The background of the slide is a photograph of a residential street. On the left, there is a blue recycling bin with a white recycling symbol on it. The street is paved with asphalt and has a concrete curb. In the background, there are trees with green and some autumn-colored leaves. A blue car is parked on the right side of the street. The overall scene is bright and sunny.

WHAT'S IN YOUR TRASH: IMPLEMENTING AN AUDITING PROGRAM TO HELP IN FUTURE DECISION MAKING

**Erik Grabowsky
Arlington County
Department of Environmental Services
Solid Waste Bureau**

January 31, 2019

- **Population of 225,200**

- **63%** of residents live in apartments or condos served private haulers
- **37%** of residents live in single family homes and are served by the County's residential collection program

- **Waste Generation**

- **70%** of all waste produced is from commercial and multi-family sectors
- Total refuse = **101,781 tons**
- Total recyclables = **79,944 tons**
- **CY 2017 Recycling Rate = 49%**

Area of **26 square miles**



*Data compiled from Arlington, Virginia Profile 2018 and CY2017 Recycling Rate Report

- 20-Year Solid Waste Management Plan
- Adopted in June of 2004 by our Board
- Guide for the future growth of the County's solid waste management system
- Established planning priorities
- Commitment to Waste to Energy
- Established future recycling rate goals
 - 37% by 2014
 - 42% by 2019
 - 47% by 2024

Beyond 5 Years

Table 7-3
Voluntary Program Enhancements, Beyond Five Years:
Implementation Timeframe

Completed/ Addressed		Program Enhancements	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
		Franchising															
		Franchise agreements															
x	1	Expand HHM program															
		Expand existing program and facilities															
		Study collection for "backdoor" residents and CESQGs															
		Implement collection for "backdoor" residents and CESQGs															
x	2	Waste assessment and tracking															
		Waste tracking system															
		Periodic waste assessments (every 5 years)															
x	3	Education/outreach position															
x	4	Community inspector position															

Residential Curbside Program

33,200 households

Curbside Collection Program:

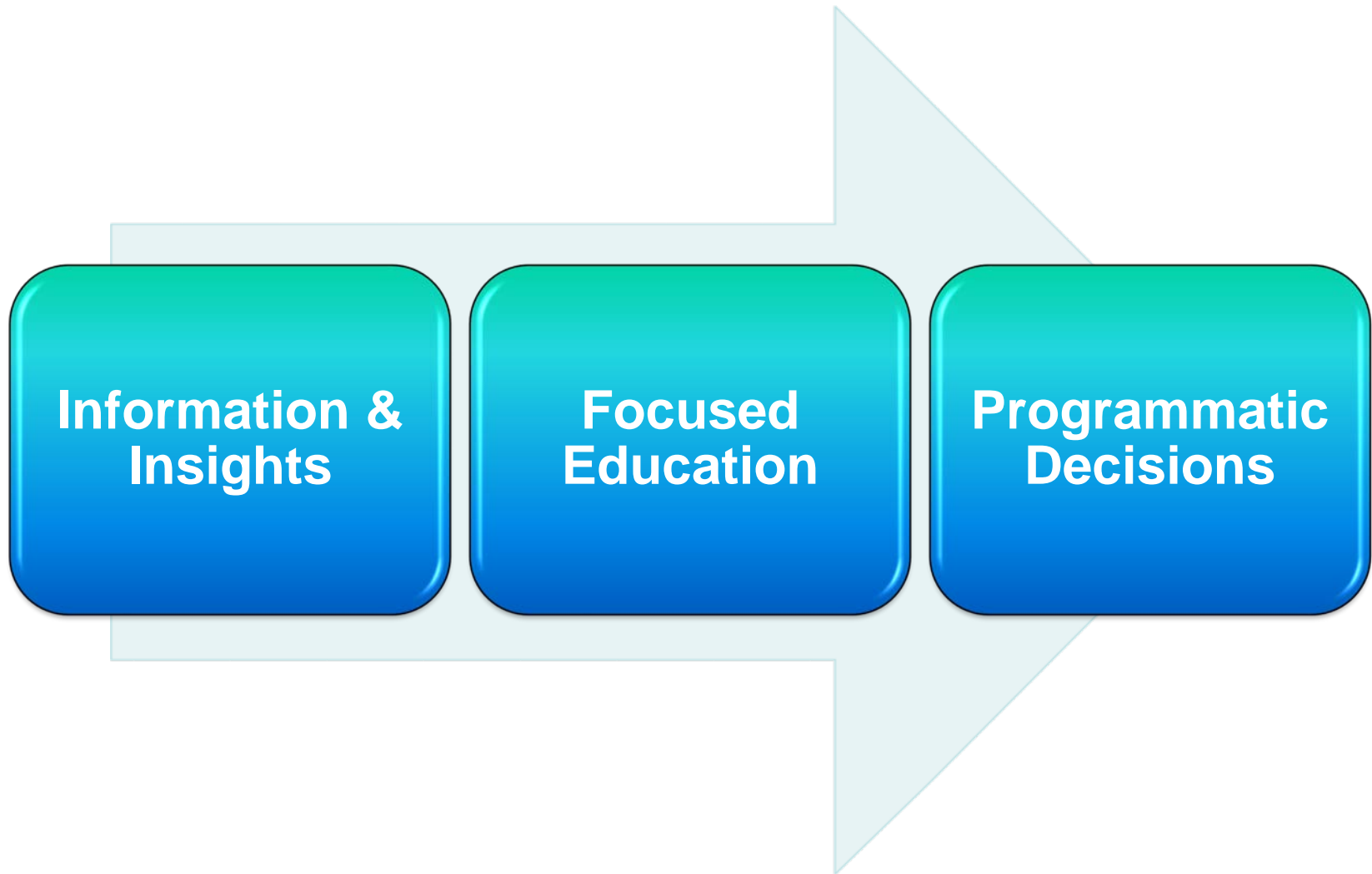
- Trash
- Recycling
- E-waste
- Metal
- Brush
- Organics- yard trimmings
- Leaves
- Car Batteries

Other services:

- Inert material drop-off (EPRY)
- Paper Shredding (EPRY)
- Food Scraps drop-off (EPRY)
- 2 Drop-off centers (single stream, cardboard, **glass**)
- HHM collection (WPCP)



Importance of Waste Audits



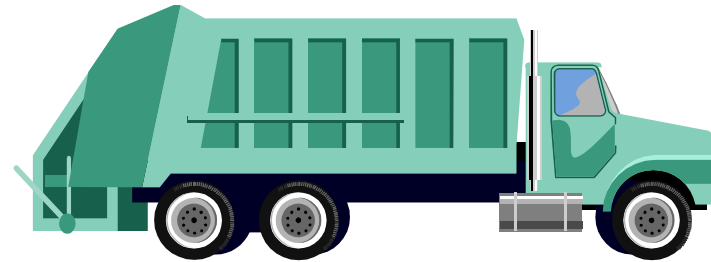
The residential waste audit is:

- Collecting materials
- Sorting materials
- QA of sorted materials
- Data collection & recording
- Analyzing data (trends/change)
- Publishing findings
- Using results for decisions



Resources

- **Collection (5 days): 20 hours**
 - 2 hours per day
 - 2 staff (2 drivers)
- **Sorting/Clean-up (5 days): 100 hours**
 - 5 hours per day
 - 4 staff
- **Data Recording/Analysis/Publishing: 5 hours**
 - 5 hours
 - 1 staff
- **Total Staff hours = 125**
- **Cost < \$3,000 per audit (\$12K annually)**



- Collection safety- early in morning prior to collection crews starting, concern about visibility in dark- class III garments
- Sorting safety- Tyvek suits, safety shoes, appropriate gloves, face masks, picking sticks

How it Works

- 1. Individual houses tagged in advance**
- 2. Collect: 20-22 houses per day (100 total)**
 - a) 2 houses per route (50 routes total)**
 - b) Track set out percentages (trash, recycling & yard waste)**
- 3. Sort: recycling & trash**
- 4. Weigh: each material category**
- 5. Analyze: the data for insights**



Collection

Year	Trash (lbs)	Recycling (lbs)	Total (lbs)
2014	13,205	7,236	20,441
2015	15,754	7,097	22,851
2016	10,018	8,925	18,943
2017	8,561	7,005	15,567
2018	6,991	5,832	12,823



Route Sheet

#	Route Day	Rte #	Address	Recycle (Y/N)	% Full	Trash (Y/N)	% Full	Grass or Leaves/ Yard waste	Notes
1	MONDAY	1	5623 N 26TH ST	Y	100	Y	50	100 N	
2	MONDAY	1	5826 N 27TH ST	X	100	N	N	N	
3	MONDAY	2	5124 N 23RD RD	Y	100	Y	50	100+	
4	MONDAY	2	5105 N 25TH PL	Y	40	N	N	N	
5	MONDAY	3	5622 N YORKTOWN BLVD	Y	100	Y	25	100	
6	MONDAY	3	3118 N JOHN MARSHALL DR	Y	100	Y	15	N	
7	MONDAY	4	5007 N YORKTOWN BLVD	Y	30	Y	40	100	
8	MONDAY	4	5027 N 30TH ST	X	100	Y	20	N	
9	MONDAY	5	3494 N EMERSON ST	X	100	N	N	N	
10	MONDAY	5	3701 N KENSINGTON ST	Y	50	Y	10	N	
11	MONDAY	6	4517 N DITTMAR RD	Y	100	Y	20	N	
12	MONDAY	6	4324 N 37TH RD	Y	100	X	100	95	
13	MONDAY	7	4747 N ROCK SPRING RD	Y	100	Y	80	100	
14	MONDAY	7	3304 N VERNON ST	Y	60	Y	50	100	
15	MONDAY	8	4512 N 40TH ST	Y	80	Y	60	N	
16	MONDAY	8	4007 N STUART ST	Y	20	Y	5	100	
17	MONDAY	9	6817 N 28TH ST	Y	100	Y	100	80	
18	MONDAY	9	6801 N 31ST ST	X	50	Y	20	N	
19	MONDAY	10	6309 N 27TH ST	N	N	N	N	100	
20	MONDAY	10	2625 N POCOMOKE ST	Y	90	Y	5	N	
21	MONDAY	11	2217 N TUCKAHOE ST	Y	100	Y	5	N	
22	MONDAY	11	6311 N 22ND RD	N	N	Y	80	N	

Carts	Trash	Recycling	Yard Waste
Set out rate	82%	91%	41%
Over Capacity	0%	0%	5%

Sorting



- Trash Categories

- Paper (5)
- Metals (5)
- Plastic (9)
- Glass (3)
- Inorganic (10)
- Organics (3)
- Yard Waste (3)
- Wood (2)
- E-waste (1)
- Hazardous Waste (2)

- Total (43)

- Recycling Categories

- Paper (5)
- Metals (5)
- Plastics (8)
- Glass (3)
- E-waste (2)
- Other (10) (food, organics, textiles, wood)

- Total (33)

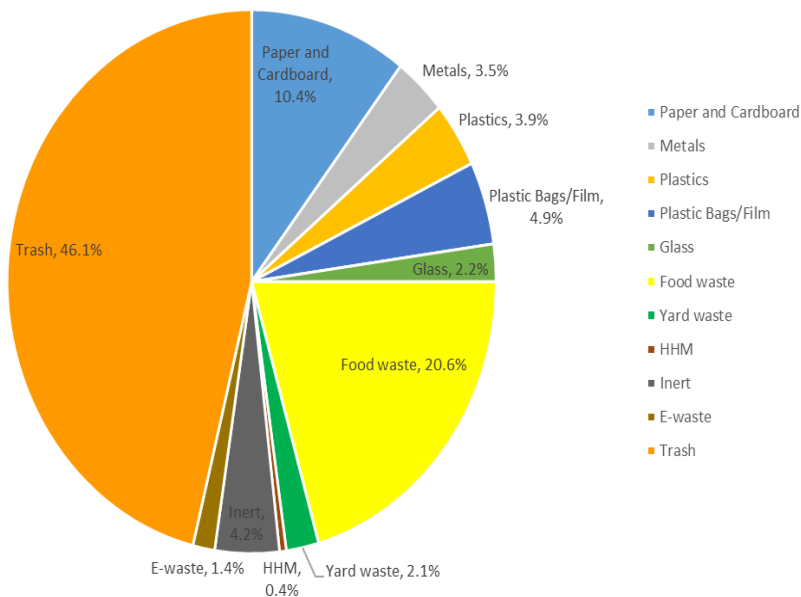
Weighing & Recording



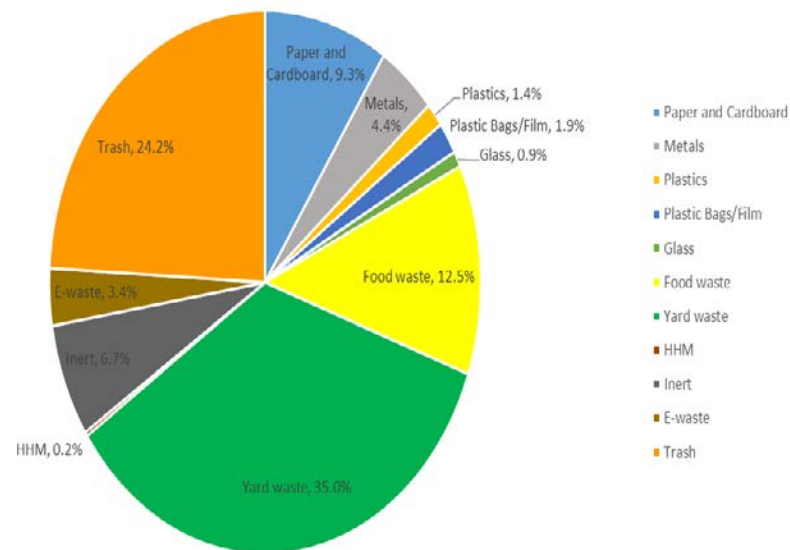


Analyzing Results (Trash)

Composition of Trash Cart - 2017



Composition of Trash Cart - 2013



2017 Recyclable

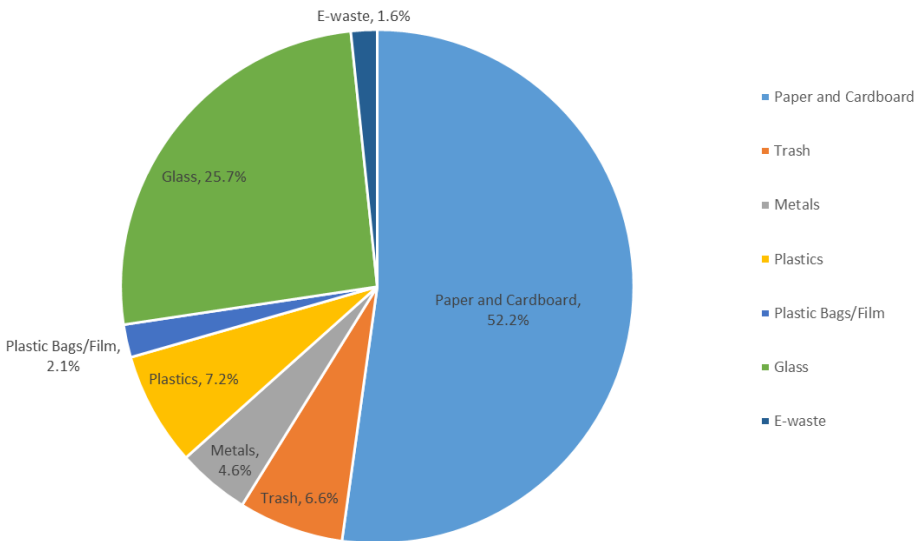
Item	Percent
Paper/ Cardboard	10.4
Plastic Film	4.9
Plastic	3.9
Metals	3.5
Glass	2.2
Yard waste	2.1
Total	27.1

Messaging

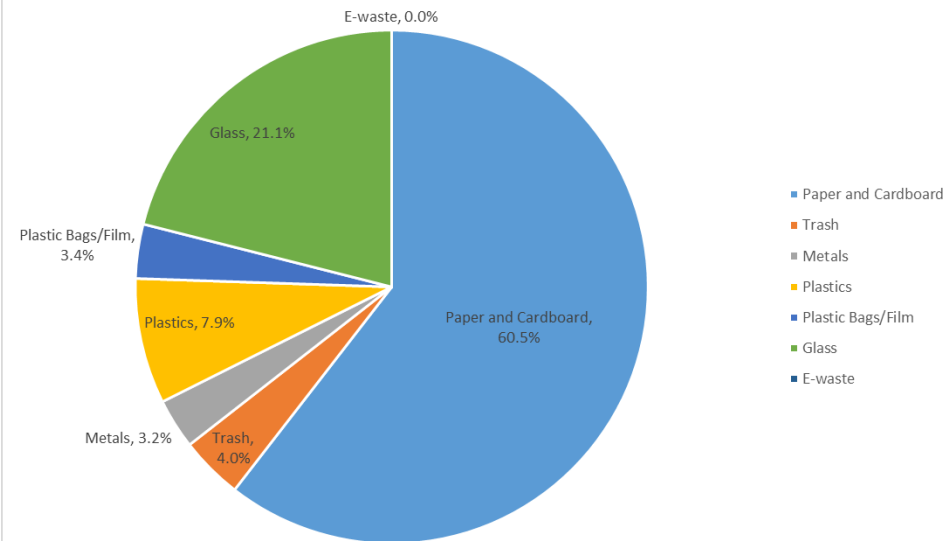
- 66.7% of cart is trash & food
- 20% is recyclable in blue cart
- Food waste is 20.6% of trash
- Separate e-waste collection
- Inert material disposal options
- Great job using organics cart

Analyzing Results (Recycling)

Composition of Recycle Cart - 2017



Composition of Recycle Cart - 2013



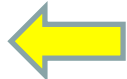
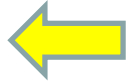
2017 Trash	Item	Percentage
	Misc. Trash	2.3
	Plastic Film	2.07
	NR Plastic	1.82
	E-waste	1.6
	Food waste	.24
10.3% NR	Total	8.03

Messaging

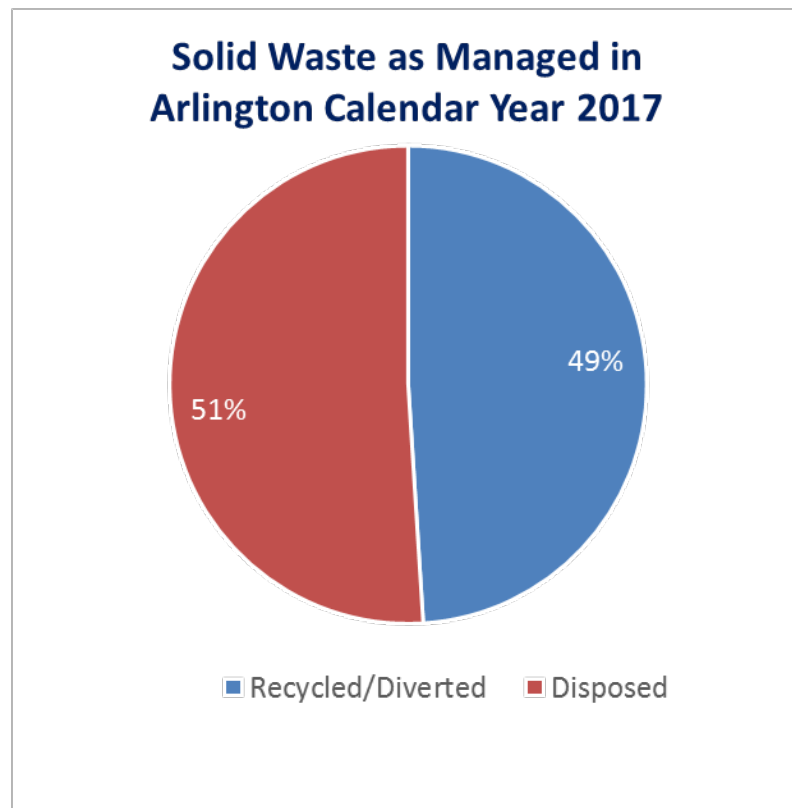
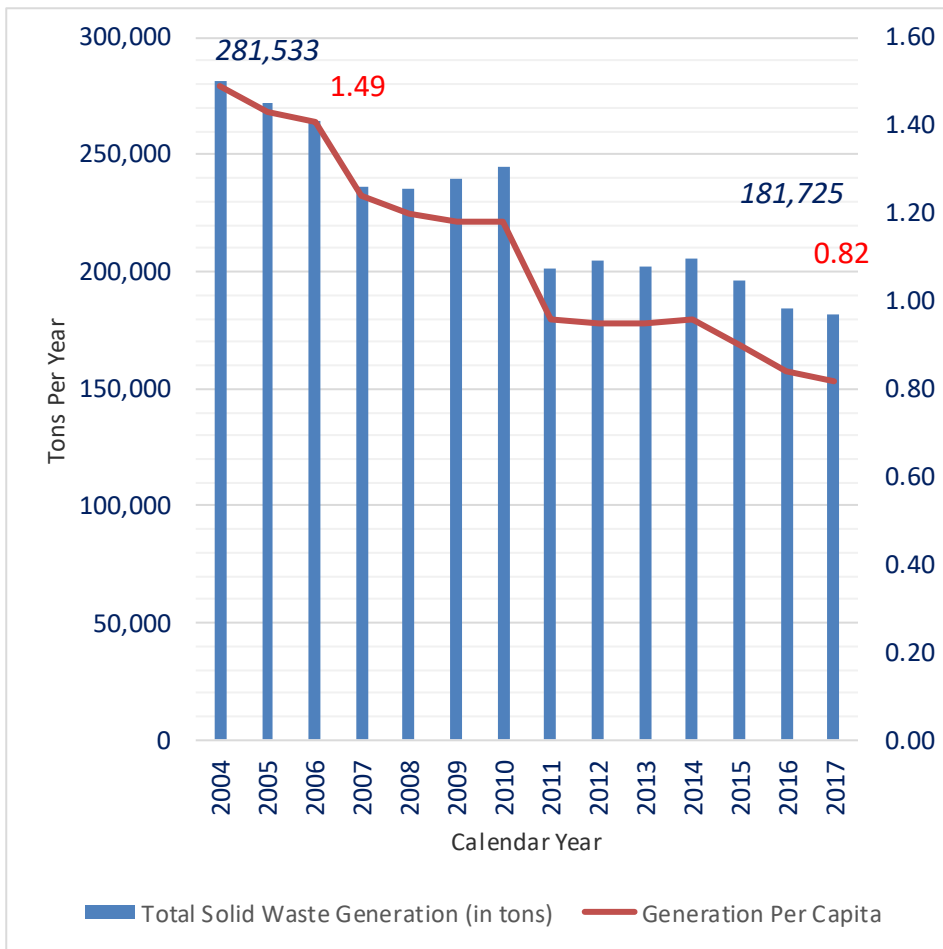
- No plastic bags
- Take plastic film to grocery store
- Recycle right- no wishful recycling
- Clean materials
- Not all plastic is recyclable
- Separate e-waste collection

Recalculated Recycling Ton- waste audit data

(Currently paying \$17+ per ton)

Arlington MPI Calculation									
December-18									
	Index: 15th of Month or Price Prior to 15th	Issue Date 12/14/18	Values	% of Index Value	New Contract Composition%	Blended Value			
Aluminum Cans	NY Hi Alum Sorted & Baled	\$ 1,400.00	\$ 1,400.00	85.00%	1.28%	\$ 15.23	Glass In		
Steel Cans	NY Hi Steel Sorted & Densified	\$ 40.00	\$ 40.00	85.00%	1.53%	\$ 0.52			
Mixed Plastic	NY Hi Avg of PET, HDPE Color & Natural Baled	\$ 523.33	\$ 523.33	85.00%	7.50%	\$ 33.36			
Mixed Glass	NY Hi Flint Glass	\$ 60.00	\$ 60.00	0.00%	20.11%	\$ -			
#11 OCC	SE #11OCC Hi 2nd	\$85.00	\$ 85.00	85.00%	17.56%	\$ 12.69			
Sorted Mixed Resi	SE Sorted Resi Mix (56) Hi 2nd	\$35.00	\$ 35.00	85.00%	11.35%	\$ 3.38			
Mixed Paper	SE Mixed (54) #1Hi 2nd	\$5.00	\$ 5.00	85.00%	27.80%	\$ 1.18			
Residue			\$ -	0.00%	12.87%	\$ -			
Total					100.00%	\$ 66.36	Processing fee	Rebate / Tip Fee	
							(\$72.00)	(\$5.64)	
								Rebate Due	
								(\$5.64)	
									
Arlington MPI Calculation									
December-18									
	Index: 15th of Month or Price Prior to 15th	Issue Date 12/14/18	Values	% of Index Value	New Contract Composition%	Blended Value			
Aluminum Cans	NY Hi Alum Sorted & Baled	\$ 1,400.00	\$ 1,400.00	85.00%	1.60%	\$ 19.07	Glass Out		
Steel Cans	NY Hi Steel Sorted & Densified	\$ 40.00	\$ 40.00	85.00%	1.92%	\$ 0.65			
Mixed Plastic	NY Hi Avg of PET, HDPE Color & Natural Baled	\$ 523.33	\$ 523.33	85.00%	9.39%	\$ 41.76			
Mixed Glass	NY Hi Flint Glass	\$ 60.00	\$ 60.00	0.00%	0.00%	\$ -			
#11 OCC	SE #11OCC Hi 2nd	\$85.00	\$ 85.00	85.00%	21.98%	\$ 15.88			
Sorted Mixed Resi	SE Sorted Resi Mix (56) Hi 2nd	\$35.00	\$ 35.00	85.00%	14.21%	\$ 4.23			
Mixed Paper	SE Mixed (54) #1Hi 2nd	\$5.00	\$ 5.00	85.00%	34.80%	\$ 1.48			
Residue			\$ -	0.00%	16.11%	\$ -			
Total					100.00%	\$ 83.06	Processing fee	Rebate / Tip Fee	
							(\$72.00)	\$11.06	
								Rebate Due	
								\$11.06	
									

2017 Recycling & Diversion Rate*



Sector-based recycling/diversion rates:

- Residential = ~61%
- Commercial = ~41%

Waste audit benefits:

- Identify waste trends
- Understand the seasonality of waste
- Provide insights into new programs
- Improve use of existing programs
- Focus education
- Right size carts

Next steps:

- Glass assessment
- Clean-up recycling stream
- Food Scraps assessment

• Process

- 29 properties participated (MF, Restaurants, grocery stores, APS, County facilities, Hotels, Office, University, Mixed facility) (3 wks)
- Provided them with trash and recycling carts
- Collected material for a 24 hour period
- Recovered carts after 24 hours and sorted material using temporary staff
- Hired consultant to manage sort, data recordation and oversee crews

• Results

- 43 trash categories, 32 recycling categories- same as residential sort
- 6,275 pounds of material sorted
 - Trash
 - 4,463 pounds total
 - 818 (18.3 %) recyclable
 - Recyclables
 - 1,813 pounds total
 - 284 pounds not recyclable
 - » 156 pounds compostable
 - » 128 pounds trash
 - Contamination rate of 16%
 - Overall:
 - 37.4% recycling rate
 - 67.8% potential with compostables
 - Contamination rates
 - » MF- 21%
 - » APS- 16%
 - » County- 11%
 - » Mixed Commercial- 16%

Material Stream	Total Sorted	Recycled or Recyclable in Current Programs	Percent	Potentially Compostable	Percent	Recycled or Potentially Recyclable or Compostable	Percent
Trash	4,463 lbs.	818 lbs.	18.3%	1,749 lbs.	39.2%	2,567	57.5%
Recyclables	1,813 lbs.	1,529 lbs.	84.3%	156 lbs.	8.6%	1,685	92.9%
Total Solid Waste	6,276 lbs.	2,347 lbs.	37.4%	1,905 lbs.	30.4%	4,252	67.8%

Thank You

Erik Grabowsky
Arlington County Solid Waste Bureau
703.228.7953

egrabowsky@arlingtonva.us

