Report on

Postconsumer PET Container Recycling Activity in 2017

November 15, 2018

NAPCOR

www.napcor.com

The Association of Plastic Recyclers

www.plasticsrecycling.org

ACKNOWLEDGEMENTS

2017 marks the twenty third year that the National Association for PET Container Resources (NAPCOR) has issued this report, and the thirteenth year that NAPCOR and The Association of Plastic Recyclers (APR) have worked together to produce it. This report would not be possible without the APR's support and the cooperation of its members and NAPCOR's. Information contained in this report was obtained through surveys conducted by NewGen Strategies & Solutions and More Recycling, and from data generated internally by NAPCOR. Support was also provided by Resource Recycling Systems (RRS). In order to present as accurate a picture of these activities as possible, additional data and information were obtained through discussions with individual collectors, intermediate processors, reclaimers, converters, brokers, exporters, importers, resin producers, bottle manufacturers, public recycling officials, consultants, and other key industry members. We greatly appreciate all contributions.

ABOUT THE SPONSORS

Founded in 1987, the **National Association for PET Container Resources (NAPCOR)** is the trade association for the PET plastic packaging industry in the United States, Canada and Mexico. NAPCOR is dedicated to promoting the PET package; to overcoming hurdles to the successful recycling of PET; and to communicating the attributes of the PET container as a sustainable package. More at www.napcor.com.

The Association of Plastic Recyclers (APR) is the "Voice of Plastics Recycling®." As the international trade association representing the plastics recycling industry, membership includes independent recycling companies of all sizes, processing numerous resins, as well as consumer product companies, equipment manufacturers, testing laboratories, organizations, and others committed to the success of plastics recycling. APR advocates the recycling of all plastics. Visit www.PlasticsRecycling.org for more information.

SUMMARY

This report is intended to provide the reader with a detailed overview of the recycling of injection stretch blow molded polyethylene terephthalate (PET) bottles and jars in the United States (US) during 2017, and a general summary of the recycling of PET thermoforms.

In 2017, approximately 5,913 million pounds of PET bottles were sold into the marketplace in the US. About 29.2 percent of those—1,726 million pounds—were collected through recycling programs and sold, either to domestic or foreign markets. PET reclaimers in the US supplemented those bottles collected in the US with imported materials and alternative feedstocks to process a total 1,606 million pounds of material. A variety of end users in the US, led by producers of fiber, consumed the clean RPET flake produced by US reclaimers, as well as imported RPET from Canada and other countries.

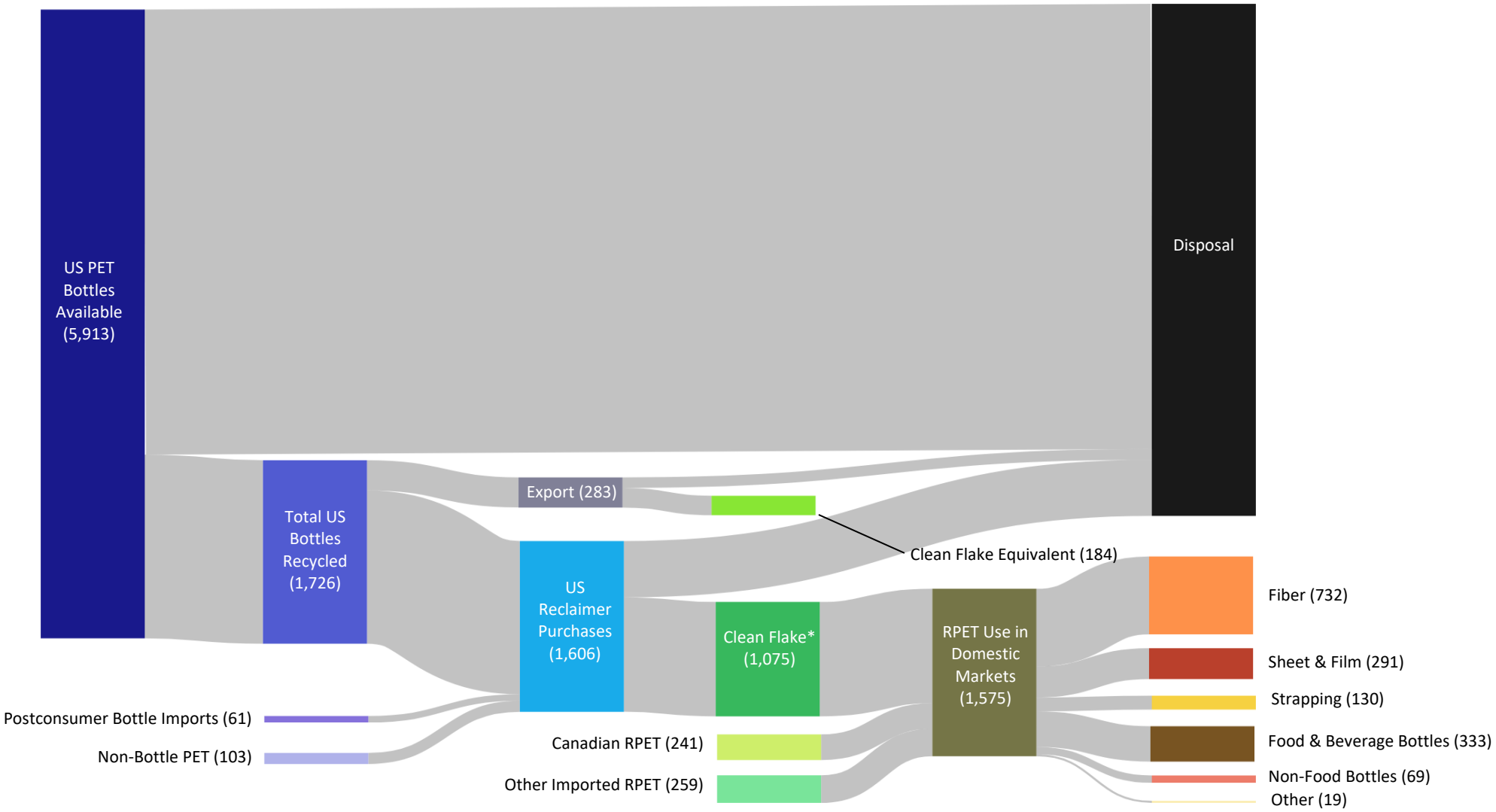
PET material flows in the US are depicted in Figure 1. This report uses color coding to aid readers in following material flows throughout the report; a color reference guide is provided in Appendix A. Comparative historical data is provided in Appendix B.

PET BOTTLES AVAILABLE FOR COLLECTION

The volume of PET bottles available for recycling in the United States declined in 2017 for the first time since 2009. The total weight was 5,913 million pounds, representing a decrease of more than four percent from 2016. This number reflects the total amount of PET resin used by US bottle manufacturers from US, foreign, and recycled sources, with adjustments for scrap generated and not reused in bottles and bottles less than eight ounces in size. This 5,913 million pounds serves as the denominator in this report to determine both the recycling and material utilization rates, and includes 357 million pounds of postconsumer PET recyclate.

The most important and unexpected factor leading to the decline of bottles available for recycling in 2017 versus the previous year was the bankruptcy of M&G Polymers, a major PET resin producer, in the fourth quarter of 2017. The resulting closure of their Apple Grove, West Virginia plant took 800 million pounds of annual capacity offline. The suddenness of these events meant that customers were not able to respond to this lack of supply before the end of the year, thus creating tightness in the market. Another point of note is that bottled water sales volumes were greater than that of carbonated soft drinks (CSD) in 2017. The growing consumer preference for bottled water likely impacted the amount of resin in bottles available for recycling, given the lighter weight of the water bottle relative to CSD.

FIGURE 1: PET Material Flows in the US (*MMlbs)*



* This total represents all clean flake sold into end markets by US reclaimers. See Figure 7 for detail on total flake produced by US reclaimers from bottles.

POSTCONSUMER PET BOTTLE PURCHASES

The total amount, by weight, of postconsumer PET bottles collected for recycling in the United States and sold to recycling markets in 2017 was 1,726 million pounds. The breakdown of this total, by purchaser, is as follows:

TABLE 1: Recycling Rate Numerator

1,442	Purchased by US Reclaimers
275	Purchased by Export Markets
8	PET bottle component of mixed bales exported
1,726	**Total Postconsumer Bottles *(MMlbs)***

This represents a 27 million pound, or 1.6 percent, decrease in total volume of bottles collected as compared to 2016. As such, volumes of both bottles collected and those available for recycling decreased in 2017. Because the decrease in the amount of bottles available for recycling was larger than the decrease in the amount of bottles recycled, the recycling rate increased by a little less than one percent over 2016, bringing it to 29.2 percent.

The decrease in collection volumes in 2017 is the result of a drop in the volume of PET collected at curbside. California CRV collection was up, and contrary to the downward trend noted in recent reports, there was a slight increase in non-California deposit redemption. This may be due in part to the deposit expansion in Oregon that became effective in January of 2017, which not only increased the deposit amount but expanded the types of containers covered under the program to include juice, tea, and other beverages. Still, CSD is the predominant category in most state deposit programs, and given the decline in market share for

PET Thermoform Recycling

In 2017, PET thermoforms collected for recycling in the US and Canada increased from 82.4 million pounds collected in 2016 to 90.2 million pounds. A sharp decline in exported material was offset by an approximate 40 percent increase in US domestic reclamation, leading to an overall increase in total thermoform recycling.

PET thermoform collection volumes are not included in the recycling rate presented in this report, or in the bottle volumes purchased, but are included in total reclaimer PET purchases (page 6) and "flake produced from all sources" total cited on page 14.

PET thermoform exports totaled only six percent of total thermoform collection compared to 27 percent in 2016. Meanwhile, tightening RPET supply issues that began late in the third quarter and continued through the end of 2017 led reclaimers to find ways to use PET thermoforms to supplement their buyers' needs, or fulfill demand for RPET flake.

Even so, reclaimers are still reluctant to embrace non-preferred material like PET thermoforms. While PET thermoforms are technically recyclable with PET bottles, they can be problematic from a performance and yield perspective. PET thermoforms bring the potential for "look-alike" contamination from other polymers including OPS, PVC, PETG or PLA. Brand owners using PET thermoforms are slow to adopt best practices related to Design for Recyclability® standards as it relates to labels, inks and adhesives which can affect the quality of recycled materials.

Despite these challenges, some PET reclaimers continue to process PET thermoforms with their PET bottles. Recycling programs and MRFs interested in marketing PET thermoforms should talk to their buyers about market opportunities and best practice guidelines. NAPCOR continues its work to better understand and address market concerns, with a goal of overcoming the obstacles preventing large-scale PET thermoform recycling.

these beverages deposit collection ticked up only slightly.

The amount of PET material processed through Material Recovery Facilities (MRFs) declined again in 2017, continuing a slow but steady downward trend that began in 2014. It is worth noting that for the purposes of this report, MRF volumes are estimated by total reclaimer purchases of PET bales from MRFs, which may not be equivalent to total material collected. As such, it's unclear whether the decline is occurring at the point of collection or at the point of MRF sortation and processing, or some combination of the two. While determining the exact cause of the decline is beyond the scope of this report, several factors in particular may have been at play in 2017.

First, the lightweighting of containers, coupled with the development of bigger, faster MRFs, has led to increased misdirection of materials. A 2014 study conducted by RRS, and sponsored by NAPCOR and other industry trade associations, found that lightweight PET water bottles were often present in the paper stream, particularly if MRF lines were not well-maintained or ran too fast. Second, certain collection channels, particularly commercial streams, are more sensitive to market value than others. The combination of low PET bale prices through the beginning of 2017, and low value for the remainder of the commercial stream (particularly paper) later in the year due to Chinese import restrictions, may have put a damper on commercial recycling collections. Lastly, the increasingly more stringent export quality requirements and restrictions under China's National Sword generally began to disrupt markets late in the year, affecting MRF process and priorities pertaining to material sorting and marketing.

United States reclaimer purchases of US bottles saw a five percent increase to 1,442 million pounds, compared to 1,374 million pounds in 2016. US purchases accounted for 84 percent of all US bottles collected, up from 78 percent reported in 2016. United States reclaimers also reported supplementing their domestic purchases by importing 61 million pounds of postconsumer bottles or dirty flake, predominantly from Canada and Mexico, as compared to the 70 million pounds imported in 2016. In addition to the bottle volumes presented in Figure 2, domestic reclaimers reported buying 103 million pounds of alternative feedstock, which included postconsumer thermoforms, pre-consumer bottles, postconsumer strapping, and sheet. This represents an increase over the 82 million pounds of alternative feedstock purchased in 2016. In total, US reclaimers purchased 1,606 million pounds of PET scrap material.

FIGURE 2: Postconsumer Bottles Recycled & Used by Reclaimers

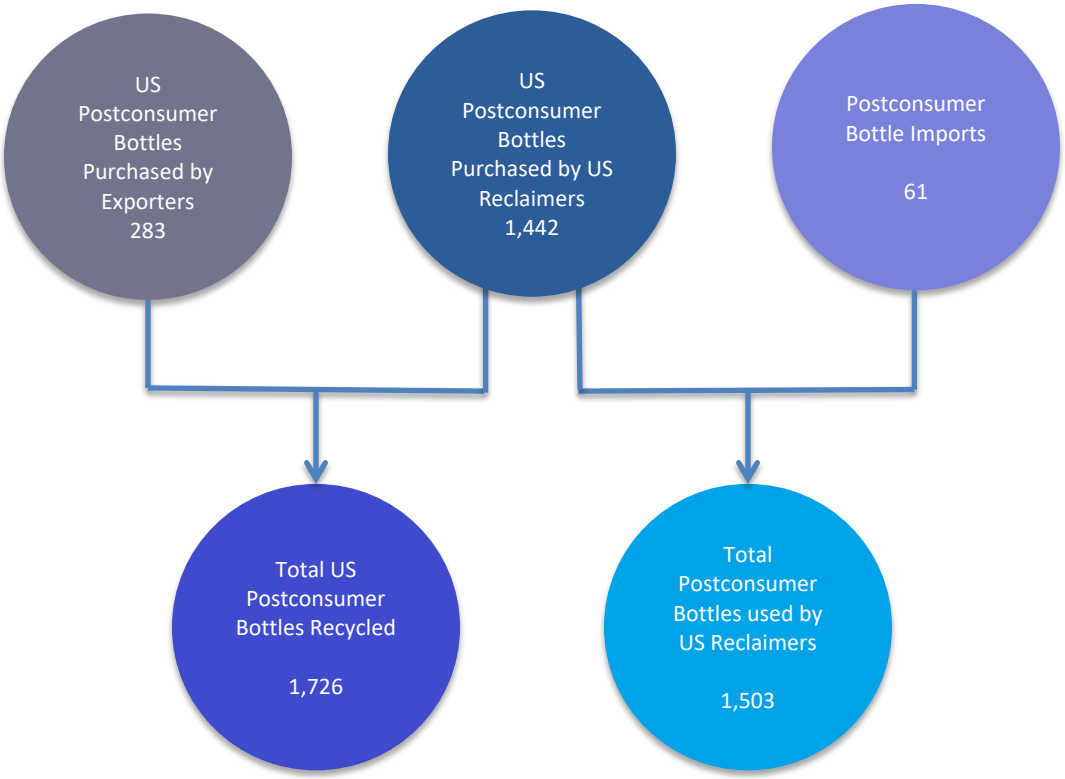
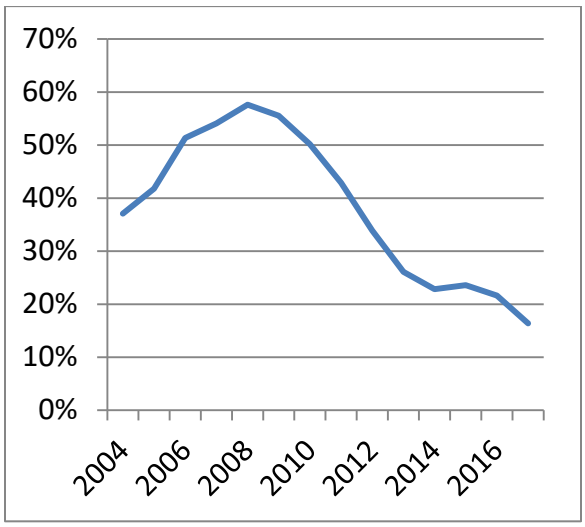
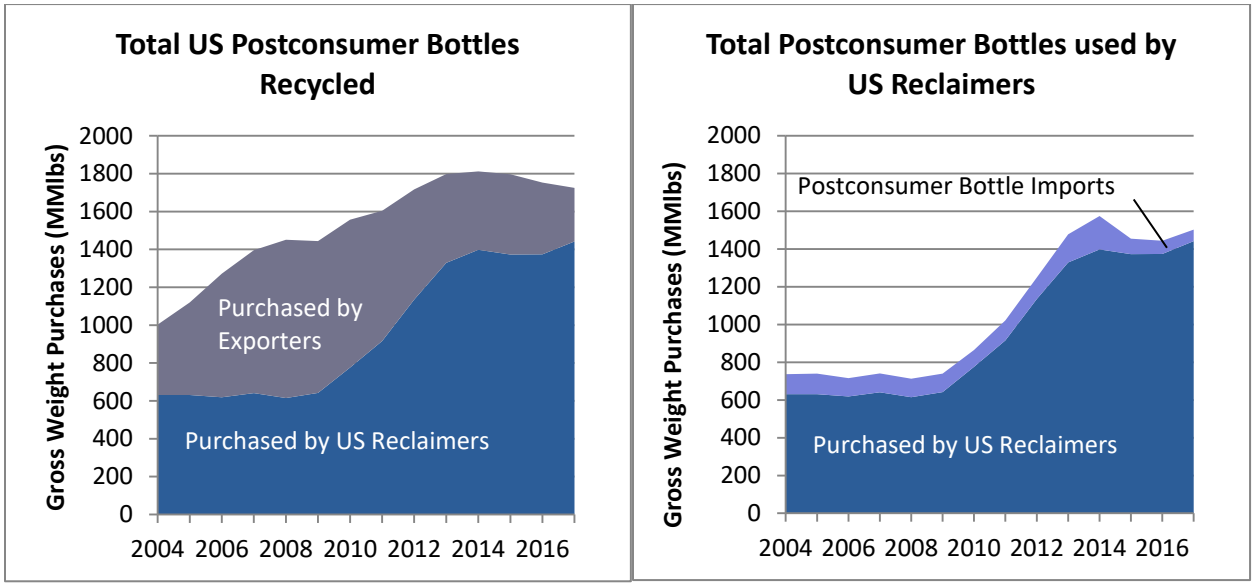


FIGURE 3: Percentage of US Postconsumer Bottles Purchased by Export Markets



Reclaimers outside of the US purchased a total of 283 million pounds or 16 percent of total US bottles collected. This is the lowest export percentage of total collections since 2000 (see Figure 3). The purchase of US bottles by Canadian reclaimers increased to 72 million pounds from 68 million in 2016. PET bottle bale exports outside of Canada totaled 203 million pounds, down by more than 90 million pounds as compared to the previous year. Exports of the estimated PET bottle fraction of mixed plastic bales totaled 8 million pounds, which is approximately half of what was reported in 2016.

FIGURE 4: Postconsumer Bottles Recycled & Used by Reclaimers



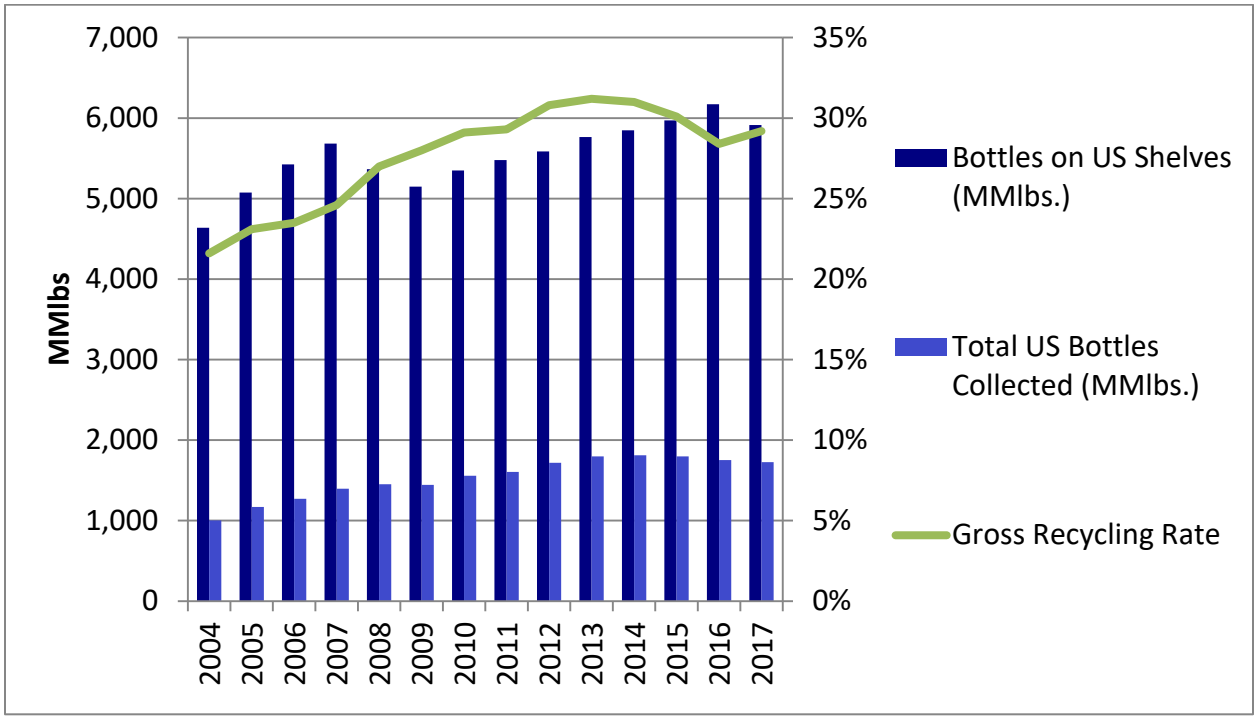
2017 GROSS RECYCLING RATE

Total US Bottles Collected and Sold for Recycling = 1,726 MMlbs

Total US Bottles Available for Recycling = 5,913 MMlbs

= **29.2%**

FIGURE 5: Gross Recycling Rates, 2004 – 2017



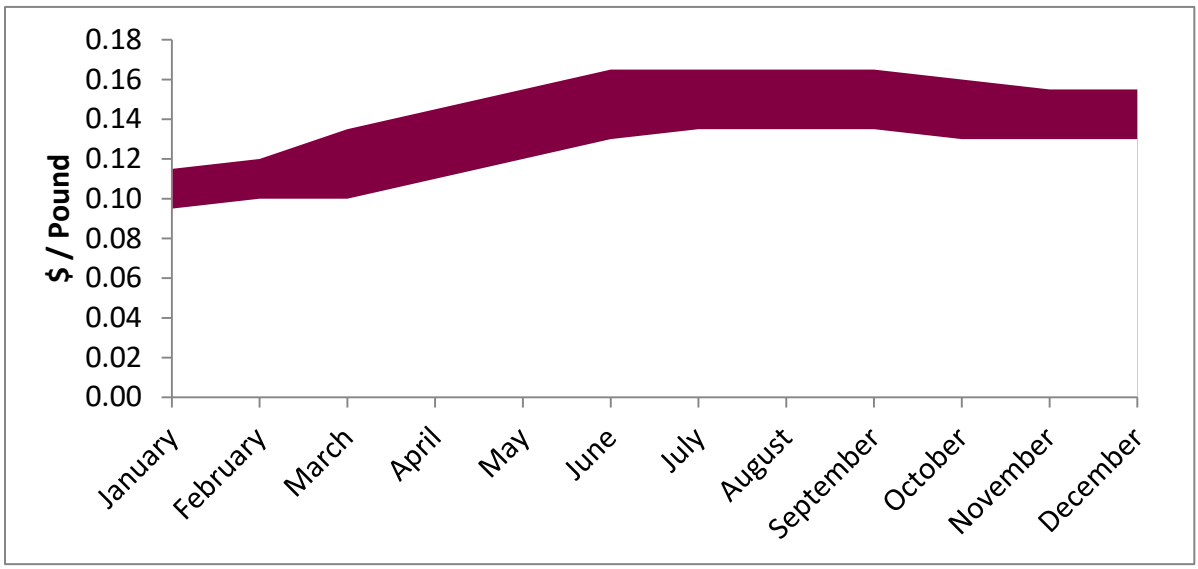
PET BOTTLE BALE MARKETS

From fourth quarter 2016 lows of between $0.08 and $0.11 per pound, PET bottle bale prices increased through July of 2017, reaching a low / high average range of $0.14 to $0.17 in July through September before declining slightly through the end of the year (Figure 5). The virgin PET market was initially impacted in 2017 by the first round of anti-dumping duties imposed mid 2016 on China, India, Oman and Canada, but as the year progressed import volumes picked up from other countries and prices remained quite low. A second anti-dumping case was initiated against the five countries that had stepped up their export volumes and as volumes dried up from these sources the supply/demand balance shifted in favor of domestic suppliers. The failure of M&G in the fourth quarter of 2017 caused virgin resin supply to tighten up further and prices increased. This was a platform for RPET prices to start firming at the end of 2017.

West Coast baled bottle prices started 2017 with increases over the fourth quarter of 2016 and had a strong first four months. By April 2017 prices were up between $0.03 and $0.035 per pound for both Grade A and lower grade material to $0.23 and $0.14 per pound, respectively. However, weakness started in May and gradually increased as the reality of China's National Sword began to penetrate the market. In December 2017 prices had fallen by approximately $0.06 per pound from the highs of April. Grade A

material was down over 25 percent and lower grades had fallen 43 percent from April, finishing the year at $0.16 and $0.08 per pound, respectively.

FIGURE 6: East Coast, Non-Deposit PET Bottle Bale Prices
(Monthly Average Low / High Range - Picked Up, Truckload Quantities, Seller's Dock)



RECLAMATION CAPACITY[1]

The first two quarters of 2017 were for reclaimers a continuation of the tough market conditions seen throughout 2016. RPET buyers, especially those purchasing for beverage container applications, continued to buy at prices lower than virgin resins. This dynamic, combined with increased bale costs – a result of extremely tight supply – dropped reclaimer margins to unsustainable levels. Some reclaimers cut back production, while others sought potential buyers for their businesses.

Then the landscape of events was suddenly changed with the implementation of China's National Sword in mid-2017, which eventually resulted in a ban on shipments of postconsumer plastics as well as other materials, particularly paper. The immediate impacts to the PET recycling industry include the elimination of markets for mixed bottle bales where some items like non-traditional colored PET bottles and thermoforms were finding buyers, and for PET reclaimer byproducts such as PVC kick-out, aluminum kick-out and other contaminated flake. On the positive side, more bales were being made available to domestic PET reclaimers – supply that was desperately needed.

[1] A reclamation plant is defined as an operation that can take dirty postconsumer plastic packaging and process it into a clean flake suitable for remanufacture; all known US operations are included in NAPCOR's inventory regardless of size.

Fortunately, there was more than enough US PET reclamation capacity and end use demand to buy and process all of the bottles that were previously exported.

At the beginning of 2017, there were 21 US PET reclamation plants in operation, with a combined annual capacity of 2,080 million pounds, gross weight input. By year's end, there were 22 plants operating in the US with total annual nameplate capacity of 2,255 million pounds. The 22 operating plants continued to employ a wide range of technologies, with 15 of the 22 able to produce Food and Drug Administration (FDA) Letter of No Objection (LNO) recyclate.

The 2017 US reclaimer plant utilization rate—total throughput, based on the use of all PET feedstock, expressed as a percentage of total plant capacity—was approximately 71 percent, down slightly from the 73 percent reported at the end of 2016.

FIGURE 7: PRODUCTION OF PET FLAKE FROM BOTTLES

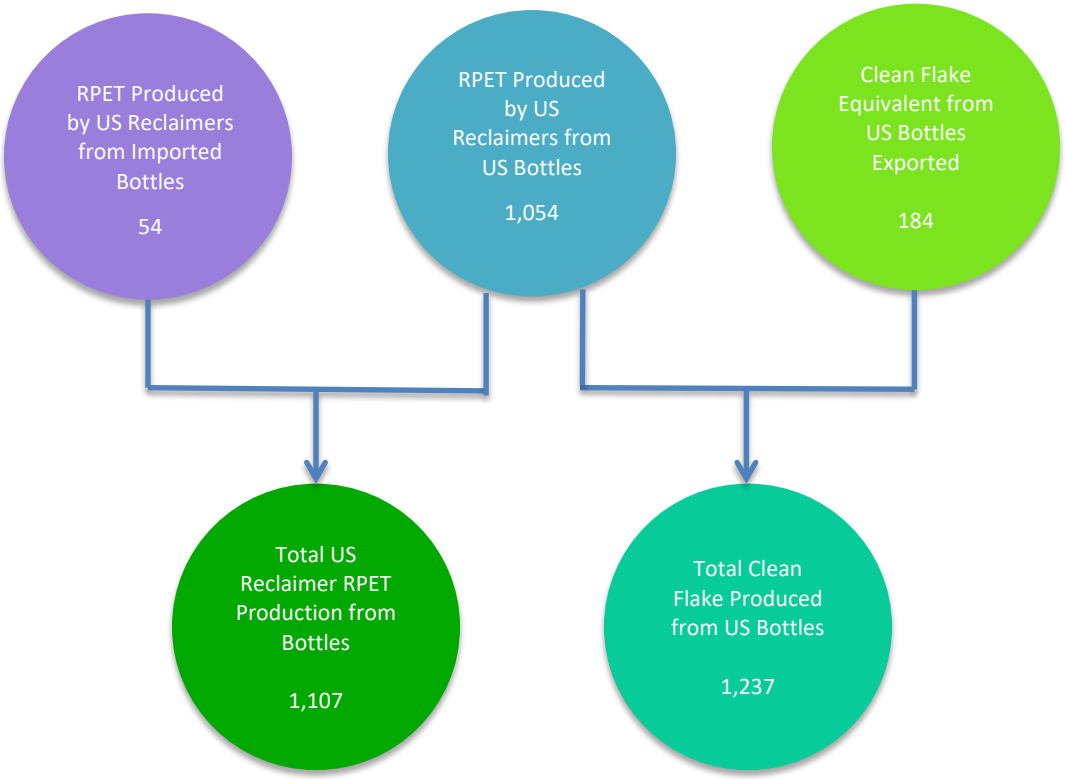
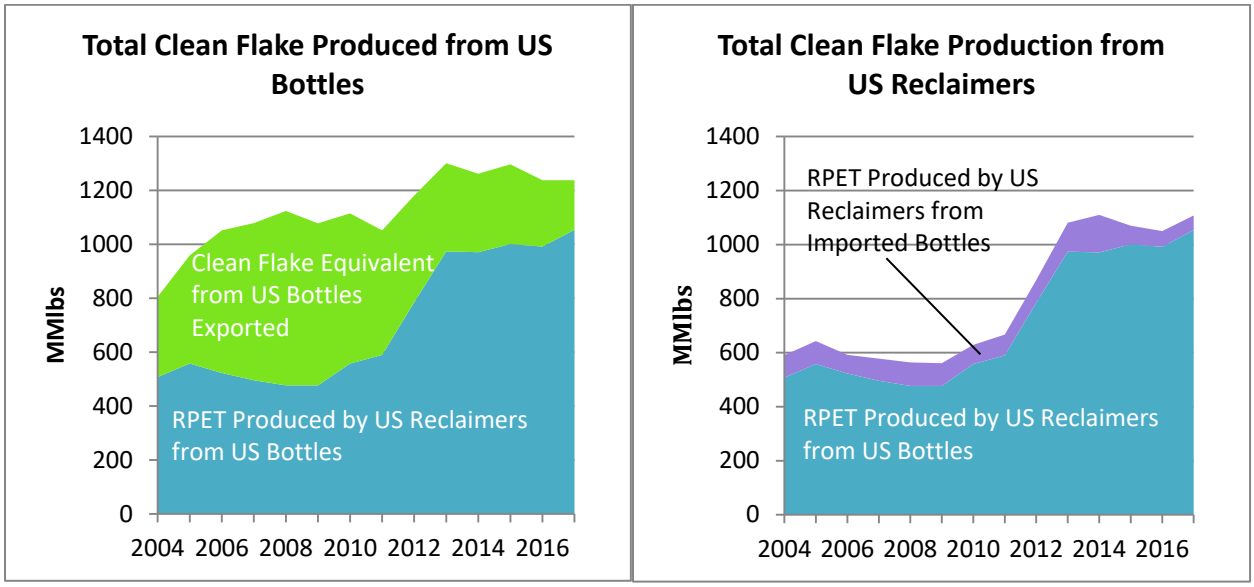


FIGURE 8: Production of PET Flake from Bottles



PET BOTTLE MATERIAL UTILIZATION RATE

Up to this point in the report, discussion has primarily been around the ratio of bottles collected (the numerator) to the volume of bottles available for recycling (the denominator). There is, however, an additional way to conceptualize a rate of PET recycling in the US. Here we introduce the PET bottle material utilization rate, which compares the amount of usable end product (clean flake) produced from US bottles to the volume of bottles available for recycling. The numerator for the PET bottle material utilization rate is determined by adding the amount of clean flake produced by US reclaimers from US bottle material to the amount of clean flake expected to be produced from exported bottles. That sum is then divided by the total volume of PET bottles available for recycling in the US (the same denominator used in calculating the recycling rate in this report). The PET bottle material utilization rate is an expression of material and system efficiency that indicates how much clean flake reclaimers were able to produce from incoming material purchased. It is presented alongside the recycling rate, and accounts for processing waste and other yield loss trends year-over-year (Figure 9).

It is important to note that bottle utilization rate is not a direct reflection of bale yields for a given calendar year for several reasons. First, the report methodology uses survey-derived data of the aggregated amounts of recycled PET bottle material inputs, including both whole bottle bales and dirty flake, at the point of reclaimer purchase for the calendar year. Clean flake production is reported on the basis of flake produced in the calendar year. As a result, the utilization rate could reflect production from materials that were already in inventory as the year began. Second, if reclaimers report

higher proportions of dirty flake purchased in a given year, this too can disproportionally affect the utilization rate since dirty flake material generally contains fewer contaminants than bottle bales.

PET Bottle Material Utilization Rate Calculation

Clean Flake Produced by US Reclaimers from US Bottles = **1,054 MMlbs**

\+

Clean Flake Equivalent of US Bottles Exported, Canada and all other = **184 MMlbs**

=

1,237 MMlbs

÷

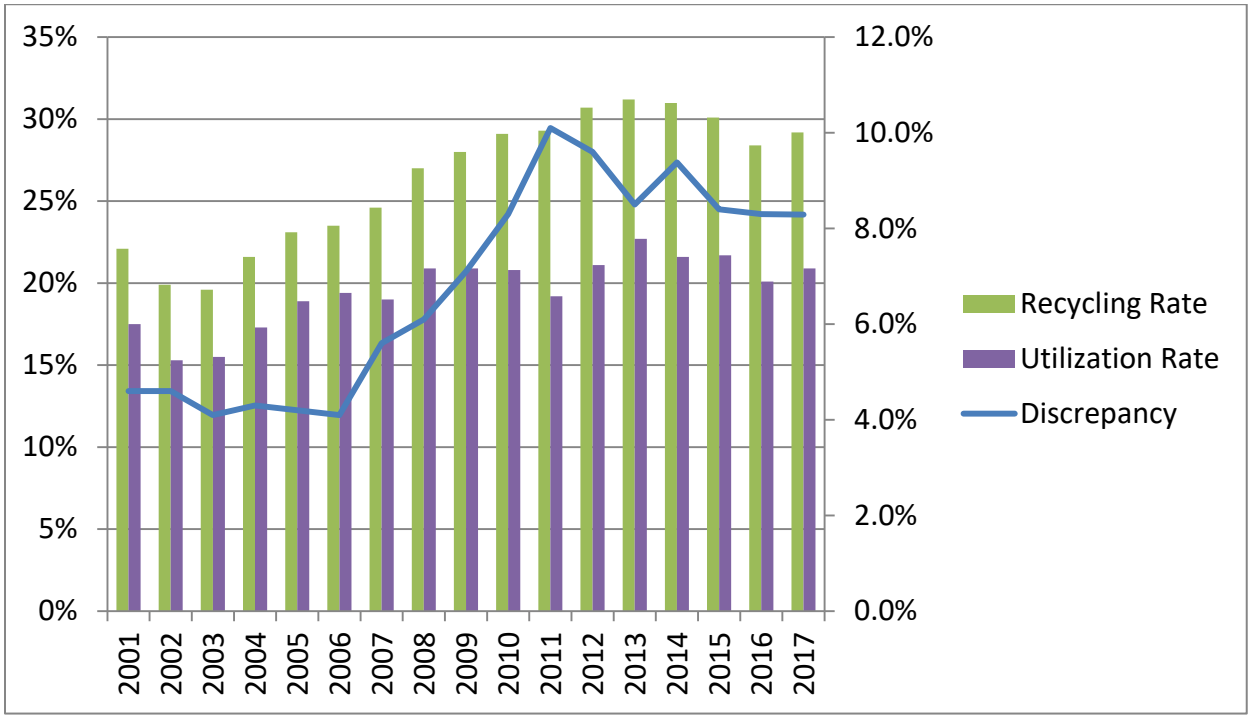
Total US Bottles Available for Recycling = **5,913 MMlbs**

=

20.9%

As diagramed above, after applying estimated production rates to the export fractions purchased, NAPCOR determined that the clean flake equivalent of the 283 million pounds of postconsumer PET bottles exported to all locations was 184 million pounds. Adding this to the total flake produced in the US from US bottles from all collection sources, the resulting PET utilization rate was 20.9 percent, up slightly from the 20.1 percent reported in 2016.

FIGURE 9: PET Recycling & PET Material Utilization Rates



As seen in Figure 9, the discrepancy between the recycling rate and the utilization rate began to increase in 2007. At this time, the gap between the rates widened as the recycling rate continued to increase while the utilization rate stagnated; in other words, the rate of PET collection increased without a corresponding increase in the rate of clean flake production from that PET. The most important factor related to this shift is deteriorating bale quality. The quality standards set by China's National Sword that began taking effect in the second half of the year likely disrupted MRF sorting processes in a complex way, but the end result seems to have been continued low yields for PET reclaimers. For example, efforts on the part of US MRFs to meet Chinese contamination standards have reportedly resulted in more paper ending up in PET bales.

In addition, stagnant utilization rates continue to reflect the prevalence of smaller, lighter containers, which require more processing and related loss per pound of material, as well as ongoing design for recyclability issues creating a greater percentage of less marketable, harder-to-process PET. Design for recyclability concerns include labels that are difficult-to-remove or separate from PET or that block autosort function; barrier layers added to PET to preserve product integrity and extend shelf-life; and metal integrated into PET packages, whether in closures, closure rings, can tops, or pump springs.

Separate from the utilization rate, NAPCOR also calculates United States reclaimers' average production rates by collection source—taking reported clean flake produced from US bottle material in three major collection categories as a percentage of reported incoming material purchased in that category. This is akin to a yield calculation, but should be considered a general indicator only for the same reasons mentioned above. In 2017, the production rate for deposit bottles was 88 percent; for curbside, it was 68 percent; and for California CRV material, 71 percent.

2017 RPET MARKET

Combined end market totals increased by about five percent for a second consecutive year in 2017, with total converter consumption at 1,575 million pounds across all product categories (see Figure 10).[2] This figure includes all material sources, with US and Canadian reclaimers supplying about 1,316 million pounds of flake and pellet produced from all sources of feedstock. The remaining 259 million pounds of recycled PET was imported from reclaimers in countries including Peru, Ecuador, Mexico, Indonesia, Thailand, Honduras, and others. Not counted in these totals, United States and Canadian reclaimers also sold 54 million pounds of PET byproducts to secondary markets.

[2] Since the 2009 report, the RPET end-use data reflected in Figure 10 has reflected RPET consumption by converters in both the US and Canada.

Looking at total use of RPET in specific domestic market segments—both domestically produced and imported—food and beverage bottle usage was significantly down which more than offset a slight increase in non-food bottle usage. The combined total for RPET usage in bottles was 403 million pounds (approximately 30 million pounds lower than 2016). RPET use in the film and sheet category was up by about five percent at 291 million pounds, bringing total use of RPET in all packaging applications to 694 million pounds, down by 18 million pounds as compared to 2016. Both fiber and strapping sectors saw growth, up 14 and four percent, respectively, over 2016. Fiber sector growth is attributable to an increase in both US and Canadian-produced RPET going to fiber markets, but was also driven by a dominant share of RPET imports. There were a number of expansions and also growth from companies producing fiber from RPET that had started up in 2016, and reached increased production levels throughout 2017. US RPET sales to domestic converters totaled 1,107 million pounds, up by 57 million pounds over 2016. Canadian RPET total sales were up to 241 million pounds from 236 in 2016.

FIGURE 10: RPET used by Product Category *(MMlbs)*

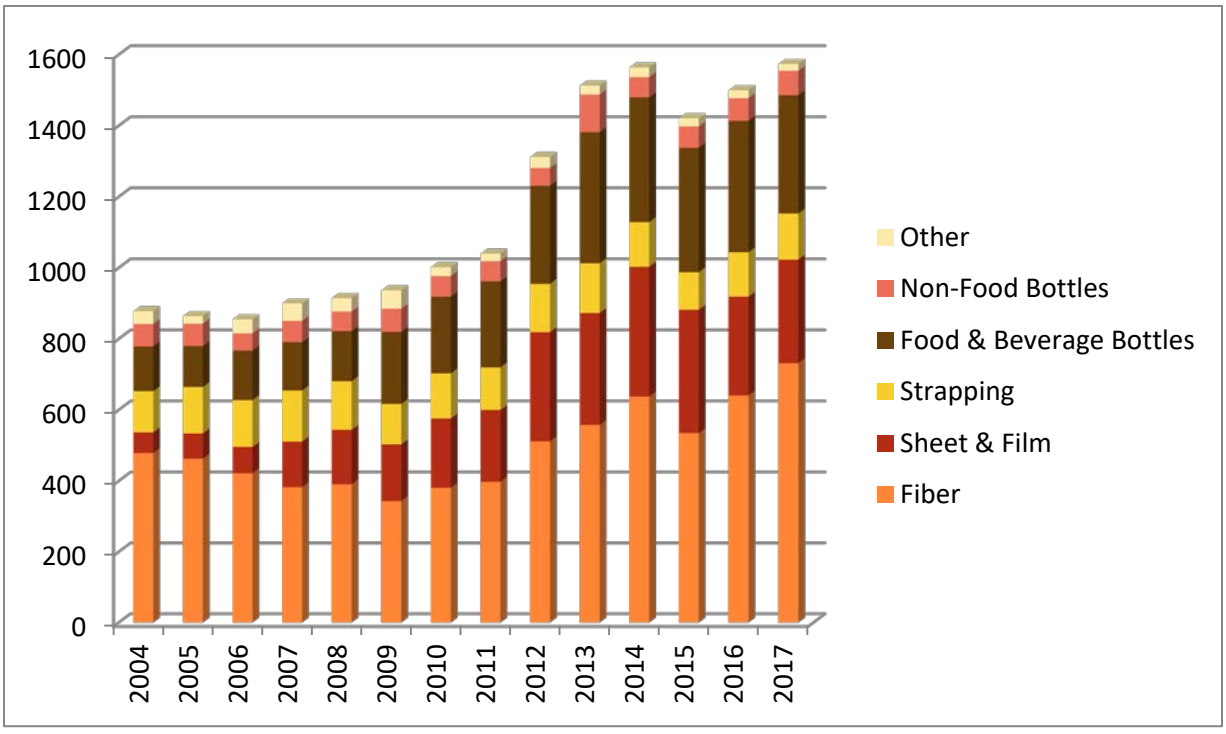
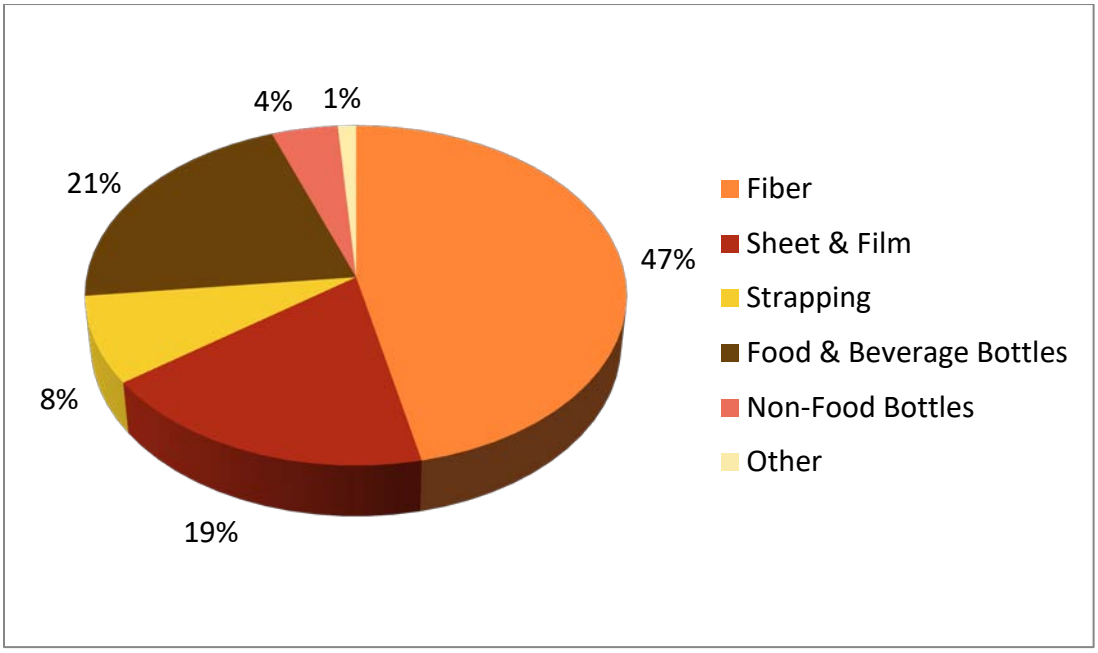


FIGURE 11: RPET used by Product Category in 2017 *(MMlbs)*



2017 YEAR-END SUMMARY

The difficult market conditions for reclaimers seen throughout 2016 carried over into the first two quarters of 2017. Reclaimer margins were squeezed by increased costs of PET bales, resulting from extremely tight supply, coupled with downward pressure on RPET pricing, especially for beverage container applications. Then two totally unforeseen events occurred that shifted the market outlook both near- and long-term. The first was the implementation of China's National Sword policy, which resulted in the curtailing of postconsumer PET bottle bales in 2017, and the elimination of Chinese markets for mixed bottle bales and PET reclaimer byproducts. As a result, more bales were made available to domestic PET reclaimers, which mitigated the tightness of supply. Soon after, M&G Polymers declared bankruptcy, and the resulting closure of PET production capacity boosted virgin pricing. Interest in RPET was immediately revived and with higher prices, reclaimer margins improved. Ultimately, the amount of recycled PET sold into end markets increased by over four percent from 2016.

LOOKING AHEAD

While the markets for RPET and virgin PET are distinct, it is clear that pricing of RPET is influenced by virgin PET. The closure of M&G Polymers, and more precisely the delays in completing their 2.4 billion pound Corpus Christi virgin PET plant means

that the US domestic supply of virgin PET resin will remain tight and therefore prices are expected to remain firm. Imports of PET resin are restrained by various anti-dumping actions and other tariffs, and though the future of these is unclear, the medium-term impact is expected to keep the market tight and therefore prices can be expected to remain high compared to the last several years.

The overall direction for RPET pricing will be to trend directionally with virgin, but certain other factors will have an impact as well. Demand for RPET is expected to remain strong; in early 2018 the Ellen MacArthur Foundation unveiled a growing list of key brands, retailers, and packaging companies that have committed to increasing recycled content in packaging. The increased demand for recycled content from major brands will give RPET additional pricing power moving forward as the content volumes increase, although supply and demand balances will tighten.

In many ways, the implementation of National Sword has tested the resilience of the US curbside recycling industry. At this time of writing, recycling program reductions and eliminations have already occurred. At the MRF, mixed paper revenues have dropped by 90 percent in recent months, meaning that metals and plastics, which make up less than 10 percent of the curbside stream by weight, currently contribute 75 percent of the combined material value. MRF costs have increased to upwards of $100 per ton, while revenue sits at$50 to $60 per ton. The key question will be whether the public sector can continue to support collection programs in this challenging climate.

These threats to the collection infrastructure for PET recycling come at a time when supply is most needed. With ample reclamation capacity and strong demand for recycled PET in a wide range of end market applications, all that is missing is the supply of material. Increasing the supply of material requires further augmenting collection efforts, encouraging recycling-compatible PET container design, and supporting MRF infrastructure retention and investment. Additionally, it continues to be imperative, perhaps more than ever, to educate and promote to the public the numerous benefits of PET recycling.

Appendix A – Color Reference

Used in Material Flow Diagram

- US Bottles Available for Recycling (Denominator)
- Total US Bottles Recycled (Numerator)
- Postconsumer Bottle Imports
- Non-Bottle PET Imports
- US Postconsumer Bottles Purchased by Exporters
- Total Postconsumer Bottles used by US Reclaimers
- Clean Flake Equivalent from Exports
- Clean Flake*
- Canadian RPET
- Other Imported RPET
- RPET Use in Domestic Markets
- Disposal

End Markets

- Fiber
- Sheet & Film
- Strapping
- Food & Beverage Bottles
- Non-Food Bottles
- Other

* This total represents all clean flake sold into end markets by US reclaimers. See figure 7 for detail on total flake produced by US reclaimers from bottles.

Other

- US Postconsumer Bottles Purchased by US Reclaimers
- RPET Produced by US Reclaimers from Imported Bottles
- RPET Produced by US Reclaimers from US Bottles
- Total US Reclaimer RPET Production from Bottles
- Total Clean Flake Produced from US Bottles

Appendix B – Data Tables

TABLE 2: Postconsumer Bottles Recycled / Used by Reclaimers

Gross Weight Purchases (*MMlbs*)

A. Purchased by US Reclaimers

B. Purchased by Exporters*

C. Total US Material Recycled (A+B)

D. Postconsumer Bottle Imports

E. Total Postconsumer Bottles used by US Reclaimers (A+D)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
A.	605	549	580	656	588	599	600	522	520	631	681	619	641	615	642	776	916	1,135	1,329	1,398	1,373	1,374	1,442
B.	170	148	111	89	183	170	234	275	321	372	489	653	755	836	802	781	688	582	469	414	424	379	283
C.	***775***	***697***	***691***	***745***	***771***	***769***	***834***	***797***	***841***	***1,003***	***1,170***	***1,272***	***1,396***	***1,451***	***1,444***	***1,557***	***1,604***	***1,718***	***1,798***	***1,812***	***1,797***	***1,753***	***1,726***
D.	46	87	66	101	60	69	70	57	62	106	109	97	100	98	98	89	106	114	149	177	82	70	61
E.	***651***	***636***	***646***	***757***	***648***	***668***	***670***	***579***	***582***	***737***	***790***	***716***	***741***	***713***	***740***	***865***	***1,022***	***1,249***	***1,478***	***1,575***	***1,455***	***1,444***	***1,503***

* As of 2005, this number includes the amount of PET sold in mixed bottle bale shipments.

TABLE 3: Gross Recycling Rates, 1995 – 2017

Year	Total US Bottles Collected *(MMlbs)*	Bottles on US Shelves *(MMlbs)*	Gross Recycling Rate
1995	775	1,950	39.7%
1996	697	2,198	31.7%
1997	691	2,551	27.1%
1998	745	3,006	24.8%
1999	771	3,250	23,7%
2000	769	3,445	22.3%
2001	834	3,768	22.1%
2002	797	4,007	19.9%
2003	841	4,292	19.6%
2004	1,003	4,637	21.6%
2005	1,170	5,075	23.1%
2006	1,272	5,424	23.5%
2007	1,396	5,683	24.6%
2008	1,451	5,366	27.0%
2009	1,444	5,149	28.0%
2010	1,557	5,350	29.1%
2011	1,604	5,478	29.3%
2012	1,718	5,586	30.8%
2013	1,798	5,764	31.2%
2014	1,812	5,849	31.0%
2015	1,797	5,971	30.1%
2016	1,753	6,172	28.4%
2017	1,726	5,913	29.2%

TABLE 4: East Coast, Non-Deposit PET Bottle Bale Prices – Average High / Low
(Picked Up, Truckload Quantities, Seller's Dock)

2017	*LOW*	*HIGH*
JANUARY	$0.095 / pound	$0.115 / pound
FEBRUARY	0.100	0.120
MARCH	0.100	0.135
APRIL	0.110	0.145
MAY	0.120	0.155
JUNE	0.130	0.165
JULY	0.135	0.165
AUGUST	0.135	0.165
SEPTEMBER	0.135	0.165
OCTOBER	0.130	0.160
NOVEMBER	0.130	0.155
DECEMBER	0.130	0.155

TABLE 5: Production of PET Flake from Bottles in 2015

Recycled PET (RPET) Production Summary (*MMlbs*)

A. RPET Produced by US Reclaimers from US Bottles
B. RPET Produced by US Reclaimers from Imported Bottles
C. Total RPET Production US Reclaimers (A+B)
D. Clean Flake Equivalent from US Bottles Exported
E. Total Clean Flake Produced from US Bottles (A+D)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
A.	496	438	486	513	457	476	476	401	412	505	558	523	496	477	477	558	590	785	974	971	1,001	992	1,054
B.	38	70	55	75	47	51	44	46	49	83	85	69	82	87	84	71	77	84	107	139	69	58	54
C.	***534***	***508***	***541***	***588***	***504***	***527***	***520***	***447***	***461***	***588***	***643***	***592***	***578***	***564***	***561***	***629***	***667***	***869***	***1,081***	***1,110***	***1,070***	***1,050***	***1,107***
D.	153	134	92	75	154	143	184	212	255	298	401	529	583	647	601	557	462	396	327	291	296	246	184
E.	***622***	***572***	***578***	***588***	***611***	***619***	***660***	***613***	***667***	***803***	***959***	***1,052***	***1,079***	***1,124***	***1,078***	***1,115***	***1,052***	***1,181***	***1,301***	***1,262***	***1,297***	***1,238***	***1,237***

TABLE 6: PET Utilization Rate

Year	Clean Flake Equivalent from Bottle Material *(MMlbs)*	Bottles on US Shelves *(MMlbs)*	Utilization Rate
1995	622	1,950	31.9%
1996	572	2,198	26.0%
1997	578	2,551	22.7%
1998	588	3,006	19.6%
1999	611	3,250	18.8%
2000	619	3,445	18.0%
2001	660	3,768	17.5%
2002	613	4,007	15.3%
2003	667	4,292	15.5%
2004	803	4,637	17.3%
2005	959	5,075	18.9%
2006	1,052	5,424	19.4%
2007	1,079	5,683	19.0%
2008	1,124	5,366	20.9%
2009	1,078	5,149	20.9%
2010	1,115	5,350	20.8%
2011	1,052	5,478	19.2%
2012	1,181	5,586	21.1%
2013	1,301	5,764	22.6%
2014	1,262	5,849	21.6%
2015	1,297	5,971	21.7%
2016	1,238	6,172	20.1%
2017	1,237	5,913	20.9%

TABLE 7: RPET used by Product Category *(MMlbs)*

Product Category	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011[1]	2012	2013[2]	2014	2015	2016	2017
Fiber	292	320	415	417	452	435	344	296	479	463	422	383	391	344	381	398	512	558	638	535	642	732
Sheet & Film	69	71	89	68	65	37	18	32	58	71	74	128	153	159	195	202	307	315	365	347	278	291
Strapping	66	58	67	80	101	82	83	77	116	131	132	144	137	114	127	120	136	140	126	106	125	130
Engineered Resin	24	26	30	26	27	24	10	10	12	8	9	11	7	10	9	See Other	See Other	See Other	See Other	See Other	See Other	See Other
Food & Beverage Bottles	24	41	52	68	54	77	86	106	126	115	139	136	141	203	216	242	276	425	351	350	370	333
Non-Food Bottles	71	53	47	50	40	44	43	24	63	63	49	60	55	65	58	57	50	50	57	60	64	69
Other	1	1	7	9	5	2	4	7	24	13	30	38	31	42	16	21	31	25	27	23	22	19
TOTAL CONVERTER CONSUMPTION	**547**	**570**	**707**	**718**	**744**	**701**	**588**	**552**	**878**	**864**	**855**	**900**	**915**	**937**	**1,002**	**1,040**	**1,312**	**1,513**	**1,564**	**1,421**	**1,501**	**1,575**

[1] The Engineered Resins category was folded into "Other" as there was insufficient survey response in this category to meet standard confidentiality guidelines.

[2] The Food & Beverage and Non-Food Bottles converter consumption volume splits for 2013 have been corrected to reflect a data error discovered in 2014. Total converter consumption volume for 2013 was not affected.