



The Association of Postconsumer  
Plastic Recyclers



## **2013 UNITED STATES NATIONAL POST- CONSUMER PLASTICS BOTTLE RECYCLING REPORT**

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### **INTRODUCTION**

The 2013 edition of the United States National Post-Consumer Plastics Bottle Recycling Report is the 24<sup>th</sup> annual report on plastic bottle recycling. This study is a cooperative effort between the Plastics Division of the American Chemistry Council (ACC) and the Association of Postconsumer Plastic Recyclers (APR), the goal of which is to quantify the amount of high density polyethylene (HDPE) and polypropylene (PP) bottles collected for recycling, as well as the rate of recycling of those bottles. This study includes postconsumer recycling values and comments for polyethylene terephthalate (PET) developed by the National Association for PET Container Resources (NAPCOR) and the Association of Postconsumer Plastic Recyclers (APR). The reclaimer survey portion of the study was conducted by the Moore Recycling Associates, Inc.

### **HIGHLIGHTS/SUMMARY FOR 2013**

#### ***Plastic Bottle Pounds Collected for Recycling in the United States***

- The total pounds of plastic bottles collected for recycling reached a record high 2,906 million pounds.
- The total plastic bottle recycling collection rate was 30.9%, an increase of 0.4 percentage points over 2012.
- The total pounds of plastic bottles collected increased by 120 million pounds for 2013 over 2012, with increases for PET and HDPE and PP bottle resins.
- The annual increase in pounds of plastic bottles collected for recycling was 4.3%.
- The five year compounded annual growth rate for plastic bottle recycling was 3.8%.
- PET bottles collected increased by 80.0 million pounds for a total of 1,798 million pounds and recycling collection rate rose from 30.8% in 2012 to 31.2% in 2013.
- HDPE bottles collected rose by 26.2 million pounds to 1045.4 million pounds.

- The HDPE bottle recycling collection rate held steady at 31.6% in 2013 compared to the 2012 rate.
- Exports of United States-collected HDPE bottle material fell to 163 million pounds, 15.6% of domestically collected material with approximately 64% of the exports leaving North America.
- Imports of postconsumer HDPE to the United States increased by 124% to 74.3 million pounds, which combined with increased collection and decreased exports resulted in much larger purchases for United States reclamation plants, up 105.8 million pounds since last year.
- PP bottle recycling collection totaled 62.0 million pounds, an increase of 31.8% over 2012 with 71% of the total processed domestically as deliberate PP material, as opposed to mixed material flake combined with HDPE. While the collection rate rose to 31.8% in 2013 compared to 27.0% in 2012, both the numerator and denominator rose in 2013 compared to 2012.

### ***Plastic Bottle Recycling Overview for 2013***

2013 was a continuation year for postconsumer plastic bottle recycling growth, resulting in a significant increase in collection rate for recycling. The numerator of pounds of all bottles collected rose by 4.3%, beating the three year running average bottle collection growth rate of 4.1% per year. Lightweighting of PET and HDPE bottle continued as has been the case for several years. Some consumer products are being sold in smaller bottles with increased sales. The sales of PET and HDPE for bottles increased over 2012. The total for all bottles in the marketplace increased by 277 million pounds, or 3.0% above the three year running average bottle marketplace growth rate of 1.7%. 2013 was a recovery year from 2012.

Sales of virgin HDPE resin for bottles rose by 1.2% and sales of recycled HDPE resin for bottles rose 12.1%. Sales of virgin PET resin for bottles rose by 0.5% and sales of recycled PET resin for bottles rose substantially.








Recycled HDPE bottle bale prices rose in the first half of 2013 compared to the latter half of 2012, then prices for pigmented HDPE fell in the second half of 2013 while the prices of natural HDPE continued to rise. PET bottle bale prices rose slightly in the first half of 2013 compared to the latter half of 2012 and then PET postconsumer bale prices eased back in the second half of 2013. The average price for baled postconsumer plastic bottles fell in 2013 compared to 2012.

Exports of postconsumer plastic bottle bales fell in 2013 compared to 2012 and reached the lowest percentage of total exports in five years, 20% overall. HDPE exports dropped substantially in 2013 compared to 2012. PET exports continued, dramatically, a decrease in percentage of material collected, which started after the peak in exports in 2008. PET exported bales were the lowest in at least 10 years, percentage-wise. The export of recycled PP bottles rose in 2013 to 15% of that collected, even as more material was processed domestically. An increased amount of PP bottle material was isolated as PP as opposed to being mixed with other resins.

The processing of recycled PET, sourced domestically or imported, increased substantially in 2013 over 2012. The processing of recycled HDPE, sourced domestically and imported, increased by 103 million pounds in 2013 compared to 2012. The processing of recycled PP bottles, sourced domestically and imported, increased by 15 million pounds in 2013 over 2012.

- Bottle resin use per capita increased by 2.3% from 2012 and was a welcome increase after five years of little or no growth. The growth seen before the recession has been replaced by less use and continual lightweighting.
- Bale prices for recycled bottles moved generally up in the first half of 2013 and then fluctuated through the rest of the year, ending generally lower.
- Single stream collection of household recyclables continued to grow, generally resulting in higher overall household participation rates and more challenges from contaminated bales of bottles with bale yields as dismal as in recent years. Tension continued with the attraction of more available material from such collection and more challenging processing requirements. For PET sleeve labels added to the woe of poor bale yields.
- California Container Redemption Value redemption centers collected not only PET, but also HDPE, PP, PVC, LDPE bottles and Other bottles.
- Plastic bottle recycling continues to be an international business with U.S.-based reclaimers competing particularly effectively in 2013.
- Active “all bottle” collection continued the collection of LDPE and PVC bottles, although the tonnage continues to be small. We see a small amount of “#7, Other”, bottles collected, but we do not have data for the denominators of those bottles. The LDPE and PVC bottles were exported as part of mixed bales.

The plastic bottle resins, as identified by their resin identification codes, are:

	Polyethylene Terephthalate, PET
	High Density Polyethylene, HDPE
	Polyvinyl Chloride, PVC
	Low Density Polyethylene, LDPE
	Polypropylene, PP
	Polystyrene, PS
	Other

PET and HDPE bottles continue to comprise over 96% of the United States plastic bottle market with PP at 2.1% of plastic bottles produced followed by LDPE at 0.83% of plastic

bottles and PVC at 0.81% of plastic bottles. Together, PET and HDPE are 97.8% of the bottles recycled with PP bottles constituting 2.1% of plastic bottles recycled. Some PP bottles are included with pigmented HDPE bottles for recycling, about 14% of all PP collected. An allowance, based on buyer reports and bale audits, has been included to account for those PP bottles in this report.

Although bottles made with the #3 through #7 resins are recyclable, and to varying degrees are recycled, the actual level of recycling is limited by the continuing challenge to reach a critical mass of readily recognizable bottles for economical collection and processing. However, it should be noted that bottles made from resins #3 through #7 make up only 3.7% of the plastic bottle market.

Finally, bottles coded with “#7, Other” are included in this report as a discrete category. Bottles coded #7 may include, among others, HDPE or PET or PP resins with barrier layer materials. These bottles are often recycled with the primary resins used in each container. Bottles coded #7 may also be made from resins other than those listed above. No information is available for the denominator for “#7, Other”.

## **Post-Consumer Plastic Bottle Recycling Collection Results**

**Table 1**  
**Post-Consumer Plastics Bottles Recycled in**  
**Calendar Year 2013 Compared to Calendar Year 2012 Results [1,2,3,4,5,6,7]**  
(in millions of pounds per year)

Plastic Bottle Type	Calendar Year 2012			Calendar Year 2013		
	Plastic Recycled [2]	Resin Sales [3,4]	Recycling Rate	Plastic Recycled [2]	Resin Sales [3,4]	Recycling Rate
PET [4]	1717.9	5585.6	30.8%	1798.0	5764	31.2%
HDPE Natural	445.6	1560	28.6%	440.4	1571	28.0%
HDPE Pigmented	573.6	1669	34.4%	605.0	1733	34.9%
<b>Total HDPE Bottles</b>	<b>1019.2</b>	<b>3229</b>	<b>31.6%</b>	<b>1045.4</b>	<b>3304</b>	<b>31.6%</b>
PVC [5]	1.0	75	1.3%	0.4	76	0.5%
LDPE [5]	0.7	77	0.9%	0.3	78	0.4%
PP [6]	47.0	174	27.0%	62.0	195	31.8%
Other [7]	4.3			3.8		
<b>TOTAL BOTTLES</b>	<b>2786</b>	<b>9140</b>	<b>30.5%</b>	<b>2906</b>	<b>9417</b>	<b>30.9%</b>

[1] These data provide a snapshot of plastic bottle recycling collection trends from a national perspective. The data are particularly useful in identifying national trends and highlighting changes that have occurred from year to year, and may be a useful tool for planning purposes. While national data may be useful as a comparison with local waste characterization and recycling data, significant differences will exist from locality to locality, and from state to state. If communities or states are making decisions where precise knowledge of the amount, composition and disposition of MSW is crucial, e.g., where a solid waste management facility is being designed, or for local or state regulatory enforcement, etc., then local characterization of the quantities of individual components generated, recycled and disposed is essential.

[2] Data are based on surveys performed by Moore Recycling Associates, Inc. and include bale composition data provided by Moore Recycling Associates, Inc. and others.

[3] Based on data provided by the American Chemistry Council’s Plastics Industry Producers Statistics Group. HDPE resin sales include both the virgin and recycled plastic pounds used to produce new bottles. Imports from non-ACC members are not included.

[4] Source: Report of Post Consumer PET Container Recycling Activity in 2013, National Association of PET Container Resources, Sonoma, California

[5] The majority of PVC and LDPE recycled were as part of commingled bottle and container bales.

[6] About 82% of PP bottles were deliberately recycled as PP bottles.

[7] Limited data for bottles of other resins are shown. Material sold as part of mixed export bale. No denominator values are available.

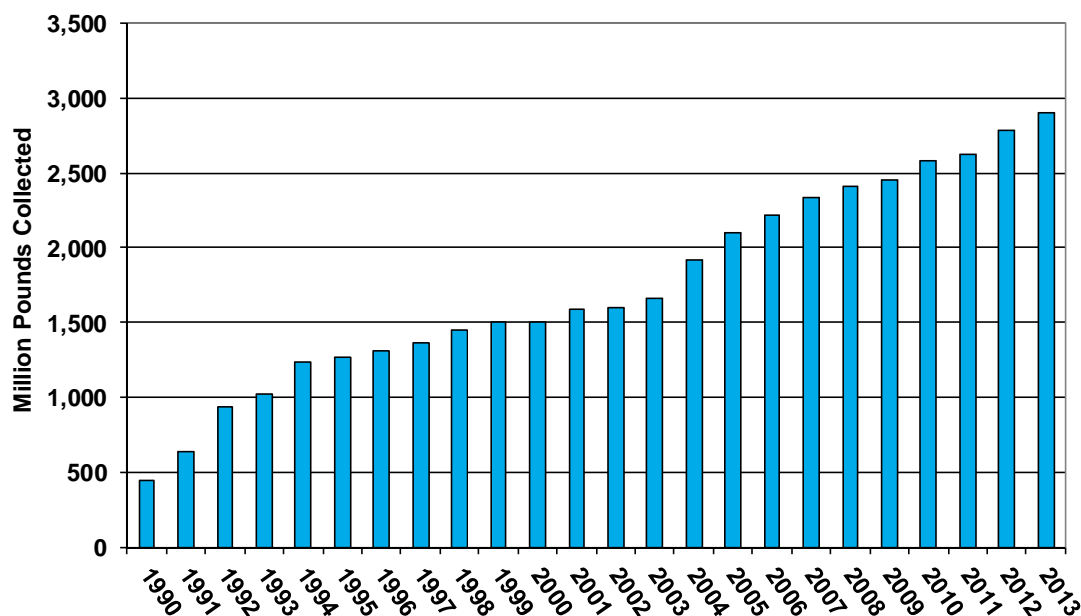
The 2013 PET bottle denominator increased by 178 million pounds to 5,764 million pounds. The 2013 PET bottle numerator, not including thermoforms, grew by 80 million pounds to 1,798 million pounds collected. Many natural homopolymer HDPE milk bottles continue to be pigmented, the usual visual indicator of the use of copolymer, and those bottles become included in the usually pigmented copolymer bottles. The recycled HDPE split between natural HDPE (presumed to all be homopolymer) and pigmented HDPE (usually presumed to be copolymer) was based on buyer estimates. The “Total HDPE Bottles” values in Table 1 are probably more accurate numbers. In comparison with 2012, the 2013 HDPE denominator (bottles in the market place) increased by 75 million pounds, or 2.3%. This was a welcomed change from the last three years. The HDPE numerator (bottles collected for recycling) increased by 26.2 million pounds, or 2.6%. The collection rate for HDPE bottle recycling held steady in 2013 versus 2012 at 31.6% with more pounds recycled. Natural HDPE recycling, as defined, slipped slightly in 2013 versus 2012 while pigmented HDPE recycling increased. Overall, HDPE bottle recycling saw an increase in pounds recycled as the available pounds to be recycled also rose, resulting in a steady collection rate for recycling.

About 0.2% of the total #2 through #7 bottles collected was part of commingled bottles bales, which is down from 2012, showing greater capture of value in the sorting operations. About 0.6% of the total #2 through #7 bottles was from mixed rigids bales. None of the total #2 through #7 bottles was from bales characterized as “other bottle” and known to possibly contain all possible bottles. For high density polyethylene bottles the contribution from commingled bottles bales and mixed rigids was about 2% of the total HDPE bottles collected in 2013. For PP bottles the contribution from commingled bottles bales and mixed rigids was about 4% of the total. For PVC bottles the contribution from commingled bottles bales and mixed rigids was about 100% of the total. For LDPE bottles the contribution from commingled bottles bales and mixed rigids was about 100% of the total.

Domestic processing of postconsumer PP bottles totaled 58.8 million pounds, a 35% increase over 2012 as concerted efforts were made to increase PP postconsumer plastic recycling. The deliberately isolated PP bottles for domestic recycling as PP increased from 34.5 million pounds in 2012 to 44.2 million pounds in 2013. PP recycling collection saw a substantial increase in tons collected and an increase in tons of PP used for bottles, resulting in an increase in the collection rate for recycling to 31.8%.

PP from injection molded closures was recycled, but that amount is not part of this report on bottles. For information on PP from injection molded closures, please refer to Moore Recycling’s Non-Bottle Rigid Plastic Recycling Annual Reports.

**Figure 1**  
**Growth in Post-Consumer Plastic Bottle Recycling**



**SOURCE: NAPCOR, all years, for PET. For other bottle resins, R.W. Beck, Inc., 1990-2006; Moore Recycling Associates, Inc., 2007-2014**

The growth in total pounds of postconsumer bottles collected for recycling continued in 2013. A total of 2,906 million pounds of #1 through #6 plastic bottles are reported as collected for recycling. The change from 2012 was an increase of 120 million pounds of recycled bottles, or an increase of 4.3%. This happened with slight increase in plastic bottles usage and the moderately robust GDP growth of 4.6% for 2013.

### ***Bottle Resin Sales***

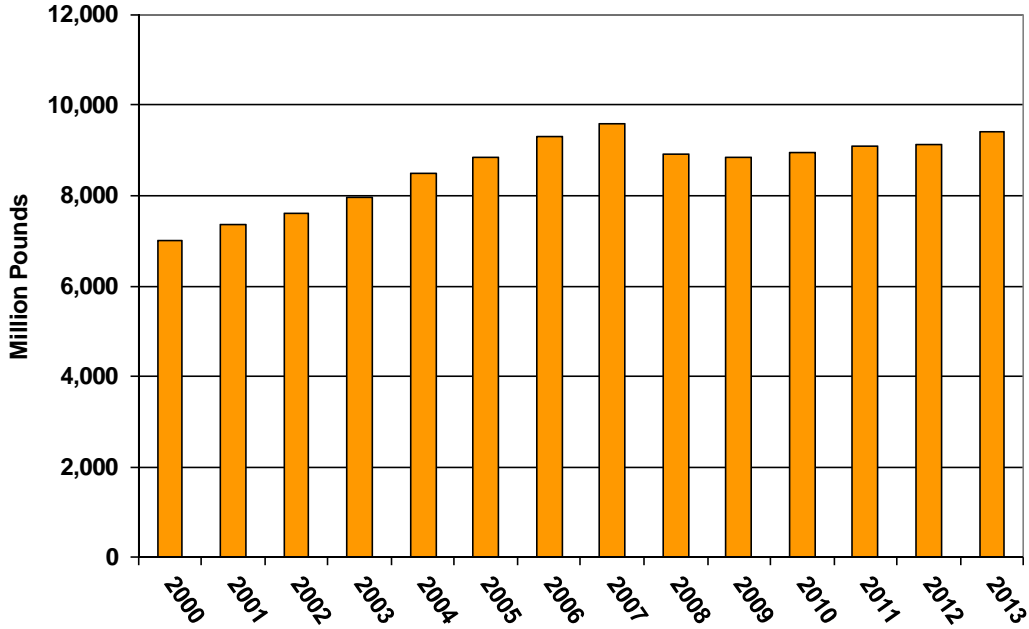
The denominator used to calculate the recycling rate is composed of both virgin resin and recycled resin used for bottle making.

Plastic bottle light-weighting continues for all bottle resins. Many HDPE bottle applications are using product concentrates, which means an increasing number of smaller bottles, or fewer bottles made for the total number of uses, such as laundry loads. Light-weighting helps companies to meet economic and sustainability goals and is a relentless force in bottle making. While lighter bottles are more economically sustainable, recycling is denominated by weight.

The change in total resins used to make bottles was an increase of 277 million pounds, or an increase in bottle production of 3.0%. Use of HDPE to make bottles increased by 75

million pounds, or 2.3%, bettering the amount used in each of the previous three years. Use of PET to make bottles increased by 178 million pounds, or 3.2%. A gain is seen over the last few years for all resins used to make bottles, but not yet to the level of 2007.

**Figure 2  
Resin Used for Plastic Bottles in USA**

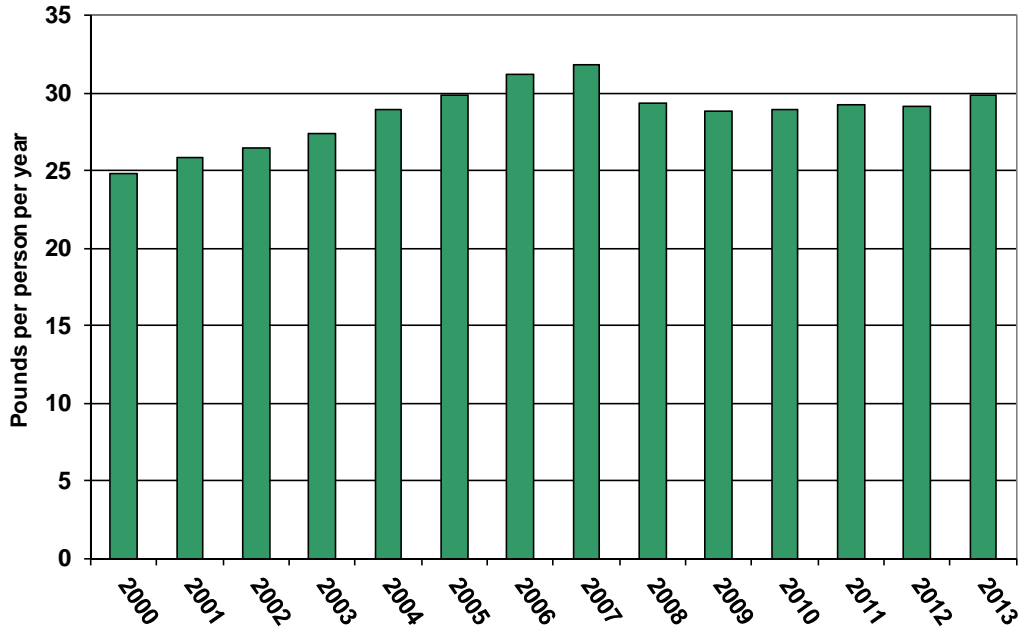


**SOURCE: National Post-Consumer Plastic Bottle Report, 2001-2013**

It is vital for the growth of plastic bottle recycling that bottles be present in the marketplace and consumers place bottles in the proper pathways for recycling to happen. The pounds of material in bottles used by consumers shown in Figure 2 include recycled content. Without available pounds of feed material, plastics recycling may grow in recycling rate, but not in the tons needed for a robust industry. Inability to secure wanted feedstocks has increased reclaimer interest in other resins and non-bottles.

Figure 3 shows the United States per capita consumption for plastic bottles. The per capita consumption of bottle resins, virgin and recycle sourced, in 2013 matched the consumption rate of 2005 and was less than the 2007 peak usage. This chart shows that use of plastic bottles for more applications is offset by the continuing lightweighting and use of product concentrates with smaller, lighter bottles.

**Figure 3**  
**USA Per Capita Consumption of Plastic Bottles**

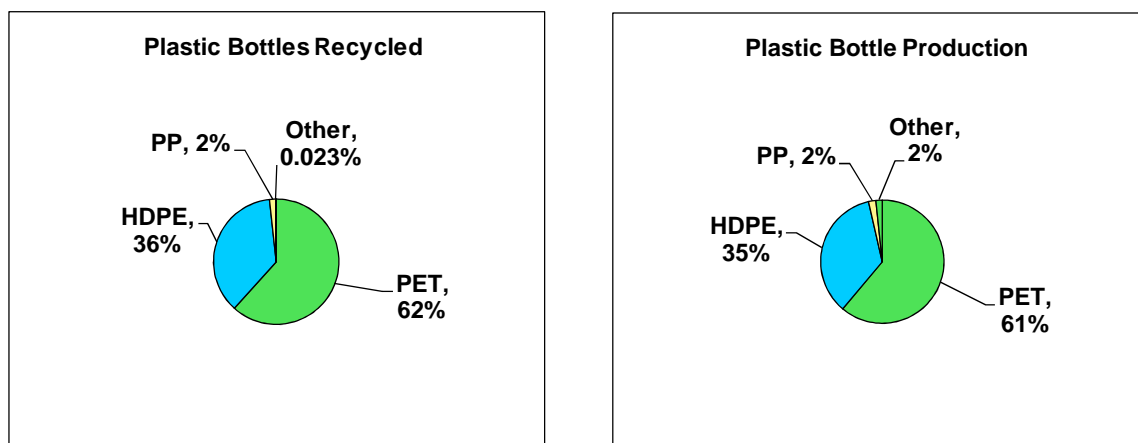


**SOURCE: National Post-Consumer Plastic Bottle Report, 2001-2013; US Census**

PET and HDPE continued to dominate as selected resins to produce plastic bottles: 96.3% by weight of produced bottles were made of PET or HDPE. PET and HDPE bottles also continued to dominate the bottles collected for recycling, collectively being 97.8% and PP being 2.1%.



**Figure 4**  
**2013 Plastic Bottles Recycled and Plastic Bottle Production by Resin**



Source: Moore Recycling Associates, Inc. 2014  
 NAPCOR, 2014

### ***Barriers to Increased Plastic Bottle Recycling***

As noted for 2005 through 2012, too many consumers continue to be unaware of the significant usefulness, demand, and value of recycled plastic HDPE and PET and PP. Data and experience show that plastic bottle recycling can be increased through sustained local education campaigns. Municipalities also need to understand that they too can benefit from the prices being paid for bales of bottles, including revenue sharing to fund educational programs and other costs of collection.

Another barrier to increased recycling is lack of sufficient convenient access to recycling collection opportunities for products used away from home. Consumers continue to want additional opportunities to be able to recycle at public venues, offices, recreational sites, schools, and retail establishments.

With three driving influences: the increase in single stream collection of recyclables at household residences, the increased interest to collect more than bottles, and reduced export material, the quality of available postconsumer bottle material to U.S. reclaimers held steady for HDPE. For PET with an increasing variety of packaging applications, the quality of bales as reflected by bale yields, continued to slip. Use of the APR Design™ Guide can help reduce economic and technical barriers to plastic bottle recycling.

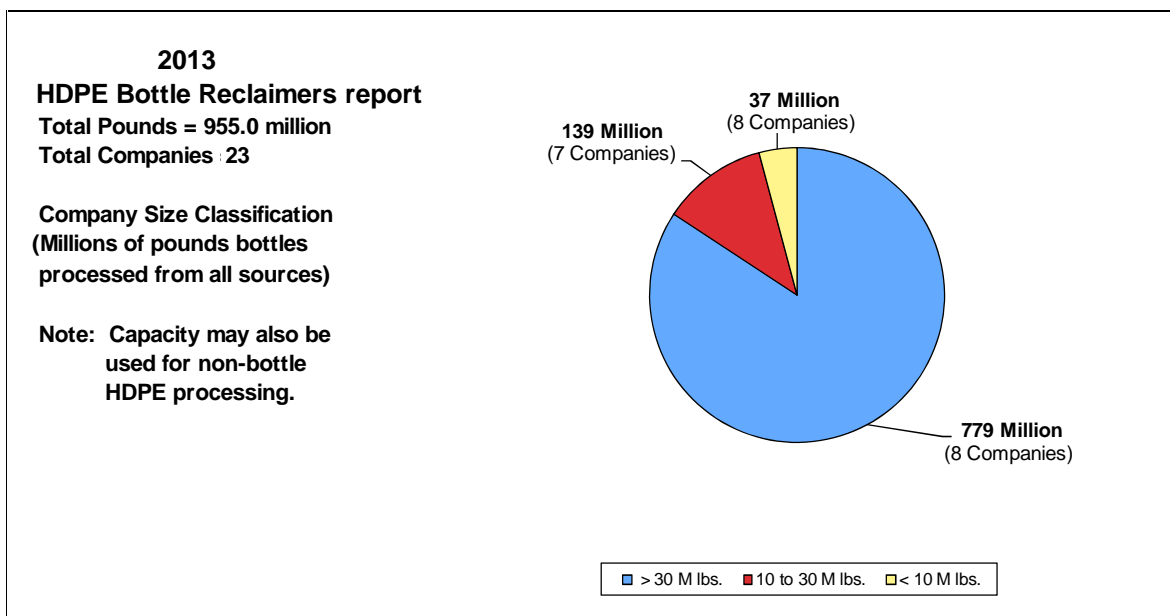
### ***HDPE Reclamation Industry Update – Reclaimers’ reporting***

- The number of HDPE reclaimers increased slightly in 2013 as compared to 2012 with 23 companies active at year’s end. The number of smaller companies may vary year-to-year as industrial scrap companies change their business plans and start-ups and acquisitions continue.
- The amount of HDPE reported processed by the survey of United States HDPE reclaimers rose by 108 million pounds to 955 million pounds. This is an all-time

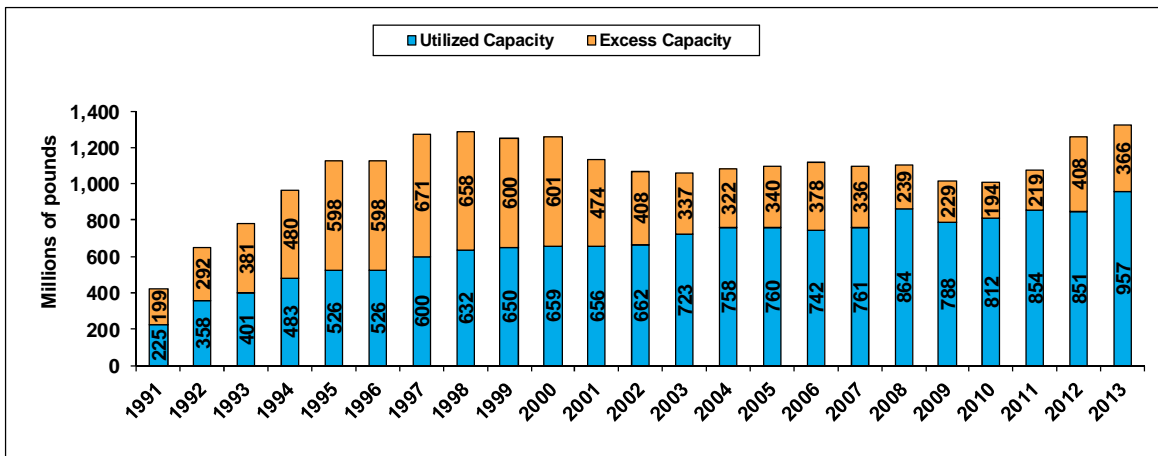
high. While HDPE recycled bottle domestic collection increased compared to 2012, exports decreased and imports increased to account for the amount of HDPE bottles processed.

- The largest companies, processing over 30 million pounds annually, processed 82% of the HDPE processed with a net increase in the pounds processed and totaled eight in number.
- The mid-sized companies were increased by two in number and amount processed in 2013 increased compared to 2012. Small companies decreased in number, but increased slightly the amount processed compared to 2012.

**Figure 5**  
**Size Comparison of Domestic Reclaimers of HDPE Bottles**



**Figure 6**  
**HDPE Bottle Wash Capacity in the U.S.**



The figures shown above are estimates and should not be used for business planning purposes. Utilized capacity includes postconsumer material quantities processed domestically only. Capacity is based on 24 hours per day and 365 days per year.

The capacity utilization is shown for the given conditions of hours worked. The capacity utilization, as calculated, rose to 72% for 2013 as compared to 68% in 2012. Production capacity was added and more production was done with a net improvement in utilization. The HDPE reclaimers continue to use assets to process non-bottle HDPE containers and PP. The total utilized capacity rose in 2013 to 957 million pounds, compared to 851 million pounds in 2012. The overall industry capacity, as calculated, increased to 1,323 million pounds of HDPE postconsumer reclamation capacity.

As reported, PET reclamation capacity utilization was about 72%, up from 63% in 2012.

### **Export and Import Markets**

Postconsumer bottles are a valuable commodity and are traded globally. Buying of United States postconsumer bottles for export continued in 2013. Postconsumer plastic was exported out of the United States as bales of PET, PP, and HDPE bottles; bales of commingled bottles and containers; mixed rigid container bales; and unwashed flake material. A total of 20.4% of collected plastic bottle material of all types was exported in 2013 compared to 28.4% in 2012.

For United States-collected HDPE bottle material, 163 million pounds were exported; representing 15.6% of the total bottle material collected domestically, a decrease of 38 million pounds since 2012. Of those exported pounds, 36% went to Canada. The trade in bales is not one-sided. United States HDPE reclaimers imported 74 million pounds in 2013, up from 33 million pounds of postconsumer HDPE bales imported in 2012. The

imported pounds of PCR are not included in the totals of pounds collected in the United States and are not part of the totals on Table 1.

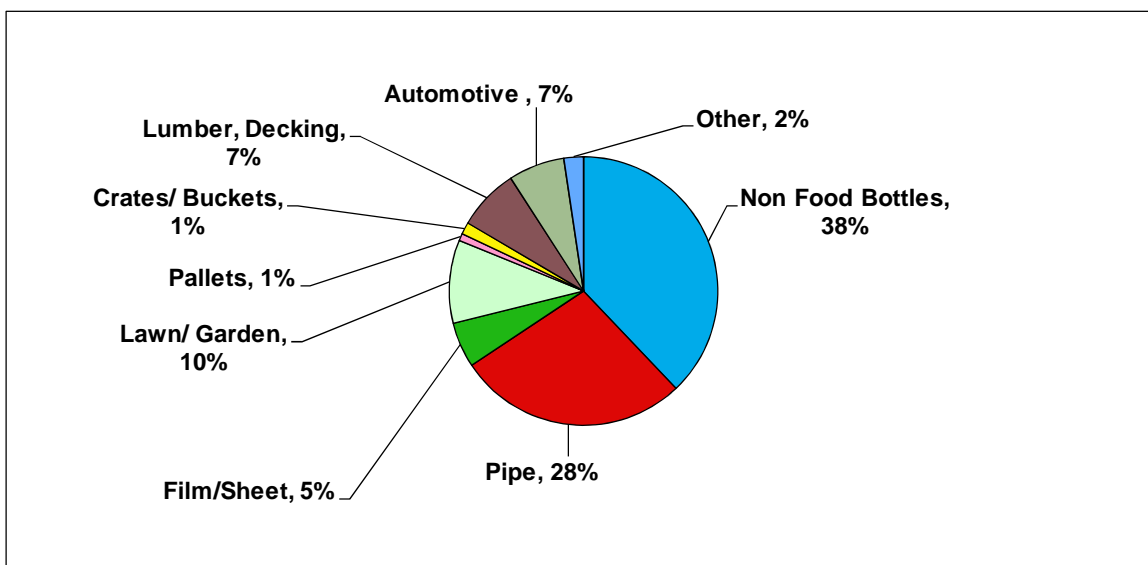
2013 PET exports totaled 23.4% of the total PET bottles collected with most exports going to China. This percentage is significantly less than the experience in 2012, when 33.9% of the collected PET was exported. The Chinese “Green Fence” initiative slowed imports of postconsumer baled bottles in the year. The exports for PP bottles rose in 2013 from 6.1 in 2012 to 9.3 million pounds, most as deliberately separated bottles. The PP exports rose from 13% in 2012 to 15% in 2013 for bottle material. 54% of PVC bottles were exported, a total of 0.2 million pounds. 72% of LDPE bottles were exported, a total of 0.2 million pounds.

### ***End Use Markets for Recycled Plastics***

Per a survey of postconsumer reclaimers:

- Natural HDPE postconsumer recycled resin’s primary markets continued to be for non-food application bottles, such as for detergent, motor oil, household cleaners, etc.
- Pigmented HDPE postconsumer recycled resin’s markets continued to include pipe and plastic lumber, decking, railroad ties, and non-food application bottles.
- Plastic lumber continued to consume a broad range of materials including recycled HDPE, LDPE, mixed rigid containers, and wide-spec virgin resin.
- PET postconsumer resin retained its traditional markets for fiber, film and sheet, and food bottles. Use into fiber, sheet & film, and food and non-food bottles rose significantly in 2013.
- PP postconsumer bottles in 2013 were used for pallets, buckets, crates, plastic lumber, decking, and railroad ties.

**Figure 7**  
**Domestic Recycled HDPE Bottle End Use**  
**2013**



There was little relative change in the recycled postconsumer HDPE end use markets in 2013 over 2012, with new bottles the major use. Pipe applications usage slipped in 2013 to tonnage levels seen in 2010 and 2011. The tons of postconsumer HDPE for lawn/garden, film/sheet, and automotive uses rose. The tons for lumber and railroad ties slipped compared to 2012. End use markets and usage of material in those markets are as reported by a survey of reclaimers.

The reported yield of post-consumer HDPE bottles to clean product ranged from low-70% to mid-90 %, depending on raw material and end use. The average of reported yield values of bales to clean HDPE pellets in 2013 was 81.4%, comparing to 81.3% in 2012 and 81.0% long term. Many reclaimers are reporting that they implemented a Zero Waste program, leading to increased use of purchased materials and higher reported yields. For PET, the bale yields varied from mid- 60 % to mid-70 %, depending on source of bottles. The yield situation is different for recycling HDPE and PET bottles. For PET bottles, the labels are not recovered as PET while for HDPE bottles labels may be recovered as HDPE. Contamination in bales of HDPE bottles and PET bottles presented an ongoing challenge to reclaimers.

### ***Economic Impact***

The estimated value of purchased bales of postconsumer bottles of PET and HDPE in 2013 was approximately \$618 million dollars.

### ***Additional Information***

ACC's Plastics Division represents the leading U.S. manufacturers of plastic resins. ACC offers resources to communities that wish to increase postconsumer plastic collection, including some targeted specifically at bottles and rigid plastics, as well as others focusing on plastic films, bags and wraps, and applications such as mattresses that are outside the scope of this Report. Details on the highly successful All Plastic Bottle collection programs can be found at [www.allplasticbottles.org](http://www.allplasticbottles.org). A database for the recycling of clean plastic film and grocery/retail bags is provided at [www.plasticfilmrecycling.org](http://www.plasticfilmrecycling.org). Additional resources on plastic recycling can be found at [www.recycleyourplastics.org](http://www.recycleyourplastics.org).

APR offers resources at its website, [www.plasticsrecycling.org](http://www.plasticsrecycling.org), including lists of buyers and sellers of recycled plastic, market development workshop information, the Kids Zone for educating and involving children in plastics recycling, and technical resource documents to aid in designing recyclable packaging. APR announces at its website upcoming webinars and workshops to help local recycling coordinators achieve better plastic recycling results. The APR Design™ Guide, offered by APR for over 16 years, help packaging designers avoid poor materials selections that reduce the recyclability of plastic packages. The guideline document is available at <http://plasticsrecycling.org/technical-resources/design-for-recyclability-guidelines>.

Moore Recycling Associates Inc., supported by ACC, APR, J store front, and Resource Recycling, manages [www.plasticsmarkets.org](http://www.plasticsmarkets.org), a database of buyers and sellers of recycled

plastic, open to all market participants. The website also provides other useful information, such as historical scrap prices and guidance for handling and bailing guidelines.

The Association of Postconsumer Plastic Recyclers, with support provided from the plastics industry through the American Chemistry Council, conducted programs for municipal recycling coordinators to educate them on the existing markets for baled bottles, the strong demand for goods, quality considerations, and suggestions for householder education.

NAPCOR provides additional information about PET at its website, [www.NAPCOR.com](http://www.NAPCOR.com).

### **Legal Notice**

The 2013 United States National Post Consumer Plastics Bottle Recycling Report has been prepared to provide helpful ideas and information for parties interested in recycling plastics. Facilities developing a recycling process and all entities involved in the chain of collection, processing, distribution, and sale of recycled products have an independent obligation to ascertain that their plans, actions, and practices meet all relevant laws and represent sound business practices for their particular operations. Facilities may vary their approach with respect to particular operations, products, or locations based on specific factual circumstances, the practicality and effectiveness of particular actions and economic and technological feasibilities. This report is not designed or intended to define or create legal rights or obligations. Although the information contained in this document has been produced and processed from sources believed to be reliable, no warranty expressed or implied is made regarding the accuracy, adequacy, completeness, legality, reliability or usefulness of any information, and this information is provided on an "as is" basis. **NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.** Neither ACC nor APR assumes any liability of any kind whatsoever resulting from the use of or reliance upon any information, conclusions, or options contained herein.

The Association of Postconsumer Plastic Recyclers and the Plastics Division of the American Chemistry Council produced this report.

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