



*Global trends and their
impact on local recycling
programs*

Arkansas Recycling Coalition - 2019

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Waste Management



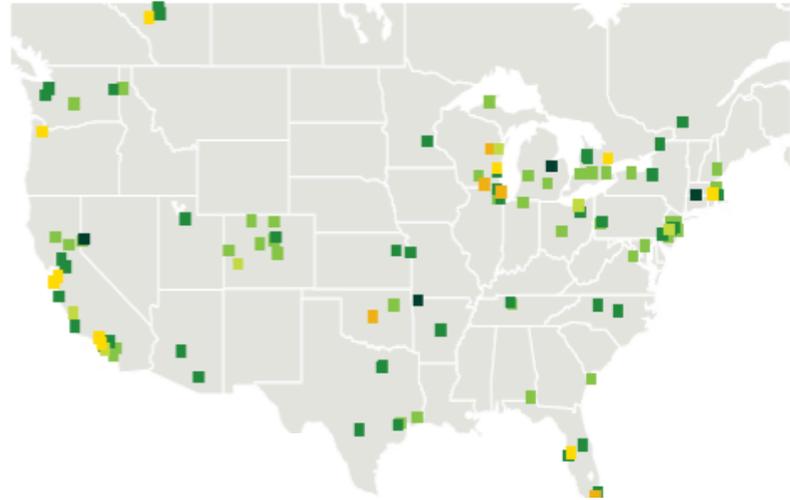
Headlines and News Articles

- “Recycling in the US will survive - despite the media narrative”
- “Investments contradict ‘end of recycling’ headlines”
- “Cscore (Compology) - Standardizing Contamination Measurement with Artificial Intelligence”
- “Prince William County, Virginia eliminates glass, some plastics from curbside recycling”
- “Officials say Vietnam to end plastic imports in 2025”
- “Are you ready for Round 3 of the plastic waste trade war?”

Waste Management Recycling Overview

Where We Recycle

- Material Recovery Facilities (MRFs)
- 43 Single Stream
 - 4 Dual Stream
 - 37 Paper Only or Other Commercial Materials
 - 8 Construction and Demolition Debris
 - 6 High Grade
 - 6 Other



WHAT WE RECYCLED (in tons)



ORGANIC WASTE

3.38 Million Tons of Organic Material Recycled

Our world: What has changed?

China's new import policies are changing recycling

- China consumed 50% of all paper and plastic recycled in the world
- 13.2 millions tons per year of recyclables are now competing for alternative markets.
- Mixed Paper and Mixed Plastics are banned from import into China. The 0.5% contamination limit on all other recyclables makes it difficult to sell into China
- China will ban all imports by 2020

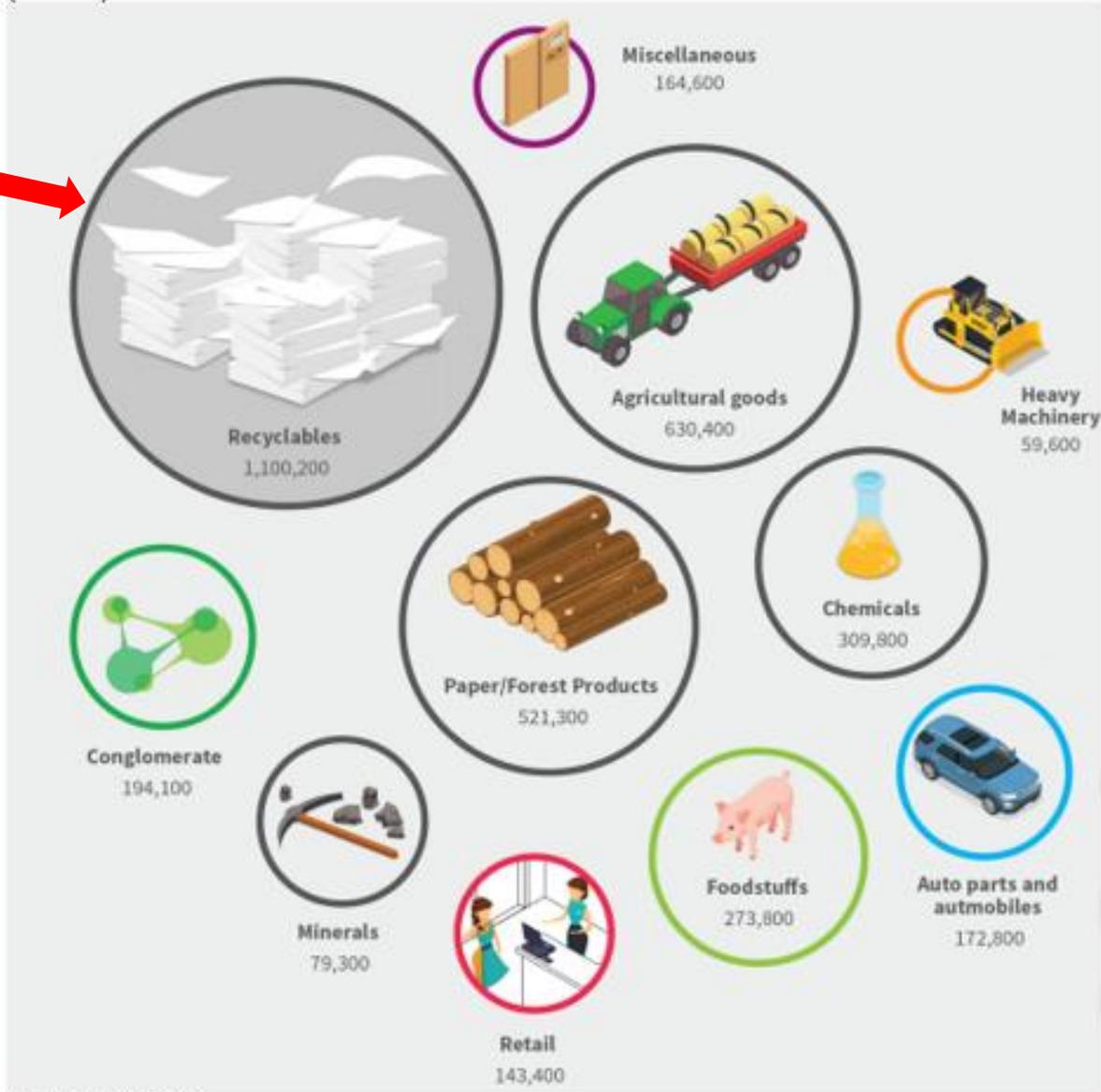


Reduced overall demand, supply surplus, increased quality requirements =
increased processing cost and low commodity values for paper

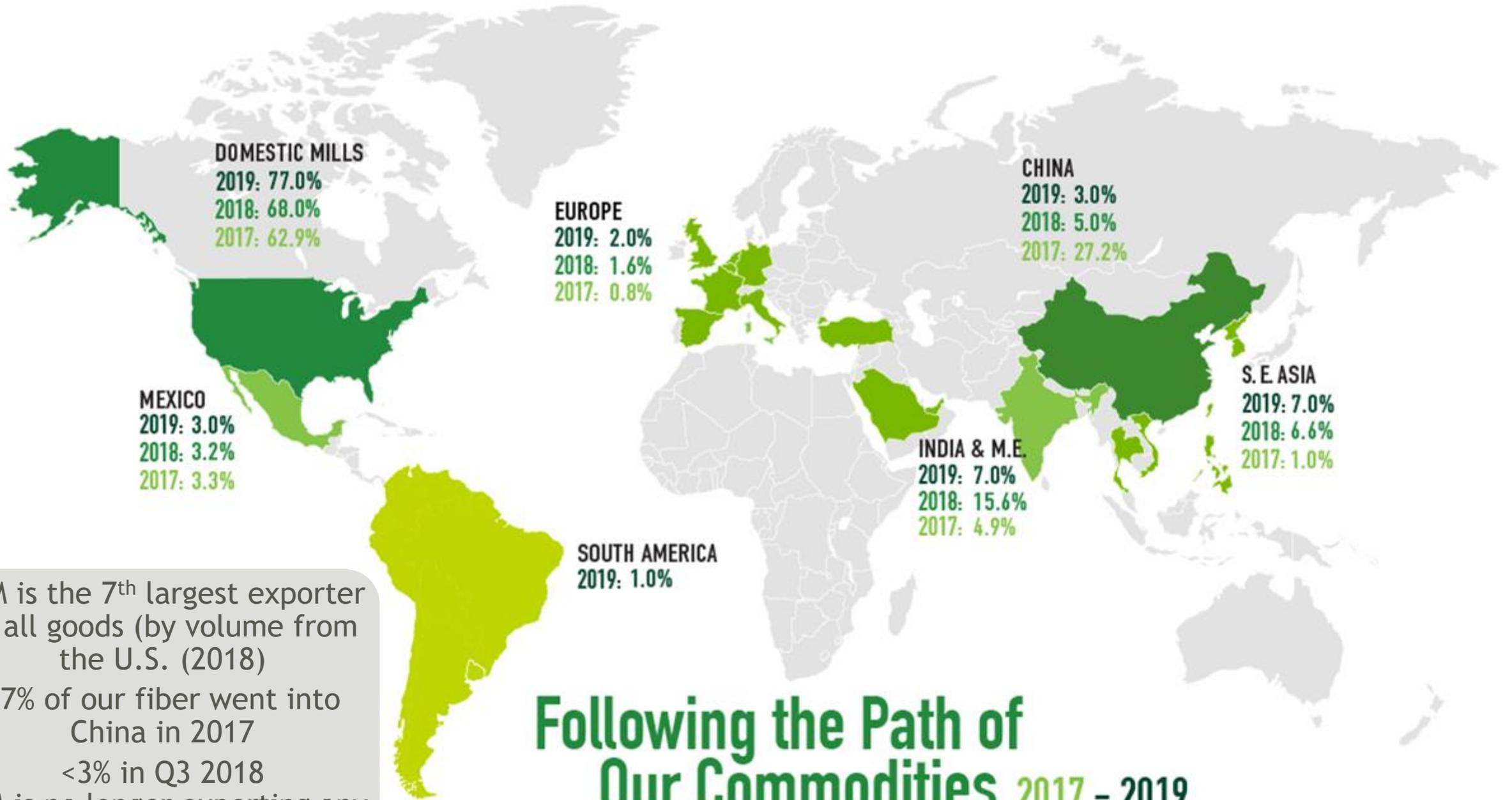
Top Ten U.S. Exports

- Recyclables are the largest U.S export item by volume
- The U.S. is impacted by trade interruptions with its investment in the recycling industry and other products
- We continue to export large volumes, but the end markets are changing

2017 Top 100 Exports (in TEU)



Source: JOC.com



WM is the 7th largest exporter of all goods (by volume from the U.S. (2018)

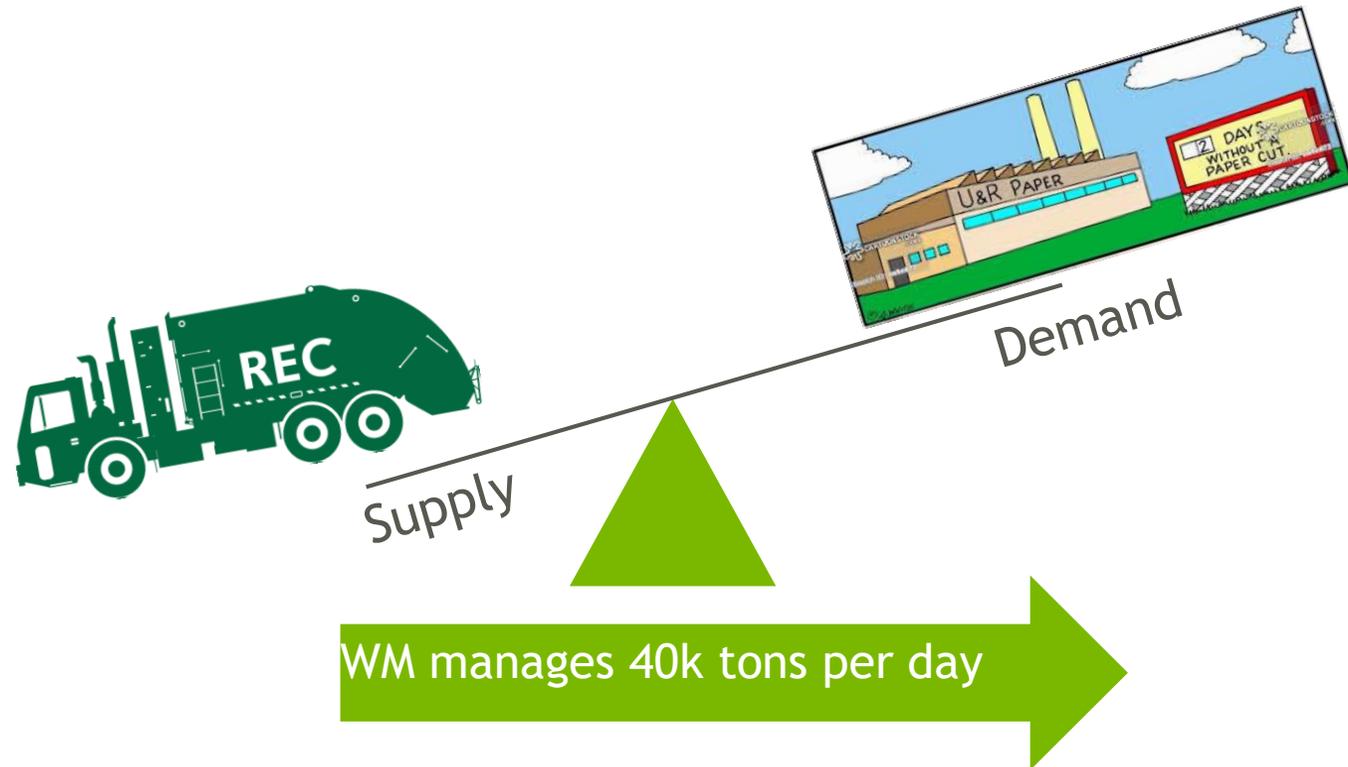
27% of our fiber went into China in 2017

<3% in Q3 2018

WM is no longer exporting any residential plastics

Following the Path of Our Commodities 2017 - 2019

- Recycling programs have a fundamental economic supply/demand problem
- Even though demand has significantly declined, the supply continues to flow in at high rates



What does this mean for recycling?

Why do we recycle?

- Recycling conserves resources by **creating secondary feedstocks** for industry
- Conserving virgin resources by substituting recycled feedstocks for raw materials is an recycling environmentally good thing to do
- Recycling makes business sense when done correctly



Collection is not recycling



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- Recycling doesn't happen until a material displaces virgin resources
- Unless materials becomes a feedstock for a new product, it increases cost and environmental burden.

Recycling in 2019

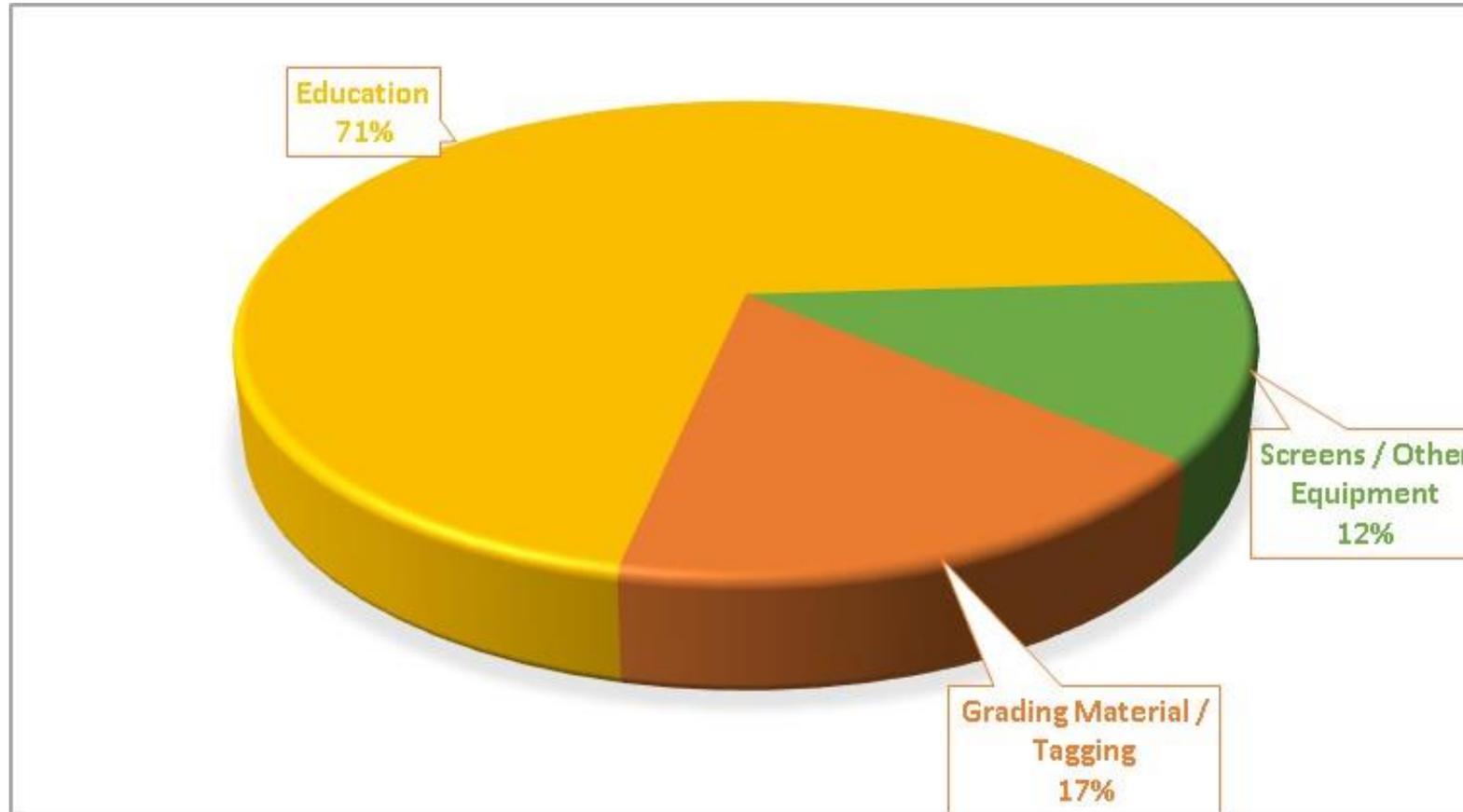


450 pounds of every ton collected is contamination when markets demand less than 10 pounds.

The “Right Thing” must be reframed.
We must recycle those materials that can be made into new

2019 Recycling Facility Manager Survey Results

What do you think the best investment is to reduce/contamination in your MRF?



Most commonly heard from recycling facilities operators: Education and discipline for residents and third parties

This is not recycling



- We spend 140K hours each year cleaning plastic bags, hoses, and Christmas tree lights out of screens
- Our recycling plants received over 28,000 lbs of batteries last year. They are the largest source of fires
- Over 5,000 bowling balls are collected in recycling programs each year. That is 82 tons of bowling balls.

Where do we go now?

It's time to re-write the recycling playbook

- It is time to rethink/reset recycling programs.
- Which materials offer the best bang for the buck?
- As the cost of recycling increases, should we be looking more closely at the benefits of waste reduction?
- Environmental benefits are our goal



Lifecycle Thinking is an approach to becoming mindful of how everyday life affects the environment.

Lifecycle information offers greater visibility into the benefits of how we manage and use products and packaging through their entire life. Lifecycle thinking helps us to:

- Prioritizing and strategic planning.
- Challenging preconceived ideas about how materials can and should be managed avoiding unintended consequences.
- Find the best use/place for the material.

It's time for a paradigm shift to facilitate the success of recycling and materials management

The Changing Waste Stream: Challenging our paradigms about packaging

E-Commerce:
More smaller cardboard in residential curbside recycling programs



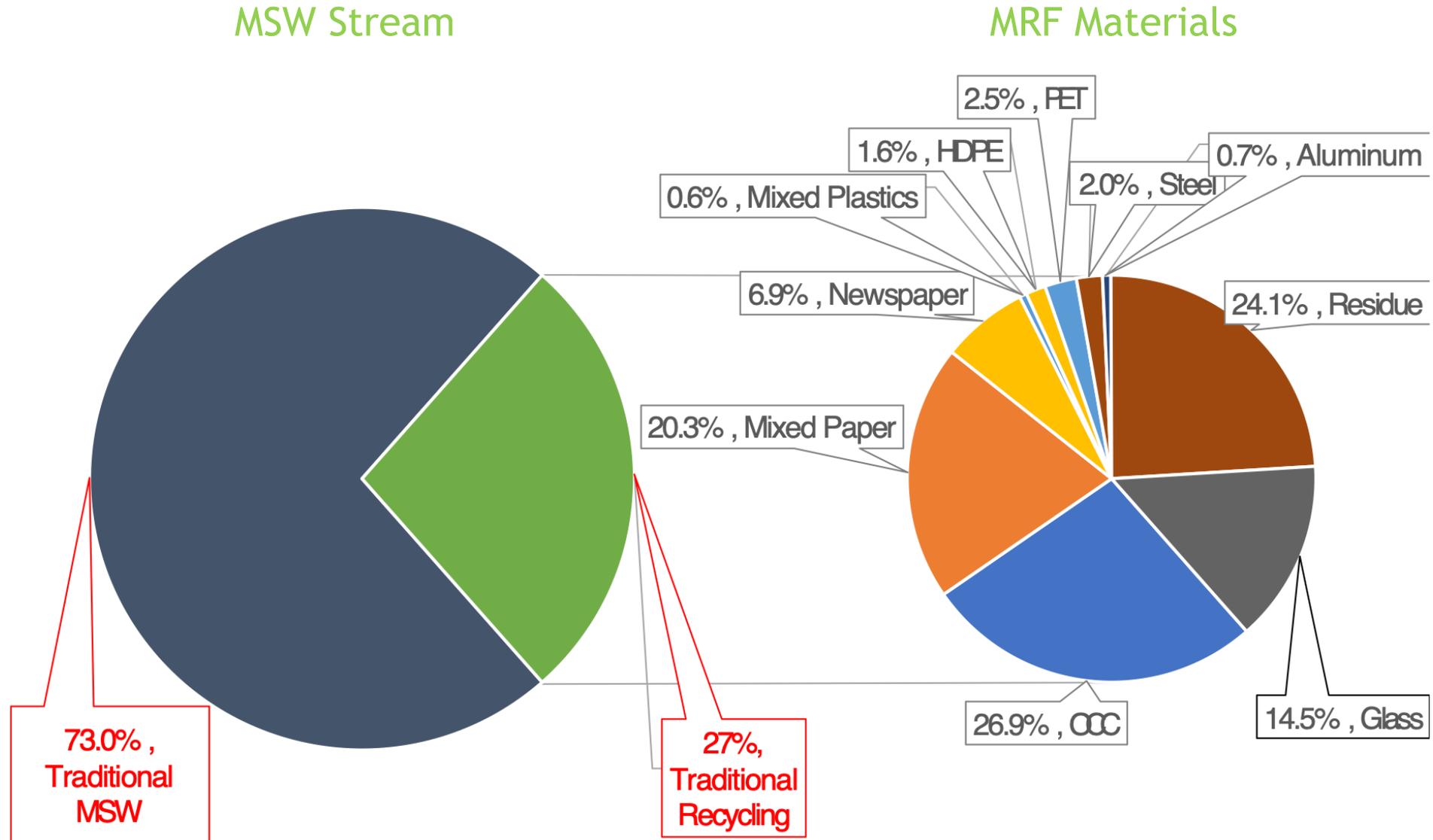
Changes in Packaging:
Non-recyclable packaging replaces recyclable packaging



Lightweighting:
Increases processing cost, reduces MRF revenue. Contributes to stagnant recycling rate



The recycling stream as a subset of MSW



Summary

- We are at a decision point for many of our recycling programs. This offers an opportunity to use science and data to prioritize our efforts for the best environmental results.
- Prioritizing materials in our programs allows for more focused education, reduced cost and optimized value - all while maximizing environmental benefits.
- It's time to change customer attitudes and behavior:

Reduction first!

Recycle paper, cardboard, bottles & cans

- Recycling is one tool in the tool box. Recycling more stuff is not the goal. Reducing the environmental impacts of the materials we manage is the goal. It's time to think bigger, and more broadly about the environment.

2019 MRF Survey Results

Top 10 most interesting pieces of contamination received at our MRFs?

10. Mannequin from Target



9. Tennis net and rackets

8. Black bear carcass



7. Radioactive tissue inside a tin can

6. Live 6 ft ball python



2019 MRF Survey Results

Top 10 most interesting pieces of contamination received at our MRFs?

5. Grenade Launcher



4. Marijuana



3. Bolt on booster rocket engine for the 50's

2. WWI Helmet



1. Tombstones



Thank you!



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