inc.								145.60	145.60													
A.J Crumbley Enterprises									-													
Aldi Inc.	197.00								197.00													
Allegheny Iron & Metal									-											36,820.00		
All-Mel Recycling									-								289.00			388.00		
American Disposal Systems									-													
B and M Disposal, LLC									-													
Bill's Container Service									-												68.14	
Camden Iron & Metal (SPC corporation)													0.06			120,175.00	7,240.00		94,894.00	8,066.00		
Cifaloglio									-													
Cintas Document Destruction									-													
Clean Venture									-													
Covanta Energy Corporation									-	0.08		4.00	2.00			0.86	4.00	14.00	179.00	22.00		
Daecha and Company Inc.									-													
Darling International Inc.									-						1,354.57							
David Geppert Recycling								35.15	35.15							70.00	10.00			40.00	40.00	
Delaware Valley Recycling									-										287.87		47,782.23	
Drexel University			17.00	38.25	28.90	44.20			311.10			2.00	1.00	3.00				115.00				
East Penn Manufacturing									-													
Eforce Compliance									-			35.50	5.50				10.00	96.00	1,008.00		67.50	
Emanuel Tire									-													
E.S. Vile & Son Inc.									-													
Fairmount Park																						
George Leck & Sons Inc.	66.72							9.82	76.54													
Gold Medal Disposal	3,247.00	147.00						290.00	3,684.00													

2010 MSW Composition Study

- Prime contractor MSW Consultants with sub work from Cascadia Consulting Group of San Jose & Seattle
- Winter/Spring & Summer/Fall to capture seasonality
- Distributed among all sanitation districts
- 238 total samples (20 per district)



Michael A. Nutter, Mayor
David J. Perri, P.E., Streets Commissioner

2010 MSW Composition Study

- "Grab" samples selected at random
- Each grab = 200-250 lbs.
- Materials sorted into 42 sub-streams
- Performed to 90% confidence level
- Also performed residential recyclables "capture rate" analysis

Comparing MSW Composition

CLASS	Material	Philadelphia (2010) Composition %	Chicago (2011) Composition %	Tucson, AZ (2012) Composition %	Connecticut (2010) Composition %
PAPER	OCC/Kraft	2.4%	5.4%	3.2%	3.1%
	Newspaper	1.5%	6.4%	2.7%	2.3%
	High Grade paper	0.4%	1.1%	1.1%	1.5%
	Mags/Glossy	0.8%	1.7%	0.0%	1.6%
	Mixed Paper	4.2%	4.6%	6.1%	4.5%
	Aseptic/Polycoated	0.3%	0.2%	0.0%	0.0%
	Compostable Paper	4.5%	5.1%	0.0%	9.8%
	Other	0.6%	2.8%	5.6%	2.4%
	Subtotal:	**14.7%**	**27.3%**	**18.7%**	**25.2%**
PLASTIC	PET Containers	0.8%	1.6%	0.7%	1.0%
	HDPE Containers	0.6%	1.4%	0.7%	1.2%
	#3-7 Containers	0.2%	0.3%	0.3%	0.5%
	Tubs/Cups	0.3%	0.9%	0.0%	0.0%
	Polystyrene	0.7%	4.2%	0.0%	0.9%
	Film/Bags	4.0%	3.4%	0.9%	5.1%
	Other	3.4%	1.1%	5.5%	4.8%
	Subtotal:	**10.0%**	**12.9%**	**8.1%**	**13.5%**
GLASS	Glass Food & Bev Containers	1.0%	6.4%	2.3%	1.8%
	Other Glass	0.9%	0.3%	0.2%	0.5%
	Subtotal:	**1.9%**	**6.7%**	**2.5%**	**2.3%**
METAL	Ferrous Cans	0.5%	1.4%	1.0%	0.9%
	Other Ferrous	1.1%	0.6%	1.8%	2.0%
	Aluminum Cans	0.3%	0.6%	0.4%	0.2%
	Other Aluminum	0.3%	0.5%	0.0%	0.0%
	Other Non-Ferrous	0.5%	0.1%	1.1%	0.8%
	Appliances	0.8%	0.4%	0.3%	0.7%
	Subtotal:	**3.5%**	**3.6%**	**4.6%**	**4.6%**

Comparing MSW Composition (cont.)

CLASS	Material	Philadelphia (2010) Composition %	Chicago (2011) Composition %	Tucson, AZ (2012) Composition %	Connecticut (2010) Composition %
ORGANICS	Food Waste	10.4%	19.9%	17.6%	13.7%
	Liquid Food Waste	0.4%	0.0%	0.0%	0.0%
	Grass/Leaves	7.2%	3.3%	24.5%	10.7%
	Brush/Pruning	4.2%	0.1%	0.0%	3.4%
	Diapers/Sanitary	2.3%	4.0%	0.0%	0.0%
	Textiles	6.2%	6.6%	5.5%	5.4%
	Rubber/Leather	1.3%	n/s	0.0%	n/s
	Other Organics	2.7%	3.7%	7.3%	4.3%
	Subtotal:	**34.7%**	**37.6%**	**54.9%**	**37.5%**
C&D	Clean Wood	2.1%	1.7%	3.0%	0.5%
	Painted/Treated wood	5.3%	2.3%	0.0%	3.8%
	Dirt/Fines	5.3%	0.0%	0.0%	1.8%
	Block/Brick/Stone	0.6%	0.6%	2.7%	0.0%
	Carpet & Padding	4.2%	0.6%	0.0%	4.4%
	Other C&D	6.6%	2.5%	1.9%	1.9%
	Subtotal:	**24.1%**	**7.7%**	**7.6%**	**12.4%**
OTHER	HHW	0.1%	0.4%	0.4%	0.4%
	PCs/TVs	0.9%	0.1%	0.0%	1.2%
	Other E-Waste	0.7%	0.6%	0.0%	0.8%
	Bulky - Metal	2.5%	2.5%	0.0%	0.0%
	Bulky - Crushable	6.3%	n/s	0.8%	2.2%
	Tires	0.4%	0.3%	0.0%	n/s
	Other inorganic	0.2%	0.3%	2.0%	0.0%
	Subtotal:	**11.1%**	**4.2%**	**3.2%**	**4.6%**
		100.0%	100.0%	100.0%	100.1%

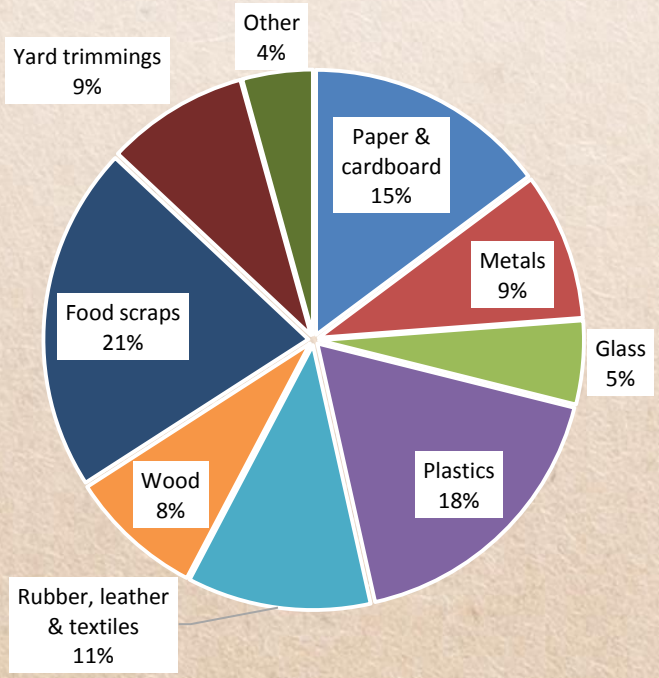
Residential MSW Composition from InSinkErator Project

Philadelphia Residential MSW Composition (by major categories)				
Material	2000	2010	*2012*	*2013*
Paper & cardboard	29.0%	14.7%	15.6%	12.9%
Plastics	13.2%	10.0%	13.5%	14.1%
Glass	4.0%	1.9%	2.4%	1.4%
Metals	6.6%	3.5%	2.9%	2.5%
Organics	29.1%	27.2%	38.9%	36.4%
C&D	12.9%	24.1%	21.0%	20.2%
Other	5.2%	18.6%	5.7%	12.5%
Total	100.0%	100.0%	100.0%	100.0%

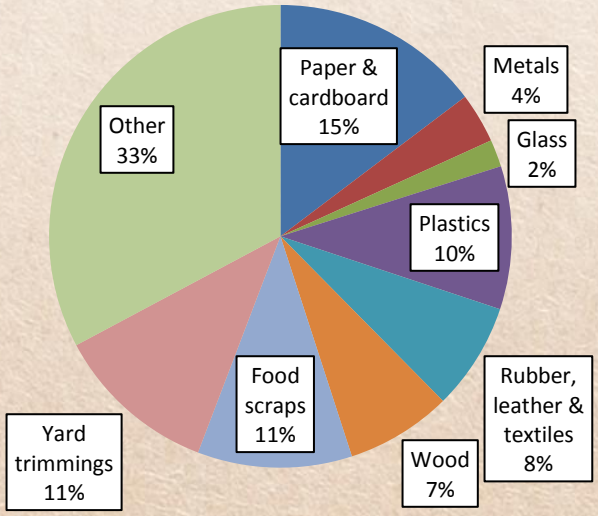
- Composition data from InSinkErator project sorts in 2012 and 2013 show relative consistency with 2010 study results.

Philadelphia MSW% Compared to U.S. EPA

MSW in the U.S. 2012 (after recycling)



Philadelphia Residential MSW (after recycling)



Next Meeting:

Analysis of recycling stream…