CRANKING UP RECYCLING IN TEXAS

New insights, proven resources

Scott Mouw, Senior Director of Technical Assistance
Justin Gast, Technical Assistance
National nonprofit transforming recycling in towns all across America

-THANK YOU-
National nonprofit transforming recycling in towns all across America

We work across the system... across the country...

STATE and LOCAL

466 communities impacted by Partnership work (19 million HH)

HAULERS

~400,000 carts

More than $27MM of new infrastructure and more than 115 MLBS of new recyclables diverted.

MRF

...growing access to resources and data.

BRANDS

RESIDENTS
We work with cities to fight contamination, boost participation, and recycle with carts.

- National scale with projects in 466 communities.
- Project-based collaboration with all stakeholders in the recycling system: haulers, MRFs, communities, state offices and end-markets.
What do we know?
Half plus half equals A WHOLE LOT OF OPPORTUNITY.

47% of Americans don’t automatically have curbside recycling.

60% of packaging is not being recovered in the home.

2016 SPC Access Study

The Recycling Partnership
Location of Recyclable Packaging Tonnage
(Estimate)

Tonnage of Recyclable Packaging
MILLION TONS

- 600 LB/HH
  - 30 Million Homes
  - Estimate by Difference
- 850 LB/HH
  - 85 Million Homes
- 357 LB/HH
  - Recovery Rate ~42%

Total National Generation: 105
Generated Industrial & Commercial: 59
Generated in Multi Family Homes: 9
Generated in Single Family Homes: 36
Recovered from Single Family Homes: 14
Discarded from Single Family Homes: 22
How Much Recyclable Packaging Is Left in Single Family Homes?  
Hypothetical Example

US Single Family Households Unrecovered Packaging  
MILLION TONS

- Paper: 2.2 million tons
- Mixed Non-bottle Plastic: 1.1 million tons
- HDPE: 0.8 million tons
- PET: 1.1 million tons
- Glass: 3.8 million tons
- Steel: 1.0 million tons
- Aluminum: 0.4 million tons

Total of 22 Million Tons
+20% contamination rates cost the system money & time, and safety hazards for workers.

The Recycling Partnership
IT TAKES A TEAM TO DELIVER TONS

Preserving the environment is the responsibility of everyone: the government, the public, nonprofits and businesses.
Residents should hear the same recycling message no matter where they live, work or play.

A MRFshed is defined as a group of communities that funnel material into the same MRF.

Communities that provide information online and their accepted materials list is the same as what their MRF accepts.
Examined the commonality and differences amongst communities providing recyclable material to the same MRF:

- How similar are the acceptable materials lists from each of the communities funneling material into the same MRF?

- How are communities communicating those acceptable materials lists (words, images, both, other)?

- Staff researched all 68 municipal websites associated with the two respective MRFsheds.

More than 1.3 million single-family households and a combined population of more than 4.6 million are represented by study.
MRFshed Report

HOW WAS STUDY CONDUCTED:

• Recent research from the Foodservice Packaging Institute, the Institute of Scrap Recycling Industries, Inc., and others, shows residents are becoming more reliant on the Internet to find answers to their recycling questions, especially from city, county or a recycling company’s website.

• Research also tells us 60 percent of all current Internet searches are done using either one or two keywords. Depending on the content being sought, the average resident/consumer may spend as little as 15 seconds on a given webpage seeking information before they abandon the site.

• Research was conducted via a simple online search. Using the community’s name and ‘recycling,’ as keywords, staff timed how long it took to obtain the necessary information, completely ending a search if it took two minutes or more to locate information.
20 municipal sites had recycling information that could be found in an average time of 13.15 seconds.
PLASTICS CONFUSION

19 of the 22 communities had lists that contained more than just #1 PET and #2 HDPE. For example:

- Seven stated the acceptance of all plastic containers labeled #1-#7.
- Seven others stated all plastics #1-#7 are accepted, though plastic take-out containers, butter tubs, yogurt containers and bags are not.
- Five communities stated the acceptance of “HDPE & PETE Plastics (#1 thru #7).”
MRFshed Report – Chicago (Waste Management)

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRF handles approx.</td>
<td>117K TONS/YR</td>
</tr>
<tr>
<td>Population served by MRF</td>
<td>3,295,754</td>
</tr>
<tr>
<td>Households served by MRF</td>
<td>893,474 HH</td>
</tr>
<tr>
<td>Total communities studied</td>
<td>26</td>
</tr>
<tr>
<td>Communities studied that offered a curbside service</td>
<td>21</td>
</tr>
<tr>
<td>Communities studied that only had a drop-off option</td>
<td>1</td>
</tr>
<tr>
<td>Municipalities that did not provide garbage and recycling collection information</td>
<td>4</td>
</tr>
</tbody>
</table>

18 municipalities had websites where it took an average of 10.18 seconds to find dedicated recycling information.
MESSAGING CONFUSION

• Most notable differences concerned plastics. Three of the communities link directly to Waste Management brochures from 2007 and 2008, which state that all plastics #1-#7 are accepted. Two other communities also noted the acceptance of #1-#7 plastics, with one jurisdiction stating that plastic six-pack rings are accepted curbside.

• As for other materials, one community listed the acceptance of empty paint cans, though Waste Management’s educational materials do not, while another listed the acceptance of aluminum foil and trays, metal lids and plastic take-out containers and buckets, though the RORR site does not display these items.

• One community’s acceptable materials list lacked the inclusion of cardboard, paperboard and cartons.
CONCLUSIONS:

• Of the 68 communities studied for this project, 40 provided online recycling information (59 percent). Unfortunately, 24 of those communities (60 percent) provided acceptable materials lists different from what their designated MRF accepts.

• Basic recycling information should be at a resident’s finger tips (what to recycle and when to recycle) and information regarding what to recycle should be consistent throughout every community within the same MRFshed.
WHAT CAN BE DONE:

- States could be facilitating forums where municipalities/solid waste authorities, haulers and MRF operators within a given MRFshed come together to create the MRFsheds common suite of materials, a list that could then be used with every community providing recyclable material to the MRF for that territory.

- Communities need to keep messaging simple, using clear images/icons paired with simple wording. Municipalities also need to be consistent with that messaging across all electronic and print forms of communication and make sure that message is in harmony with the MRF’s operations.

- EPA should undertake studies that show the benefits of educating around a common suite of materials, most notably whether or not such an education approach helps lessen confusion for residents.
GETTING TO A COMMON SUITE
### Gather Key Facts

#### PROHIBITIVE ITEMS

- Motor oil containers
- Photographs
- Gun Ammunition
- Mercury containing objects
- Batteries
- Ink/printer cartridges
- Electronics
- Motor Oil
- Phenolic plastic
- Pottery
- Steel cans (routine)
- Plastic furniture
- Non-bottle HDPE Containers & Lids

#### ACCEPTABLE MATERIALS (GLASS, STEEL, PLASTIC, ALUMINUM, PAPER)

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Acceptable</th>
<th>Not Acceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Bottles</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Glass Jars</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Steel Cans</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Steel Buckets</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Plastic Bottles &amp; Jars</td>
<td>Yes, with numbers “1” through “5.”</td>
<td>No</td>
</tr>
<tr>
<td>Plastic Food Service Containers</td>
<td>Yes, with numbers “1” through “5.”</td>
<td>No</td>
</tr>
<tr>
<td>Plastic Furniture</td>
<td>Yes, with numbers “1” through “5.”</td>
<td>No</td>
</tr>
<tr>
<td>Plastic Toys</td>
<td>Yes, with numbers “1” through “5.”</td>
<td>No</td>
</tr>
<tr>
<td>Other Household bottles &amp; Jars</td>
<td>Yes, with numbers “1” through “5.”</td>
<td>No</td>
</tr>
<tr>
<td>Other Drink Bottles (e.g. Juice in #7)</td>
<td>Yes, with numbers “1” through “5.”</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Other:

- Ice Cream Container
- Tissue Paper
- Paperboard Boxes
- Take-out Containers
- Hot Cups (e.g. coffee cup)
- Cold Cups
- Round Can (fiber body, metal bottom)

#### Directions on how to Prepare Shredded Paper

- Like milk, orange juice, etc.
- Cartons (gable top containers)

#### Junk Mail

#### Office Paper

#### Paperback Books

#### Hard Cover Books

#### Magazines

#### Newspaper

#### Pizza Boxes

#### PLASTIC PRODUCT

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Acceptable</th>
<th>Not Acceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET Bottles &amp; Lids</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Non-bottle PET Containers &amp; Lids</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Non-bottle PET Bottles &amp; Jars</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>PP Bottles &amp; Jars</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Other Non-bottle HDPE Containers &amp; Lids</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Acceptable Materials

- Bulky plastic (e.g. crates)
- Accessories, site or pre-arrangement requirements
- Markers (pen size)
- Accessories, site or pre-arrangement requirements
- Bags
- Accessories, site or pre-arrangement requirements
- Boxes
- Accessories, site or pre-arrangement requirements
- Buckets (any size)
- Accessories, site or pre-arrangement requirements
- Plastic Size Requirements?`
## ACCEPTABLE MATERIALS WORKSHEET

**MRF:**
- Please go through each item on the list and check whether the item is acceptable or not acceptable. This document will be used to get the local governments and the MRF on the same page. It can set the framework for front line staff (employees answering the phone or driving the collection vehicles) to better inform the community. It also provides the framework to start building educational materials that are consistent throughout the community.

### Paper Product

<table>
<thead>
<tr>
<th>Item</th>
<th>Accept</th>
<th>Do Not Accept</th>
<th>Not Dangerous</th>
<th>Dangerous</th>
<th>Do Not Want On List But Accept</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCC</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pizza Boxes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newspaper</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magazines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard Cover Books</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paperback Books</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Paper</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junk Mail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cartons (gable top containers like milk, orange Juice, etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shredded Paper</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round Can (fiber body, metal bottom)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ice Cream Container</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kraft Bags</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tissue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Getting to a COMMON SUITE

## SHARED ACCEPTABLE ITEMS:

<table>
<thead>
<tr>
<th>Fiber</th>
<th>Steel</th>
<th>Plastic</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCC</td>
<td></td>
<td>PET Bottles &amp; Jars</td>
</tr>
<tr>
<td>Pizza Boxes</td>
<td></td>
<td>HDPE Bottles &amp; Jars</td>
</tr>
<tr>
<td>Newspaper</td>
<td></td>
<td>Other Drink Bottles (e.g. Juice in #7)</td>
</tr>
<tr>
<td>Magazines</td>
<td></td>
<td>Other Food bottles &amp; Jars (e.g. items in #3,4,6 or 7)</td>
</tr>
<tr>
<td>Office Paper</td>
<td></td>
<td>Other Household bottles &amp; Jars (e.g. #3 shampoo bottle)</td>
</tr>
<tr>
<td>Junk Mail</td>
<td></td>
<td>Non-bottle HDPE Containers &amp; Lids</td>
</tr>
<tr>
<td>Cartons (gable top containers like milk, orange Juice, etc)</td>
<td></td>
<td>Other Tubs &amp; Lids (e.g. tubs that are #3,4,6,or 7)</td>
</tr>
<tr>
<td>Paperboard Boxes</td>
<td></td>
<td>PP Bottles</td>
</tr>
<tr>
<td>Kraft Bags</td>
<td></td>
<td>PP Containers &amp; Lids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Glass</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottles and Jars</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Aluminum**           |                        |                  |
|                        |                        |                  |
|                        | Can                    |                  |

## TOP 5 PROHIBITIVE:

1) Plastic Bags
2) Needles
3) Tanglers (rope, hose, cord, wire)
4) Textiles
5) Scrap Metal
Getting to a COMMON SUITE

**Cans**
- Aluminum and Steel Cans
  - empty and rinse

**Cartons**
- Food and Beverage Cartons
  - empty and replace cap

**Glass**
- Bottles and Jars
  - empty and rinse

**Paper**
- Mixed Paper, Newspaper, Boxes, and Cardboard
  - flatten

**Plastic**
- Kitchen, Laundry, Bath: Bottles and Containers
  - empty and replace cap

**NO! NO INCLUIR**

- No Propane Tanks
- No Plastic Bags (return to retail)
- No Hypodermic Needles
- No Clothing or Linens (use donation programs)
- No Tangles (no hoses, wires, chains, or electronics)
GETTING TO A COMMON SUITE

Cuyahoga County, OH
59 Local Governments

500k Single Family Homes

1.3M People

DISTRICT

CONTAINERS

1 cart/bin mix program

2 bin programs

3 with no curbside

7 bin/bag mix programs

14 blue bag programs

32 cart programs

HAULERS

4 MRFs

23 haulers
Key Metrics – Pathways to Improving Performance

- Tonnage by type of service
e.g., curbside, multi-family
- Units served
e.g., how many households served by curbside; how many units served by multi-family program, etc.
- Participation/Set-out
  Or other usage metrics for drop-off, etc.
- Commodity Capture Rates
- MRF Commodity Profile and Blended Value
- Contamination Rates
Critical Performance Metric: Pounds per Household Served

Tons collected in program

Number of Households (HH) served by program

Pounds/HH Served

* Concept can be extended to other services/programs – e.g. pounds per unit served in multifamily programs
<table>
<thead>
<tr>
<th>Gaps</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO CURBSIDE or DROP-OFF AVAILABLE</td>
<td>• ESTABLISH SERVICES</td>
</tr>
<tr>
<td>All 800 pounds lost to trash</td>
<td>• ENCOURAGE PARTICIPATION</td>
</tr>
<tr>
<td>CURBSIDE OPT-IN</td>
<td>• CREATE UNIVERSAL AUTOMATIC ACCESS</td>
</tr>
<tr>
<td>All 800 pounds in most homes lost to trash</td>
<td></td>
</tr>
<tr>
<td>CURBSIDE IN BINS; INCONVENIENT DROP-OFF</td>
<td>• CONVERT TO CARTS</td>
</tr>
<tr>
<td>600 pounds lost to trash</td>
<td>• INCREASE ACCESS TO DROP-OFF</td>
</tr>
<tr>
<td>CURBSIDE IN CARTS, DROP-OFF ESTABLISHED</td>
<td></td>
</tr>
<tr>
<td>NO EDUCATION</td>
<td>• INVEST IN EDUCATION</td>
</tr>
<tr>
<td>400 pounds lost to trash</td>
<td>• USE MULTIPLE OUTREACH TOOLS</td>
</tr>
<tr>
<td>CURBSIDE IN CARTS, STRONG DROP-OFF</td>
<td></td>
</tr>
<tr>
<td>GOOD EDUCATION</td>
<td>• ANALYZE OPPORTUNITIES</td>
</tr>
<tr>
<td>200 pounds lost to trash</td>
<td>• TARGET OUTREACH</td>
</tr>
</tbody>
</table>

THE OPPORTUNITY

800 pounds of recyclables available in HH
Set-Out and Participation

**Week 1 Collection Cycle**

- **Set-out Rate**: 50%
  - 5 out of 10 homes on average

**Week 2 Collection Cycle**

- **Set-out Rate**: 70%
  - 7 out of 10 homes on average

**What is the Total PARTICIPATION Rate?**
How Much Recyclable Material is Available?

Current Estimate
800–850 lbs/year
Twin Challenges: Trash in Recycling and Recycling in Trash

Trash in the Recycling:
- ASSESS through Capture Studies and by talking to MRF
- ADDRESS through smart, targeted outreach

Recycling in the Trash:
- ASSESS through Capture Studies
- ADDRESS through smart, targeted outreach
Capture Rates: Measuring Recyclables Still in the Trash

Let's say a house has 800 lbs recyclables. And 400 lbs recyclables go into recycling. Thus, the other 400 lbs recyclables then go into trash.

50% capture rate.
Capture Rates: How It’s Done
### Example of Capture Rate Data

#### Pounds/Household/Year

<table>
<thead>
<tr>
<th>Material Type</th>
<th>All HH Recyclables</th>
<th>Garbage</th>
<th>All Recycling</th>
<th>Bagged Recycling</th>
<th>Loose Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recyclable Paper</td>
<td>472.7</td>
<td>138.5</td>
<td>334.3</td>
<td>32.0</td>
<td>300.8</td>
</tr>
<tr>
<td>Cardboard</td>
<td>122.6</td>
<td>22.0</td>
<td>100.5</td>
<td>3.9</td>
<td>98.5</td>
</tr>
<tr>
<td>Mixed Paper</td>
<td>343.1</td>
<td>114.0</td>
<td>229.1</td>
<td>27.7</td>
<td>198.2</td>
</tr>
<tr>
<td>Aseptic &amp; Gabletop</td>
<td>7.1</td>
<td>2.4</td>
<td>4.6</td>
<td>0.5</td>
<td>4.1</td>
</tr>
<tr>
<td>Recyclable Metal</td>
<td>49.8</td>
<td>21.6</td>
<td>28.2</td>
<td>3.4</td>
<td>24.9</td>
</tr>
<tr>
<td>Aluminum Cans</td>
<td>21.0</td>
<td>6.8</td>
<td>14.2</td>
<td>2.3</td>
<td>12.1</td>
</tr>
<tr>
<td>Aluminum Foil &amp; Trays</td>
<td>5.4</td>
<td>4.2</td>
<td>1.1</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Steel Cans</td>
<td>23.4</td>
<td>10.5</td>
<td>12.9</td>
<td>1.0</td>
<td>11.9</td>
</tr>
<tr>
<td>Recyclable Glass</td>
<td>180.0</td>
<td>42.9</td>
<td>137.1</td>
<td>14.2</td>
<td>120.5</td>
</tr>
<tr>
<td>Glass Containers</td>
<td>180.0</td>
<td>42.9</td>
<td>137.1</td>
<td>14.2</td>
<td>120.5</td>
</tr>
<tr>
<td>Recyclable Plastic</td>
<td>124.0</td>
<td>58.5</td>
<td>65.5</td>
<td>7.8</td>
<td>58.5</td>
</tr>
<tr>
<td>Clear PET Containers</td>
<td>44.7</td>
<td>16.5</td>
<td>28.2</td>
<td>3.7</td>
<td>24.8</td>
</tr>
<tr>
<td>Other Containers &amp; Small Rigs</td>
<td>51.6</td>
<td>30.1</td>
<td>21.5</td>
<td>2.3</td>
<td>18.8</td>
</tr>
<tr>
<td>HDPE Natural Bottles &amp; Jars</td>
<td>6.1</td>
<td>1.7</td>
<td>4.4</td>
<td>0.7</td>
<td>4.1</td>
</tr>
<tr>
<td>HDPE Colored Bottles &amp; Jars</td>
<td>12.8</td>
<td>5.5</td>
<td>7.3</td>
<td>1.0</td>
<td>6.3</td>
</tr>
<tr>
<td>Bulky Rigid Plastics</td>
<td>8.9</td>
<td>4.7</td>
<td>4.1</td>
<td>-</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>826.57</strong></td>
<td><strong>261.46</strong></td>
<td><strong>565.11</strong></td>
<td><strong>57.34</strong></td>
<td><strong>504.74</strong></td>
</tr>
</tbody>
</table>

Total Capture for *participating* HHs, excluding bagged material: **61%**
From *Participating* Capture to *Whole City* Capture

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling Pounds Generated Per HH (Estimate provided by Capture Study)</td>
<td>826.57</td>
</tr>
<tr>
<td>Total Households Served By Program</td>
<td>176,000</td>
</tr>
<tr>
<td>Total Tons of Recyclable Material Available from Households</td>
<td>72,738</td>
</tr>
<tr>
<td>Actual Tonnage Collected in Curbside Program</td>
<td>38,000</td>
</tr>
<tr>
<td>Available HH Recycling Not Collected</td>
<td>34,738</td>
</tr>
<tr>
<td>Whole City Capture Rate of Household Recyclables (Tonnage Collected/Tonnage Available)</td>
<td>52%</td>
</tr>
</tbody>
</table>
### Data from your MRF – Blended Value and Contamination

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Assumed Material Comp. %</th>
<th>$/TON*</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONP</td>
<td>19.0%</td>
<td>$48.00</td>
<td>$9.12</td>
</tr>
<tr>
<td>Mixed Paper</td>
<td>19.4%</td>
<td>$57.00</td>
<td>$11.06</td>
</tr>
<tr>
<td>OCC</td>
<td>16.5%</td>
<td>$150.00</td>
<td>$24.75</td>
</tr>
<tr>
<td>PET</td>
<td>5.5%</td>
<td>$289.00</td>
<td>$15.90</td>
</tr>
<tr>
<td>3-7 Plastic</td>
<td>1.5%</td>
<td>$20.00</td>
<td>$0.30</td>
</tr>
<tr>
<td>HDPE-Natural</td>
<td>0.6%</td>
<td>$584.00</td>
<td>$3.50</td>
</tr>
<tr>
<td>HDPE-Color</td>
<td>1.45%</td>
<td>$291.00</td>
<td>$4.22</td>
</tr>
<tr>
<td>MRP</td>
<td>1.45%</td>
<td>$60.00</td>
<td>$0.87</td>
</tr>
<tr>
<td>Aluminum</td>
<td>1.25%</td>
<td>$1,300.00</td>
<td>$16.25</td>
</tr>
<tr>
<td>Steel Cans/Ferrous Metal</td>
<td>3.00%</td>
<td>$164.00</td>
<td>$4.92</td>
</tr>
<tr>
<td>Aseptic</td>
<td>0.00%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Glass</td>
<td>17.00%</td>
<td>$30.00</td>
<td>$5.10</td>
</tr>
<tr>
<td>Residue-Trash</td>
<td>12.75%</td>
<td>$70.00</td>
<td>$8.93</td>
</tr>
<tr>
<td><strong>100.00%</strong></td>
<td></td>
<td><strong>76.86</strong></td>
<td></td>
</tr>
</tbody>
</table>

Blended Rate:
# Measuring Contamination

- Feedback from MRF - Periodic audits and reports
- Capture studies - Can measure weight and occurrence

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Top 5 by weight</th>
<th>Top 5 by occurrence</th>
<th>Weight % of recycling</th>
<th>lbs/hh/mo</th>
<th>Occurrence % of HHs</th>
<th># of HHs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>1</td>
<td>2</td>
<td>2.7%</td>
<td>1.4</td>
<td>23%</td>
<td>30</td>
</tr>
<tr>
<td>Paper Contaminants</td>
<td>2</td>
<td>2</td>
<td>2.1%</td>
<td>1.1</td>
<td>72%</td>
<td>95</td>
</tr>
<tr>
<td>Plastic Bags &amp; Film</td>
<td>3</td>
<td>1</td>
<td>1.6%</td>
<td>0.8</td>
<td>78%</td>
<td>103</td>
</tr>
<tr>
<td>Metal Contaminants</td>
<td>4</td>
<td>4</td>
<td>1.3%</td>
<td>0.7</td>
<td>45%</td>
<td>59</td>
</tr>
<tr>
<td>Rigid Plastic Contaminants</td>
<td>5</td>
<td>3</td>
<td>0.7%</td>
<td>0.4</td>
<td>62%</td>
<td>82</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td></td>
<td>0.6%</td>
<td>0.3</td>
<td>23%</td>
<td>31</td>
</tr>
<tr>
<td>Yard Waste</td>
<td></td>
<td>5</td>
<td>0.6%</td>
<td>0.3</td>
<td>7%</td>
<td>9</td>
</tr>
<tr>
<td>Textiles &amp; Shoes</td>
<td></td>
<td>5</td>
<td>0.5%</td>
<td>0.3</td>
<td>23%</td>
<td>31</td>
</tr>
<tr>
<td>Tanglers</td>
<td></td>
<td></td>
<td>0.5%</td>
<td>0.2</td>
<td>2%</td>
<td>3</td>
</tr>
<tr>
<td>Electronics</td>
<td></td>
<td></td>
<td>0.4%</td>
<td>0.2</td>
<td>5%</td>
<td>6</td>
</tr>
<tr>
<td>Glass Contaminants</td>
<td></td>
<td></td>
<td>0.4%</td>
<td>0.2</td>
<td>8%</td>
<td>11</td>
</tr>
<tr>
<td>C&amp;D Waste</td>
<td></td>
<td></td>
<td>0.1%</td>
<td>0.1</td>
<td>3%</td>
<td>4</td>
</tr>
<tr>
<td>HHW &amp; Household Chemicals</td>
<td></td>
<td></td>
<td>0.0%</td>
<td>0.0</td>
<td>5%</td>
<td>6</td>
</tr>
<tr>
<td>Disposable Diapers</td>
<td></td>
<td></td>
<td>0.0%</td>
<td>0.0</td>
<td>1%</td>
<td>1</td>
</tr>
<tr>
<td>Recyclable Materials</td>
<td></td>
<td></td>
<td>88%</td>
<td>47.0</td>
<td>100%</td>
<td>132</td>
</tr>
<tr>
<td>Contaminants</td>
<td></td>
<td></td>
<td>12%</td>
<td>6.1</td>
<td>100%</td>
<td>132</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>100%</td>
<td>53.2</td>
<td>100%</td>
<td>132</td>
</tr>
</tbody>
</table>
What Do MRFs Tell Us?

Most expensive contaminants

1. Refuse 40%
2. Film 24%
3. Tanglers 7%
4. Propane Tanks 2%
5. Textiles 2%
6. Scrap Metal 6%
7. Food 3%
8. Hazardous Materials 5%
9. Needles 1%
Methods for Addressing Contamination

- Consistent Communication
- Focus on key contaminants
  - (not the laundry list of everything bad)
- Empower the drivers
- Coordinated use of outreach tools
- Cart tagging

Contamination costs the system money & time, and safety hazards for workers.
Cart-Tagging

• Targeted, Direct, Proven, Effective
Cart-Tagging Results

Route Results in Atlanta

LOWELL and W. SPRINGFIELD, MA

- Stuff in Bags: 43% Contamination, 57% Recyclables
- All Other: 15% Contamination, 85% Recyclables

- Contamination: 37%
- Recyclables: 63%

- Contamination: 26%
- Recyclables: 74%

Contamination Trend

Graph shows a decrease in contamination over time with a peak in July and a gradual decrease towards August.
How Long Do Campaign Effects Last?

1 year
- Level of initial success
- Depth of initial impression

3 years
- Transience of residents
- Difficulty of behavioral ask
How Do I Maximize Durability of Message?

Training Videos

Train them well. Set a standard.
MRF MATERIAL TRACKING FORM

City: ___________________________  Hauler: ___________________________

Truck Number: ___________________________  Container Number (if drop-off): ___________________________

Route Number: ___________________________  Container Material (if drop-off): ___________________________
   (e.g. bottles/cans, cardboard, paper)

QUALITY GRADE
(circle one)

A  Quality is acceptable. Less than 10% of material is contaminated.
B  Quality is poor. 10% to 20% of material is contaminated.
C  Quality is bad. Over 20% of material is contaminated.

Grade B or C?
Check main contaminant:

☐ Recyclables in Bags  ☐ Refuse in Bags  ☐ Loose bags/film  ☐ Scrap Metal
☐ Wood Waste  ☐ Large bulky/heavy items  ☐ Hazardous Waste  ☐ Tanglers  ☐ Textiles

Other: ___________________________

Photographed?

Quality Inspection Signature: ___________________________

Driver Signature: ___________________________
Access Our Tools

ALWAYS PAIR SOUND OPERATIONS WITH THOUGHTFUL OUTREACH. PROCEED WITH INFORMED DECISION MAKING.

PLAN - ACT - MEASURE
(REPEAT)

SO RECICLER, WHAT DO YOU WANT TO DO FIRST?
Delivering robust recycling service means valuable materials are diverted from landfills back into manufacturing, and residents confidently recycle.

Fight Contamination

Recycle with Carts

Boost Participation
Effective Outreach – Appeal to the Emotive Instinct
Effective Outreach Elements

INFORM – BASIC DO’S AND DON’TS

PERSONALIZED FEEDBACK

ISSUE SPECIFIC COMMUNICATIONS

POSTCARD/MAGNET

CART TAGS

MAILERS + MEDIA

STANDING RESOURCE
Social media is the most efficient way to interact with your residents.
The complete set includes:
52 images covering 6 topics
- General
- Holidays
- Material Specific
- Recycling Factoids
- Why Recycle

Pre-written post text for each image.

All posts designed for use with Facebook and Twitter.

BONUS – Create your own.
ROLLING CART GRANTS

• Up to $500K for carts

• Up to $50K for educational needs associated with cart campaign.

• Questions? Contact jgast@recyclingpartnership.org
JOIN OUR NETWORK,
and let’s make recycling more & better!

TOOLS
Online
Library
Starters
BMPs

IDEAS
Webinars
Newsletters
E-Books
Forums

RESOURCES
Grants
Campaigns
Tech
Assistance

www.recyclingpartnership.org
Thank You!

Scott Mouw, Senior Director of Technical Assistance
smouw@recyclingpartnership.org  919-633-0738

Justin Gast, Technical Assistance
jgast@recyclingpartnership.org  541-285-6335