



**IMPROVE THE ENVIRONMENT
RECYCLE CORRECTLY - NOW**

Marta Keane

Will County Recycling Program Specialist
Illinois Recycling Foundation President & Illinois Product Stewardship Chair

Greg Maxwell

Resource Management Companies
Professional Engineer

May 20, 2021 for Will County Education Series



QUICK OVERVIEW

Climate Change is Real & Recycling makes a Difference

Reducing through Reuse and Recycled Content

Buying Intelligently: Durable, Repairable, Used

Recycling is Important – Materials have Value

- Contamination Costs, it drives up the fees for collection

Moving to a Circular Economy and EPR



CLIMATE CHANGE IS REAL

Science has been telling us for over 40 years that the Global Climate is Changing at an accelerated pace due to the use of carbon based fuels.

Banks, some of the most conservative institutions on the planet, stopped loaning money to ski resorts located below 1,500 meters in the Alps back in the 1990s.

This is a threat to all of us. Not just to some people living in remote areas or on the US coasts where sea level rise makes many properties uninsurable.

Many actions we take every day can impact this process, slowing or even reversing it, if we are willing to change some habits that harm the environment. It is not about one person or one action, it is about all of us taking several actions each day.

It is important to know that recycling is one of easiest actions we can take.

Science is Real



REDUCING ENERGY USE & RENEWABLE ENERGY

ComEd and Nicor offer Free home assessments where they give you some efficiency products and make recommendations such as:

- Switch to a programmable thermostat
- Switch to LEDs lights
- Replace old appliances with ENERGY STAR appliances
- Use Advanced power strips
- Install WATERSENSE Showerheads and Faucet Aerators
- Insulate the attic, around windows, outside wall electric sockets, and hot water pipes
- When replacing the Hot Water Tank – consider Tankless. The D.O.E. recommends setting at 120 F



Smart Meters
Fixed Price vs Hourly Pricing

- Run the Washer, Dishwasher, recharge the Plug-In Vehicle at night
- If Hourly Pricing isn't right for you, enroll in the Central AC cycling program for \$5 to \$10 off your monthly bill.

Button up before adding Solar

- SEDAC offers FREE assessments for businesses



WE CAN MAKE A DIFFERENCE

Just as small energy changes make an impact, so do changes in your waste habits!

Plastic comes from oil and natural gas, limited resources that are non-renewable. While plastic is amazing, avoiding items that are single use, for short times, is important.

A straw in a drink: Eat out once a week and that's 52 annually. In the US, it is estimated we use over 500,000 straws a day. These cannot be taken in curbside collections and there are not collection events for them.

Asking restaurants to make straws optional and encouraging friends and family to avoid them makes an impact. Recognizing that many straws are used with disposable, non-recyclable cups and a plastic lid that is also not recyclable currently, and the waste we can avoid really adds up.



REDUCING WASTE FIRST, RECYCLING SECOND

The EPA reports that using *recycled* materials reduces energy and emissions, even when accounting for the transportation of materials.

To make products from recycled materials, we need to recognize the items we no longer need are still valuable.

If you had a gold necklace break, you wouldn't toss it in the garbage, you would take it to a jeweler to fix; or sell it to a jeweler, an online gold buyer or pawn shop.

Your aluminum can may be valuable enough for you to make a similar effort, saving up several dozen cans and taking them to a scrap yard for the spare cash.

When you save those aluminum cans, you empty them, may rinse them, keep them relatively clean. What if we applied that thought to all the items you place in your curbside cart?



RECYCLING NOW

Many items are recyclable but only specific items are allowed in the CURBSIDE programs:

The State of Illinois convened **Material Recovery Facility** operators and recycling educators from around the state in 2018 to address changes in acceptable items due strict contamination guidelines put in place by China.

China, the global importer of the world's plastics and paper, implemented a drastic rule of half of a percent in a bale.

Here to discuss it, and the MRF's adaption to the global glut in the materials this created, is Greg Maxwell of Resource Management Companies, with 40 years of experience marketing our recyclables.

CONTAMINATION

THE GREEN WALL

China previously consumed about half of the world's recycled plastic and paper. The country has now raised its quality standards for materials and plans on halting all recycling imports in 2020.

PREVIOUS MAXIMUM CONTAMINATION RATE ACCEPTED BY CHINA

20%

NEW MAXIMUM ▶ 0.5%

CURBSIDE RECYCLING MARKETS

MAY 20, 2021

PRESENTATION BY
GREG MAXWELL

RESOURCE MANAGEMENT COMPANIES



PART 1

MRF Paper Fiber Recycling Markets



OUTTHROWS - All 'papers' that are so manufactured or treated or are in such form as to be undesirable for consumption as the grade specified.

Prohibitive Materials – 'Any materials' by which their presence in a packing of paper stock, in excess of the amount allowed, will make the pack unusable as the grade specified; or any materials that may be damaging to equipment.

ISRI 2020 GUIDELINES FOR PAPER STOCK DOMESTIC & EXPORT TRANSACTIONS – **MIXED PAPER**

Mixed Paper (MP #54)

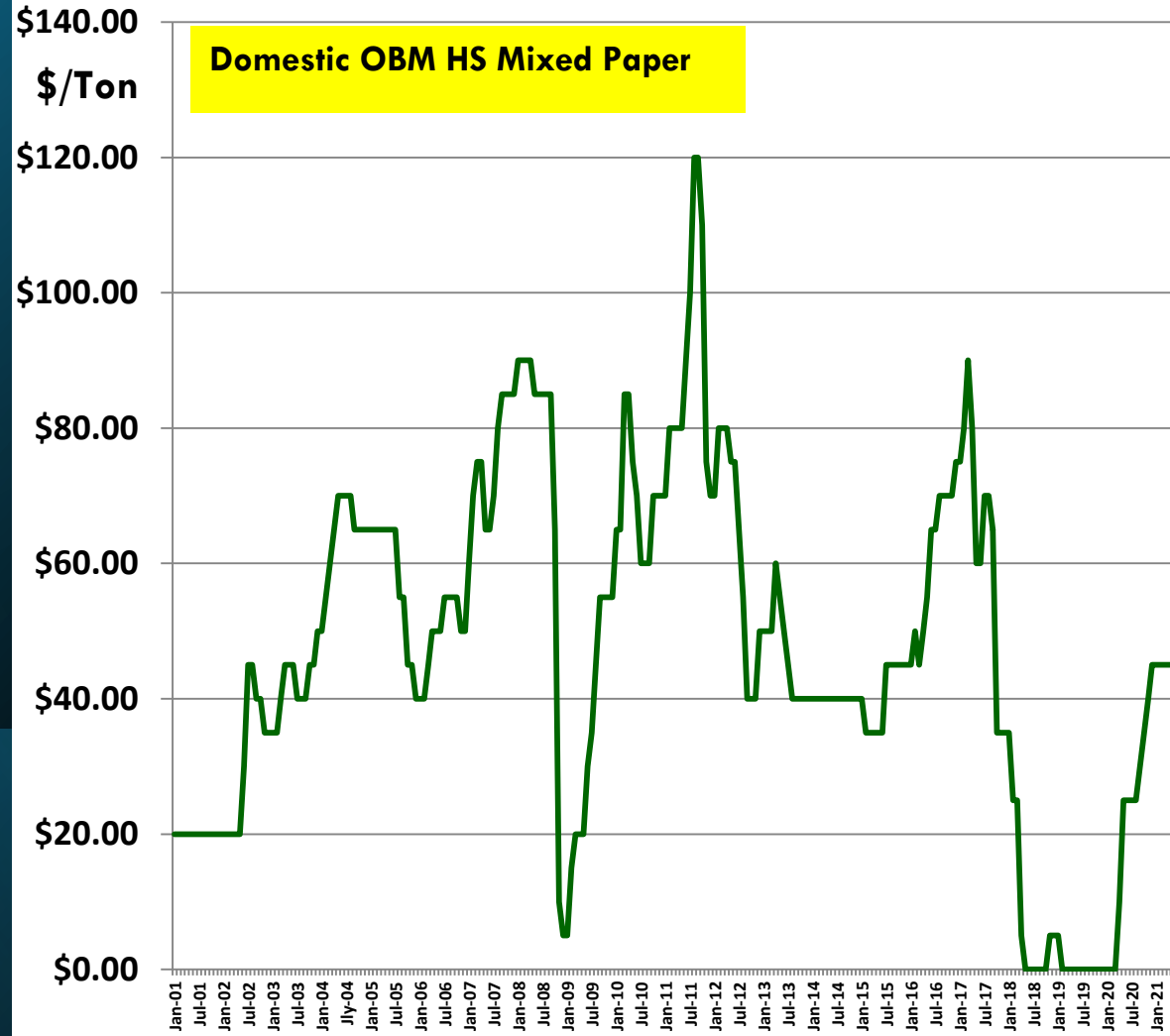
Paper & paperboard of various qualities not limited to type of fiber, sorted & processed at a recycling facility.

Prohibitives $\leq 2\%$

Outthrows (paper) $\leq 3\%$



PULP & PAPER
WEEK INDEX
PRICING -
MIXED PAPER



ISRI 2020 GUIDELINES FOR PAPER STOCK DOMESTIC & EXPORT TRANSACTIONS - ***NEWSPAPER***

News (#8 ONP – no longer a paper stock guideline)

Sorted Clean News (#58 ONP)

Newspapers from source separated collection programs free of excessive ink, brown grade or non-paper material

Prohibitives $\leq 1/2\%$

Outthrows (paper) $\leq 1\%$

Other Papers $\leq 10\%$

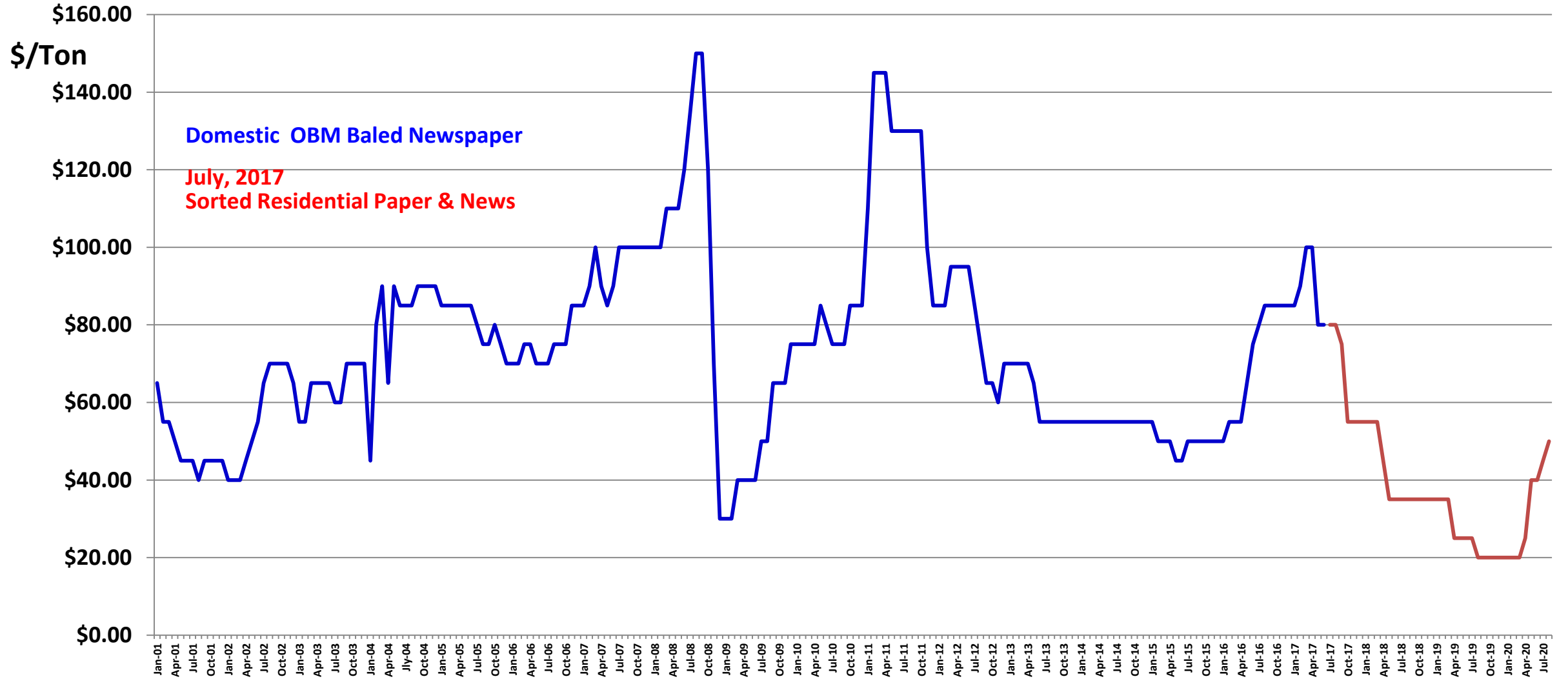
Sorted Residential Paper & News (#56 SRPN)

Newspaper, junk mail, magazines, print & writing and other papers from residential recycling programs sorted & processed at a recycling facility (no brown grades)

•Prohibitives $\leq 2\%$

•Outthrows $\leq 3\%$

PULP & PAPER WEEK INDEX PRICING 2001-2020



ISRI 2020 Guidelines for Paper Stock Domestic & Export Transactions - *Cardboard*

- **Old Corrugated Containers (#11 OCC)**

Corrugated containers having liners of either test liner or kraft.

- **Prohibitives**

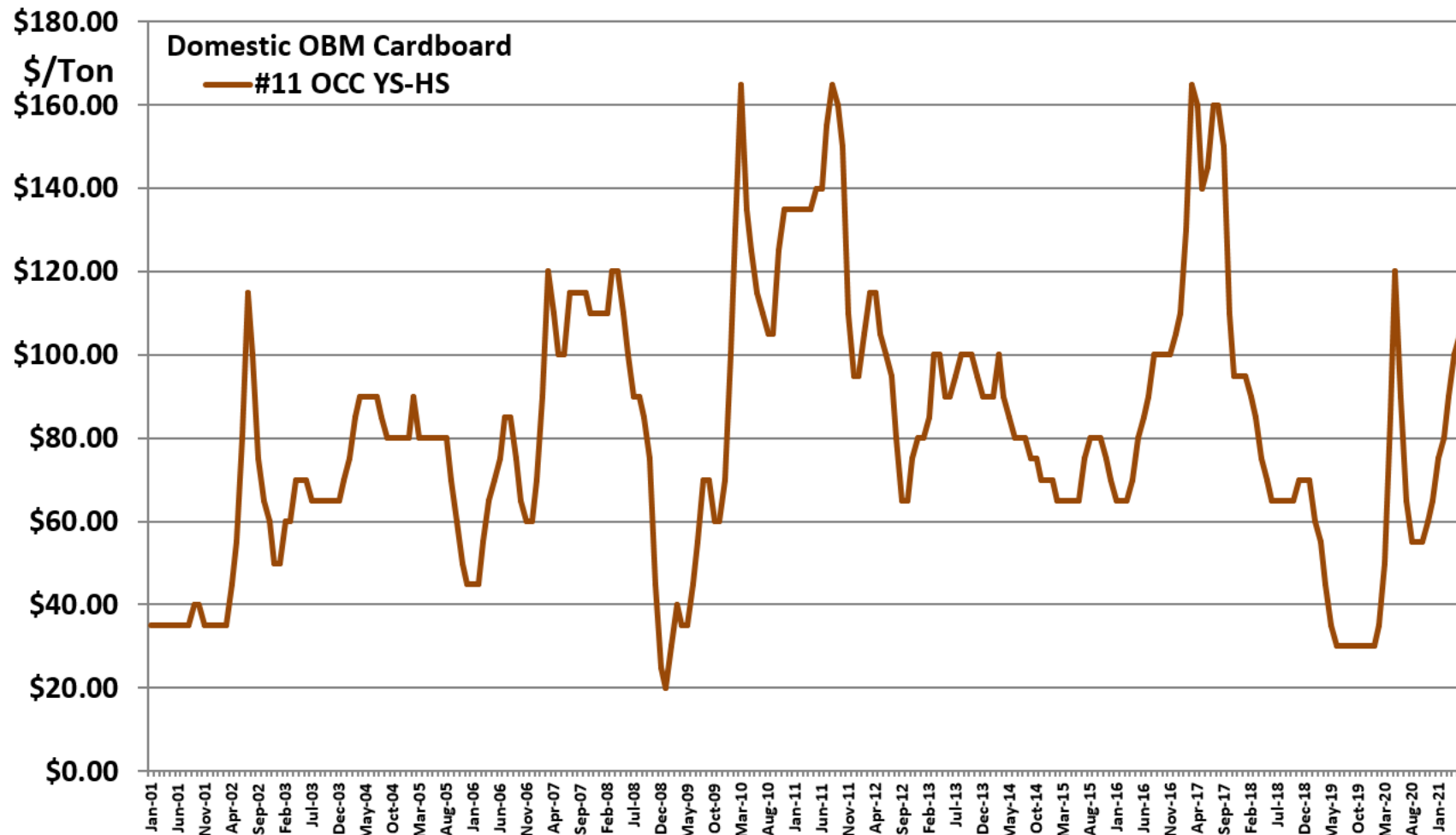
PSI \leq 1% **China - NA**

- **Outthrows (paper)**

PSI \leq 5% **China - NA**



Pulp & Paper Week Index Pricing



PART 2

Post Consumer Containers Recycling Markets



ALUMINUM CANS - NOVELIS SPEC EXAMPLE

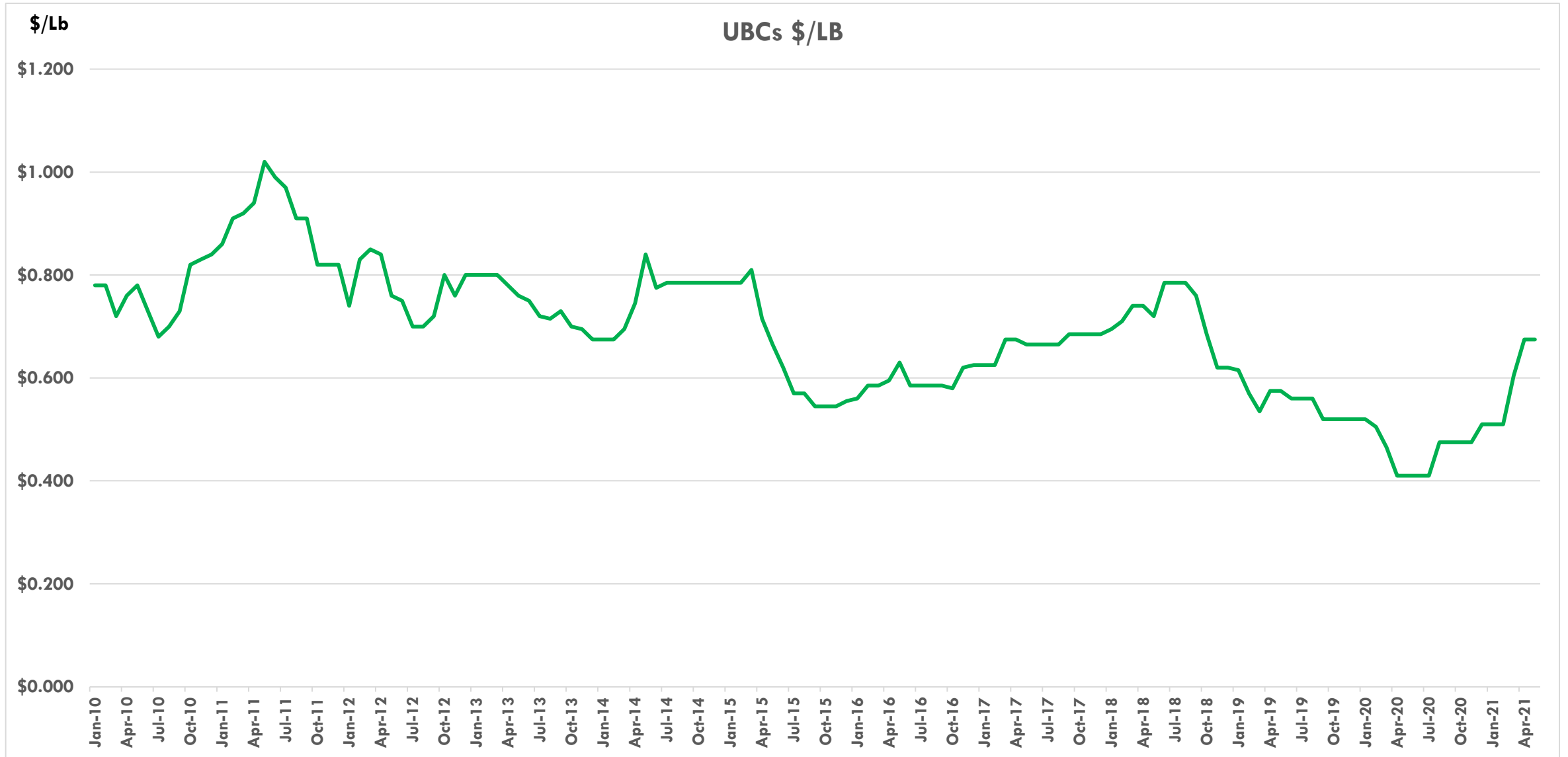
IMMEDIATE REJECTION

- a) Medical waste/Hypodermic needles
- b) Pressurized Aerosol cans with or without liquid
- c) Live ammunition/explosives
- d) Butane lighters
- e) Fertilizers/oxidizers
- f) Containers of liquid
- g) Propane/gasoline containers
- h) Free lead
- i) Radioactive sources
- j) Unidentifiable materials/substance
- k) Infestation of the UBC by insects, rodents, etc.
- l) Batteries (lead cell)

ITEMS THAT MAY DEEM CAUSE FOR REJECTION

- a) Paper
- b) Plastic
- c) Iron & Steel, brass, bronze and other nonferrous metals
- d) Batteries
- e) Rocks, dirt, sand and glass
- f) Rubber, foil, pie pans, and wood
- g) Insulated beverage containers
- h) Excessive Moisture – Loads with moisture greater than 4% of the load weight will be subject to a weight deduction (financial penalty) or rejection.

ALUMINUM CANS 2010-2021



STEEL CANS



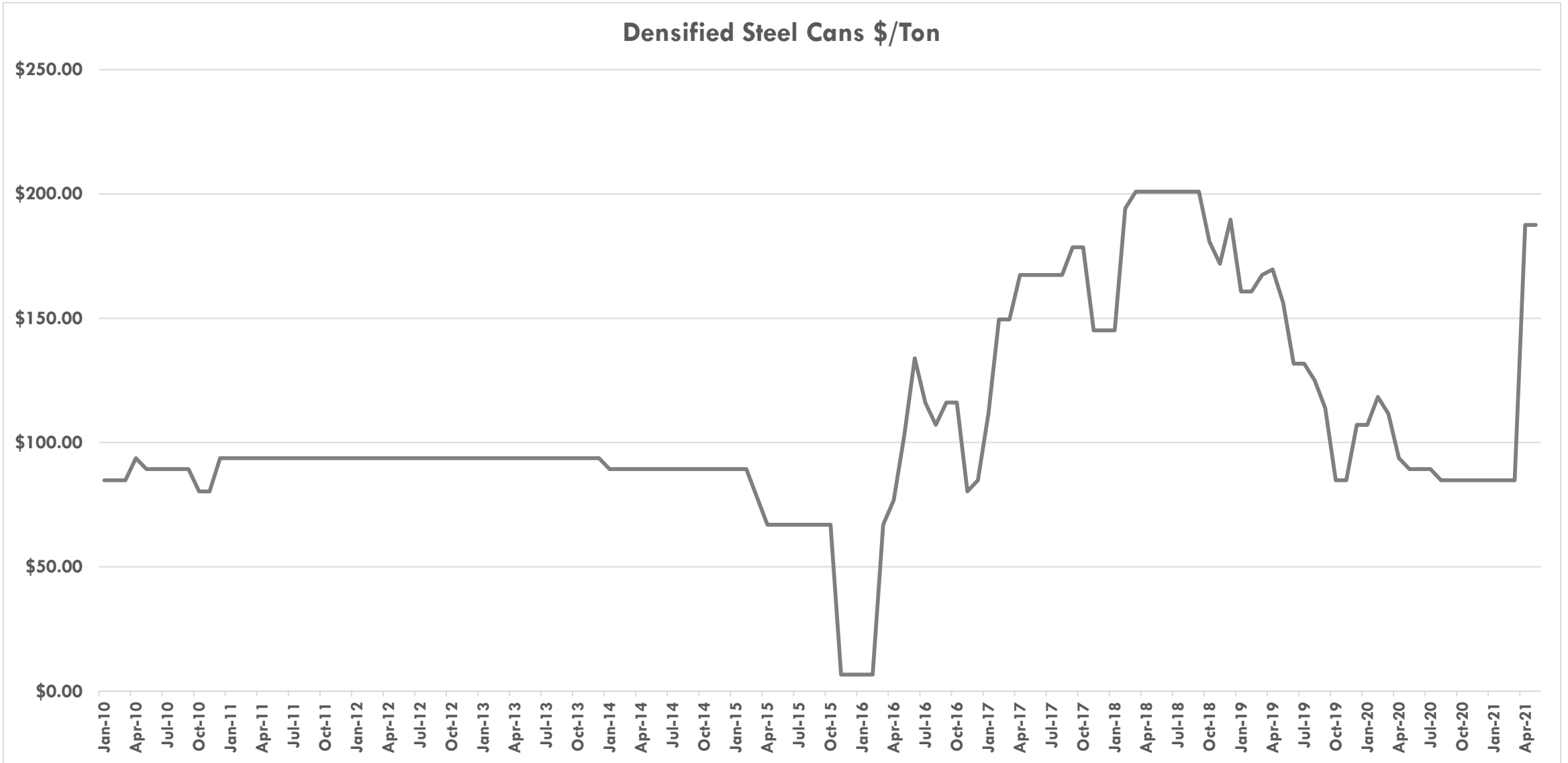
**Baled –
850 lbs/yd³**



**Densified –
2,160 lbs/yd³**

STEEL CANS

Densified Steel Cans \$/Ton



PET BOTTLES

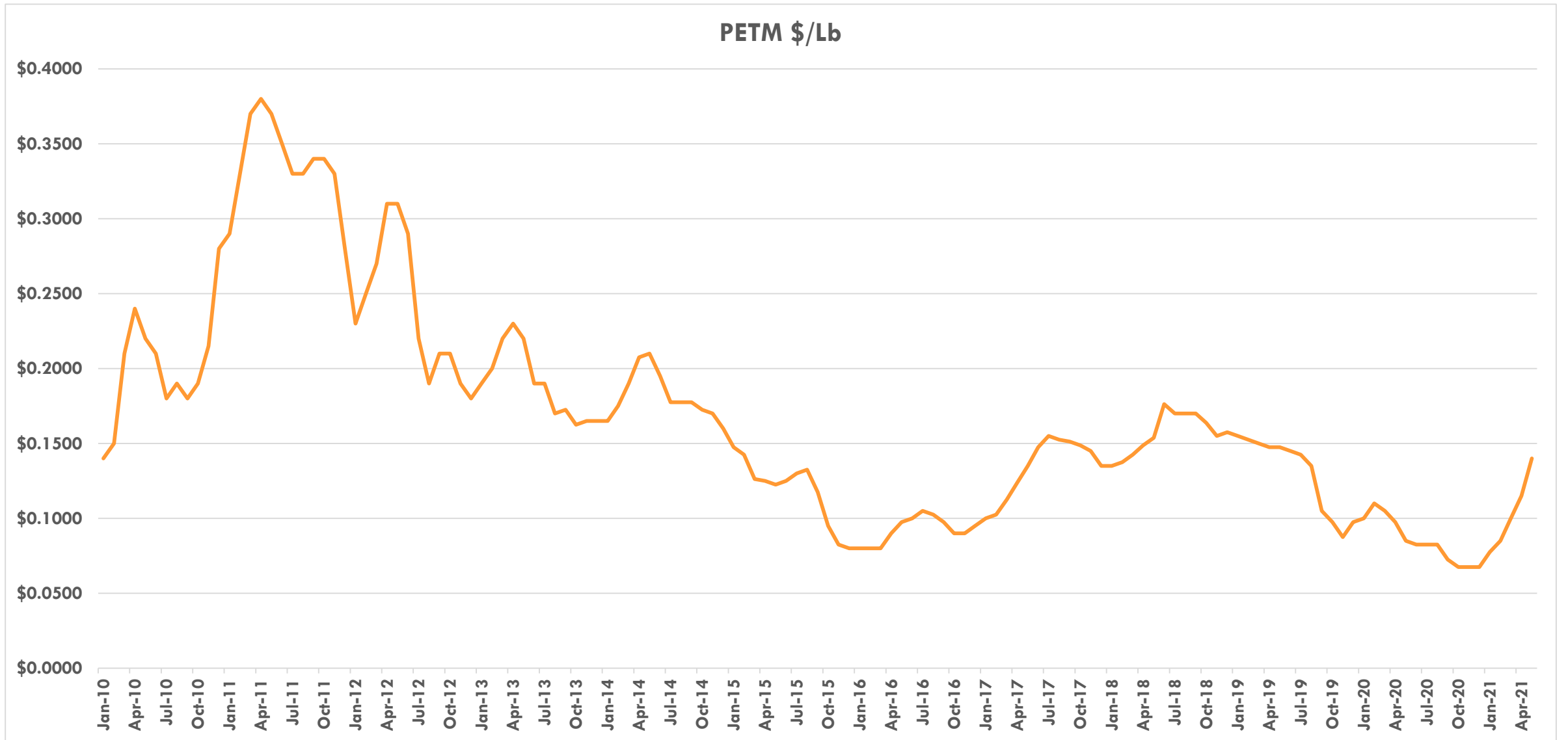
THE ASSOCIATION OF PLASTIC RECYCLERS

PLEASE CHECK WITH YOUR PET BUYER(S) as to their allowances for: § **Other Colored PET Containers § PET Thermoforms**, e.g., microwave trays, dishes, bakery trays, deli containers, clamshell containers, drink cup

ALLOWABLE LEVELS OF CONTAMINANTS: Total contaminants should not exceed the percentages, by weight, as defined by PET bale grades. § HDPE (#2) Rigid Plastic Containers § LDPE (#4) Rigid Plastic Containers § PP (#5) Rigid Plastic Containers § Aluminum § Metal containers or cans § Paper or cardboard § Liquid residues, primarily water (**2% maximum allowed**)

THE FOLLOWING CONTAMINANTS ARE NOT ALLOWED AT ANY LEVEL: § PVC (#3) in any form § Chemically incompatible low temperature melting materials, including PS (#6) plastic and PLA plastic, as rigid or foam in any product. § Chemically compatible low temperature melting materials, such as PETG § Any plastic bags or plastic film § Wood, glass, oils and grease § Rocks, stones, mud, dirt § Medical and hazardous waste § Items containing degradable additives

PET CONTAINERS 2010-2021



HDPE-NATURAL BOTTLES

THE ASSOCIATION OF PLASTIC RECYCLERS



ALLOWABLE LEVELS OF CONTAMINANTS: Total contaminants should not exceed the percentages, by weight, as defined by the HDPE bale grades in chart above. **No more than 2% by weight of any of the following “individual” contaminants will be allowed:**

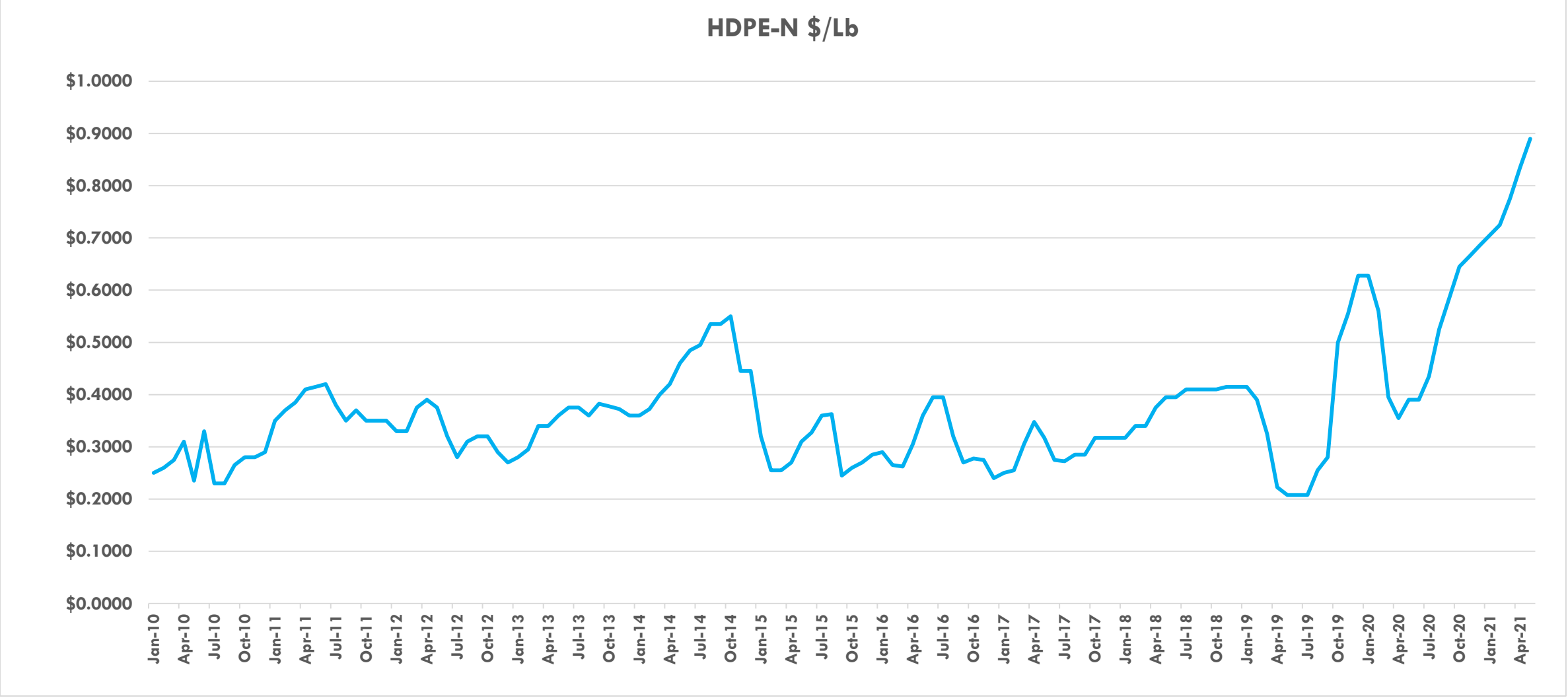
- Non-dairy pigmented HDPE (#2 Bottles)
- Paper or Cardboard
- Any other non-HDPE rigid plastic container
- Liquid Residues
- Or packaging, including PET (#1), LDPE (#4),
- Aluminum
- PP (#5), PS (#6), Other (#7)
- Injection-molded HDPE (#2) based cups, tubs, other wide-mouthed containers or non-bottle HDPE (#2) materials.

THE FOLLOWING CONTAMINANTS ARE NOT ALLOWED AT ANY LEVEL:

- Pigmented white and yellow HDPE milk jugs
- Bulky Rigids
- Any Plastics with PLA or Foaming Agents
- Wood, glass, oils, grease
- Rocks, Stones, Mud, Dirt
- Medical and Hazardous Waste
- Any plastic bags or film from any resin
- PVC (#3) in any form
- Metal



HDPE-NATURAL CONTAINERS 2010-2021



HDPE-COLORED BOTTLES

THE ASSOCIATION OF PLASTIC RECYCLERS

ALLOWABLE LEVELS OF CONTAMINANTS: Total contaminants should not exceed the percentages, by weight, as defined by the HDPE bale grades in chart above. **No more than 2% by weight of any of the following “individual” contaminants will be allowed:**

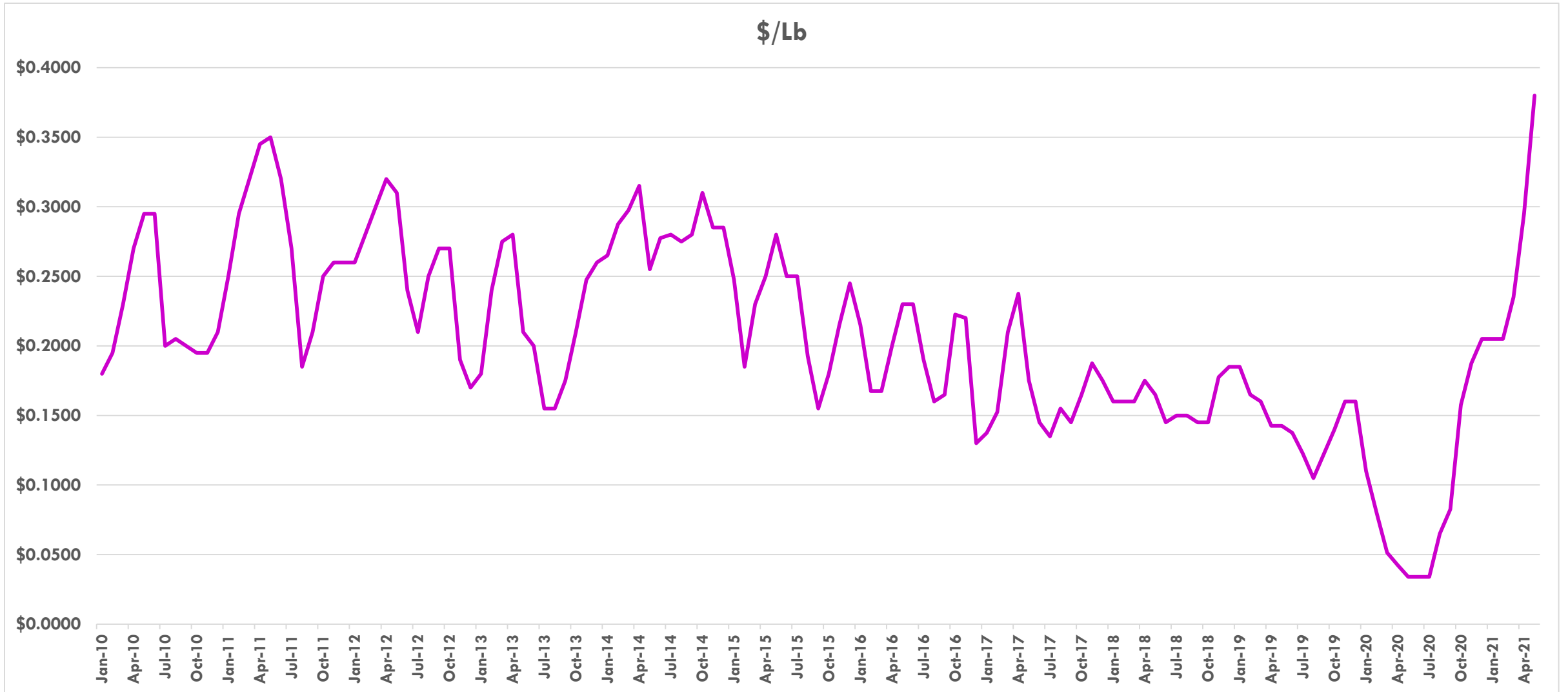
- Any other non-HDPE rigid plastic container or packaging, including PET (#1), LDPE (#4), PP (#5), PS (#6), Other (#7)
- Liquid Residues
- Aluminum
- Paper or Cardboard

THE FOLLOWING CONTAMINANTS ARE NOT ALLOWED AT ANY LEVEL:

- Bulky Rigids
- Any Plastics with PLA or Foaming Agents
- Rocks, Stones, Mud, Dirt
- Any plastic bags or film from any resin
- Metal
- Wood, glass, oils, grease
- Medical and Hazardous Waste
- PVC (#3) in any form
- HDPE (#2) motor oil or other automotive fluids.



HDPE-COLOR CONTAINERS 2010-2021



OTHER CONTAINERS



Aseptic Packaging
\$20 to \$40 / Ton

Mixed Baled #3 - #7 Plastics Containers
-\$0.01 to \$0.01 / Lb
History of Numerous PRF Market Failures & Interruptions

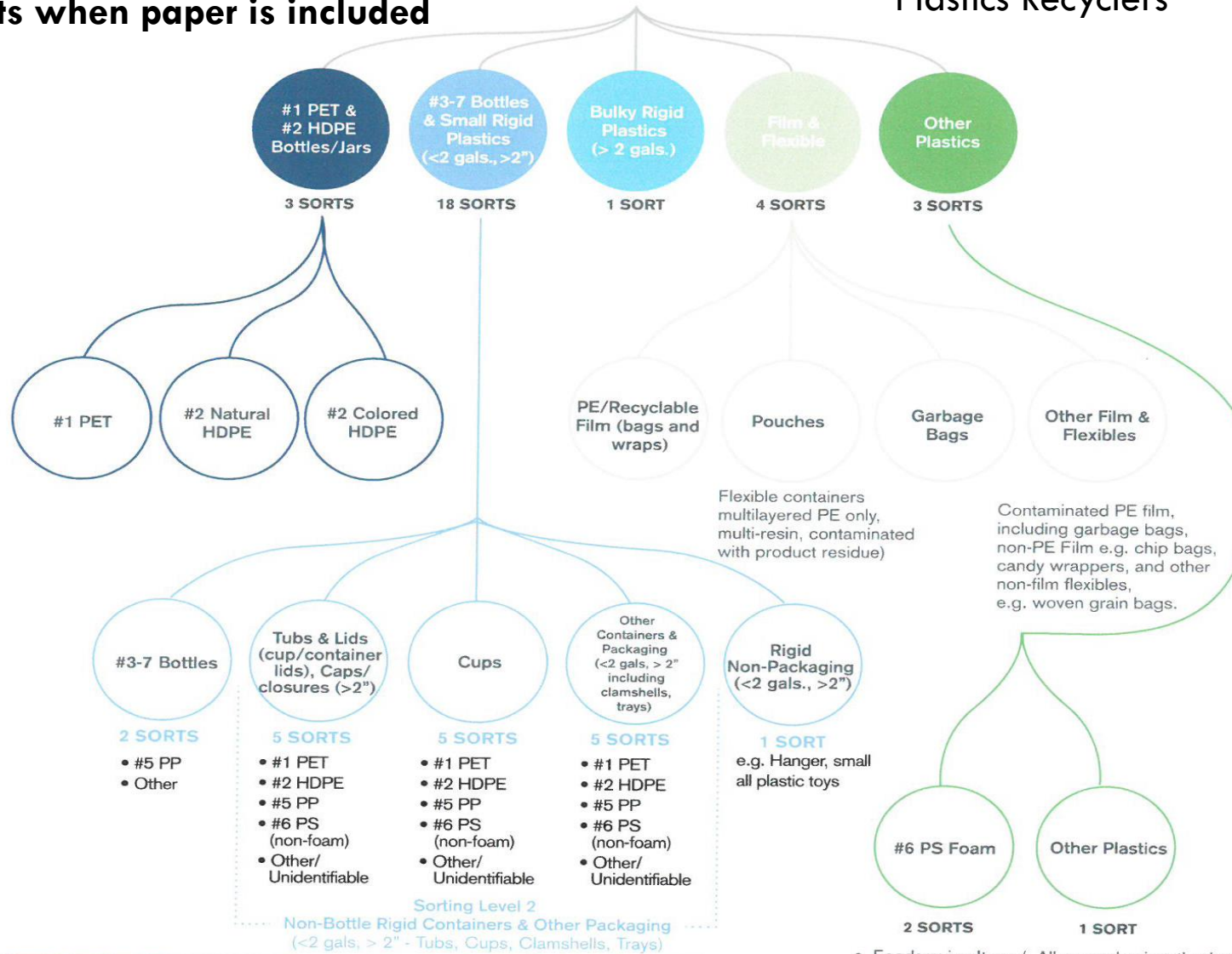
Polypropylene Containers (#5)
\$0.04 to \$0.34 / Lb



29 Sorts
30 Sorts when paper is included

Sorting Level 3
 29 SORTS

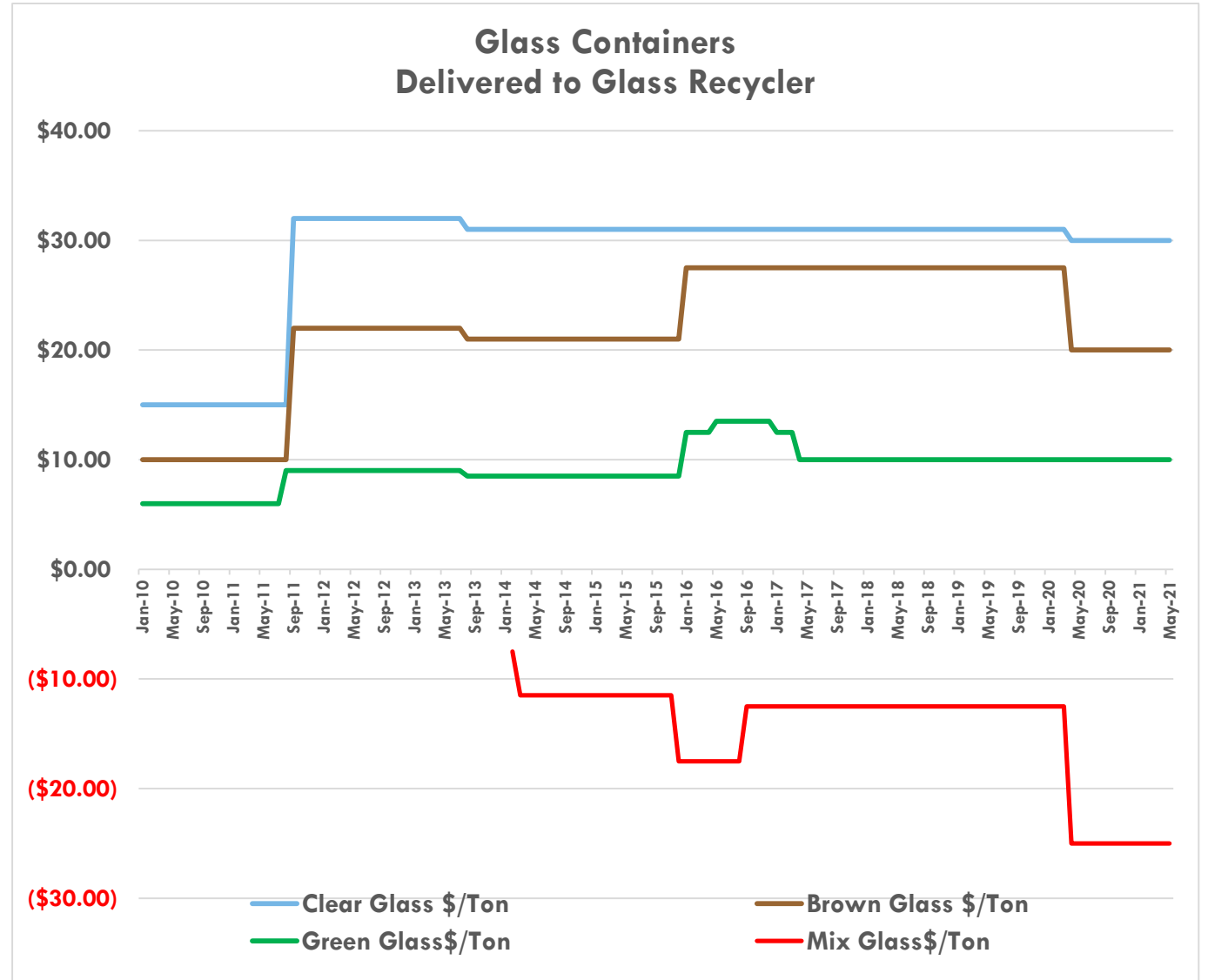
Association of
 Plastics Recyclers



#1 PET	Polyethylene Terephthalate	#5 PP	Polypropylene
#2 HDPE	High Density Polyethylene	#6 PS	Polystyrene
#3 PVC	Polyvinyl Chloride	#7 Other	
#4 LDPE	Low Density Polyethylene		

- Foodservice Items/ Packaging (cups, trays, etc.)
- Transport Packaging, Block & Other
- All or predominantly plastic items <2" or not covered above, including, twine, strapping, other foam, a multi-material items e.g. toothbrushes, razors, dust pan brush

GLASS CONTAINERS



PART 3

Residential Single Stream Recycling

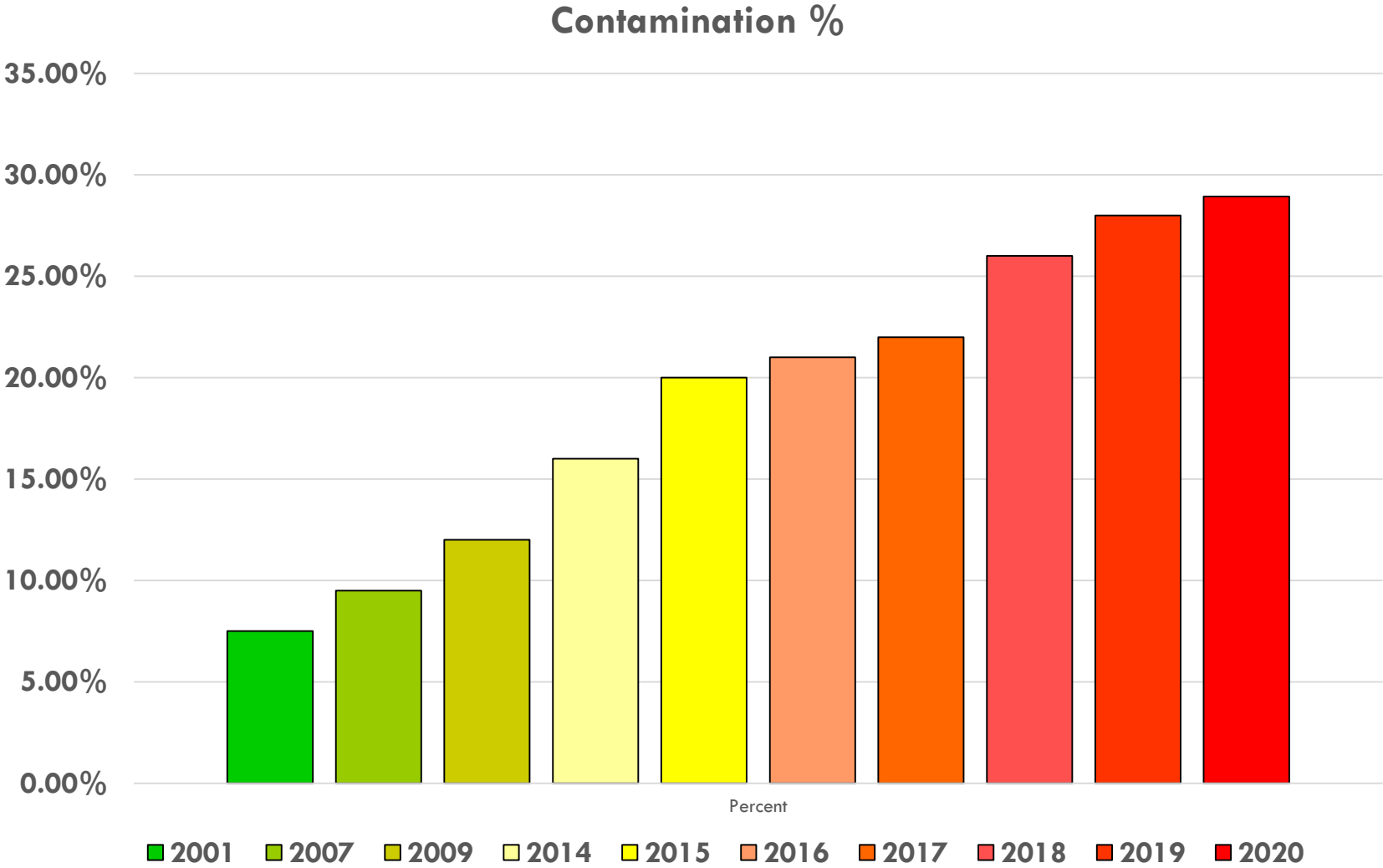
Value

&

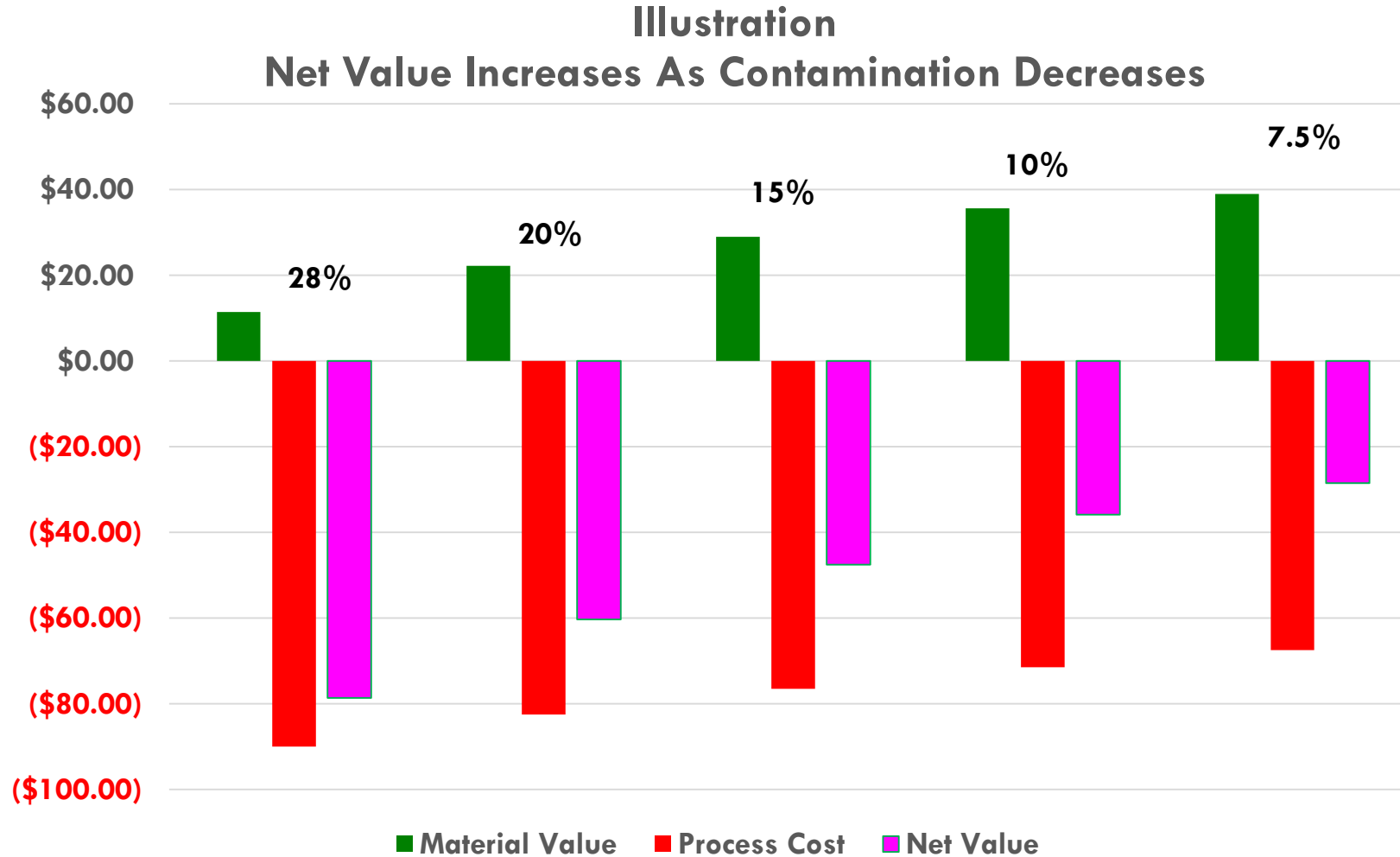
Contamination



RESIDENTIAL SINGLE STREAM RECYCLING CONTAMINATION CHICAGO SUBURBS ANNUAL AVERAGES



MATERIAL VALUE WITH CONTAMINATION



RECYCLING PARTNERSHIP

- 52% (50.3 MM US Single Family Households) participate in Curbside Recycling Service
- 61.5% Capture Rate from US Households that participate (what household puts into the recycling bin)
- 32% Net Capture Rate of Recyclables to MRF
- Contamination National Average: **16.9%**

Source: Resource Recycling Webinar, Scott Mouw, Recycling Partnership, 8/27/20.

NERC CALENDAR YEAR 2020

USING MIDWEST INDEX MARKET PRICING

	NERC	May-21		
Single Stream Recyclable Materials	2020 Average	Midwest Index Market Prices		Weighted Value
Commodity	Percent	\$/Lb	\$/Ton	\$/Ton
UBCs	1.00%	\$0.6750	\$1,350.00	\$13.50
Steel Cans	2.00%		\$187.50	\$3.75
PET	4.00%	\$0.1400	\$280.00	\$11.20
HDPE-N	1.00%	\$0.8900	\$1,780.00	\$17.80
HDPE-C	1.00%	\$0.3800	\$760.00	\$7.60
Plastic Containers #3, #4, #5, #7	2.90%	\$0.0000	\$0.00	\$0.00
Mixed Broken Glass	12.00%		(\$25.00)	(\$3.00)
Aseptic Packaging	0.10%		\$35.00	\$0.04
Mixed Paper	32.00%		\$42.50	\$13.60
OCC	28.00%		\$95.00	\$26.60
Residuals	16.00%		(\$85.12)	(\$13.62)
Total Market Value	100.00%			\$77.47
Average Process Fee				(\$84.21)
Tip Fee				(\$6.74)

NERC CALENDAR YEAR 2020 USING MIDWEST 25.66% CONTAMINATION

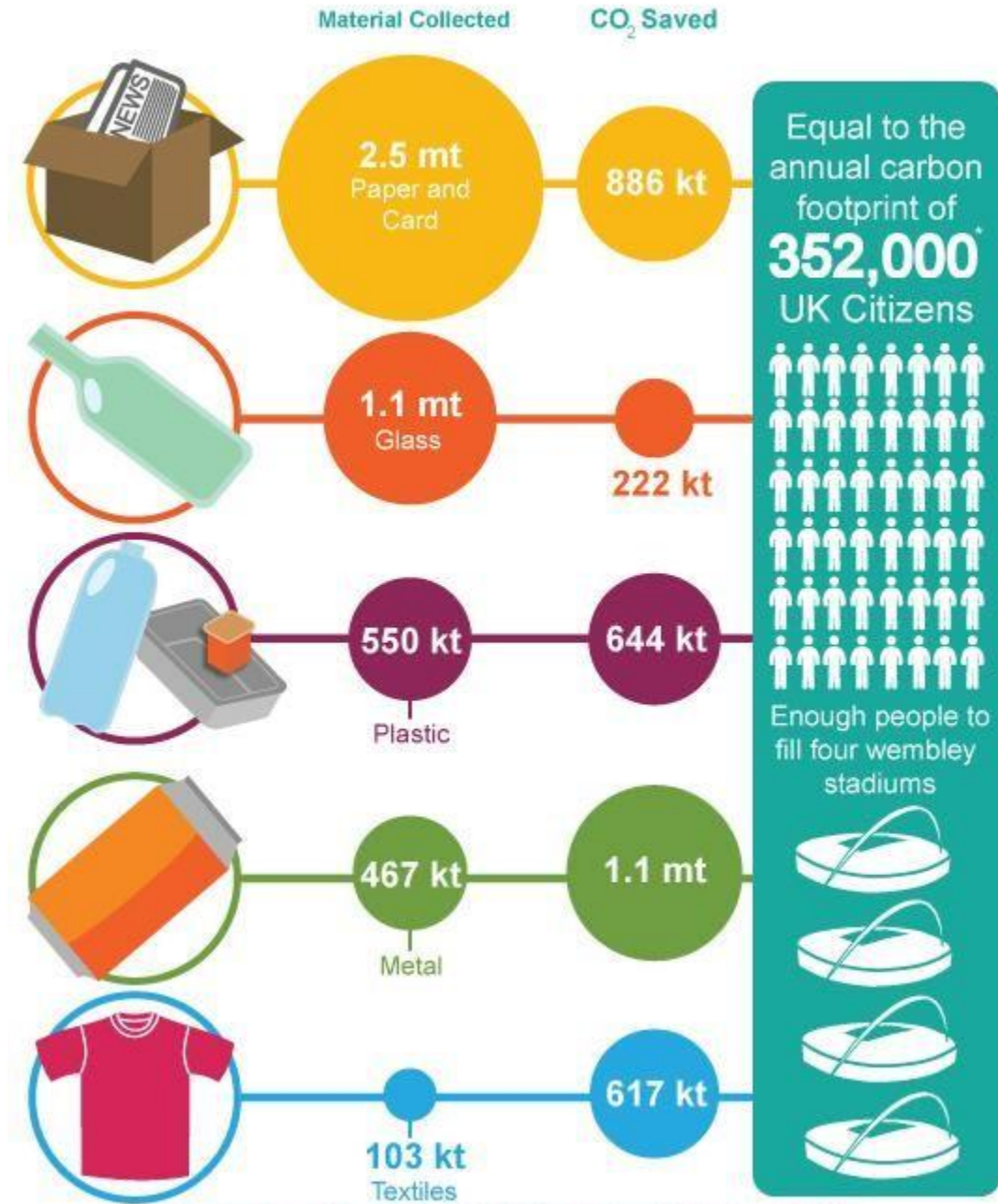
	NERC	May-21		
Single Stream Recyclable Materials	2020 Average	Midwest Index Market Prices		Weighted Value
Commodity	Percent	\$/Lb	\$/Ton	\$/Ton
UBCs	0.88%	\$0.6750	\$1,350.00	\$11.95
Steel Cans	1.77%		\$187.50	\$3.32
PET	3.54%	\$0.1400	\$187.50	\$6.64
HDPE-N	0.88%	\$0.8900	\$1,780.00	\$15.75
HDPE-C	0.88%	\$0.3800	\$760.00	\$6.73
Plastic Containers #3, #4, #5, #7	2.57%	\$0.0000	\$0.00	\$0.00
Mixed Broken Glass	10.62%		(\$25.00)	(\$2.65)
Aseptic Packaging	0.09%		\$35.00	\$0.03
Mixed Paper	28.32%		\$42.50	\$12.04
OCC	24.78%		\$95.00	\$23.54
Residuals	25.66%		(\$85.12)	(\$21.84)
Total Market Value	100.00%		\$0.00	\$55.49
Average Process Fee				(\$84.21)
Tip Fee				(\$28.72)

Not all materials are created equal. The 'embodied' carbon can vary hugely. The following are the carbon savings from the key materials—representing over 90% of all carbon savings—recycled in England, Wales and Northern Ireland in 2013/14...

Scotland's unique Carbon Metric (CM) could redefine government recycling targets

Since 2011, Scotland has used the CM to measure the lifecycle carbon emission impacts of 30 different waste materials from resource extraction through manufacturing to end-of-life management.

In the U.S, there has been emerging discussion moving away from weight-based goals or complementing these with other measurements that take account of factors such as greenhouse gas emissions and waste prevention.



* Average footprint of 10 tonnes CO₂ per year. Source: Defra Official Statistics release: UK's Carbon Footprint 1997-2011

**“Always
Moving The
Future Is”**

Yoda



TRADITIONAL RECYCLING GUIDELINES

YES!



METAL
Steel & Aluminum Containers and Foil



PAPER
Cardboard (flattened),
Office Paper, Newspaper, Magazines

Clean & Empty
Replace lids & caps



GLASS
Containers: Bottles & Jars Only



PLASTIC
Containers: Bottles, Tubs, Jugs,
and Jars Only



CARTONS

NO!



No Plastic Bags
No Plastic Wrap
(return clean to retailer)



No Big Items (Electronics, Wood,
Propane Tanks, Scrap Metal or Styrofoam –
check willcountygreen.com for other options)

Put material in loose
- Not in Bags



No Tangles (Hangers, Hoses,
Wire, Cords, Ropes or Chains)



No Clothing
Textiles or Shoes (donate)



No Food, Liquid, Diapers,
Batteries or Needles



TRENDS TO WATCH

Zero Waste: California and other west coast states continue to strive for 90% or more diversion. These goals can't be accomplished without:

- Food Scrap Composting
- Electronic Recycling
- C&D Recycling & Carpet Recycling
- Paint Recycling
- Mattress Recycling

Circular Economy: The idea that we design products to be durable, to be more easily repaired, and more easily recycled.

- Corporate Sustainability
- Product Stewardship / Extended Producer Responsibility

