

# GLASS RECYCLING UPDATE

*Environmental Quality and Public Works Committee*

*April 24, 2018*



**LEXINGTON**

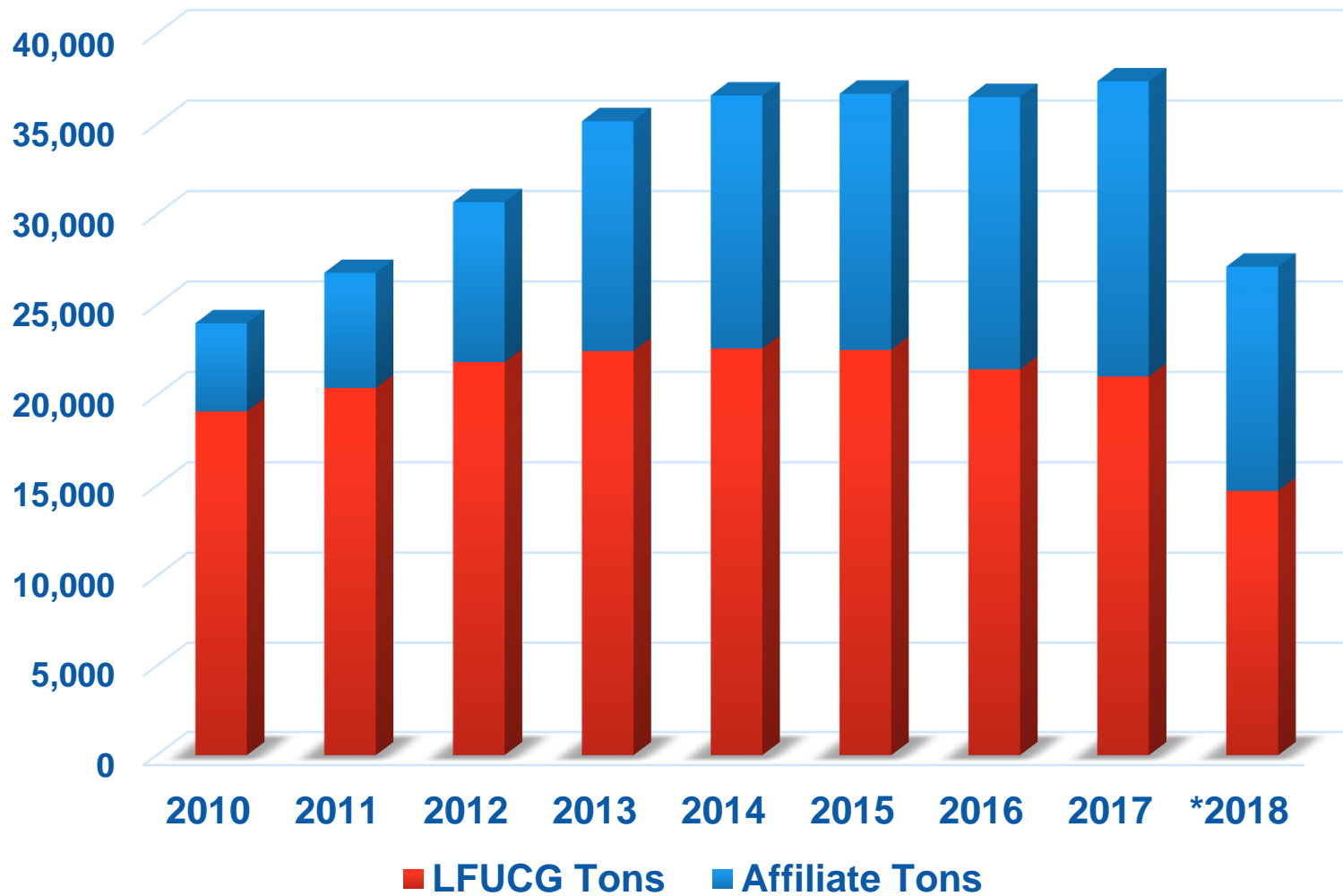


## **Presentation Outline**

- 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

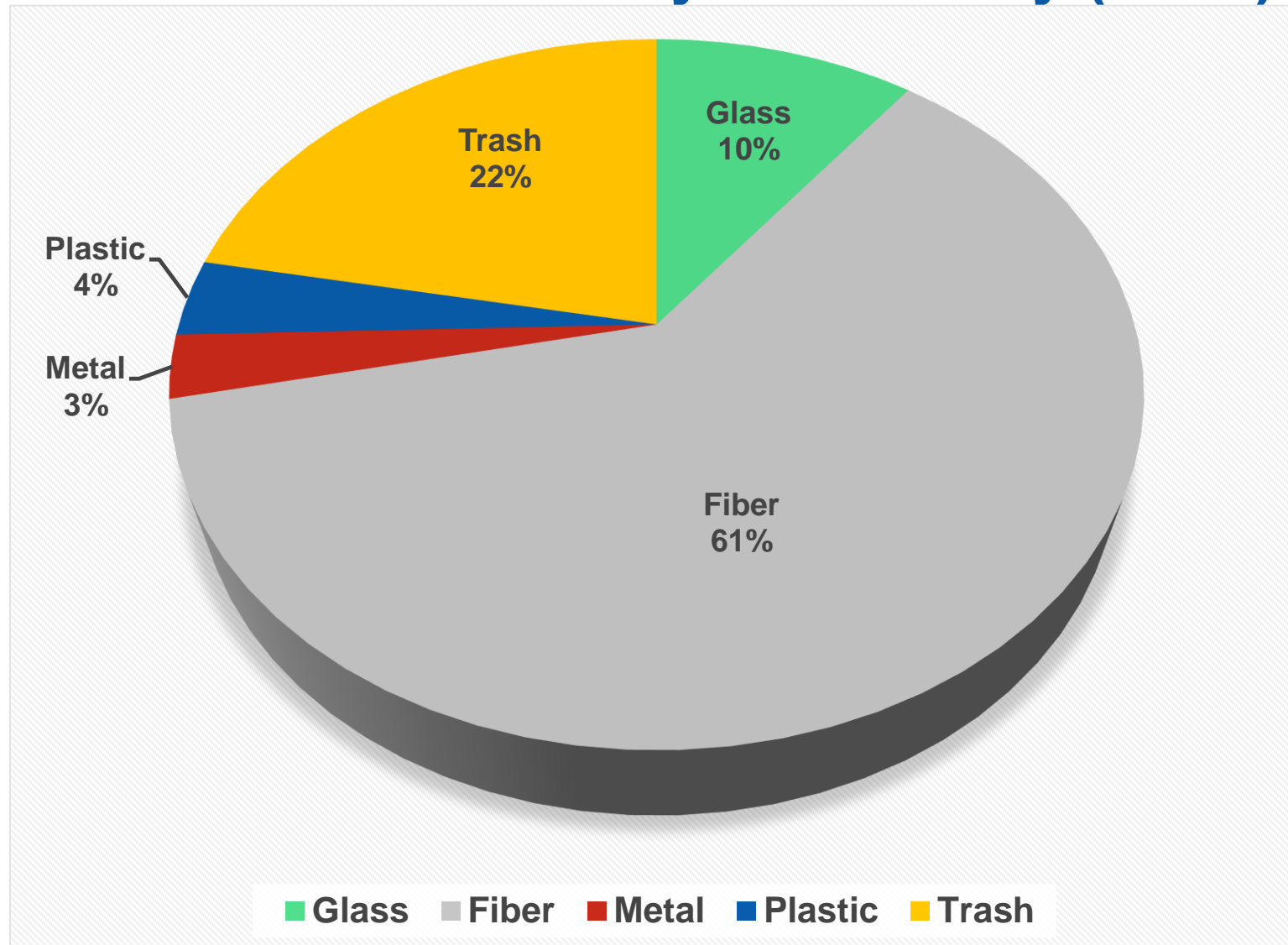


## MRF Inbound Tons





## 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**

| <b>VALUE PER TON</b>   | <b>QUALITY STANDARD</b>                 | <b>COST</b>  |
|------------------------|---|--------------|
| \$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)

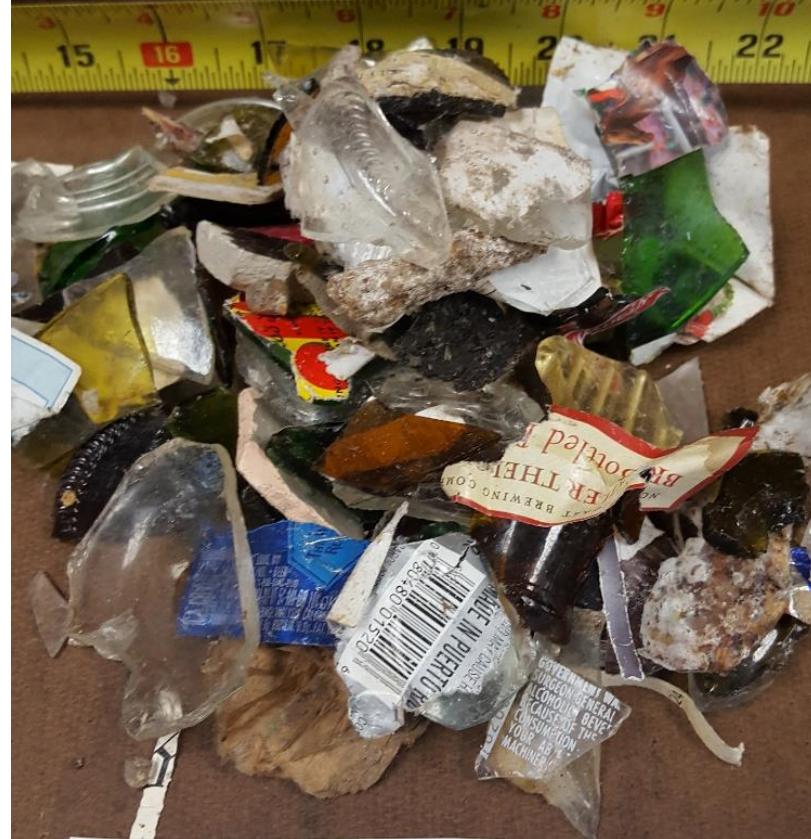
Net Revenue (\$58,035)

For Comparison:

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



MRF ¼" SCREEN



MRF 1 ¾" SCREEN

**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 | <u>(\$58,035)</u> |
| 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 (\$58,035)

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**

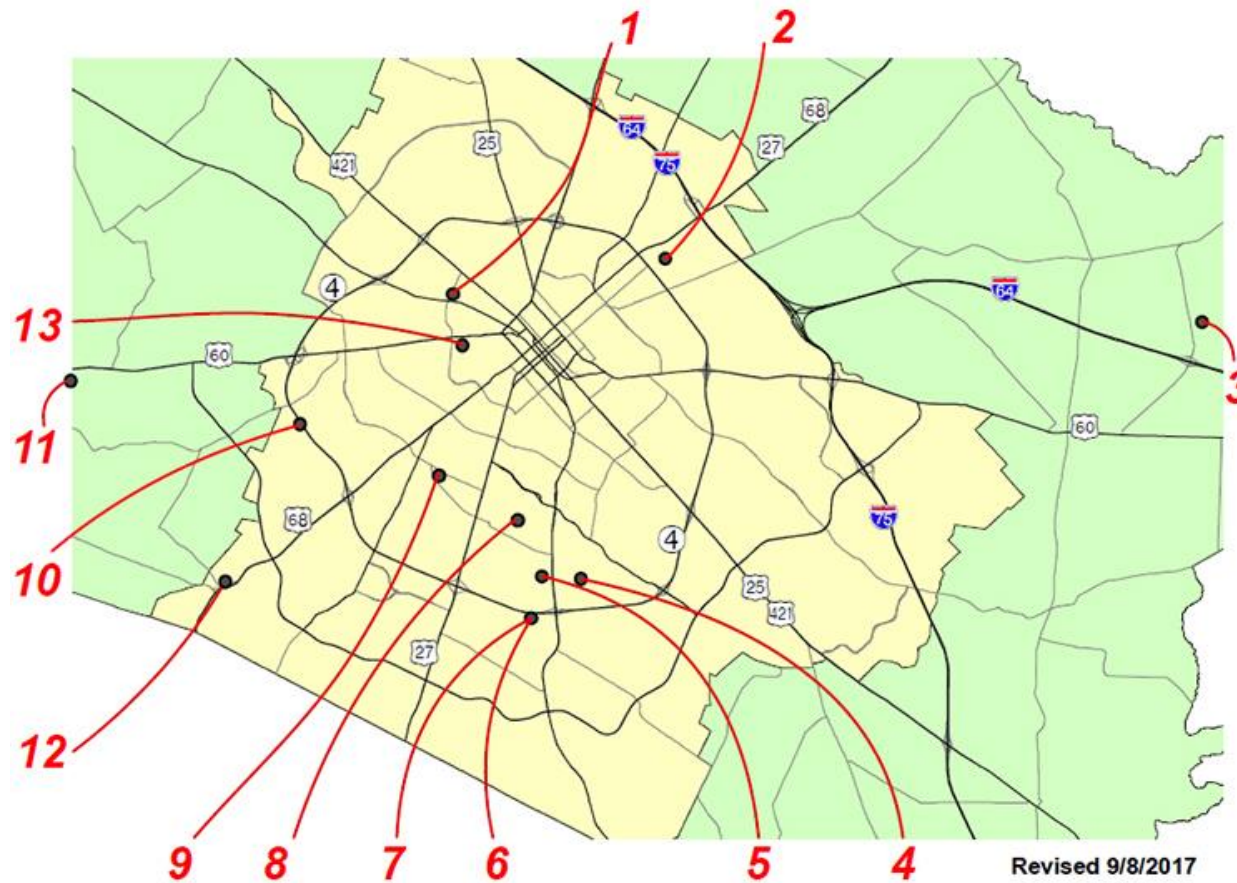




## Options for Consideration

- 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?



**LEXINGTON**