



The State of Recycling in the United States

A Perspective on What Is Happening Now

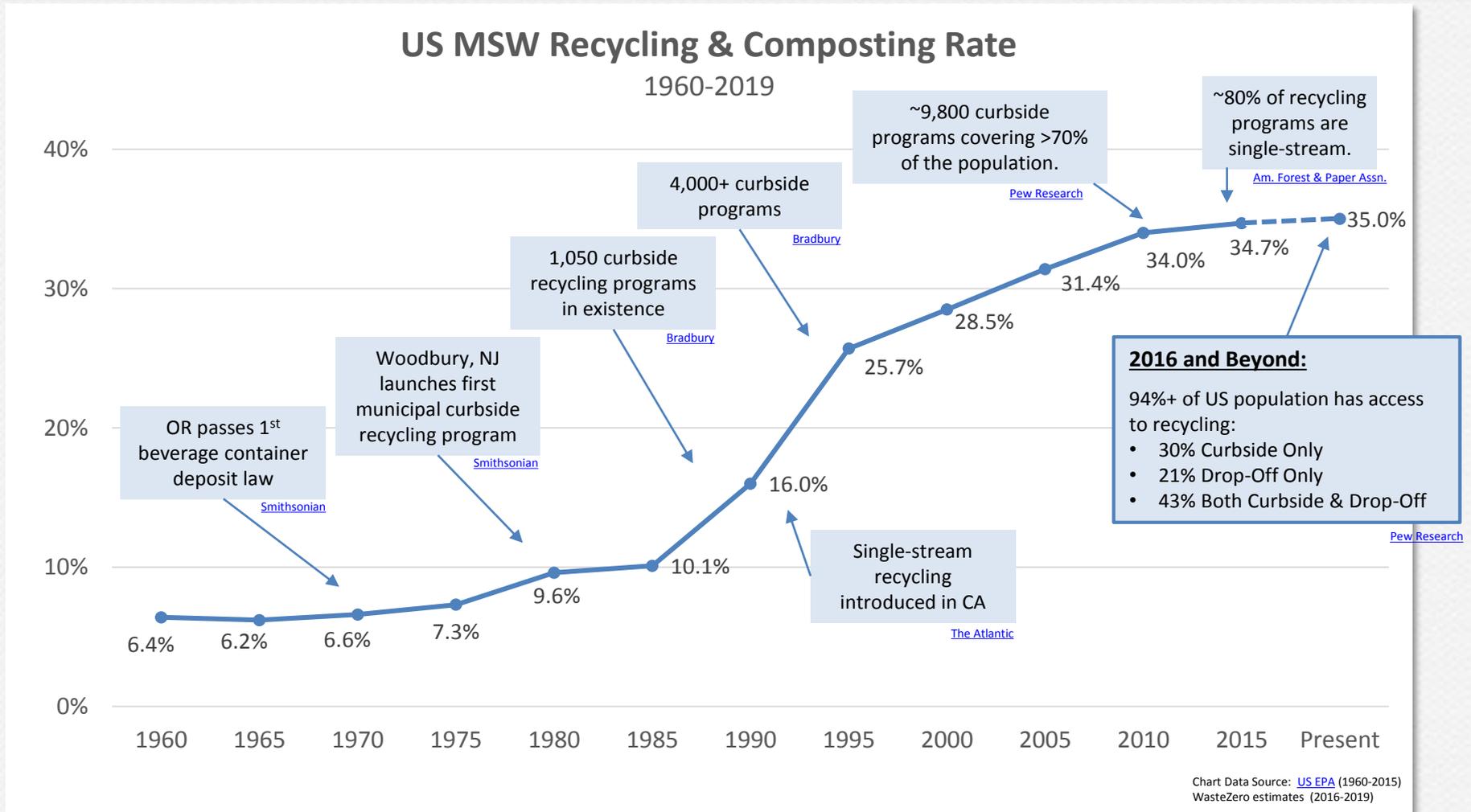
May 2019

Recycling in the US is here to stay...and will get much better.

- During times of ‘crisis,’ many people **lose perspective** as to what is actually going on:
 - Emotions take control
 - Poor decisions are made
 - People with limited knowledge become overnight “experts” -- Do you know any?
- In fact, recent setbacks are **necessary course corrections** on an otherwise remarkable trend toward becoming a “closed loop society.”
- There are certainly **short-term challenges** associated with residential recycling in the US, but:
 - The core infrastructure, collection mechanisms, and processing approaches are here to stay.
 - There are a number of business interests bringing new technologies and capabilities to address issues that have arisen.
 - Solutions will be developed. And the profit motive driving investment in technology and infrastructure is a positive factor.

To realize the vision of a closed loop society, we will leverage the enormous infrastructure already in place and introduce new technologies and practices to move forward.

Recycling has come a long way, and is now moving to a new phase.



**40 years ago there was not a single curbside recycling program in place in the US.
Now 94% of the US has access to recycling, and 73%+ have access to curbside services.**

Policy changes in China have brought new “attacks” on recycling.

China’s recent Green Fence and “National Sword” policies set strict limits on certain recyclables. This has affected US recyclables markets and resulted in some curtailment of recycling. This is not the first time a commodity buyer has disrupted markets, and it will not be the last.

SUSTAINABILITY

Knee-deep and Rising: America’s Recycling Crisis

by George C. Lodge and Jeffrey F. Rayport

FROM THE SEPTEMBER-OCTOBER 1991 ISSUE

Harvard Business Review

COMMENTARY

Recycling is Not the Answer

By Jerry Taylor

This article appeared in Roll Call on February 24, 1992.

CATO INSTITUTE

Recycling Is Garbage

By JOHN TIERNEY JUNE 30, 1996

The New York Times Magazine

Opinion

OPINION

The Reign of Recycling

By John Tierney

Oct. 2, 2015

The New York Times

Don't Recycle: Throw It Away!

TAGS The Environment

12/01/1995 • Roy Cordato

As Costs Skyrocket, More U.S. Cities Stop Recycling

With China no longer accepting used plastic and paper, facing steep collection bills, forcing them to end burn or bury more waste.

MISES INSTITUTE

The New York Times

TECHNOLOGY

Is This the End of Recycling?

Americans are consuming more and more stuff. Now that other countries won’t take our papers and plastics, they’re ending up in the trash.

ALANA SEMUELS MAR 6, 2019

The Atlantic

As with any market, a dominant player can cause short-term disruption and dislocation. We are a nation of innovators, and the short-term challenges associated with China’s policies will be resolved.

China's policies affect only a piece of the US market.

Some dire headlines exaggerate the impact of China's policy changes. At least some of the chatter is likely driven by the opportunity for processors to re-negotiate deals.

- **China's impact is real, but not as great as some fear:**

- The US generates approx. **130 million tons** of recycling through MSW and industrial recovery.
[Institute of Scrap Recycling Industries](#)
- China imported **11.45 million tons** of US paper and plastic recyclables in 2017 (the streams affected by policy changes; ~8.8% of the total US recycling stream).
[WasteDive, citing ISRI](#)
- From 2017 to 2018, the net paper and plastic “orphaned” by Chinese policies is relatively small (**~3.1 million tons**), as other exports grew.
[Resource Recycling](#)

- **Not all US states are equally affected by China:**

- West coast states are most affected, with east coast states somewhat affected.
- Midwestern states rely more on domestic markets and are less affected.

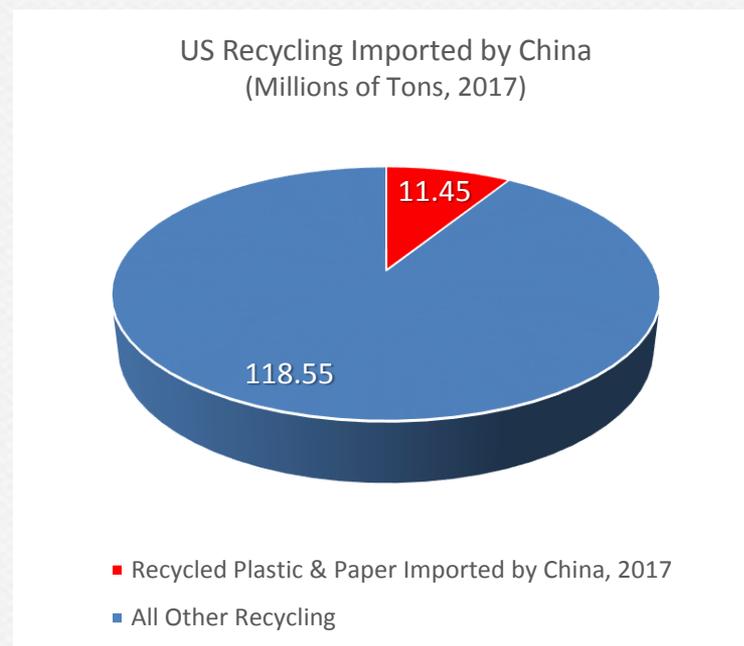
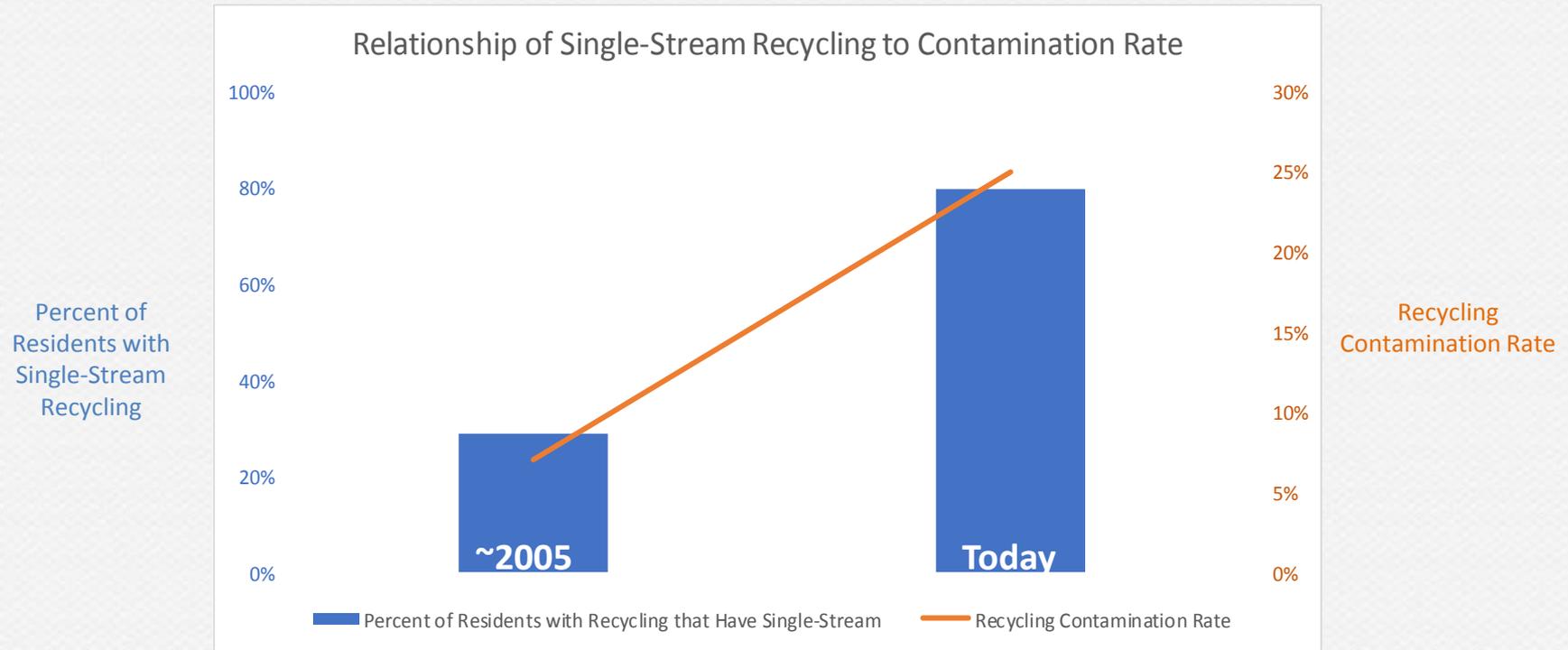


Chart derived using sources at left

Early signs indicate that other foreign markets and US processors are starting to “pick up the slack” caused by Chinese policy changes. Processors are advancing new solutions.

Contamination from single-stream is a driver of Chinese policy.

The vast majority of US recycling programs are single-stream (80%+). Poorly managed programs have driven up contamination rates, driven down material value, and caused China to implement tighter standards. The reality is that we should have been working on cleaning up this contamination all along, and we can certainly do so now.



[FiveThirtyEight](#) and [Waste Management](#)

Contamination rates have risen directly in line with the adoption of single-stream recycling. There are ways to clean up the system, but until now there have been few incentives to drive these changes.

We will continue to grow recycling because it makes sense!

- We need to remember why we began to recycle in the first place.
 - It makes business sense.
 - It's an environmental imperative.
- Best of all, a transformation in US-based recycling will lead to a boon for US industry.
 - We are exporting valuable raw materials to others without capturing any of the value.
 - Many of the feedstocks create low cost inputs that will strengthen US manufacturing.
 - Consumers are demanding products with both packaging integrity and real recycling options.

On a per-ton basis, recycling creates

10X 

as many jobs as disposal

[ILSR](#)

In the US, recycling creates

\$117 Bn 

in economic activity each year

[Recycling Partnership](#)

Recycling 10 plastic bottles saves
enough energy to power a 60W CFL
bulb for

97.8 hrs 

[EPA WARM](#)

*It's time to figure out what's working, what's not, and where we need to go.
But one thing is certain, we can only move forward. Turning back is not an option!*

What's working well?

- **Curbside Collection:** This infrastructure is vital to raising the participation rates in recycling.
- **Incentives:** In communities where the resident pays based on how much waste they create, they have cut trash going to landfills by 44%.
- **Specialized Recycling Programs:**
 - Yard Waste / Food Waste – These make good use of valuable resources and keep them out of landfills.
 - Curbside Textile Collection – Textiles are now 6% of the US waste stream, and the markets for this material are robust and growing. Curbside collection drives higher recycling rates for textiles.
- **Multi-Stream Recycling Programs:** These are like the “old school” programs where residents are asked to play a role in keeping the recycling streams segregated. There are not many multi-stream recycling programs left, but the material collected in them has much greater value in today's market. Smart communities are looking to put together some of the benefits of the multi-stream system with today's collection infrastructure.
- **Some Single-Stream Recycling Programs:** Some have high participation rates and low contamination rates, driven by
 - Good education, good information
 - Incentives and monitoring

What's not working well?

Many Single-Stream Recycling Programs

- Some are fine, but many have low participation rates and borderline or high contamination rates.
- There are often limited resources for education and information.
- Poor program design can drive the wrong actions and behaviors.
- In some cases, the way material is sorted simply cannot produce a positive outcome.

But:

- There is a **sense of urgency** to reduce contamination.
- **Emerging technologies** are enabling more efficient separation and processing.
- Tweaking program designs to engage **residents as partners** in source-separating just one or two streams holds great promise as a solution.
- We can get there, but not if we quit!

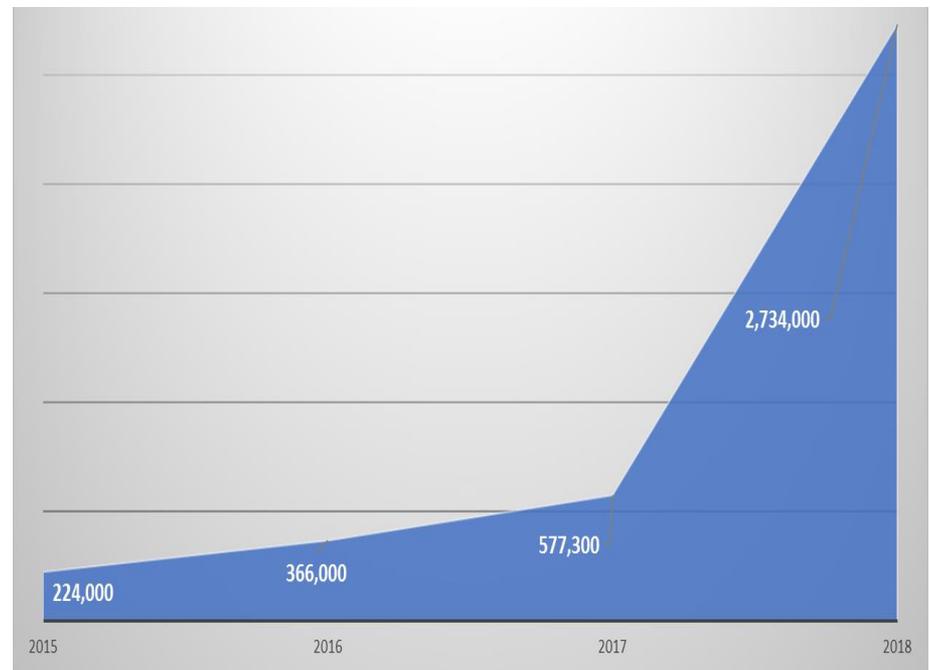


The sense of urgency—and public awareness—is rising.

The American public knows that recycling is the right thing to do. They're also becoming more aware of the need to beneficially reuse traditionally hard-to-recycle materials, such as single-use plastics.

- The spike in coverage is within both traditional and social media channels.
- Social media traffic is driven by specific issues, which then lead to a broader discussion:
 - Plastic straw bag and bans: Note Starbucks announcement on straws
 - Ocean plastic
 - Concerns over plastic particulate impact on wildlife
- Q1 2019 coverage is increasing to even higher levels, led by the themes of
 - Grocery bag bans
 - Growing social concern over ocean plastic
 - The recent ban on some single-use plastics in Europe and consideration of same in some US cities

Total Media Mentions by Year: Single-Use Plastics



Source: WasteZero analysis using Meltwater media monitoring tools; Total Media Mentions

WasteZero is ideally positioned to help drive positive change.

WasteZero is the only company in the US that has proven programs to substantially reduce waste with strategies that make sense in today's market. We substantially decrease landfill waste, increase recycling, and deliver innovative solutions to recycle more streams, more effectively. Offerings like:



Pay-As-You-Throw

Trash, Yard Waste, Food Waste

- Uses behavioral economics to encourage waste reduction and diversion
- Is the most effective method available



Hard to Recycle

Single Use Plastics

- Diverts and finds environmentally-friendly uses for hard-to-recycle plastics
- Connects CPG companies to our communities so that they can help



Stream Segregation

- Segregates targeted materials that are co-collected with the recycling
- Driven by the MRF
- Enables:
 - Convenience of curbside cart collection
 - Residents to become partners in separating selected materials to keep streams clean and valuable



Full Co-Collection

- Enables source-separation of numerous material types
- Dramatically reduces contamination and boosts collection efficiency
- Utilizes a dedicated processing facility and can be highly automated

Today's recycling model will evolve – and the sooner the better. The vision of a “Closed Loop Society” is well within reach.

- Cities and towns are now motivated to clean up their recycling streams through better education and enforcement. They want to add organics, textiles, hard-to-recycle plastics, and other streams.
- Exports of US recyclables to other countries (besides China) are growing. And domestic infrastructure is adding capacity to process materials in the US instead of exporting them.
- A vibrant, well established group of processing companies are introducing significantly better technology to pull contaminants. Optical scanning, AI, and robotics are all parts of the solution.
- After many years of research and scale-up, an entirely new segment is being added to the mix. These companies are working to find beneficial reuse opportunities for materials that **cannot be recycled today**. These new solutions will make it possible to put even more into curbside recycling bins very soon.
- Companies like WasteZero are bringing together all of these stakeholders to deliver real solutions in hundreds of cities and towns. Our solutions make environmental and financial sense today and into the future.

Appendix

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