Recycling of Glass Recovered via Bottle Bill and Single Stream Programs

Connecticut DEEP Solid Waste Advisory Committee Meeting

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Glass... 100% and endlessly recyclable
Glass Container Industry: Overview
Glass Bottles reduced in weight

- U.S. glass container manufacturers operate 45 plants in 22 states
- Annual $5.5 billion industry
- Approximately 28 billion glass containers manufactured in 2015
2015 U.S. Glass Container Shipments by Category

- Beer (57%)
- Food (18%)
- Beverages (9%)
- Wine (9%)
- Liquor (4%)
- Ready to Drink (3%)
- Other (0.2%)

Source: Glass Packaging Institute (GPI)
Why Glass Container Recycling Counts
Benefits Glass Manufacturers & Environment

Energy and GHG emissions reduced by 1/3 per ton for every ton of recycled glass used

100% and endlessly recyclable

can be substituted for up to 95% of raw materials
Helps Communities Meet Recycling Goals

Glass bottles and jars represent up to **25%** of the total weight of the recycling stream.

It costs less than 15¢ per person per pick up to recycle glass at the curb.

**80%** of Americans have access to single-stream recycling.

**ZERO** Waste recycling goals cannot be achieved without glass.
Consumers Want To Recycle Glass Containers

91% of consumers say that recycling is an important part of conserving natural resources.

Americans want to recycle glass:

- 90% say that it is important to recycle materials rather than sending them to the landfill.
- 95% of those who live in a community which recycles glass say glass should continue to be collected by recyclers.
- 91% say finding ways to avoid wasting our natural resources is important.

Glass is made from natural resources:
- Sand
- Soda ash
- Limestone

*Source: 2016 national poll by SurveyUSA*
Recycled content for glass bottles and jars increasing = strong industry demand

• Recycling rates*:
  – 41% of beer and soft drink bottles
  – 34% of wine and liquor bottles
  – 34.1% of all glass containers
  – 10 states with refund programs average 63% glass container recycling; other states average roughly 24%

Glass Container Recycling: Challenges
Packaging Evolution & Recycling

Glass is now a quarter of Single Stream volume in non-deposit states

NEW TON

OLD TON

Lighter, less mass
More units per ton
More Types of Material
More Materials with Less Value
Increased Residue At MRFs

- Increased contamination of inbound supply
- As fiber decreases, glass is growing % of recycling stream
- SS MRFs initially designed to “remove” glass, not sort it

Sources: 2007 Comparative Study on Public vs. Private MRFs, 2012 GAA study on Wisconsin-Area MRFs, ISRI Moore Presentation April 2015
Commodity Value Decline

$125 \text{ Per ton in 2011}

$67 \text{ Per ton in 2015}

= 1 \text{ billion loss per year}
Beverage Container Recycling Refund Programs

• Supply 65-80% of recycled glass used to make new glass bottles and jars
• Connecticut Redemption Rate – nearly 57% (almost double the national avg.)
• Results in reduced contamination for all recyclables collected
CT - Glass Single Stream Recycling

The Process

• Glass from CT SS MRF transported to SMI Rhode Island plant for pre-processing

• Glass then sent to Franklin, MA SMI plant, run through optical sorting line creating 2 streams, amber glass and clear/green mix (fleen)

• Amber cullet is blended with bottle bill material for container industry.
CT - Glass Single Stream Recycling

The Process

• Fleen shipped to South Windsor and is color sorted into Clear (flint) cullet for a container customer and green for fiberglass

• The better the material, the less that goes to landfills

• Several MRFs have invested in glass cleanup systems to improve the quality of the material coming to SMI.
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CT - Glass Single Stream Recycling

- By weight, glass makes up about 18% of the single stream collection system in Connecticut*
- Glass recovery can assist Connecticut reach its 60% diversion by 2024 goal*
- Glass recovery via single stream can be improved:
  - Remove glass early in sorting process
  - Move glass breaker screen up in process
  - Add OCC screen
  - Glass bunker placement

*Source: 2015 Connecticut DEEP Waste Characterization Study
Landfilling: Not the Answer

- **Contributes to GHG emissions**
  - Third largest source of U.S. methane emissions (18%)*

- **Cost of tip fees another financial cost to city/municipal**

- **Results in long-term degradation to recycling**
  - Nine states have landfill moratoriums
  - CT has 1 MSW Landfill – ADC is not included as part of state’s diversion rate

*Environmental Protection Agency Estimate, 2014 (18.2% of total methane emissions)
Glass Container Recycling: What are the Markets?
End-Markets for Recovered Glass

Uses for Glass from Single Stream Programs

- 60% Recycled (Containers & Insulation)
- 45 Glass Container Plants – Largest Manufacturing End Market
- 21% Trash (Landfilled)
- 19% Downcycled (Abrasives & Aggregates)

Source: Container Recycling Institute
Fiberglass Industry Demand

• 36 plants in NA
• Recycled glass a critical manufacturing input
• Purchased about 850,000 tons in 2015
Secondary Markets

- Roadbed aggregate
- Filtration medium
- Abrasives/sand blasting
- Tiles, landscaping, countertops
- Cement/concrete
- Landfill cover (ADC)
Connecting Suppliers To Markets

www.GPI.org: Connecting the dots to the glass recycling chain
Glass Container Recycling: Opportunities & Initiatives
Glass Recycling Coalition

- Consumer brands
- Glass manufacturing
- Waste hauling

- Recycling processors
- Trade organizations
Glass Recycling Coalition: Goals & Activities

Goals:
- Assist municipalities with glass recycling decisions
- Resources & champions
- Best practices & community models

Activities:
- National Webinar
- Targeted Initiatives
Glass MRF Spec

- ISRI voluntary “Glass MRF Spec” in process
- If adopted can provide expectations for supply chain stakeholders
MRF & Collection System Solutions

- **SS MRF Initiatives**
  - Technology changes
  - Best Practices

- **SS w/ glass separated** (e.g., Centre County, PA; Portland, OR)

- **SS w/ resident pay for separate glass collection** (e.g., Momentum in UT & CO)

- **Expanded glass drop-off systems** (e.g., Ripple in MO, KS, NE)

- **Glass drop-off w/ optional business collection** (e.g., Clear Intentions, CO)
THANK YOU!

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