

GLASS RECYCLING UPDATE

Environmental Quality and Public Works Committee

April 24, 2018



LEXINGTON

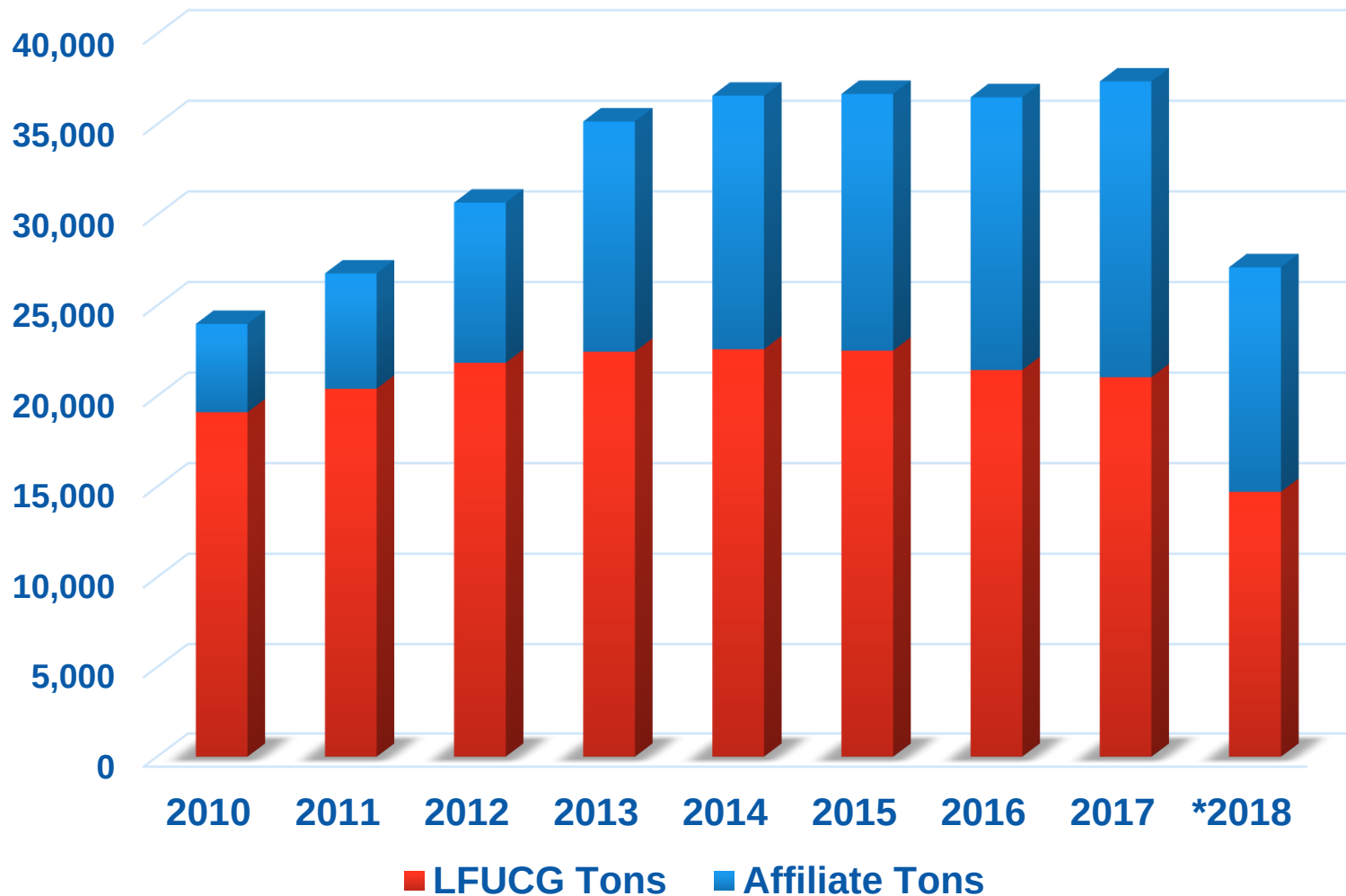


Presentation Outline

- Materials Recovery Facility (MRF) tons
- Glass collection types
- Glass processing types to reduce contamination
- Glass end uses
- Market value of recycled glass and scenarios
- Options for consideration

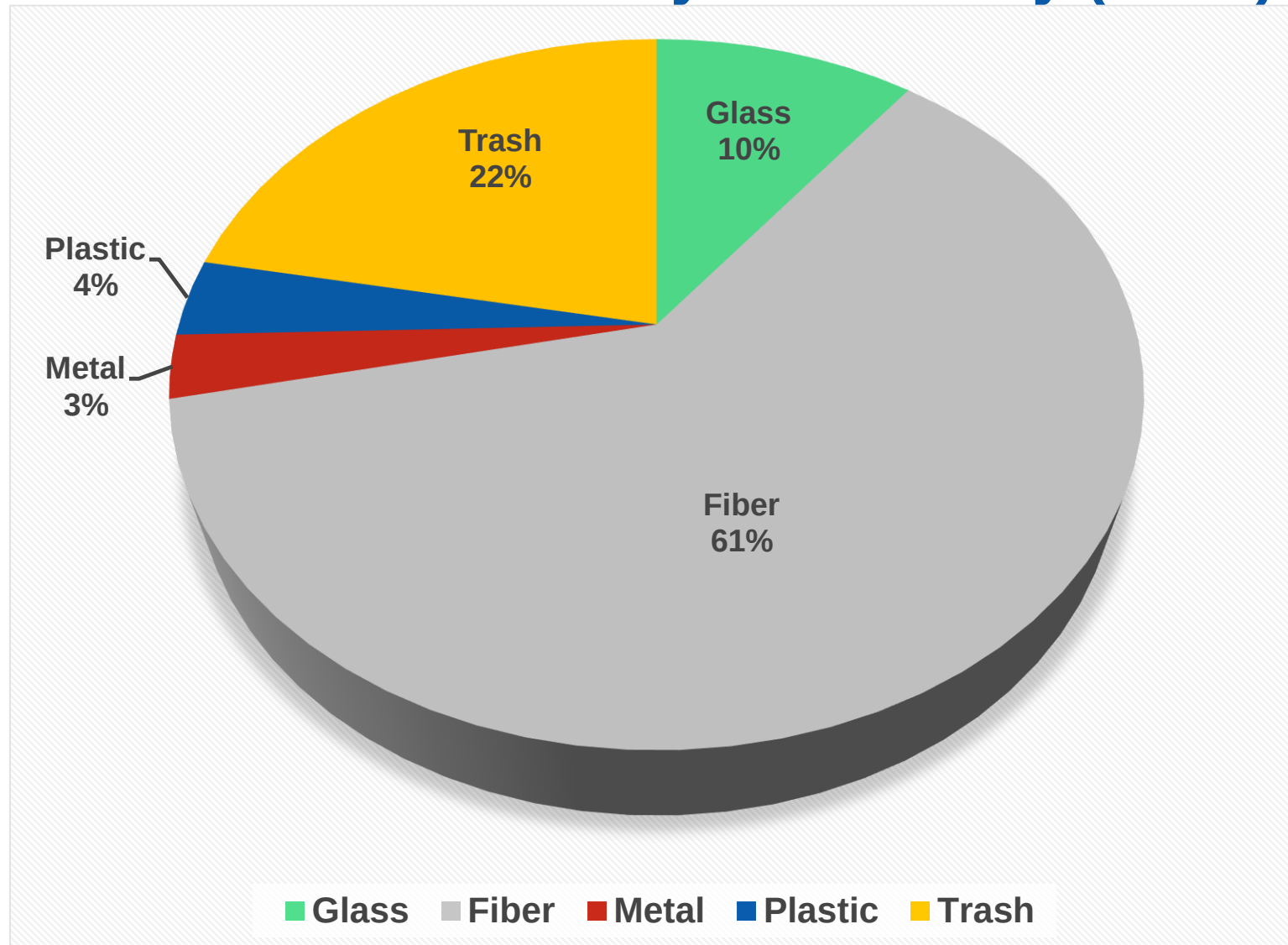


MRF Inbound Tons





MRF Outbound Tons by Commodity (FY17)





Glass Collection Types

- Single Stream Curbside (Commingling of all materials in one bin; 2010-present)
- Single Stream + Glass (Glass separate from other commodities; 2005-2010)
- Drop-off Location without Curbside Collection



Glass Processing Types to Reduce Contamination

- Air jets
- Additional screens for fines removal
- Secondary magnet and eddy current systems
- Glass crushing equipment
- Silo system for covered glass storage



Glass End Uses

- Glass cullet for new glass bottles
- Feedstock to manufacture sand blast medium
- Used as alternative daily cover for landfill
- Feedstock for fiberglass manufacturing
- Used as trench bedding material (our standards may not allow this)



Market Value of Recycled Glass

VALUE PER TON	QUALITY STANDARD	COST
\$0 (plus transport)	MRF with 50% contamination	Status Quo
\$9 (plus transport)	MRF with 10% contamination	~\$500,000
\$25 (plus transport)	Source Separated with <1% contamination	>\$250,000
\$175 (plus transport)	Market Ready Cullet	>\$4,000,000



Status Quo → MRF with 50% Contamination

VALUE PER TON	QUALITY STANDARD	COST
\$0 (plus transport)	MRF with 50% contamination	Status Quo

FY17 Glass Tons 3,869

Revenue from Sale \$0

Transportation Cost @ \$15/ton (\$58,035)

Net Revenue (\$58,035)

For Comparison:

Cost to Landfill 3,869 tons (\$74,479)



50% Contamination



Scenario 1 → MRF with 10% Contamination

VALUE PER TON	QUALITY STANDARD	COST
\$9 (plus transport)	MRF with 10% contamination	~\$500,000

FY17 Glass Tons 3,869

Capital Investment \$500,000

Revenue from Sale @ \$9/ton \$34,821

Transportation Cost @ \$15/ton (\$58,035)

Net Revenue (\$23,214)

ROI on capital investment = 14.4 years; payback period exceeds useful life of equipment

** Analysis does not include operating costs or depreciation*



MRF CLEANED
10% Contamination



Scenario 2 → Source Separated

VALUE PER TON	QUALITY STANDARD	COST
\$25 (plus transport)	Source Separated with <1% contamination	>\$250,000

FY17 Glass Tons 3,869

Capital Investment (crusher/containers) \$250,000

Revenue from Sale @ \$25/ton \$96,725

Transportation Cost @ \$15/ton (\$58,035)

Net Revenue \$38,690

ROI on capital investment = 2.58 years; plus savings on wear & tear on MRF equipment

** Operating costs should be negligible in this scenario.*





Scenario 3 → Market Ready Cullet

VALUE PER TON	QUALITY STANDARD	COST
\$175 (plus transport)	Market Ready Cullet	>\$4,000,000

FY17 Glass Tons	3,869
Capital Investment	\$4,000,000

Revenue from Sale @ \$175/ton	\$677,075
Transportation Cost @ \$15/ton	<u>(\$58,035)</u>
Net Revenue	\$619,040

ROI on capital investment = 5.91 years

** Analysis does not include operating costs*

For Comparison:

Golf course sand (extra fine mortar) cost = ~\$24-\$30/ton



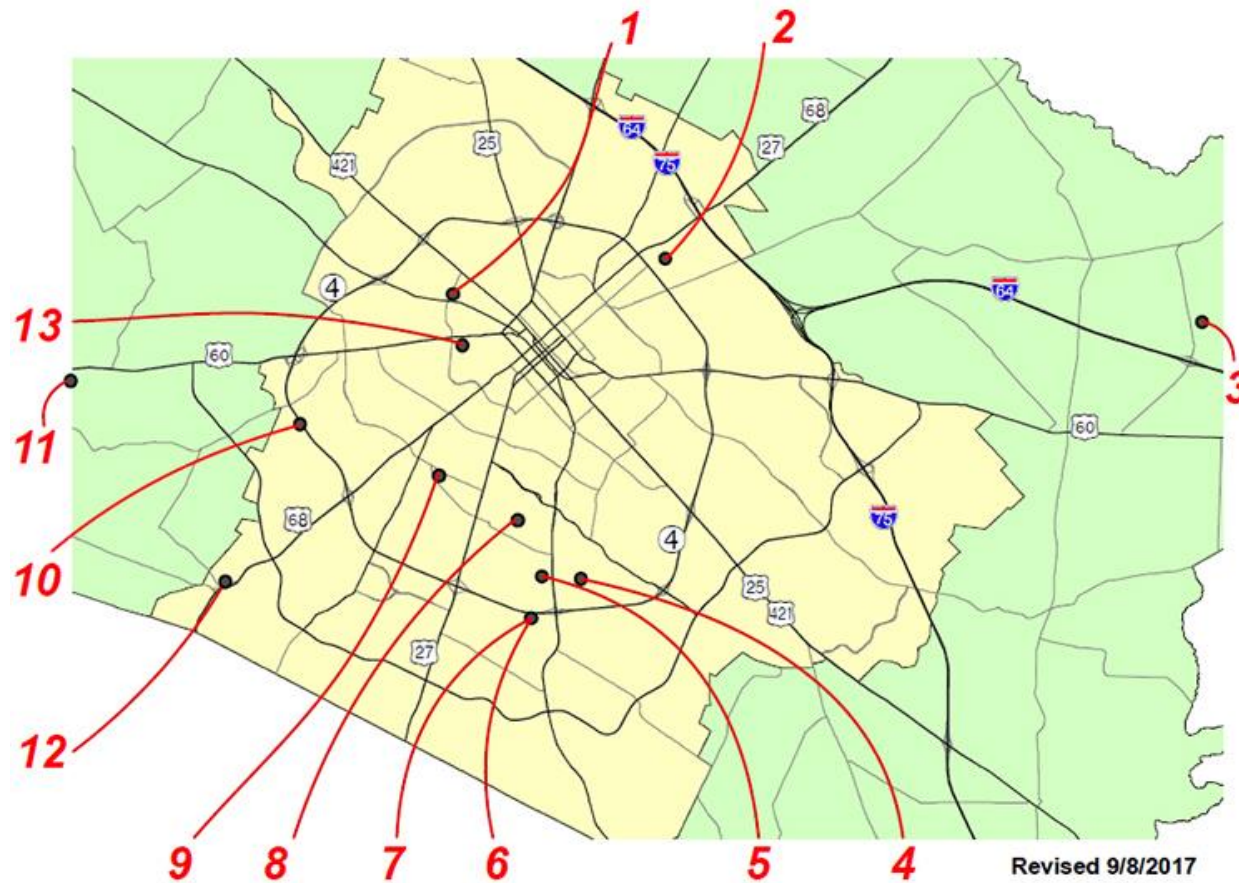
**MARKET READY
CLEANED & OPTICALLY SORTED**



Options for Consideration

- Manufacture market ready cullet
 - Requires additional processing plant equipment and structure
 - ROI for capital investment is 5.91 years
- Shift to source separated glass collection
 - Eliminate curbside glass collection, install glass crusher and glass drop-off containers at the 13 existing recycling drop-off locations for residential customers
 - Closely coordinate with bars and other large glass generators and possibly collect on-site
 - ROI for capital investment is 2.58 years
 - If glass is removed from MRF processing, benefits include:
 - Decreased contamination rate of other commodities
 - Decreased wear & tear on equipment
 - Increased plant efficiency due to decreased plant down-time
- Eliminate glass collection and landfill
- Status Quo

Recycling Drop-Off Locations



1. Recycling Center
2. Constitution Park
3. Haley Pike Convenience Center
4. Chinoe Creek Apartments
5. Lansdowne Shoppes
6. Breckinridge Court Condos
7. The Oaks Condominiums
8. Crestwood Christian Church
9. Good Foods Market & Café
10. Beaumont Middle School
11. Baileys Carpet Barn
12. Palomar Reserve Condos
13. Electronic Recycling Center

Questions?



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