



Breakthrough Glass Recycling Opportunities



Moderator:
Luke Truman
Allagash Brewing Co.



BREAKTHROUGH GLASS RECYCLING OPPORTUNITIES

Free Webinar: Tues, Dec 11, 1:00pm EST



Luke Truman
Allagash Brewing



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Strategic Materials Inc.



Kerry Getter
Balcones Resources



Mary Ann Remolador
NERC



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City of Houston

TECHNICAL DETAILS

Your **control panel** to the right allows you to change audio vs. phone settings.

We want to hear from you!

Use the control panel to ask questions.


Questions?

Use Q&A feature to ask questions during webinar



A recording of this session will be available after the webinar has ended. GlassRecycles.org/webinars

WHO WE ARE



A unique, collaborative
coalition focused solely on
making glass recycling work

GRC MEMBERS



DIAGEO



★ Heineken®



KNAUF INSULATION



binder+co

ALLAGASH
BREWING COMPANY



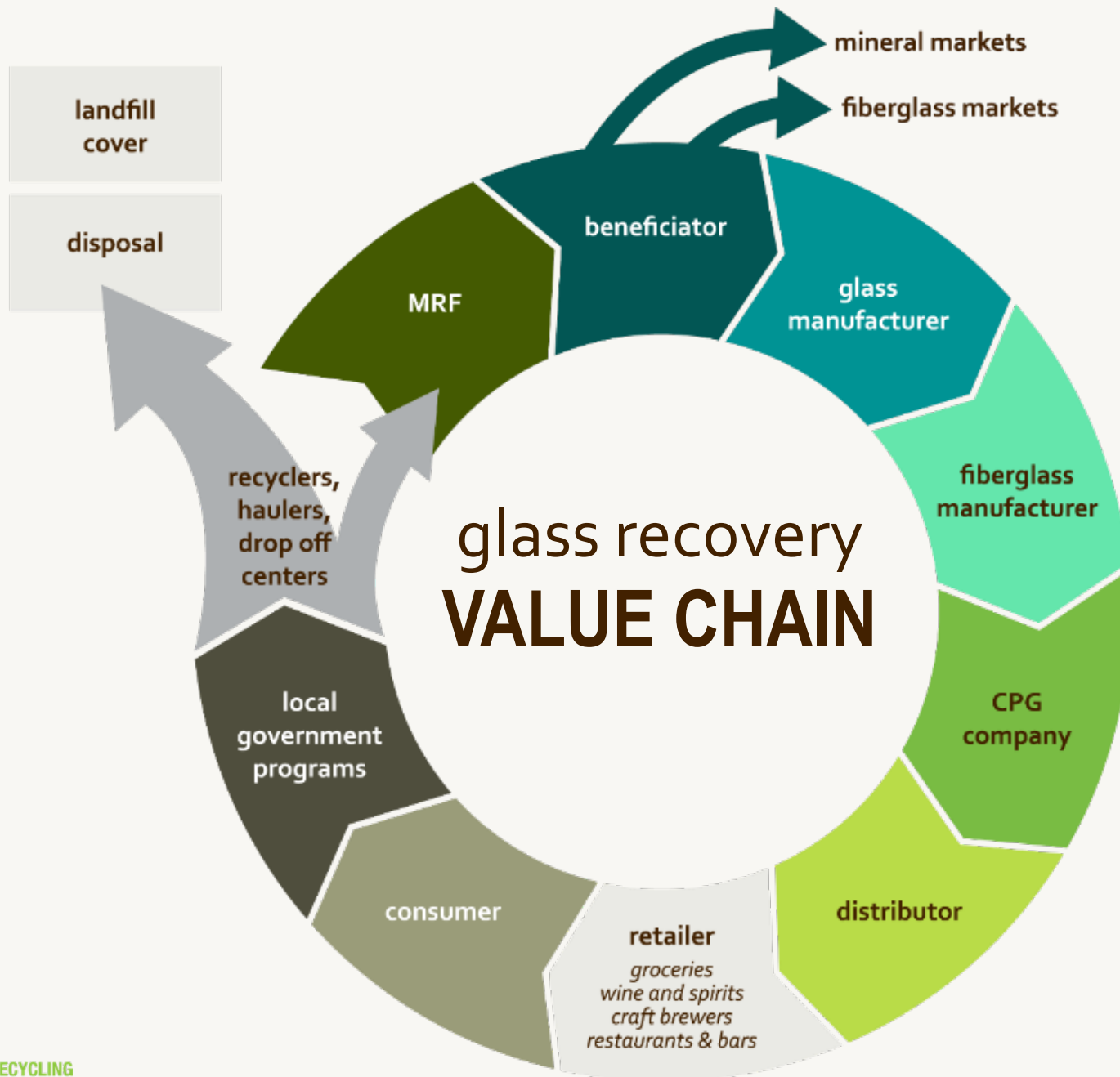
Inspired Brewing®



RUMPKÉ



GALLO GLASS
CALIFORNIA PURE





GLASS RECYCLING COALITION

2018 Glass Recycling Coalition's 2nd Annual Survey to gain insights about glass recycling landscape.



300+

public sector representatives,
top glass industry
professionals, and MRF
representatives surveyed.



90%

of residents and
consumers
still expect to be able
to recycle glass.



54%

of public sector
respondents
are increasing education
in current recycling
markets.

GRC RESOURCES



31,500+ Website Pageviews

40+ Glass Best Practices

Social Media: FB & Twitter



Glass Outreach

NEW

Glass Champions Talking Points

Speaker's Bureau

Webinars



Tools

Interactive Glass Map

Decision Making Tool

Case Studies



GRC RESOURCES



TALKING POINTS FOR GLASS CHAMPIONS

1. According to a 2018 study by the Glass Recycling Coalition, 90% of consumers and residents **expect to be able to recycle their glass**. Currently, 81% of U.S. recycling programs include glass options for residents. more than 300 from public-sector, glass industry, and MRF representatives.



2. **Glass recycling helps** to preserve limited natural resources by reducing raw material use, reduces energy consumption as recycled glass melts at lower temperatures than raw materials, saves money on reduced landfill tons, and reduces air emissions. Bottle to bottle best, fiberglass next, then others. All save resources/energy.

3. **Glass recycling programs can include** container deposit systems, single-stream and dual-stream collection, drop-off, bar and restaurant programs, etc. Successful glass recycling programs consider a variety of elements, including local recycling infrastructure and proximity to end markets. Currently, there is not one universal fix to improve glass recycling in the U.S. **Glass recycling solutions are locally-based**, as is true with other recycling commodities.

4. There are opportunities for regional **collaboration for glass recycling and end markets**. Communities have opportunities to work within their region for a central collection point for glass.

5. While many recyclables rely on export markets, the **end market for recycled glass is primarily domestic**. Recycling glass containers helps U.S. glass container and fiberglass manufacturing plants remain competitive and protects US jobs.

6. **Broken glass is not an issue for end markets. Historically only glass 3/8" and larger were recoverable but new processing technologies and new end markets now mean all glass fragments can be recycled as long as contamination levels are reduced.** Recycling collection and sorting equipment with cleaning systems can handle straight color, as well as mixed color, glass containers.

7. **End markets need a consistent supply of quality glass bottles and containers** to make cullet or recycled glass. Most glass containers collected curbside or commercially will need additional processing before being manufactured into new containers or fiberglass.



RISKS OF REMOVING GLASS CONTAINERS FROM THE ACCEPTABLE RECYCLING PROGRAM ARE:

- Disapproval from residents, who expect to be able to recycle their glass containers. Most residents view glass as a core recyclable along with paper, plastic bottles and aluminum cans.
- Lack of confidence in recycling overall, mixed messaging to residents on what is and is not recyclable, and ultimately, the risk of difficulty reinstating glass recycling as part of future collection programs.
- Residents are likely to continue placing glass in their recycling bins, which may result in rejected loads at the materials recovery facility increasing costs for contamination.
- Local governments will pay increased landfill tipping fees as the heavy weight of glass containers is removed from the recycling mix.
- Use GRC's decision-making tool to help guide you to resources available to make an informed decision: www.glassrecycles.org/yourprogram



CONTRACT CONSIDERATIONS:

- If your existing or new contract includes glass on your list of acceptable items, inquire about nearby markets for glass. Check out GRC's market map for insights in your area: www.glassrecycles.org/glassmap
- Ask if the material recovery facility has implemented glass cleaning equipment that removes glass early to make it more marketable.
- Establish a measurement system for glass sold post-MRF processing so that you can understand if the glass value has gone down or if the contamination has gone up. Consider establishing a contractual max contamination level to increase value.
- If a lower price is being offered to remove glass make sure you understand the entire supply chain impacts and consider the above consequences for removing glass for additional education, potential non-compliance and overall confusion for your recycling program.

WHY USE GLASS?

- Glass can be recycled endlessly with no loss in quality or purity. Glass containers returned for recycling help to make new glass bottles and jars (which can include over 95% recycled content), as well as fiberglass.
- Glass recycling minimizes the impacts on natural resources.
- Glass does not pose a threat to the world's oceans and our food chain.
- Recycling glass has big environmental payoffs as well—it saves raw materials, lessens demand for energy, and cuts CO2 emissions.
- Plastic bottles and even aluminum cans are lined with plastic. Glass is a natural healthy choice.
- Drug Administration as "generally regarded as safe."
- Most glass customers and suppliers are within 300 miles of production plants.
- Recycling one ton of glass is equal to eight jobs.
- Recycling glass saves raw materials — Over a ton of natural resources are conserved for every ton of glass recycled, including 1,300 pounds of sand, 410 pounds of soda ash, 380 pounds of limestone, and 160 pounds of feldspar.

GLASSRECYCLES.ORG

[Home](#)[About Us](#)[For Consumers](#)[Tools](#)[Best Practices](#)[Membership](#)[News](#)[Contact](#)

MAKING

RECYCLING WORK

[Decision-Making Tool](#)[Webinars](#)[Glass Champions](#)[Grant Funding](#)[Glass Recycling Locations-Markets](#)[Glass Recycling Benefits](#)

The Glass Recycling Coalition is a membership of companies and organizations to make glass recycling work: glass manufacturers, haulers, processors, materials recovery facilities, capital markets, end markets and brands that use glass to showcase their products.



*Promoting
best practices
in glass
recycling*



*Strengthening
glass markets
and the value
chain*



*Providing
solutions-
oriented
resources for
local and state
governments*

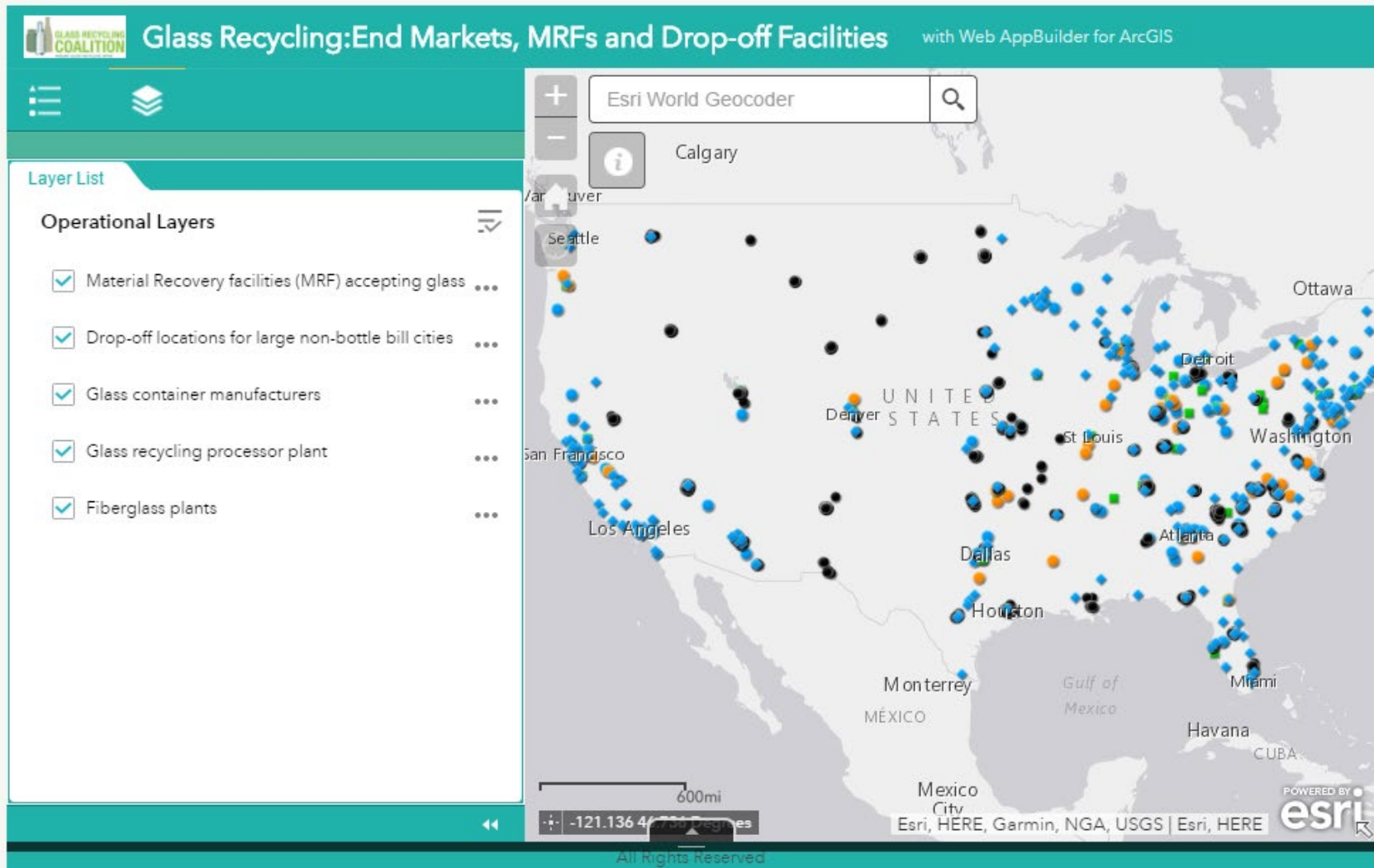


*Collaborating to
build a strong
foundation for
the success of
glass recycling in
the future*



*Partnering
with Glass
Champions to
seek solutions
that increase
glass recycling*

RESOURCE MAP



THANK YOU!



GLASS RECYCLING
COALITION

info@GlassRecycles.org

www.GlassRecycles.org



@GlassRecycles

Proud Members of:



Strategic Materials

NA Largest Glass Recycler

Laura Hennemann | VP, Marketing & Communications

Agenda



- Who is Strategic Materials
- Debunking Myths about Glass
- Why Glass? Markets & Demand
- How to Increase Glass Value

Strategic Materials

Markets Served



We are the largest glass recycler in North America, with **nearly 50 plants**.

With over **120 years of experience**, we are a recycling market leader for glass.

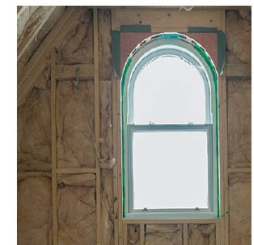
The markets we serve with our recycled glass helps to **reduce manufacturing costs and improve sustainability**.



Container



Abrasives



Fiberglass



Fillers



Highway Bead



Plastic



Specialty

We recycle nearly **3 million tons of glass** a year into a variety of applications.

Debunking Myths

What have you heard about glass?



CLAIM

FACT

Broken glass cannot be accepted

✓ We accept broken glass

Mixed color glass cannot be accepted

✓ We accept mixed color glass

Glass must be washed & cleaned

✓ Labels & organics clinging to glass present no problem

Glass contaminates other recyclables

✓ Single-stream contaminates every material in the bin. Proper layout, sequence & processing at the MRF maximizes value for all streams

Glass cannot be recycled due to China's SWORD policy

✓ This is not true. Glass is produced and recycled domestically

Glass has no value and belongs in the landfill, or the value of glass has gone down

✓ Glass has value, and can be maximized with proper process or equipment. Glass value is variable. The amount of garbage has increased, which hurts glass value

There are no end markets for glass

✓ End markets include container, fiberglass insulation, highway bead & more. Demand exceeds supply in many areas

Debunking Myths

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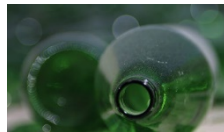
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Why Glass?

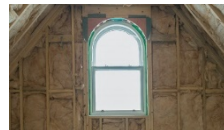
End Markets



Glass Containers



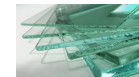
Fiberglass



Why is recycled glass used?

- ✓ Saves on energy & CO₂ emissions
- ✓ Increases throughput
- ✓ Extends furnace life
- ✓ LEED credits (fillers and insulation)
- ✓ It is chemically inert, safe packaging
- ✓ It is ocean-friendly

Flat Glass



Fuyao Glass America Inc.

Highway Bead



Glass is likely the most stable commodity in the stream for the past 5 years. All these benefits positively impact the local economies through job support.

Glass Sources

Better Quality Supply = Better Pricing



(\$\$\$) Negative Value

\$\$\$ Positive Value

Pricing Matrix

Better Quality Supply = Better Pricing



Glass Economic Drivers

- Glass price is directly tied to quality of material received. Lower quality = Lower Price
- E.g. Source separated flint, amber, green = positive value (highest value)
- E.g. 3-mix/single stream = variable value
- Glass Quality dependent on MRF processing capability / desire
- MRF processing capability dependent on City quality requirements

		Undersize									
Non-Glass I		0.0%	5.0%	9.0%	10.0%	15.0%	20.0%	24.0%	25.0%	30.0%	35.0%
	0.0%	\$ (4.20)	\$ 11.75	\$ 10.59	\$ 10.30	\$ 8.85	\$ 7.40	\$ 6.24	\$ 5.95	\$ 4.50	\$ 3.05
	5.0%	\$ 1.02	\$ (3.43)	\$ (1.60)	\$ (1.89)	\$ (3.34)	\$ (4.79)	\$ (5.95)	\$ (6.24)	\$ (7.69)	\$ (9.13)
	10.0%	\$ (10.59)	\$ (12.04)	\$ (13.30)	\$ (13.49)	\$ (14.94)	\$ (16.39)	\$ (17.55)	\$ (17.84)	\$ (19.29)	\$ (20.74)
	15.0%	\$ (15.52)	\$ (16.97)	\$ (18.13)	\$ (18.42)	\$ (19.87)	\$ (21.32)	\$ (22.48)	\$ (22.77)	\$ (24.22)	\$ (25.67)
	20.0%	\$ (19.14)	\$ (20.59)	\$ (21.75)	\$ (22.04)	\$ (23.49)	\$ (24.94)	\$ (26.10)	\$ (26.39)	\$ (27.84)	\$ (29.29)
	25.0%	\$ (23.20)	\$ (24.65)	\$ (25.81)	\$ (26.10)	\$ (27.55)	\$ (29.00)	\$ (30.16)	\$ (30.45)	\$ (31.90)	\$ (33.35)
	30.0%	\$ (29.73)	\$ (31.18)	\$ (32.34)	\$ (32.63)	\$ (34.08)	\$ (35.53)	\$ (36.69)	\$ (36.98)	\$ (38.43)	\$ (39.88)
	35.0%	\$ (37.70)	\$ (39.15)	\$ (40.31)	\$ (40.60)	\$ (42.05)	\$ (43.50)	\$ (44.66)	\$ (44.95)	\$ (46.40)	\$ (47.85)
	36.0%	\$ (39.44)	\$ (40.89)	\$ (42.05)	\$ (42.34)	\$ (43.79)	\$ (45.24)	\$ (46.40)	\$ (46.69)	\$ (48.14)	\$ (49.59)

Win-Win Solution

What can you do?



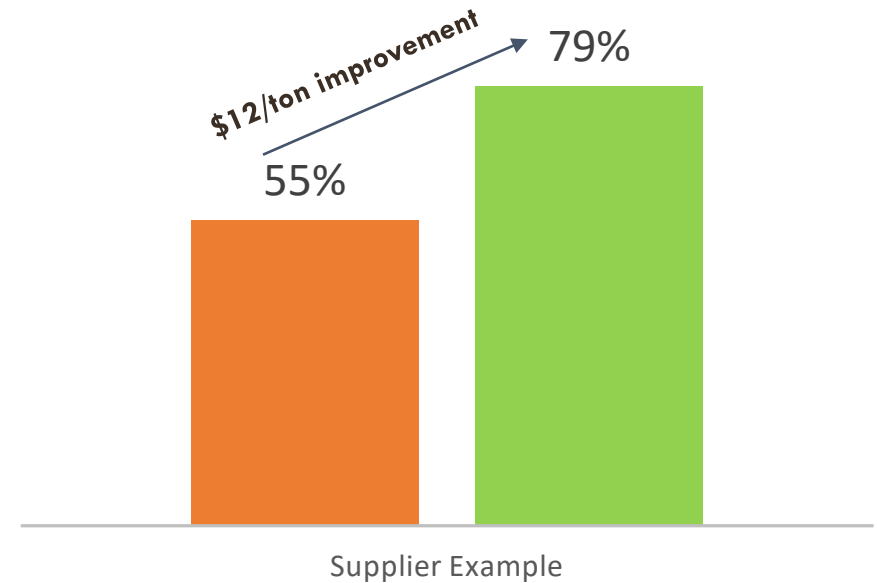
Work with your MRF **and** the glass recycler to develop a solution:

Glass Recycler Benefit:

- Improved processing efficiency
- Reduced landfill costs
- Higher quality cullet output

Benefits to Supplier (e.g. MRF/City):

- Lower tipping fees paid
- Easy roadmap on how to improve quality & economics



Example from 2016 where we sent a team in to consult and design a new clean up system. In some cases we built and installed the system at no cost with a payback period of less than 2 years with the improved value of glass.

Key Takeaways



- Strategic Materials is largest glass recycler in North America. We are glass recycling experts and solutions providers. We recycle a variety of glass.
- Demand for recycled glass exceeds supply. Glass does not belong in the landfill.
- Heard myths about glass? Trust, but verify.
- Glass is valuable – we are here to help you realize the value whether a MRF, city, or glass manufacturer.



Thank You



Laura Hennemann | Vice President, Marketing & Communications
lhennemann@strategicmaterials.com



Facebook.com/strategicmaterials

Twitter.com/stratmaterials

LinkedIn.com/strategicmaterials

Instagram.com/strategicmaterials

Proud Members of:





Okay, Let's Just Admit It...



We have a Drinking Problem!!!



Who We Are



Established corporate headquarters in Austin, 1994

Processing plants in Austin, Dallas, and Little Rock

Largest independent material processor in Southwest U.S.

New processing facility opened in Austin in June 2012; 30 tons/hour processing capability, \$25 million capital investment

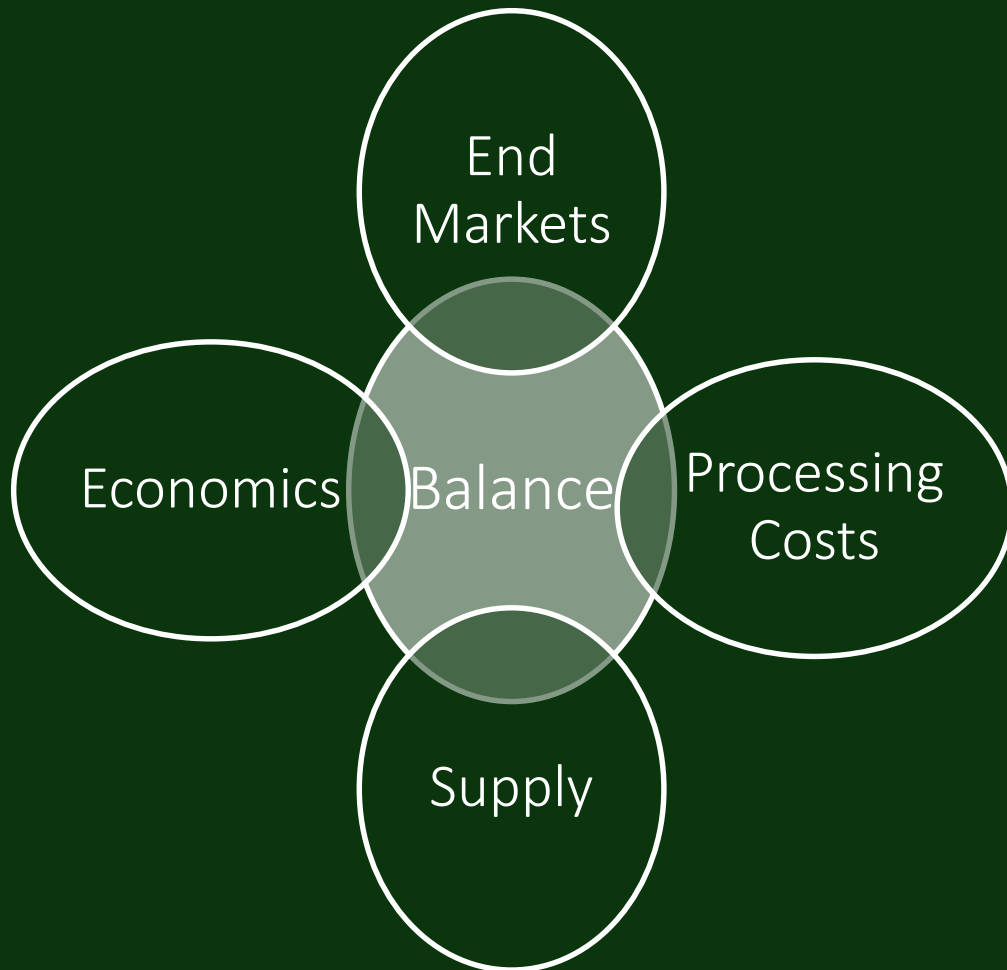
Austin plant processes approximately 120,000 + tons of material annually

Austin plant recycles for 16 communities and 500+ commercial customers

Austin facility sends 1,500 tons of glass per month to SMI in Midlothian, TX



Determining Viability of Recycling Any Material

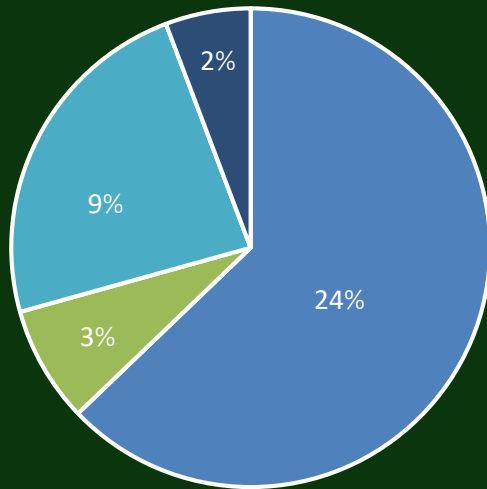


- End Markets
 - Reliable, Viable, Stable
- Supply
 - Consistent, Clean, Stable
 - Understand Goals
- Processing
 - Technology, Costs, Stable
 - High Quality End Products
- Economics
 - Favorable to all Parties

Texas Glass Recycling

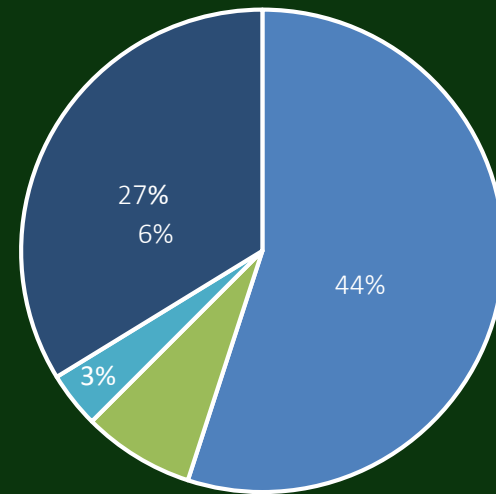
Texas Recycling Data Initiative – Conducted by Burns & McDonnell on Behalf of STAR

Texas Recycling Rates
(Published 2015 TRDI Report)



■ Paper ■ Plastic ■ Metal ■ Glass

Austin Recycling Rates
(Based on 2015 Composition Study)



■ Paper ■ Plastic ■ Metal ■ Glass

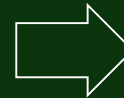
Glass Recycled in Texas
(Based on 2015 TRDI Report)

• 137,222 tons



Glass Recycled by
Balcones (2015 Austin
Plant)

• 15,120 tons



Percent of Glass in
Texas Recycled by
Balcones

• 11%



Glass Clean Up Description

Glass Breaker

The glass breaker is comprised of a screen containing shafts of rotating metal tri-discs designed to break the glass into smaller uniformly sized pieces. The discs have an interlocking design from one shaft to the next with a 1.25" x 2.25" opening that allows any glass that is broken into dimensions smaller than that to fall through and continue down the line to the next process. The glass that is larger than the opening will travel via conveyor to a secondary glass breaker of the same design to allow for the rest of the glass to be broken.

Conveyor

The conveyors in the glass clean up system are troughed idler conveyors with a 35° trough, designed to carry large volumes of uniformly sized material.

Shaker Screen

The glass is delivered to a vibratory screen designed to screen out glass fines smaller than 3/8" before the remaining glass travels to an air aspirator for final separation.

Aspirator

The final sort is by an air aspirator that sorts the heavy glass material from any light contamination that has carried with the glass like finely shredded office paper.



Glass Clean Up Description





Glass Recycling Coalition Member

www.balconesresources.com





Solid Waste Management Department

Glass Recycling in Houston



Harry Hayes, Director

Overview of Glass Recycling Changes



Sylvester Turner, Mayor

- Introduction
- Challenges to Our Curbside Program
- Innovative Alternatives
- Moving Forward and Lessons Learned



Department Mission & Services

- ▶ Provide cost effective, environmentally sound and safe solid waste services:
 - Residential Garbage
 - Junk/Tree Waste
 - Recycling Services
 - Curbside Collection
 - Recycling Centers
 - Electronic Scrap & Household Hazardous Waste
 - Yard Waste
 - Dead Animals
- ▶ ~430,000 direct service customers
- ▶ Disaster Recovery



Curbside Recycling History

- ▶ Curbside recycling began as a pilot program in 1990, with the small 18-gallon bins;
- ▶ Started with only 27,000 homes, which grew to over 200,000 homes before the City began converting and expanding the single stream program;
- ▶ February 2015, Houston achieved it's goal of offering curbside recycling to all homes with City solid waste services. A big win!





Harry Hayes, Director

Contracting Timeline



Sylvester Turner, Mayor

1. Contract with current processor up for renewal February 2016;
2. Negotiations for renewal terms began in the midst of current market downturn;
3. Reached an agreement March 2016
4. Changes to program, glass dropped from single stream program July 2016
5. New RFP issued October 2016 for new contract to follow current.





Immediate Outreach Campaign



Harry Hayes, Director

Sylvester Turner, Mayor

Houston Curbside Recycling

Service Announcement

MARCH 28, 2016

Effective immediately, **glass** is no longer accepted in the green curbside recycling bin. You may still recycle glass at all City of Houston drop-off locations. For locations, please see the list to the right or visit our website

www.houstonsolidwaste.org/recycling.

28 de marzo de 2016

Efectivo inmediatamente, **vidrio** no será aceptado en el contenedor verde de reciclaje. Pueden reciclar vidrio en todos los centros de reciclaje de la ciudad de Houston. Las ubicaciones están en la lista a la derecha y en nuestra página electrónica

www.houstonsolidwaste.org/recycling.



Glass Recycling Accepted At:

Neighborhood Depository/Recycling Centers

NORTH 9003 N. Main Houston, TX 77022	SOUTH 5100 Sunbeam Houston, TX 77033
NORTHWEST 14400 Sommermeyer Houston, TX 77041	SOUTHWEST 10785 SW Freeway Houston, TX 77074
NORTHEAST 5565 Kirkpatrick Houston, TX 77028	SOUTHEAST 2240 Central Street Houston, TX 77017

Neighborhood Drop-Off Centers

Westpark Center 5900 Westpark Houston, TX 77057	Clear Lake/ Ellington Airport Highway 3 @ Brantly Ave Houston, TX 77034
Kingwood 3210 W. Lake Houston Pkwy Houston, TX 77339	

For days and hours of operation visit our website or call 3-1-1.

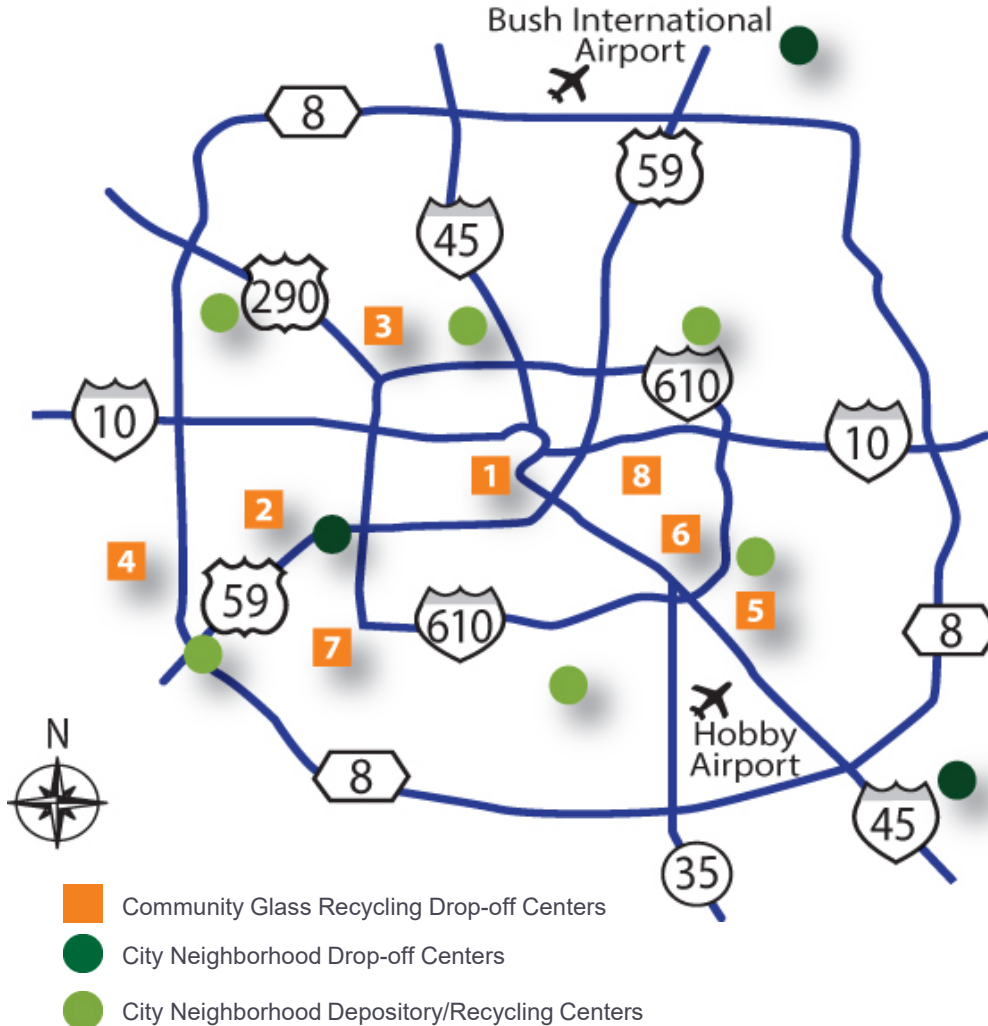
www.houstonsolidwaste.org/recycling

Interim Solution: Community Drop-Off



- Launched a comprehensive program to educate residents about the removal of glass from the curbside recycling program.
- Worked with Council members and community associations to assist in delivering the message to residents about removing glass from the recycling “green” bins.
- Worked with civic associations and church organizations to identify locations that will host glass box collection.

Original Glass Drop-Off Locations



1. **Salvation Army Family Store & Donation Center**
2208 Washington Ave, accessible 24 hours
2. **Sharpstown Park**
6600 Harbor Town Drive, accessible during park hours
3. **T.C. Jester Park**
4201 T C Jester Blvd, accessible during park hours
4. **Alief Community Park**
11903 Bellaire Blvd, accessible during park hours
5. **Glenbrook Golf Course**
8205 N Bayou Dr, accessible during park hours
6. **Mason Park**
541 S 75th St, accessible during park hours
7. **Westbury Methodist Church**
5200 Willowbend Blvd, accessible during business hours
8. **We Can Recycle**
723 N Drennan St, accessible during business hours



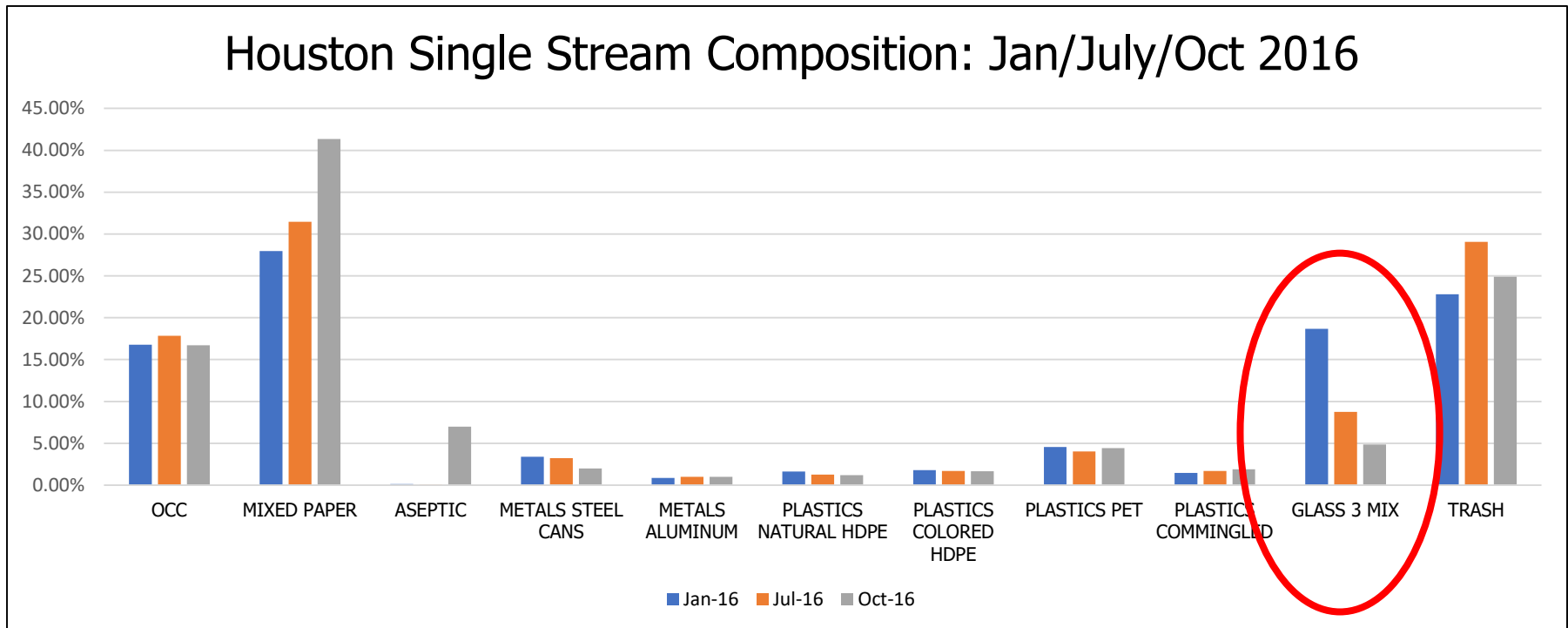
Harry Hayes, Director



Sylvester Turner, Mayor

Impact of Dropping Glass

- Composition of glass in single stream audits steadily decreased since program change.
- Overall tonnage collected in program has also decreased.
- Relatively few complaints regarding the program change.



Future of Glass Recycling in Houston

- ▶ 2016 RFP process resulted in new contract.
- ▶ 2018 Contract signed with FCC to build and operate a new single stream MRF in north east Houston.
- ▶ 2019 March, new contract will begin and glass will be added back to the curbside program.





Harry Hayes, Director



Sylvester Turner, Mayor

Challenges/Lessons Learned

- Communicating industry changes both up and down the chain.
- Houstonians love to recycle, and are able to make changes when needed to keep program going.
- Look for opportunities to partner with local stakeholders.



Questions?



City of Houston

Curbside Recycling Program

Put Only These Items In Your Cart

PLASTICS	CANS & ALUMINUM	NEWSPAPER	CARDBOARD & CARTONS
 <p>Plastic Bottles and Containers (#1-5 and #7) botellas y contenedores de plástico (#1-5 and #7)</p>	 <p>Aluminum & Tin Cans Latas de aluminio y estaño</p>	 <p>Paper and Newspaper Papel y periódico</p>	 <p>Cardboard, Food & Beverage Cartons Cartón de Comida y Bebida</p>

NOT
THESE
ITEMS



NO Glass Containers
vidrio



NO Plastic Grocery Bags
bolsas de plástico

Glass containers and plastic bags are not accepted in the curbside recycling container.
Los envases de vidrio y bolsas de plástico no son aceptados en el contenedor de reciclaje.

Neighborhood Depository/Recycling Centers

NORTH 9003 N. Main Houston, TX 77022 SOUTH 5100 Sunbeam Houston, TX 77033	NORTHWEST 14400 Sommermeyer Houston, TX 77041 SOUTHWEST 10785 SW Freeway Houston, TX 77074	NORTHEAST 5565 Kirkpatrick Houston, TX 77028 SOUTHEAST 2240 Central Street Houston, TX 77017
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Neighborhood Drop-Off Centers

Westpark Center 5900 Westpark Houston, TX 77057	Clear Lake/Ellington Airport Highway 3 @ Brantly Ave. Houston, TX 77034	Kingwood 3210 W. Lake Houston Pkwy Houston, TX 77339
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Thank you!

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QUESTIONS?



GLASS RECYCLING
COALITION

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www.GlassRecycles.org



@GlassRecycles