Report on PET Water Bottle Recycling in 2013

An Addendum to the Report on Postconsumer PET Container Recycling Activity in 2013

Prepared for the **International Bottled Water Association**

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BACKGROUND:

This is the tenth year that NAPCOR has compiled a report for the International Bottled Water Association (IBWA) specifically on the recycling of water bottles in the United States. This report complements the publicly issued *Report on Postconsumer PET Container Recycling Activity in 2013* and is supported by data compiled during a bale composition study sponsored by the IBWA and the American Beverage Association (ABA). The contents of the report are considered proprietary to NAPCOR, the IBWA, and their respective members, and will remain so unless a joint decision is made to release any or all of the findings for general distribution.

SUMMARY:

For the purposes of this report, PET water bottles are defined as those that contain still water (including vitamin water) from 8 ounces up to, and including, 6 gallons in size. Data on sparkling waters and the Propel brand of energy water are not included.

It was determined that, in 2013, there were 1,326.84 million pounds (MMlbs) of PET water bottles available for recycling in the United States, including imports, an increase of 2.6% over 2012. This represents, by weight, 23% of all the PET bottles available for recycling, which remains consistent with 2012. Of the water bottle total, 496.63 MMlbs were recovered for recycling and sold to domestic reclaimers or exporters, resulting in a gross water bottle recycling rate for 2013 of 37.4%.[1] This is a slight decrease from the 2012 rate of 38%.

RESEARCH, DATA AND METHODOLOGY:

The results of this analysis are based on a number of sources: data obtained during the production of the *Report on Postconsumer PET Container Recycling Activity in 2013*; industry data provided by IBWA; the results of bale composition analyses performed in late September of 2013; state recycling reports; and interviews with those involved in the PET recycling industry, including NAPCOR members.

The calculation to determine the total aggregated weight of PET water bottles available for recycling—the recycling rate denominator—is largely based on the comprehensive retail sales data compiled for IBWA by Beverage Marketing Corporation, including both domestic sales and imports. This data indicates that sales of bottled water, measured in gallons, were up from 2012 and reflected market share gains for water packaged in PET in all pack size categories, with the 16-ounce category remaining the dominant pack size by market share. While sales volumes by gallon were up overall in 2013, the amount of PET resin used per gallon of water continues to inch downward and

[1] 2012 "Water Bottles Recovered" and "Recycling Rate" values have been adjusted to reflect corrected data; previous values for recovery, 492.13 million pounds, and for water bottle rate, 38.04% (Table 4).

was calculated at .195 for 2013. Previous year's calculations estimated PET resin required per gallon at 0.200 for 2012, 0.217 in 2011, and 0.225 in 2010.

This PET resin-per-gallon calculation is determined by using the per gallon sales by container size category, share of market data, as well as annual data that NAPCOR maintains on PET bottle weights by brand, size, and package type. Through these calculations, it was determined that 1,326.84 million pounds (MMlbs) of PET water bottles, sized variously from 8 ounces to 6 gallons, were available for recycling in the U.S. in 2013. Imports are included in this total, and accounted for 12.25 MMlbs, with the balance produced domestically.

A total of 1,798 million pounds of postconsumer PET bottles, of all types, were purchased by reclaimers and exporters for recycling in 2013.[2] In order to calculate how much of this total was comprised of PET water bottles—the recycling rate numerator—composition analyses were conducted on PET bottle bales from locations around the country, reflecting both where the vast majority of PET bottles are collected and all major collection systems.[3] Non-enhanced water bottles were sorted separately from vitamin water and then classified into two size groupings, "less than one liter" and "one liter and greater," and into four color categories: 1) clear, 2) green/light blue, 3) other color, and 4) full-wrap label. The vitamin water bottles were given a separate category due to their rapid growth and the fact that the bottles are so much heavier than other water bottles. These heavier bottles were factored in when calculating average bottle weights by size category. All still water products were included, except Propel, which was counted in the "other" beverage category and not measured as part of

TABLE 1

Collection Method Detail	Percentage of Total Water Bottles Recovered by Collection Method 2013 **
Curbside / Drop-off	**53.3%**
California CRV All non-alcoholic beverages except milk; beer, malt liquors, wine coolers	**29.4%**
Standard Deposit (IA) CSD, beer, mineral water (not still), wine coolers, wine and liquor *also represents: MA, MI, VT**	**0.3%**
Expanded Deposit (NY) CSD, water, beer, malt liquors *also represents: CT, OR**	**15.7%**
Expanded Deposit (ME) All beverages, except dairy products, unprocessed cider *also represents: HI**	**1.3%**
* for purposes of this report only	
** Based on volume splits as detailed in Table 3	

[2] NAPCOR Report on Postconsumer PET Container Recycling Activity in 2013, http://www.napcor.com/PET/pet_reports.html

[3] 2013 Post Consumer PET Bottle Bale Composition Analysis as prepared for IBWA, ABA (February 2014)

this report. Sparkling waters are included in the carbonated soft drink (CSD) bottle category, and thus are not included in this report either.

Tables 2 and 3 below summarize the water bottle composition data calculated from the studies performed for 2013. In most cases, the bales that were analyzed came from the same locations analyzed in previous years. There are six major collection methods: Curbside, Drop-off, California CRV, Standard Deposit (IA, MA, VT, MI), Expanded Deposit (ME, HI), and Expanded Deposit (CT, NY, OR). The second Expanded Deposit category was added in 2010 because Connecticut, Oregon and New York added "water" to their deposit laws in 2009. We analyzed a New York bale this year to represent this category, whereas a Connecticut bale was used in 2012. The composition of these bales fluctuates by year and region, so every effort will be made to sort material from an additional bale from this collection category in 2014 and beyond. For 2013 and in recent years, data from one representative state was used for each of the three deposit categories; although the laws vary slightly by state in terms of package-type inclusions, they are broadly similar (see Table 1). Because California CRV represents a relatively large share of PET collection volumes, two CRV bales were analyzed, and it is anticipated that this will continue in 2014 and beyond.

TABLE 2 - 2013 Bale Composition
by Container Category & Collection Method

	Percent by Weight					
Container Type	**Drop-off**	**Curbside**	**Deposit (IA)**	**CRV**	**Expanded Deposit (ME)**	**Expanded Deposit (CT)**
Soft Drink (CSD)	30.4%	22.09%	98.51%	22.98%	21.09%	42.51%
Juice	16.80%	16.11%	0.06%	13.35%	27.26%	0.00%
Water	15.91%	21.15%	.32%	32.41%	25.93%	54.15%
Vitamin Water	1.61%	2.28%	.04%	3.21%	3.72%	3.18%
Other Beverage	17.81%	19.95%	.29%	21.19%	16.42%	0.16%
Beer/Wine	0.05%	0.19%	0.33%	0.08%	0.16%	0.00%
Milk, Liquor, Mixers	1.72%	2.24%	0.27%	1.09%	5.43%	0.00%
Food	9.52%	9.54%	0.16%	3.50%	0.00%	0.00%
Non-Food	6.57%	6.46%	0.00%	2.19%	0.00%	0.00%

TABLE 3 – Type of Bottles Recovered by Collection Method, 2013 *(in MMlbs)*

Collection Method	Total PET Recovered *(MMlbs)*	Vitamin Water Recovered *(MMlbs)*	Non-enhanced Water Bottles Recovered *(MMlbs)*	Total Water Bottles Recovered *(MMlbs)*
Curbside	1087.12	24.79	229.91	254.70
Drop-off	57.22	0.92	9.10	10.02
Standard Deposit (IA, MA, VT, MI)	85.60	0.04	1.33	1.36
CA CRV – Buy Back	409.84	13.14	132.83	145.97
Expanded Deposit (ME, HI)	21.50	0.80	5.58	6.37
Expanded Deposit (CT, NY, OR)	136.40	4.33	73.86	78.20
Totals	**1,797.67**	**44.02**	**452.61**	**496.63**

Taking the percentages by category for water (non-enhanced) and vitamin water, and applying them to each collection channel, then combining the vitamin and the non-enhanced water categories, results in a total of 496.63 MMlbs of water bottles collected for recycling in 2013.

TABLE 4 – Water and PET Bottle Recycling Rates

Year	Water Bottles Recovered *(MMlbs)*	Water Bottles Available *(MMlbs)*	Water Bottle Recycling Rate	PET Bottle Recycling Rate
2004	177.53	1,067.6	16.62%	21.6%
2005	249.96	1,253.4	19.94%	23.1%
2006	296.81	1,476.7	20.10%	23.5%
2007	366.89	1,567.03	23.41%	24.6%
2008	419.09	1,358.20	30.90%	27.0%
2009	402.80	1,298.48	31.02%	28.0%
2010	410.78	1,273.69	32.25%	29.1%
2011	499.98	1,293.83	38.64%	29.3%
2012[4]	492.98	1,293.62	38.11%	30.8%
2013	496.63	1,326.84	37.43%	31.2%

[4] 2012 "Water Bottles Recovered" and "Recycling Rate" values have been adjusted to reflect corrected data; previous values for recovery, 492.13 million pounds, and for water bottle rate, 38.04%.

OBSERVATIONS:

This is the fourth straight year of increases in bottled water sales, with total gallons sold up by five percent across all packaging material types between 2012 and 2013, and total gallons sold in plastic containers up by six percent. While not all water is packaged in PET, PET remains the predominant resin in the market-dominant package sizes. The estimated PET resin volume used to package water and thereby available for recycling—the denominator calculation as detailed in "Methodology" above—increased by an estimated 2.6% over 2012. The disparity between the relative increases in year-over-year gallon sales and PET resin usage reflects continued PET container lightweighting across all package sizes, as well as the ongoing market dominance of the lightweight 16-ounce single-serve water bottle category. Reduced package weights affect both the amount of PET resin required in the production of packages introduced into the marketplace, as well as the number of water bottles that must be collected to maintain or increase total collection volumes by weight. The total volume of recycled water bottles collected did increase between 2012 and 2013, by an estimated three quarters of one percent, by weight, however with a relatively higher denominator increase, the estimated water bottle recycling rate was down slightly in 2013.

The total increase in water bottles collected, by weight, was not reflected in the relative bale composition across all collection categories. While water bottles comprised an increased share of the **Expanded Deposit (New York)** bale at 57 percent by weight, up from 37 percent in the 2012 Connecticut bale that represented this collection category, they were flat to down in other categories: just under six percent lower in the **Expanded Deposit (Maine)** bale, just over six percent lower in **California CRV**; and relatively flat in **Curbside** and **Standard Deposit (Iowa).** However, despite some declines in relative water bottle share of total bale weight, **Curbside** and **California CRV** continue to be the prevalent collection categories for water bottles, accounting for over 80 percent of domestic water bottle collection volume in 2013, with 53 percent from combined Curbside and Drop-Off categories, and 29 percent from California CRV (Table 1). Total water bottle weight in Curbside collection was up slightly in 2013, with almost 255 million pounds of bottles estimated collected as compared to 254 million in 2012. For California CRV, total water bottles collected, by weight, decreased in 2013 to 146 million pounds, down from nearly 167 million in 2012. Looking only at the total weight of **Vitamin Water** across bales in all collection categories, it remained very consistent over 2012, with less than a one percent change in all categories except California CRV, in which it was down by 1.63 percent.

In terms of general market trends looking forward, the water bottle category has grown again in 2014, according to industry reports, and appears poised for additional growth in 2015. While it's assumed that lightweighting is tapering off, or soon will be, changes to specific components, such as bottle necks, continue to allow for slight weight reductions. Also, as regional plants are upgraded to enable production of lighter PET bottles at the required speeds and quality, these bottles replace heavier versions in the

marketplace. When these factors are combined with the market dominance of the lightweight single-serve packaging category, all contribute to a continued cumulative reduction in the total weight of water bottles being introduced into the marketplace and collected for recycling. It should be reiterated that not only does this make it probable that the total pounds of PET water bottle resin required will continue to increase at a relatively slower rate than market growth in total gallons of water sold, it also means that more bottles will need to be collected to move the needle on the recycling rate, or even to maintain the current rate. Lower bottle weights mean more bottles required per pound, but also that bottles are more easily misdirected in the Materials Recovery Facility (MRF) sorting process.

In terms of demand for recycled PET material and use of this material back into packaging applications, 2013 saw the largest volumes of recycled material going back into bottles to date with 369 million pounds of recycled PET being used in food and beverage bottles, and 106 million pounds used in non-food bottle applications. Demand remains strong with good domestic PET processing capacity, however at this writing, there are no new initiatives pending that are expected to drive significant changes in PET water bottle collections.