

# Economic & Environmental Benefits of Recycling

Northeast Recycling Council (NERC)

2016 Conference

April 12, 2016

Princeton, NJ

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[www.GPI.org](http://www.GPI.org)

[www.UpgradeToGlass.com](http://www.UpgradeToGlass.com)

Glass ... 100% and endlessly recyclable



# Overview

- A brief look at the North American glass container industry
- The big picture look into glass recycling:
  - Why it counts
  - Challenges
  - Glass Industry Initiatives to improve supply chain value, market accessibility and transparency, strategic partnerships and best practices

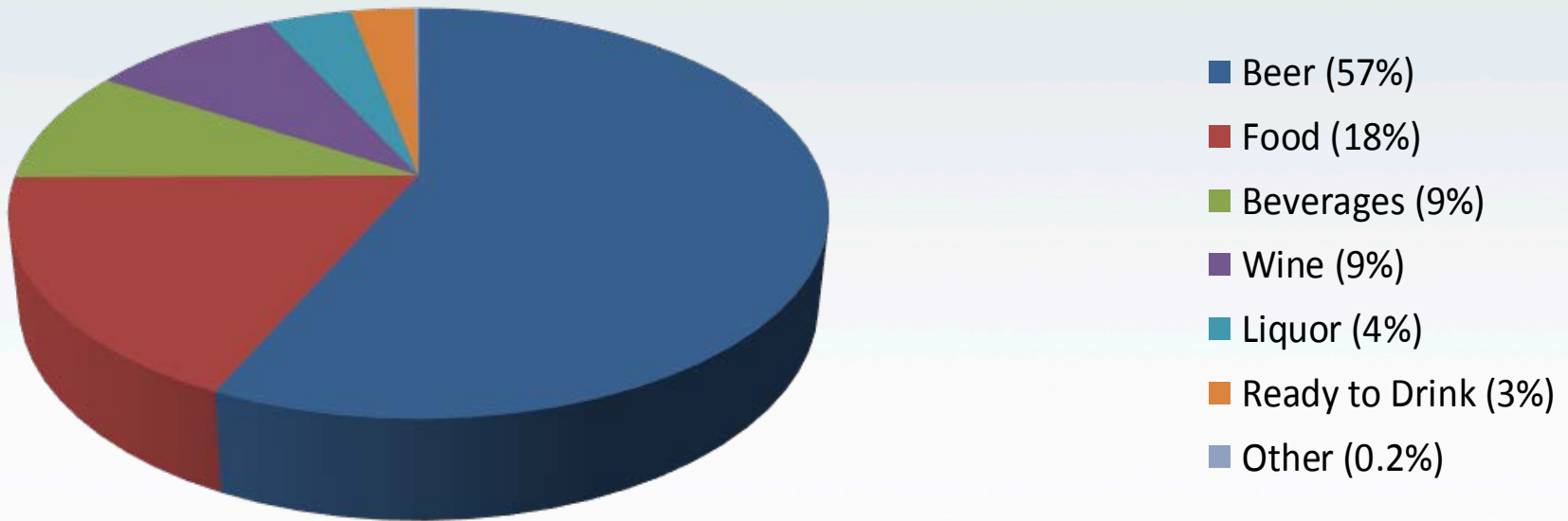
# Glass Containers: Industry Overview

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- U.S. glass container manufacturers operate 45 plants in 22 states
- Annual \$5.5 billion industry
- Approximately 28 billion glass containers manufactured in 2015
- Employs 18,000 Americans in high-paying, benefit-provided careers
- Glass bottles reduced in weight by more than 40% between 1970 and 2000



# 2015 U.S. Glass Container Shipments by Category



Source: Glass Packaging Institute (GPI)

# Glass Container Recycling

# Why Recycle Glass Containers?

## The Glass Recycling Lifecycle

Glass is made of natural materials, including sand, limestone, soda ash and recycled glass. Glass containers are infinitely recyclable without loss to quality or purity.



\*A materials recycling facility is a specialized plant that receives, separates and prepares recyclable materials for manufacturers.

- 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
- Reduces emissions, raw materials use, extends the life of plant equipment
- 2.4 million tons/annually recycled glass used for new bottles and jars

# Glass Container Recycling: Consumer Attitudes



## 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





# Helps Communities Meet Recycling Goals

Glass helps communities meet their recycling goals



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



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



**80%**

of Americans have access to single-stream recycling

**ZERO**

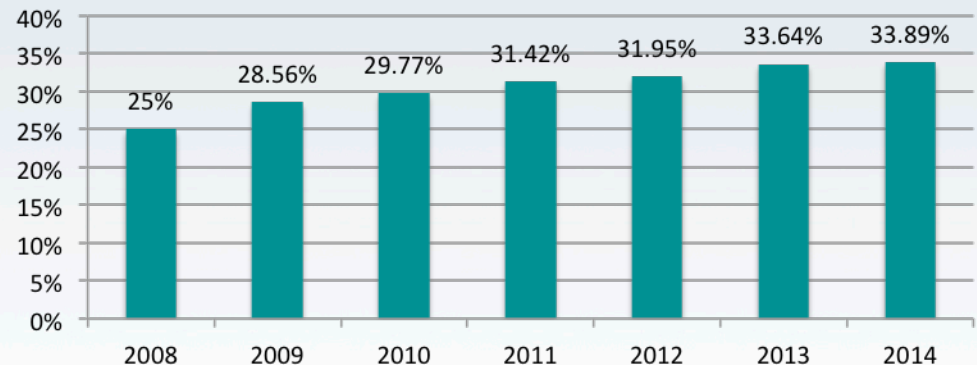
Waste recycling goals cannot be achieved without glass



# Glass Container Recycling Facts

- 59 glass processors in 29 states operated by 22 companies
- 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 Industry Average Cullet Use (Dec.2008 – Dec. 2014)**

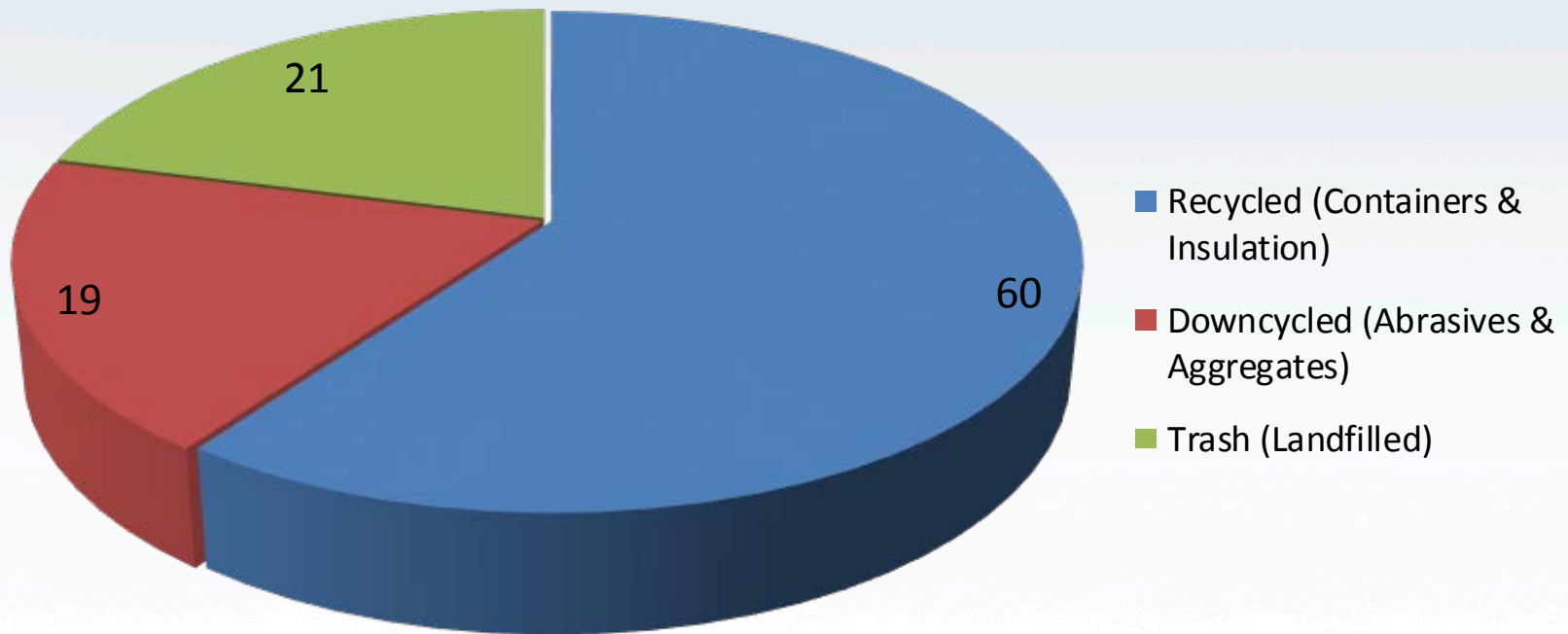


**Average recycled content of glass containers risen from 26% in 2008 to 33% at the end of 2014**

\* Sources: U.S. EPA, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2012*, and Container Recycling Institute

# End-Markets for Recovered Glass

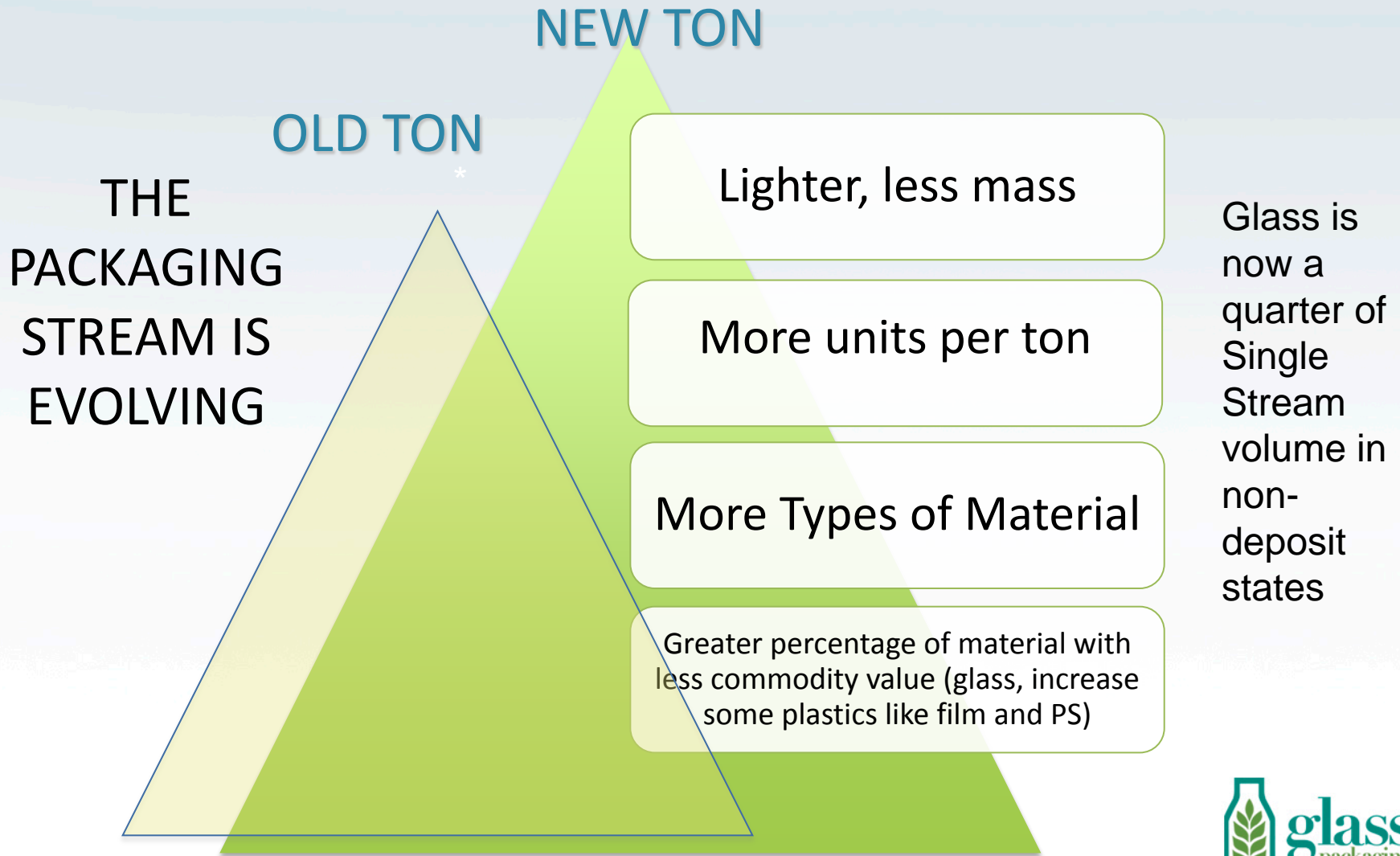
## Uses for Glass from Single Stream Programs



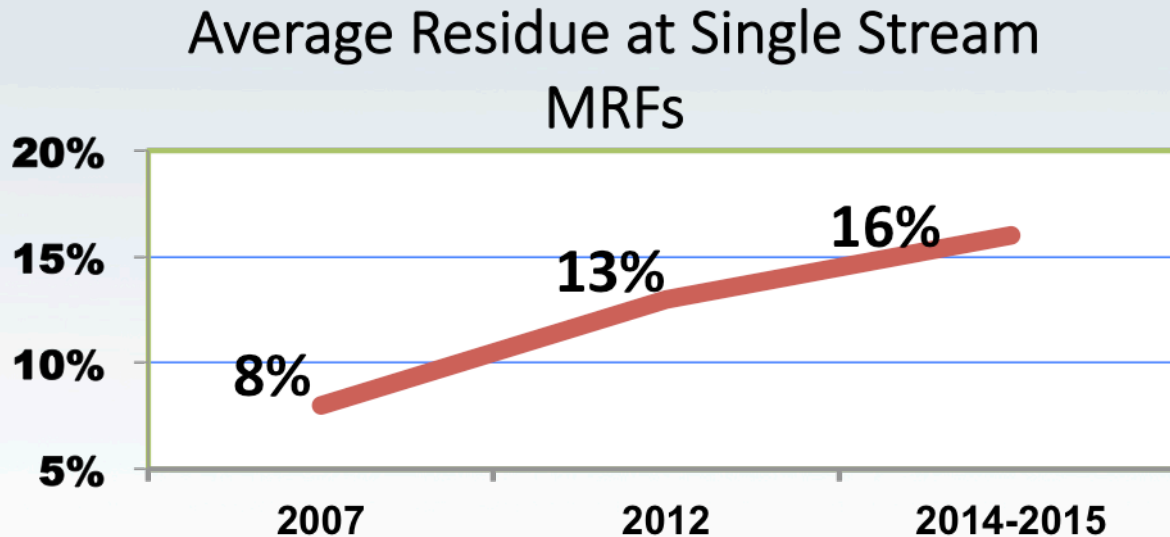
Source: Container Recycling Institute

# Glass Container Recycling: Challenges

# Single Stream Recycling: Packaging Stream



# Single Stream Recycling: MRF Processing Challenges



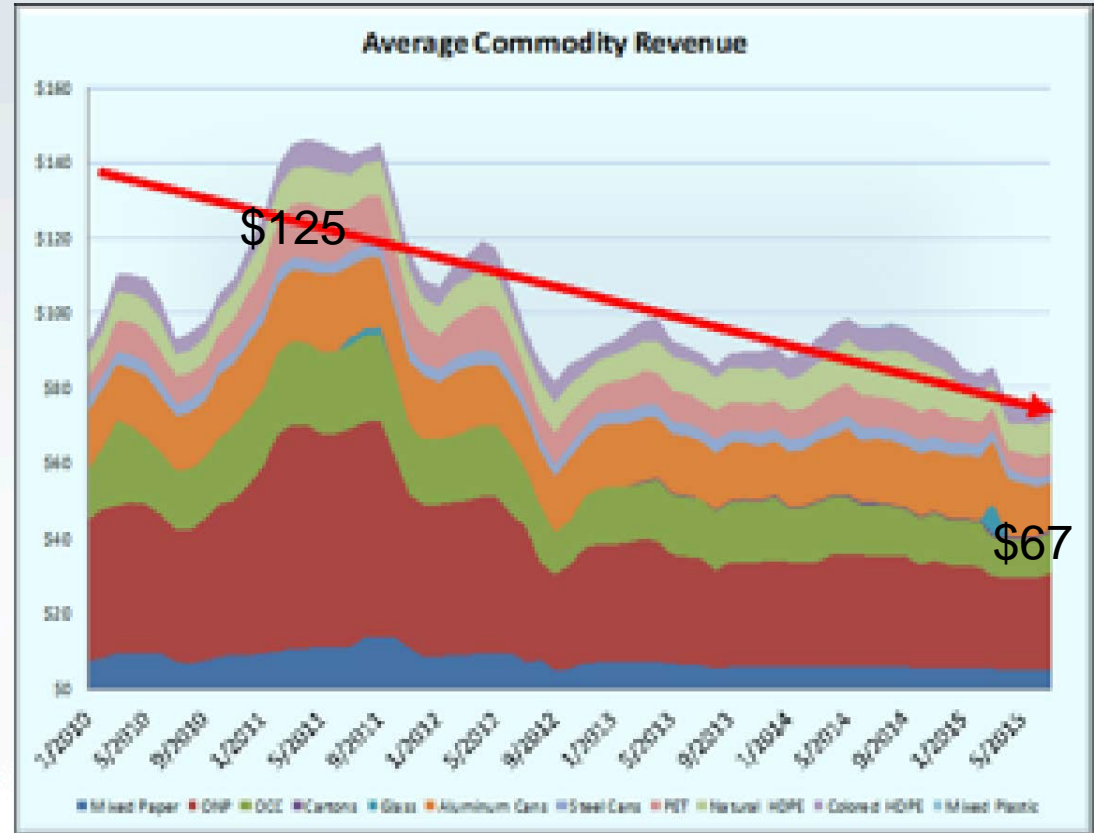
- Increased contamination of inbound supply
- As fiber decreases, glass is growing percent of recycling stream
- SS MRFs initially designed to “remove” glass, not sort it
- Glass clean up systems are expensive to maintain

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



# Single Stream Recycling: Commodities Values

- Commodities from curbside recycling processing economics have deteriorated for six consecutive years
- Over \$37/ton of commodity value lost per avg. single stream ton
- Over \$1B value loss to the industry per year



# Single Stream Recycling: Glass Processor Challenges

- Glass is “negatively sorted” so disproportionately impacted by contamination
- Majority of MRFs have a glass breaker with 2” screens
- “Glass” stream can contain up to 50% unwanted material:
  - Organics – shredded paper, food, etc.
  - Plastics – syringes, needles, caps, etc.
  - Ceramics – cups, plates, etc.
  - Moisture – winter, comes in with organics/shredded paper



Post MRF, prior to glass processor



# Landfilling: Environmental Costs & Economic Benefits

## Climate Change

- Landfilling valuable commodities contributes to GHG emissions
- Landfills are third largest source of U.S. methane emissions (18%)\*
- Nine states have landfill moratoriums



## Landfill Owner Benefits Financially

- Landfill business has higher short-term profitability, but results in long-term degradation to recycling

\*Source: US EPA

# Glass Container Recycling: GPI Initiatives

# Improve Supply Chain Value & Accessibility

## Location Type

- GPI Member Manufacturing Plant
- Recycled Glass Processing Facilities
- Fiberglass Manufacturing Facilities

## Zipcode / Proximity

Postal code

Distance

100

Miles

## State

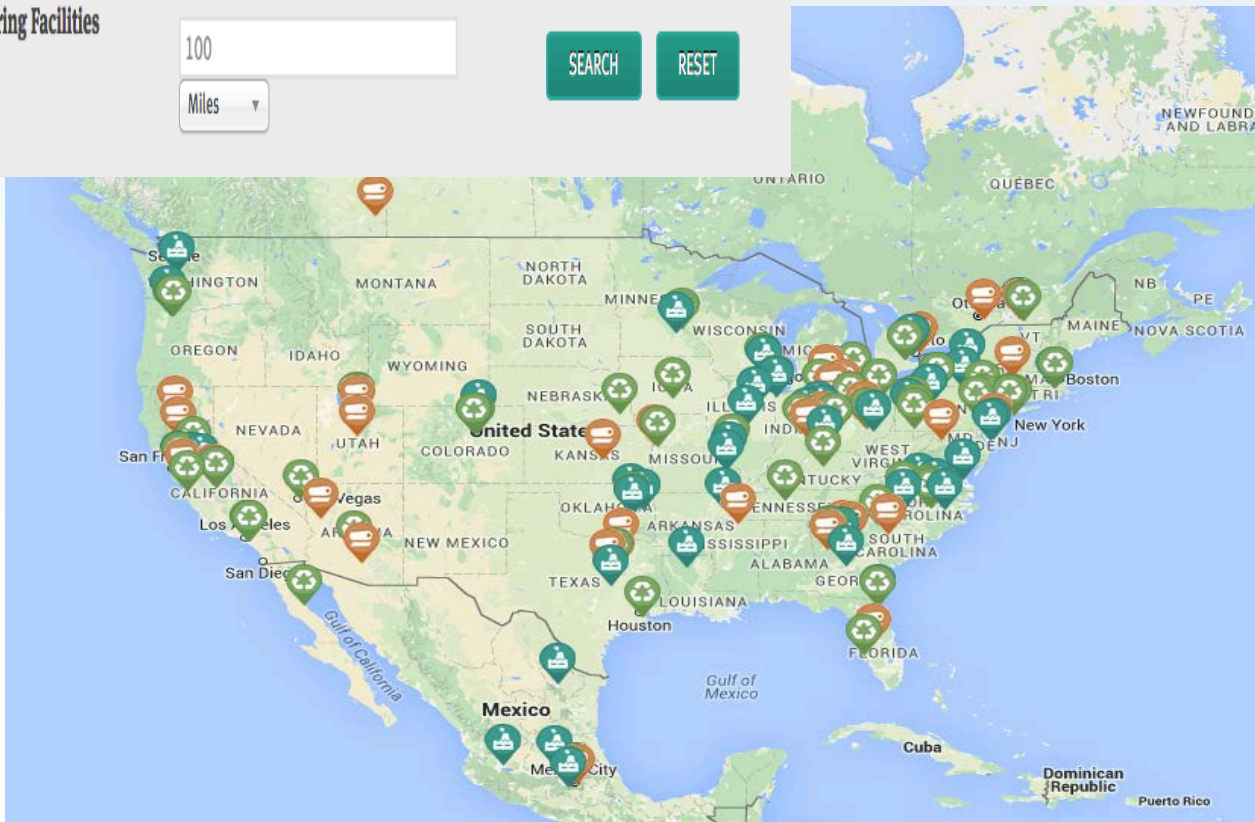
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SEARCH

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[www.GPI.org](http://www.GPI.org):

Connecting the dots to the glass recycling chain



# Partnership With Fiberglass Industry

- Operates 36 plants in North America
- Recycled glass is a critical manufacturing input
- Similar to the glass container industry, requires properly sorted glass that meets industry specifications
- Purchased roughly 750,000 tons of recycled glass in 2015



# MRF Initiatives in North Carolina

- GPI grants to two MRFs for improving glass processing and handling (Asheville and Raleigh)
- MRFs to report on changes in glass recovery efforts in one year
- 3 glass container plants in-state



# Targeted Outreach & Glass MRF Spec

- Outreach to state and local recycling officials & organizations
- Establishing a “Glass MRF Spec” under consideration with ISRI (Institute of Scrap Recycling Industries)



# Glass Recycling Coalition

- Glass Industry Value Chain:

- Diageo
- New Belgium Brewing
- Glass Packaging Institute
- Heineken
- Strategic Materials, Inc.
- Sierra Nevada
- Ripple Glass
- Owens Corning Fiberglass
- Ardagh
- O-I
- NAIMA (Insulation Manufacturers Association)
- Gallo
- Goose Island
- Rocky Mountain Bottle Co.



DIAGEO



GALLO GLASS  
COMPANY

HEINEKEN



ArdaghGlass



- Recycling Industry:

- The Recycling Partnership
- Waste Management
- Republic
- NW&RA



# Glass Recycling - Key Takeaways

- Recycled glass provides significant energy, environmental, and GHG benefits
- Consumers want to recycle glass – not see it landfilled
- Glass in the curbside bin assists municipalities and states achieve recycling and recovery goals
- GPI is working with a variety of packaging stakeholders to improve and strengthen the glass supply chain and recovery efforts



# THANK YOU!

Learn more about GPI and glass  
container recycling at

[www.GPI.org](http://www.GPI.org)

[www.UpgradeToGlass.com](http://www.UpgradeToGlass.com)

or contact [bvickers@pacellp.com](mailto:bvickers@pacellp.com)

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