



Fall 2023 Industry Update

A look into industry status and emerging sustainability trends.



RESILIENCE

Inflation

Pandemic

China Sword

Food/Organics

EV

Biogas

Circularity

Weathering storms from past 5 years...

- ✓ Commodity Markets Suppressed
- ✓ Public Confusion from Greenwashing
- ✓ Labor Issues
- ✓ Supply Chain Delays
- ✓ Antiquated Contracts v Multi-Year Inflation

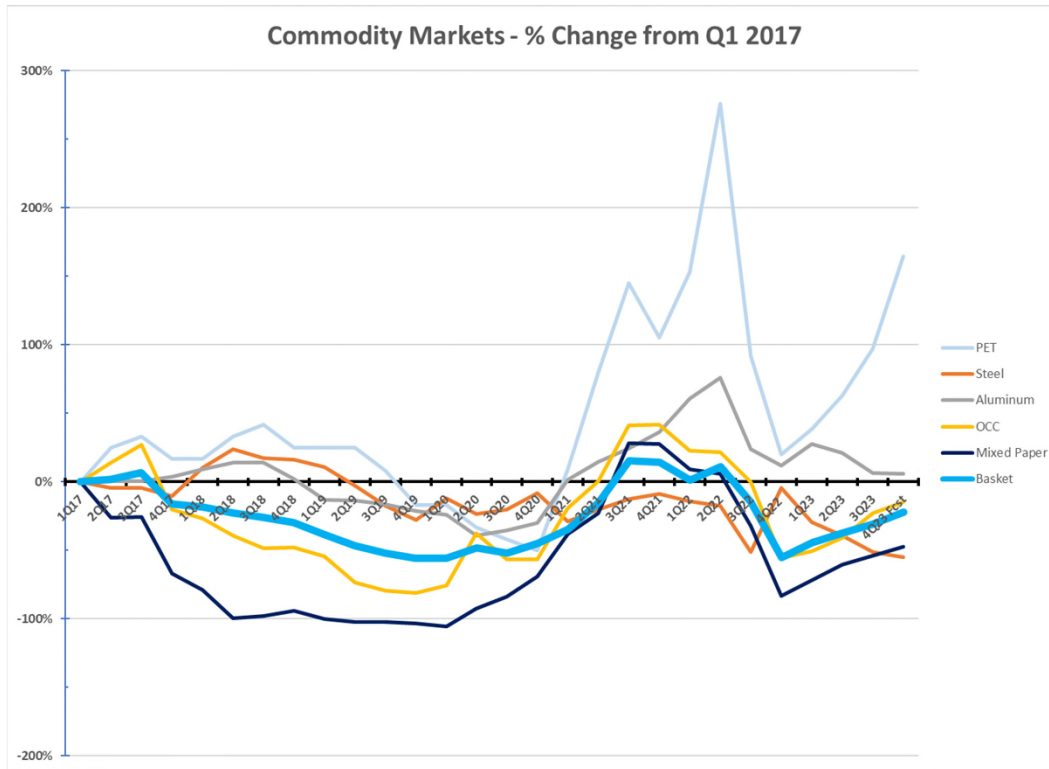
... Offset by promising innovations and investments

- ✓ Electric Vehicles
- ✓ Plastics Circularity
- ✓ Landfill Gas to Energy
- ✓ New Programs
 - ✓ Organics / Food
 - ✓ Hazardous Materials

SEISMIC CHANGES OVER RECENT YEARS

	CHANGES	IMPACTS
 <p>China Sword</p>	<ul style="list-style-type: none"> ✓ China exit from global recycling commodity markets ✓ Shifted flow of commodities to markets 	<ul style="list-style-type: none"> ✓ Drove investment in MRF quality and new innovations ✓ Spotlighted need for relevant materials in programs
 <p>COVID-19 Pandemic</p>	<ul style="list-style-type: none"> ✓ Fluctuating demand patterns, challenges in procuring and distributing resources ✓ Remote work, safety protocols, surge in digital solutions 	<ul style="list-style-type: none"> ✓ Drove need for agile, resilient supply chain strategies ✓ Increased demand for hybrid/remote work environments
 <p>Labor</p>	<ul style="list-style-type: none"> ✓ Continued shrinkage of CDL workforce nationwide ✓ Shrinking workforce interested in tough field jobs 	<ul style="list-style-type: none"> ✓ Staff shortages leading to route completion challenges ✓ Automated collection routes as standard ✓ Innovation to hire / train / place workers ✓ Labor scarcity driving up wages (costs)
 <p>ESG Commitments</p>	<ul style="list-style-type: none"> ✓ Customers and shareholders driving companies to ESG and sustainability ✓ Growing gap in supply and demand driving investments and innovations 	<ul style="list-style-type: none"> ✓ Innovation in circularity ✓ Investments in infrastructure

COMMODITIES AND MARKET VALUES



Markets continue to run below pre-China Sword levels, setting aside the demand-generated spike during the pandemic

Curbside recycling programs need to be set on current best-practice terms to remove ties to commodity values.

END MARKET SHIFTS

Structural / Secular Changes to End Markets

- ✓ On-shoring of manufacturing
 - ✓ Larger and newer machines coming on line in North America
 - ✓ Conversion of several machines from specialty paper to container
 - ✓ Investments in plastics circularity
- ✓ Investment in Southeast Asia
- ✓ Minimum Recycled Content legislation
- ✓ Extended Producer Responsibility legislation
- ✓ Voluntary brand commitments
- ✓ Shipping channels returning to normalcy, but not yet there
- ✓ Geopolitical tensions

Divergent shifts will require management through uncertainty.

BATTLING PUBLIC CONFUSION





Greenwashing

- ✓ Greenwashing is the act of providing the public or investors with misleading or outright false information about the environmental impact of a company's products and operations.
- ✓ Misalignment between actual industry recycling capabilities / markets and marketing messages
- ✓ Products that are scientifically recyclable, yet the sorting technology, end markets or commodity value do not exist today
- ✓ Major brands do not align with industry capabilities before issuing their marketing messages

Misalignment between major brands and recycling industry realities is not helpful

Greenwashing results in higher costs to deal with "residual"; Material in the cart that contaminates or do not have an end market.

ADAPTING TO NEW LABOR REALITIES

	CHANGES	EFFORT TO MITIGATE
 Drivers/Techs	<ul style="list-style-type: none"> ✓ Shrinking population of CDL drivers and techs in America continues 	<ul style="list-style-type: none"> ✓ Increased wages ✓ Driver and Tech Institutes - hire, train, certify, place
 Rear-Load Helpers	<ul style="list-style-type: none"> ✓ A decrease in workers willing to perform the role 	<ul style="list-style-type: none"> ✓ Automating antiquated rear-load routes nationwide
 MRF Sorters	<ul style="list-style-type: none"> ✓ A decrease in workers willing to perform the role 	<ul style="list-style-type: none"> ✓ Investments in sorting technology ✓ Refining material lists
 Route Auditors	<ul style="list-style-type: none"> ✓ Increasing requirement in West Coast contracts ✓ Will not scale 	<ul style="list-style-type: none"> ✓ Investments in cameras with AI ✓ Public education

SUSTAINED SUPPLY CHAIN AND ECONOMIC HEADWINDS

Understanding Economic and Supply Chain Realities



Capital Costs

Contracts are incredibly capital intensive. Inflation places pressure on large capital justifications.

- ✓ Expect higher pricing to cover increased costs of capital
- ✓ Longer terms also enable capital recovery



New Trucks

Build slots are 12-18+ months out.

- ✓ Rental trucks are scarce
- ✓ RFPs needed sooner to enable low-risk transitions
- ✓ Contracts need flexibility on fleet age

New contracts will cost more and take longer to properly transition.

Sustainability at Scale

FLEET ELECTRIFICATION

Technology continues to mature

- ✓ Platform performance and innovation continue
- ✓ Frame-up design announced with Oshkosh in 2023

Considerable benefits to Municipalities

- ✓ Environmental Impact
- ✓ Climate Action Plan Contribution
- ✓ Noise Reduction in Community
- ✓ Public Perception of Municipality

Interested Municipalities need to factor into procurement plan and scoring criteria

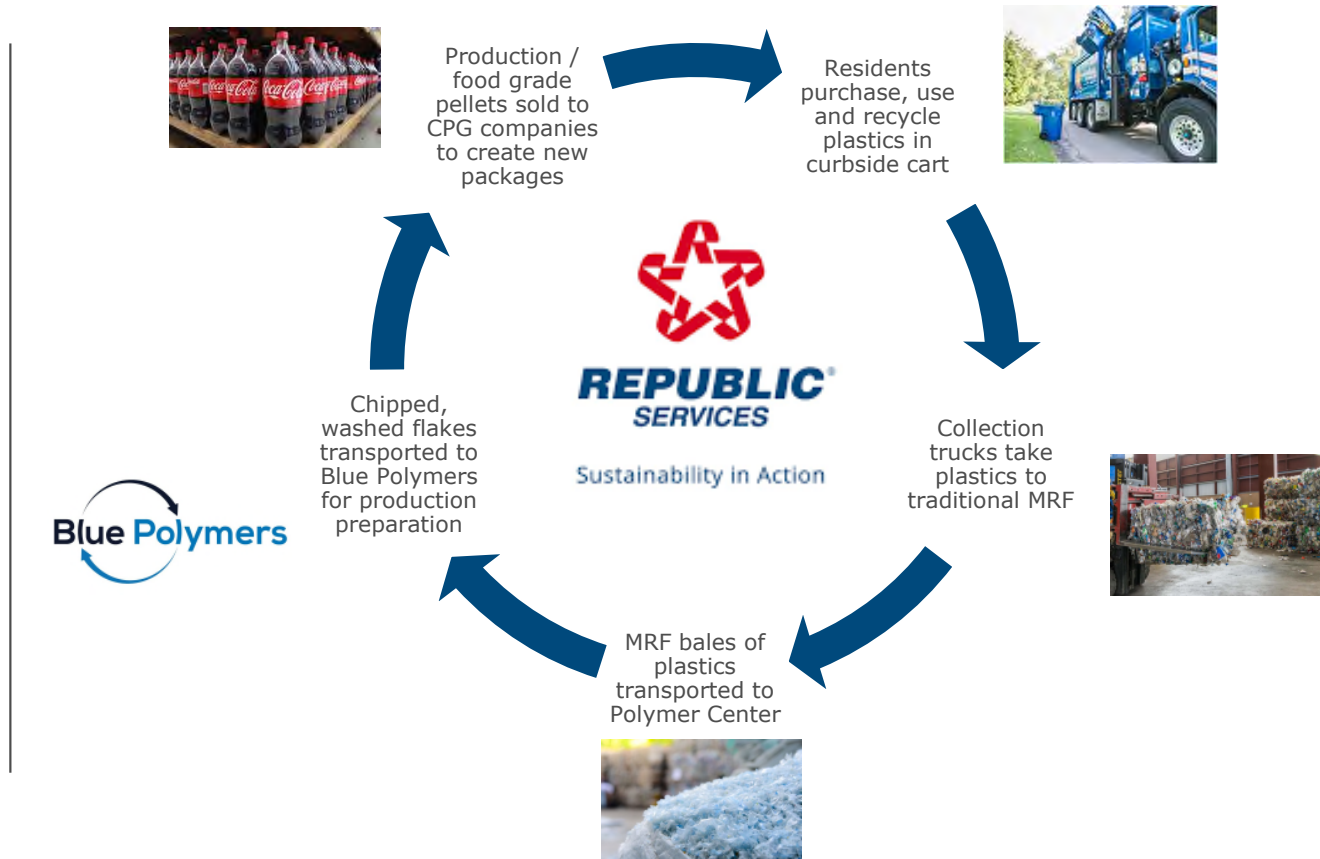


OUR PROGRESS



PLASTIC CIRCULARITY – CURB TO SHELF

Growing Number of CPGs Declaring Higher Post-Consumer Content



BIOGAS CIRCULIARTY

- ✓ Landfill methane to electricity
- ✓ Food waste to power (via AD)
- ✓ **Landfill methane to RNG**

Current \$1B investment in LFGTE will generate enough RNG to power a fleet of 9,000 trucks, fully utilized on route for a year.



FOOD / ORGANICS

Refining Programs and Operations

- Experience Scaling Up In California
 - Investments in Anaerobic Digesters
 - Partnerships with Water Treatment
 - Award Winning Compost Innovations



Expanding post-collection infrastructure to handle the future.

HAZARDOUS MATERIALS

Ensuring Simple Programs for Haz Waste Diversion

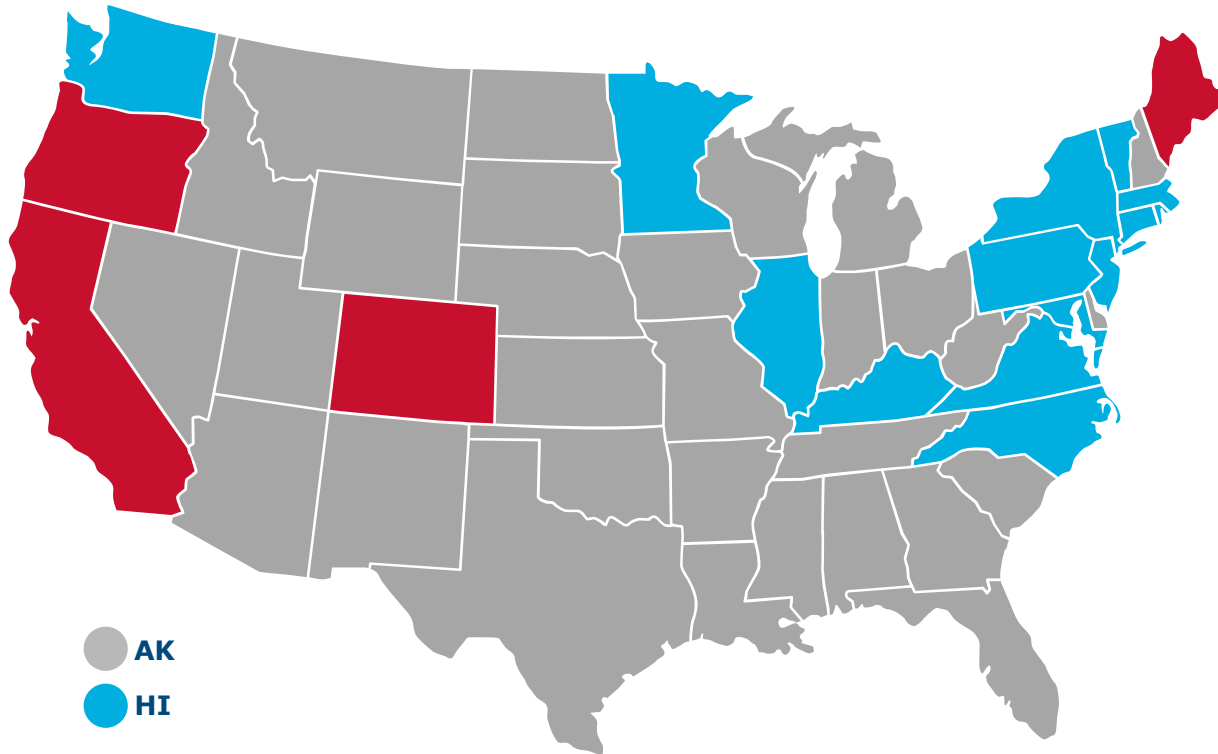
- Programs to address and divert materials beyond MSW, Recycling and Organics
 - Residential hazardous waste drop-sites
 - Commercial / Industrial collection routes (where appropriate)
- Municipal “On-call” Services (Time and Material)
 - Emergency / spill response
 - Homeless encampment clean-ups
 - Disaster response (eg: wildfires)



Establishing simple programs to keep material from sneaking into the MSW stream.

LEGISLATIVE TRENDS

Extended Producer Responsibility (EPR)



4 states have
Passed EPR bills
(ME, OR, CO, CA)

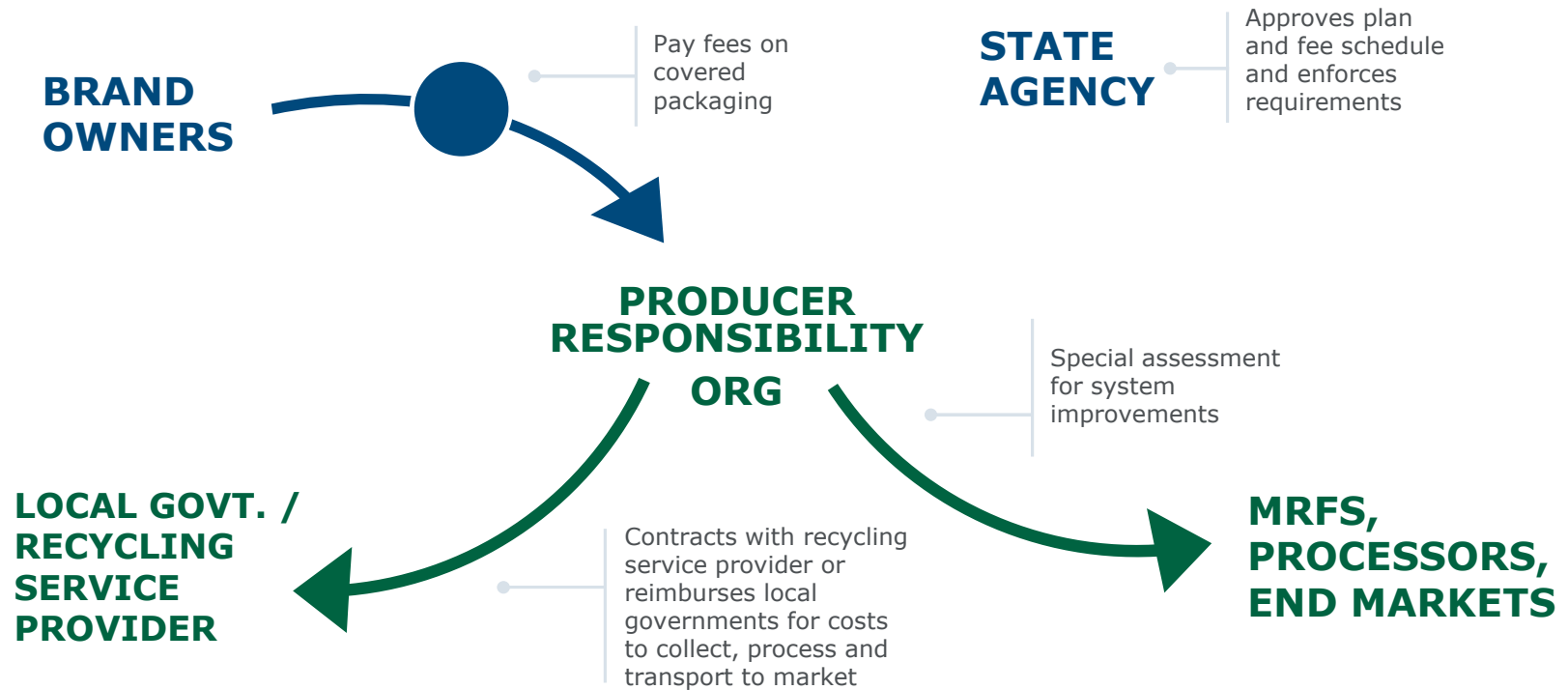
17 EPR bills
Introduced in
2021-22

*Packaging/Printed Paper and
Packaging EPR

Legislation currently in rulemaking, all programs are vastly different.

LEGISLATIVE TRENDS

Extended Producer Responsibility (EPR)



Optimal legislation creates demand and protects existing capital investments across the industry.

TAKEAWAYS

Ensure Your Programs / Contract are on Current Best Practices



Consider your climate action plans and sustainability goals, and how to improve the metrics in a material manner.



Implement plans and programs to align with your climate action and sustainability goals over the term of your contract.



Ensure collection programs are automated and enable maximum safety and labor efficiency.



Continue to push public education in ALL of your programs, allowing for lower contamination and higher circularity of materials.



Partner with your service provider to update your contract and programs to current best practices to minimize risk over time.



Sustainability in Action

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