

Recycling Markets
&
Residential Curbside Recycling
Contamination

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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 2018 Guidelines for Paper Stock Domestic & Export Transactions – **Mixed Paper**

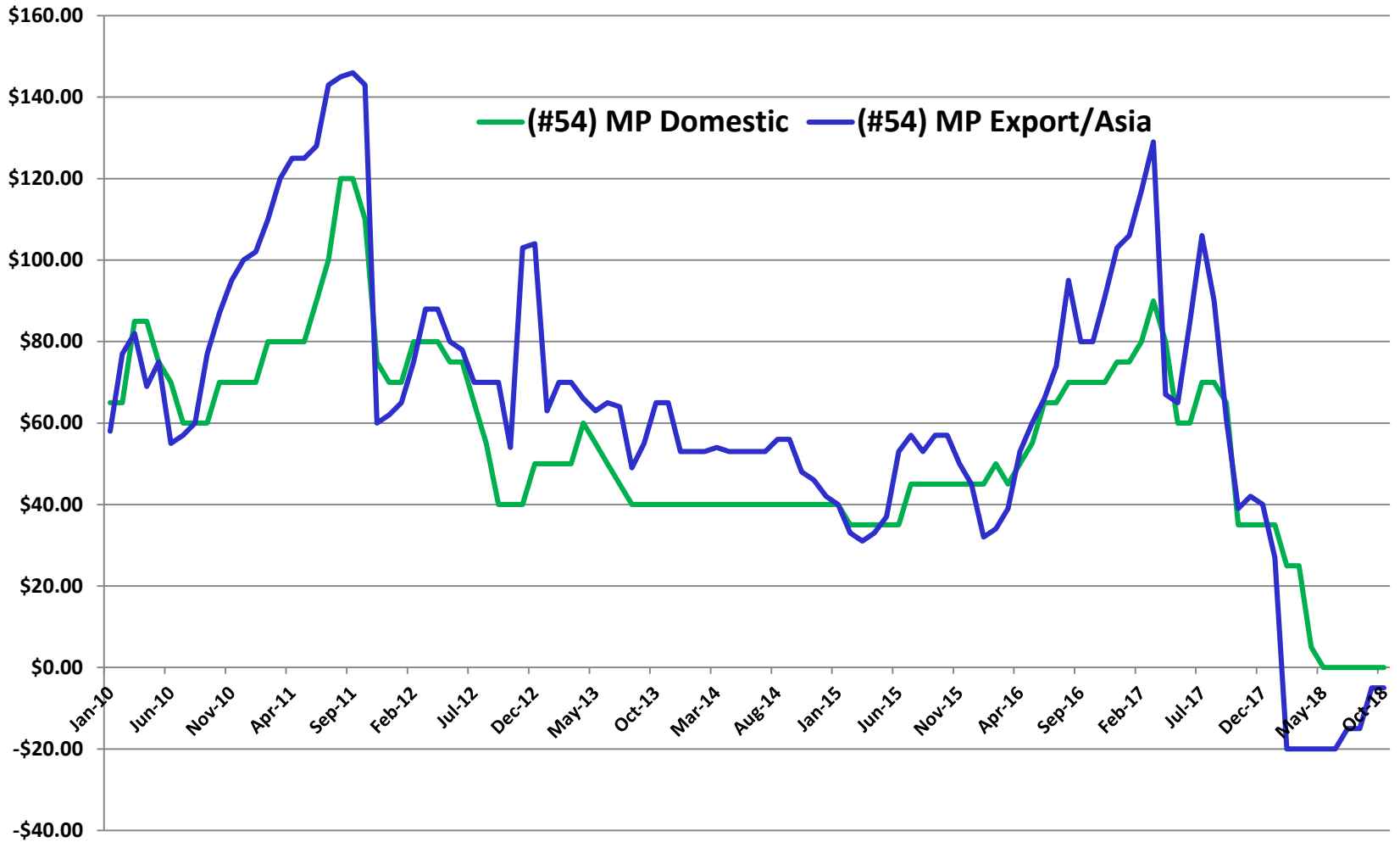
Mixed Paper (MP #54)

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 2018 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

#8 ONP to SRPN to ONP



ISRI 2018 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 \leq 1/2%**

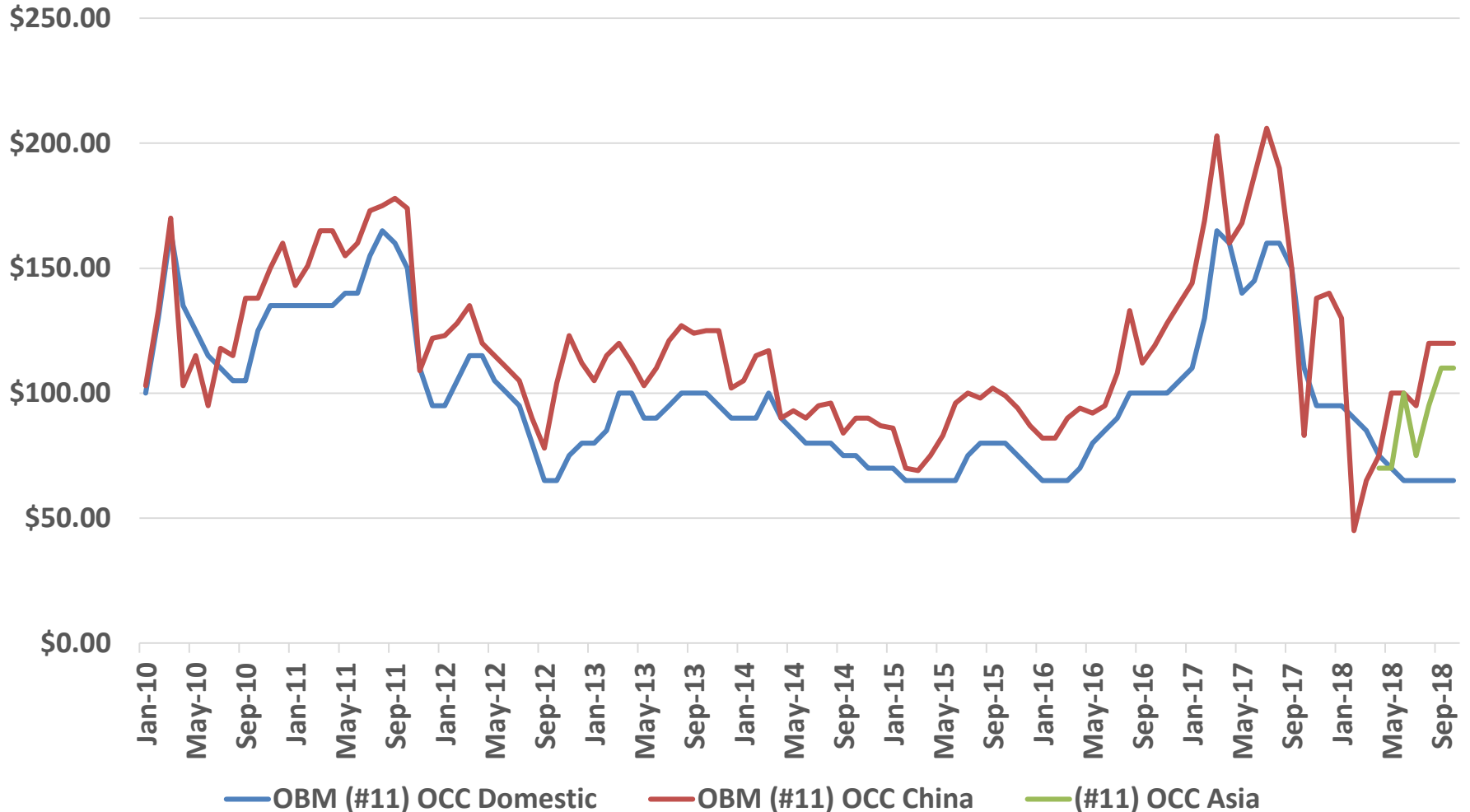
- **Outthrows (paper)**

PSI \leq 5% **China \leq 1/2% ?**



Pulp & Paper Week Index Pricing

Cardboard (#11) OCC



Part 2

Post Consumer Containers Recycling Markets

Aluminum Cans - Novelis Feb, 2015

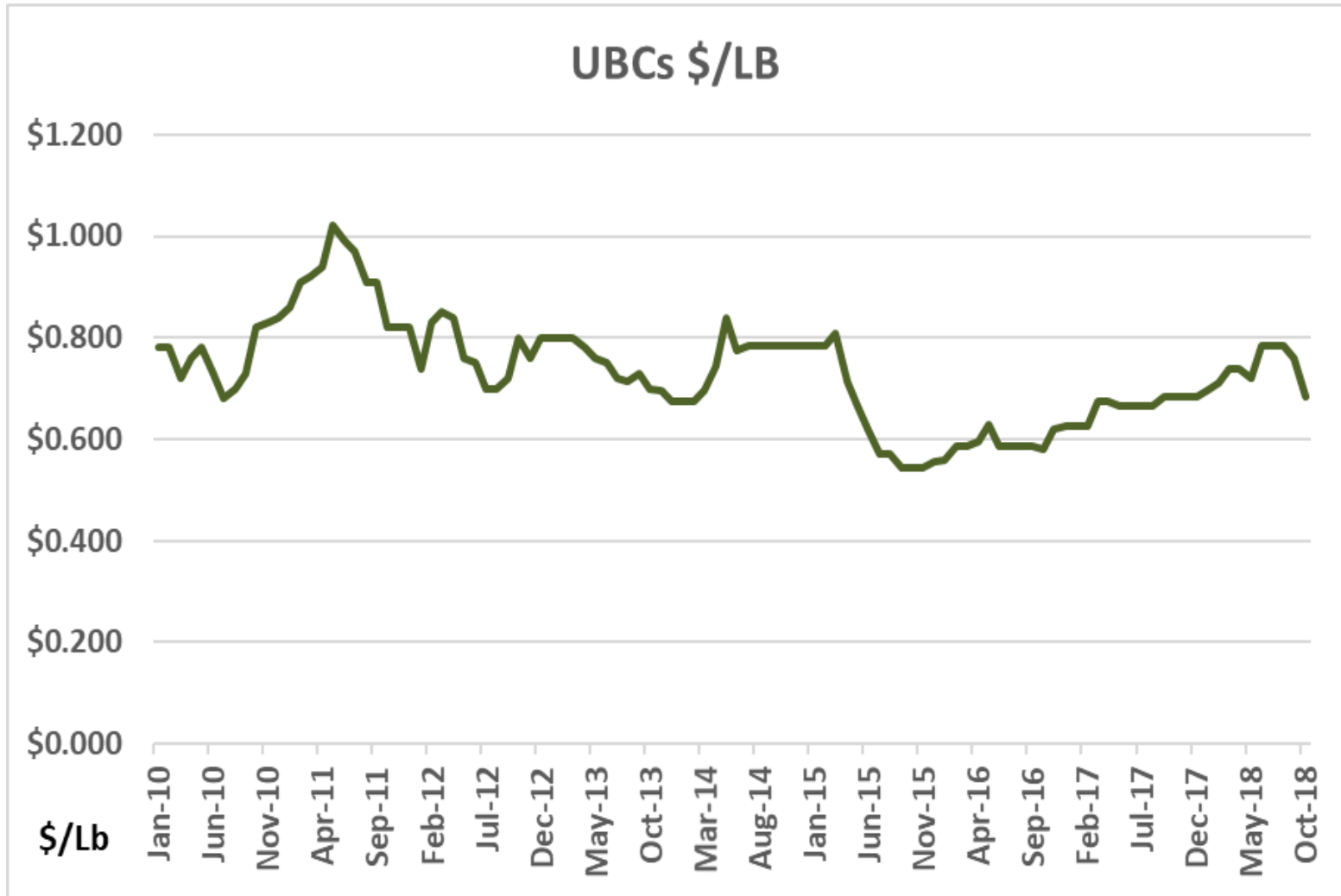
IMMEDIATE REJECTION

- 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



Steel Cans

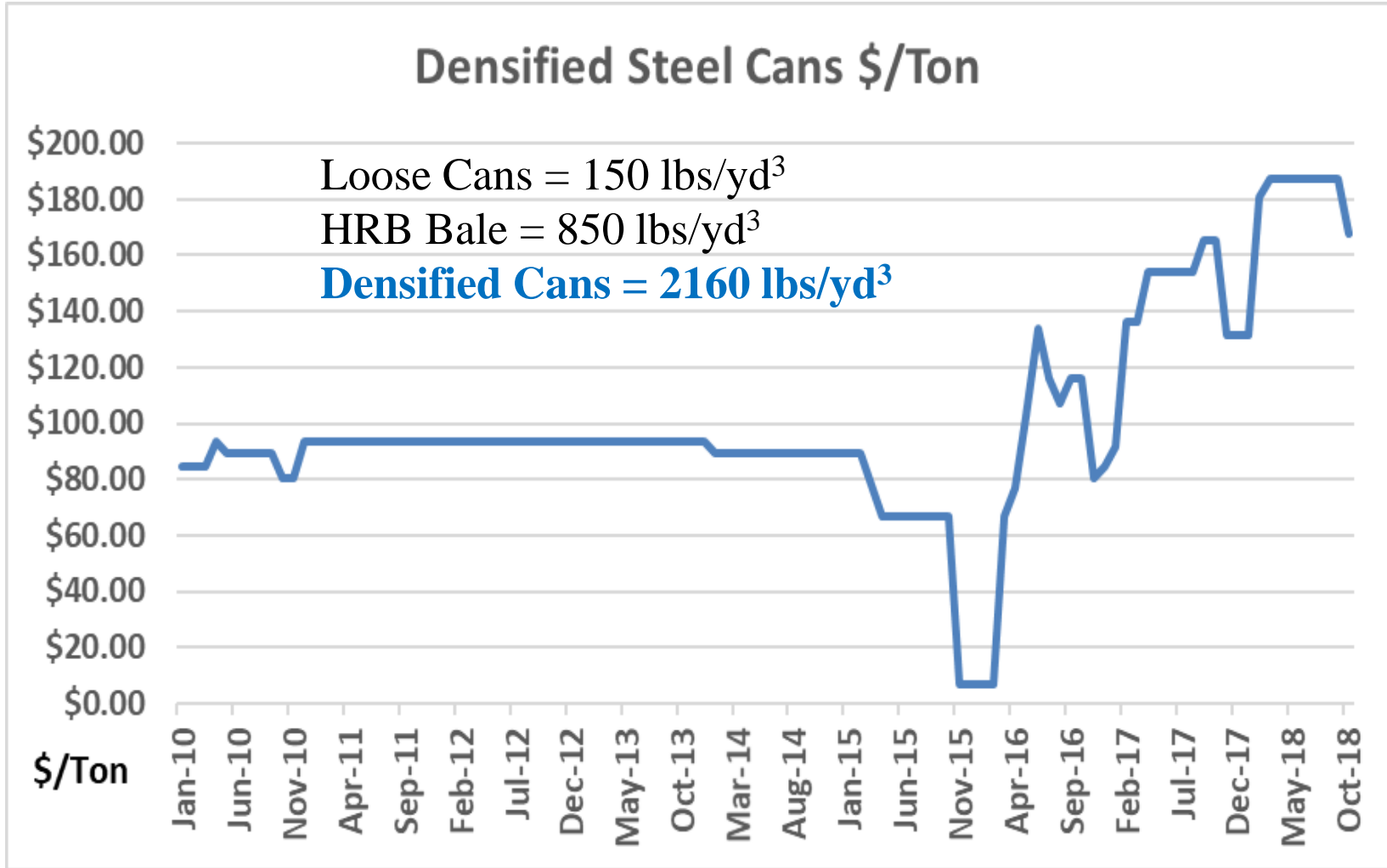


850 lbs/yd³
\$140.00/ton



2160 lbs/yd³
\$180.00

Steel Cans

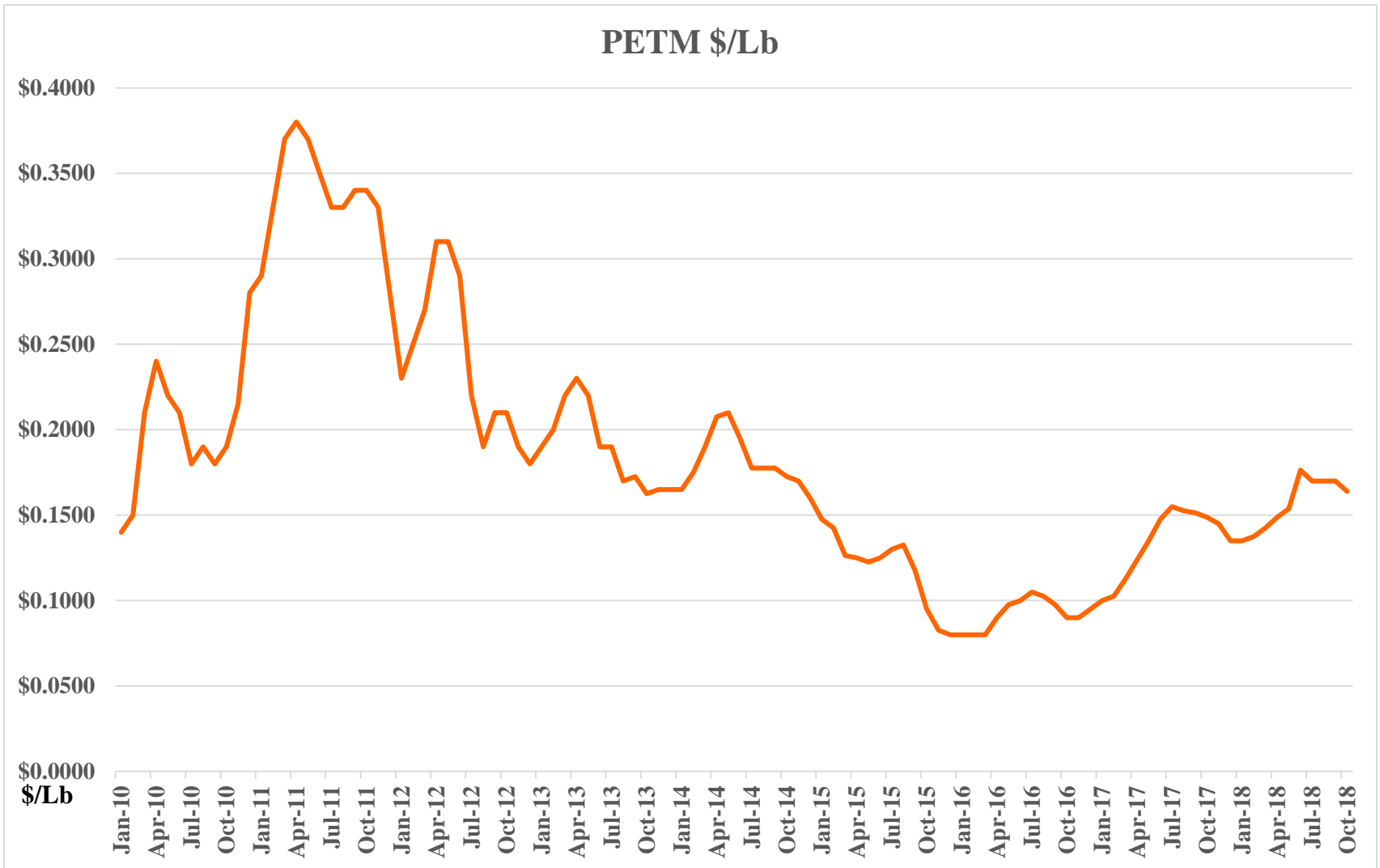


PET Bottles

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



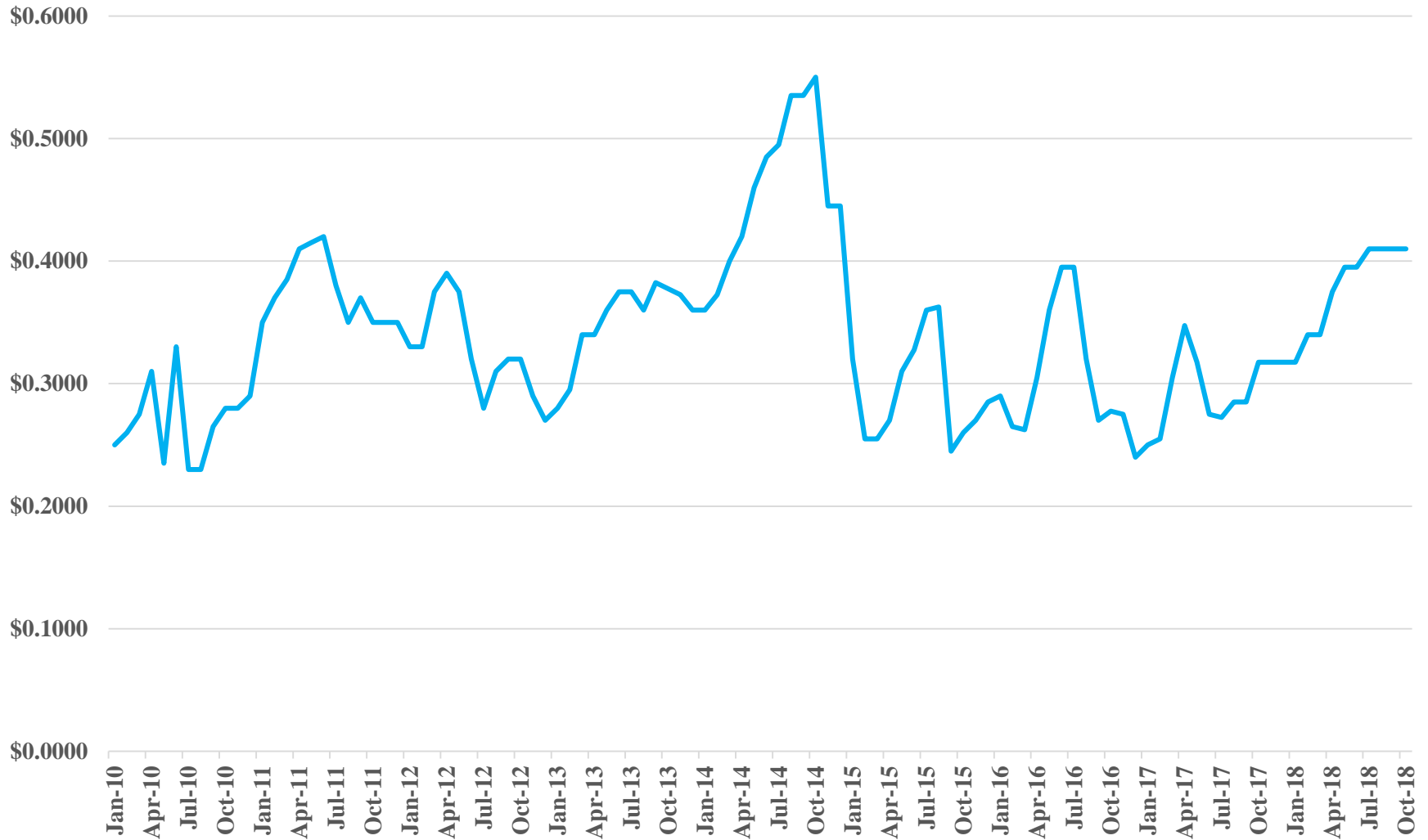
HDPE-Natural Bottles

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

HDPE-N \$/Lb



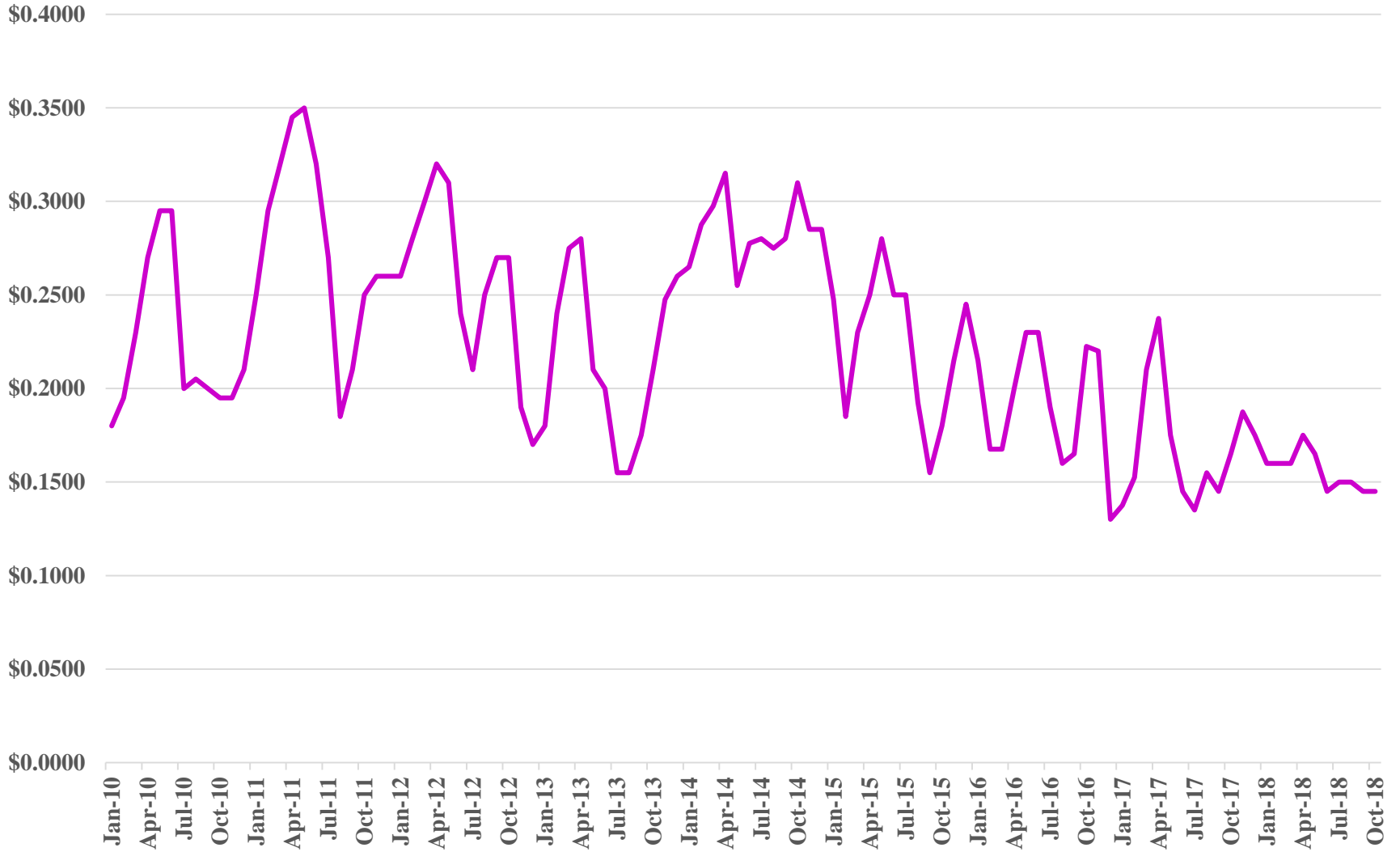
HDPE-Colored Bottles

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

HDPE-C \$/Lb



Other Containers



- **Mixed Baled #3 - #7
Plastics Containers**
\$0.00 to \$0.02 / Lb
*History of Numerous Market
Failures & Interruptions*
- **Polypropylene
Containers (#5)**
\$0.06 to \$0.11 / Lb

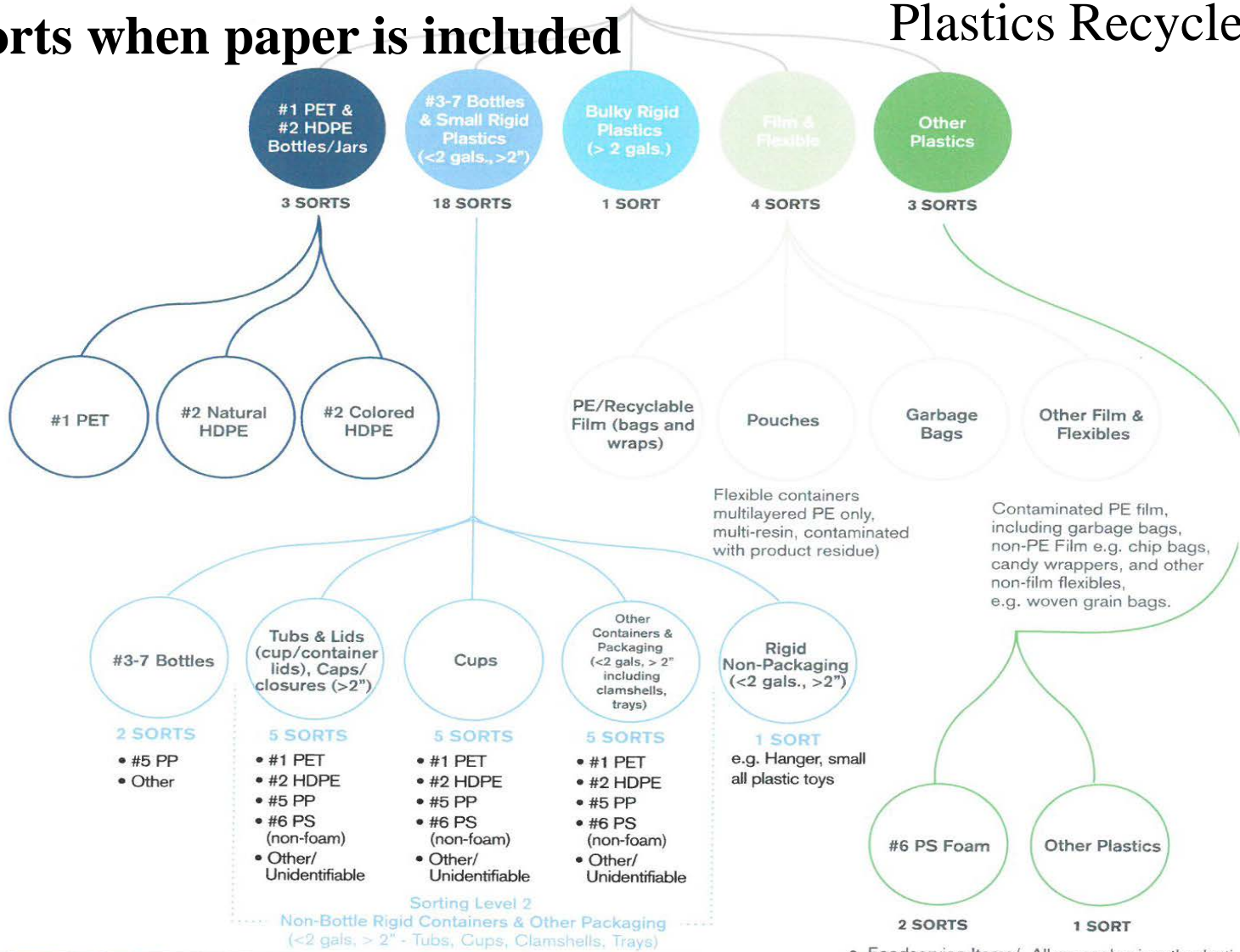
29 Sorts

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		

Flexible containers multilayered PE only, multi-resin, contaminated with product residue)

Contaminated PE film, including garbage bags, non-PE Film e.g. chip bags, candy wrappers, and other non-film flexibles, e.g. woven grain bags.

- 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

Glass Containers Delivered to Glass Recycler

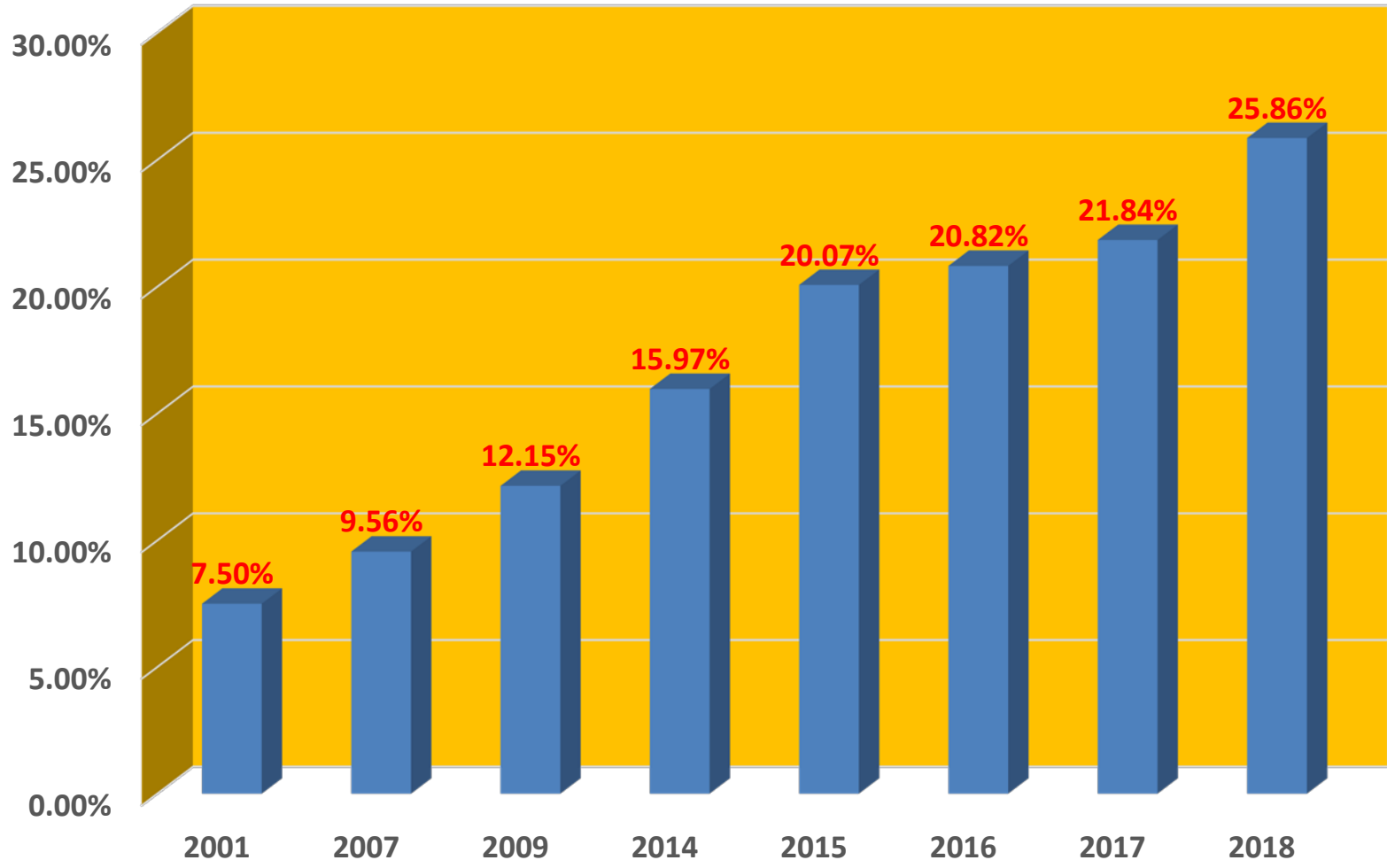


Part 3

Residential Single Stream Recycling Contamination

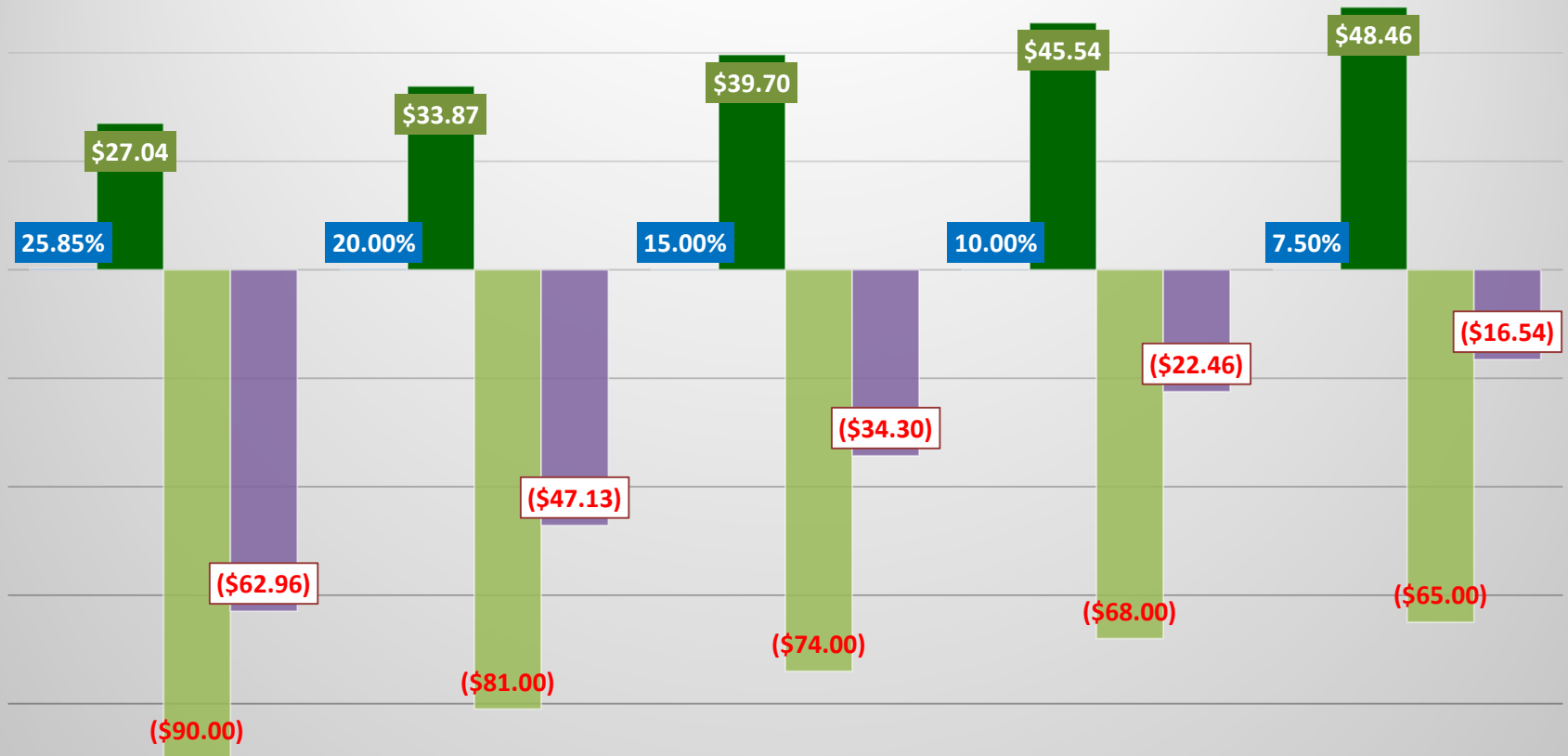
Residential Single Stream Recycling Contamination Chicago Suburbs Annual Averages

% Contamination



Material Value With Contamination

Value vs Contamination Illustration



Process fees are in the range of \$60 to \$90 per ton - RecyclingToday Sept, 2018 - Scott Paternak

■ % Contamination ■ Material Value ■ Process Cost ■ Net Value

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.

**“Always
Moving The
Future Is”**

Yoda

