

RECYCLING IS STILL BROKEN

UPDATE – SEPTEMBER 2019

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Recycling Marketplace Structural Changes

Trends



2000

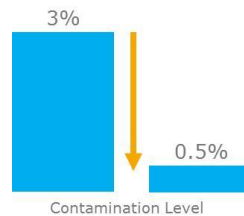


48,000 plastic bottles = 1 ton¹

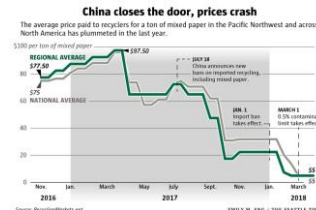
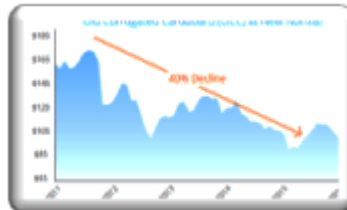
2015



92,000 plastic bottles = 1 ton¹



Mixed paper



Implications

Changes in the Stream

Some material changing faster than capital investment cycles

18M tons in 2000 → ~2M in 2015

Material Light-weighting

Skews program economics and current weight-based success metrics

Water bottles → Almost 2x transactions

China Sword (2018)

China drastically reduces acceptable quality criteria on imported recyclables

Plastics <0.5% → Mixed paper banned

Commodity Markets Crash

Commodity markets have steadily declined due to excess material globally

OCC down 75%+ → Mixed paper down 100%+

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Market Uncertainty

Los Angeles Times

Asian countries take a stand against the rich world's plastic waste

“Amid a growing global movement against non-recyclable plastic, Vietnam and Thailand have said they will block all imported plastic waste in the next few years.”

CBS NEWS

Malaysia vows to send tons of non-recyclable garbage back to U.S., other developed nations

“Malaysia will not be a dumping ground to the world ... we will fight back. Even though we are a small country, we can't be bullied by developed countries.”

INDEPENDENT

India bans imports of waste plastic to tackle environmental crisis

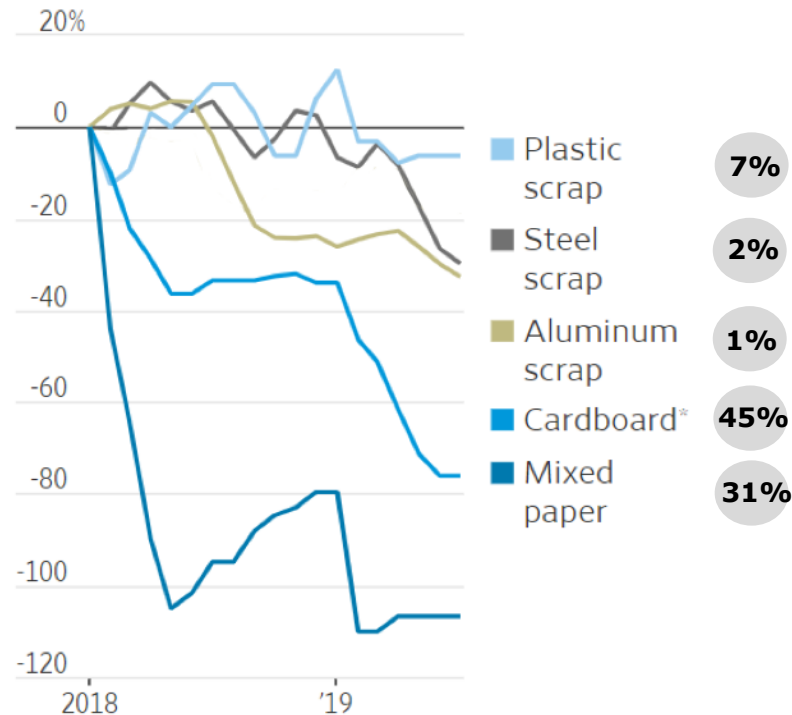
India has banned imports of waste plastic a year after China, the world's biggest importer of scrap plastic implemented a similar ban on western imports.

Southeast Asian countries are closing their ports.
Materials are being shipped back to originating countries.

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Plunging Commodity Prices

Recycled commodity prices, percentage change from January 2018



Source: Wall Street Journal 9/9/19





● = % of Republic Services material sold

- Glut of material oversupplies markets
- Oversupplied markets further drive down commodity prices
- Cardboard, mixed paper and aluminum at all-time lows

76% of the material we sell has declined in value 78-105%.
Glass makes up 7% of our material sold, and has declined 34%.

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Recycling Program Economics Over Time

	Collection		Processing		Commodity		Residual	
								
1990s	Household cost artificially low to foster adoption		Costs lower due to inbound material being cleaner and heavier		Commodity values strong, due to Supply & Demand and cleaner material		Low contamination averages, attributed to focus on basics and no diversion mandates	
Industry Avg	\$2.00/Mo		\$60/Ton		\$200/Ton		\$25/Ton	
Net Position	(\$3.00/Mo)	+	(\$1.50/Mo)	+	\$4.60/Mo	+	(\$0.10/Mo)	= \$0.00
2018	Still artificially low but with higher costs to run collection service		Dramatically higher costs from labor, technology and equipment, along with lighter material		Average values down significantly, further impacted by China Sword		Contamination average up to 30%, requiring more transport and disposal	
Industry Avg	\$3.00/Mo		\$100/Ton		\$100/Ton		\$50/Ton	
Net Position	(\$4.00/Mo)	+	(\$2.50/Mo)	+	\$1.50/Mo	+	(\$0.50/Mo)	= (\$5.50)
2019	No change to increased costs		Continued cost escalation from labor, technology and equipment		Further value decline due to saturated markets		Public Education offers opportunity, but no change yet	
Industry Avg	\$3.00/Mo		\$120/Ton		\$70/Ton		\$50/Ton	
Net Position	(\$4.00/Mo)	+	(\$3.00/Mo)	+	\$1.25/Mo	+	(\$0.50/Mo)	= (\$6.25)

China Sword exposed a \$5.50/month average gap across contracts in 2018. With further market and value declines, that gap is now **\$6.25/month** on average.

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Recommended Business Model

Republic Services

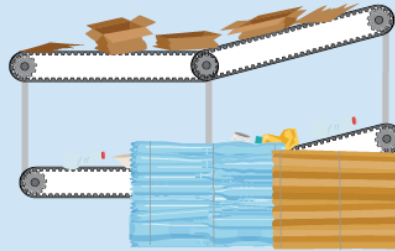
COLLECTION

- Includes costs for truck, driver, container and to collect material and transport to a processing facility
- Comparable to trash collection



PROCESSING

- Includes costly facility, equipment and labor to separate material and remove contamination
- Results in ready-to-ship baled material



Cities & Municipalities

RESIDUAL

- Includes all contaminated or non-recyclable material, which has no marketability and must be transported and disposed at a landfill for additional cost



COMMODITY SALES

- Sale of processed material to buyers around the world
- Cleaner material has greater value



COLLECTION
FEE



PROCESSING
FEE



DISPOSAL OF
RESIDUAL



COMMODITY
SALES



THE COST OF
RECYCLING

The cost of a recycling program is the sum of fees for two services: the **Collection Fee** and the **Net Processing Fee**

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Recent Municipal Program Modifications



Canceling Program

Posen, IL
Ravalli Co, MT
Safford, AZ
Thatcher, AZ
Cole Co, MO (4 Cities)
Perryville, MO
Scott City, MO
Ascension Parish, LA
Kennebunkport, ME



Changing Material List

Greensboro, NC
Arlington Co, VA
New Orleans, LA
Lexington, KY (12 Cities)
Midland, TX
Hood River Co, OR
Penn Township, PA
Jackson, MO
Wellington, KS
Morris Co, NJ



Raising Rates

Sacramento, CA
Riverside, CA
Milwaukee, WI
Boston, MA
Front Royal, VA
Sanford, ME
New Britain, CT
Fort Smith, AR
Hood River Co, OR



Dropping Glass

New Orleans, LA
Greensboro, NC
Winchester, VA
Penn Township, PA
Olmos Park, TX



Burning/Dumping Recyclables

Philadelphia, PA
Surprise, AZ
Bow, NH



Changing Service

Mecklenburg Co, NC
Tucson, AZ
Sarasota, FL
Revere, MA
Mitchell, SD
Jamestown, NY
Red Wing, MN

Source: NWRA Recycling Program Changes, 8/2/19

Absent a durable recycling model, municipalities are addressing the crisis in multiple ways

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Legislation vs. Infrastructure Needs

States addressing challenges through legislation; laws pending or enacted this year include:

California | Bills aim to reduce, reuse, recycle 75% of plastics

Washington | Recycling Development Center created

Oregon | Recycling steering committee formed

Maine | Potential requirements for package manufacturers

New Jersey | Considering ban on plastic bags, straws, foam containers

Infrastructure improvements are needed to make up for loss of China, which took in 40% of world's recyclables

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2019 Media Coverage: A Mixed Bag

Mainstream News Coverage



Distracting Issues

VICE NEWS

We're Buying Into a Giant Lie About Plastic



CLEANING UP THE PLASTIC IN THE OCEAN

Discarded plastic is piling up around the world and pooling in the ocean. Sharyn Alfonsi reports on the problem's deadly consequences for wildlife and what can be done to stop it

2019 CORRESPONDENT

FACEBOOK

TWITTER

REDDIT

FLIPBOARD

We continue to partner with media to help educate the public about the role they play in fixing recycling.

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Continued Investments in Education & Outreach

Media outreach: 2 billion+ unpaid consumer impressions

Reader's
Digest

TIME

CHICAGO'S VERY OWN
WGN9

CBS NEWS

The Washington Post

THE WALL STREET JOURNAL.

HUFFPOST

San Antonio Express-News

ST. LOUIS POST-DISPATCH

Consumer education campaign

Recycling *Simplified*

Website with tips, videos, printable assets

Marketing effort in select cities, including billboards, "oops" tags, cart audits

After 8-week audit in Texas, contamination rate dropped from **21%** to **11%**



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Key Topics Going Forward

Update the business model to services provided in a recycling program (without reliance on commodity value)

Evaluate program recyclables that offer the best benefit to the planet

Consider better metrics to track success

Increase public education, leading to lower contamination and better commodity values

The public wants to recycle, and is willing to pay for it. The path to creating a durable recycling program requires a **multi-faceted approach.**

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Global Climate Management Level
Supplier Climate Management Level distinctions



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