

# Water, Water Everywhere:

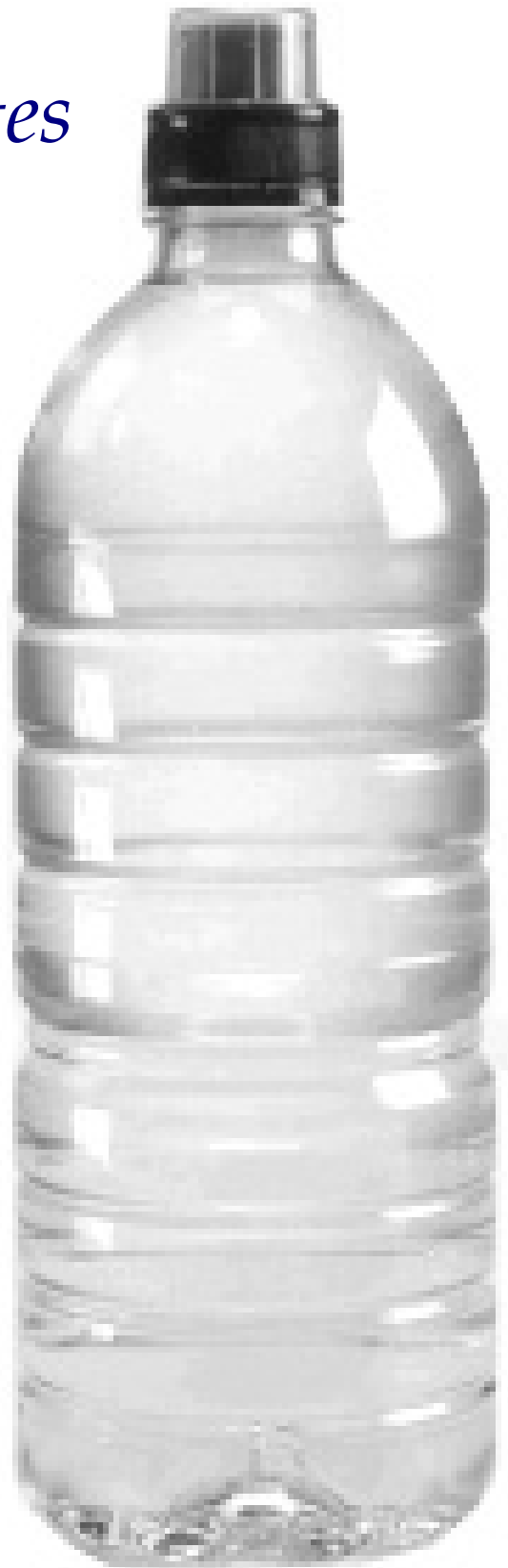
## *The growth of non-carbonated beverages in the United States*

by Jennifer Gitlitz and Pat Franklin

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# Water, Water Everywhere: The growth of non-carbonated beverages in the U.S.

**Beverage spending on the rise:** American consumers spent more than \$270 billion for the 36 billion gallons of fountain and packaged beverages they consumed in 2005.<sup>1</sup> That’s about what American families spent on gasoline that year<sup>2</sup>, and 29% more than the \$210 billion spent on 34 billion gallons in 2002.<sup>3</sup> During that 3-year period, the price for a gallon of beverage grew from \$6.18 to \$7.53: a 21% increase—almost three times faster than rise of the Consumer Price Index. Clearly, consumer demand for beverages has not yet been sated, and has not been dampened by rising prices.

**Table 1. Packaged and fountain beverage sales, 2002 and 2005\***

	Year		Increase	
	2002	2005	#	%
Gallons sold (million)	34,019	35,969	1,950	6%
Dollars spent (million)	\$210,078	\$270,731	\$60,653	29%
<b>Cost per gallon</b>	<b>\$6.18</b>	<b>\$7.53</b>	<b>\$1.35</b>	<b>22%</b>

\*Source: Beverage World, May 2006

**Increasing gallon & unit sales:** In terms of packaged beverages alone, consumption *volume* dropped from 103 gallons per capita in 2002 to 100 gallons in 2005, while the number of *units* the average person purchased annually rose from 672 to 724: or one extra bottle or can each week for every man, woman, and child in the nation.

**Table 2. Packaged beverage consumption, 2002 and 2005\***

	Year		Increase	
	2002	2005	#	%
US population (million):	289	296	8	3%
Total units sold (billion):	194	215	21	11%
<b>Units sold per capita:</b>	<b>672</b>	<b>724</b>	<b>52</b>	<b>8%</b>

\* Source: Beverage Marketing Corporation 2006, and U.S. Census Bureau.

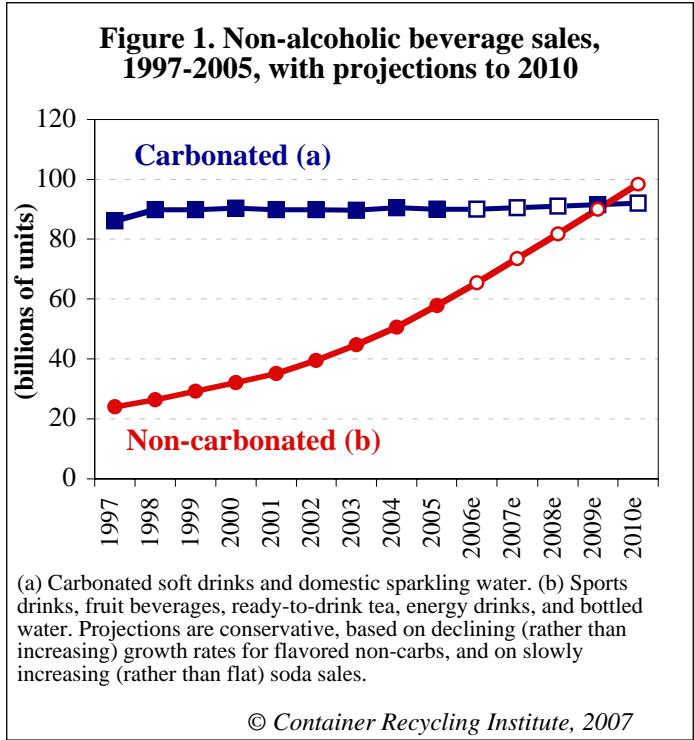
Because the population of the U.S. is growing, total consumption has also increased, even though per capita gallonage for packaged beverages dipped slightly. Total packaged beverages sales increased by 6.3%: from 30 million packaged gallons in 2002 to 31.8 million in 2005.

The number of glass, aluminum and plastic beverage containers sold increased twice as fast. Americans purchased 215 billion beverage cans and bottles in 2005: 21 billion more than in 2002.<sup>4</sup>

**Fizzling out:** The increase in total beverage consumption is not being borne evenly among carbonated (fizzy) and non-carbonated (flat) drinks. Bottles and cans for these non-fizzy drinks comprised 19 billion units—or 90%—of the 21-billion unit increase, with sales growing from 44 billion units in 2002 to 63 billion units in 2005.

At the same time, fizzy drinks lost popularity. Carbonated soft drink (CSD) consumption remained flat at 88.6 billion units per year, while packaged beer sales increased by only 4% in 3 years—about the same rate as population growth.<sup>5</sup> The number of beer cans and bottles sold in 2005 was 62 billion, up only slightly from the 59.7 billion units sold in 2002. Soda and beer each lost market share, however, losing 5 and 2 percentage points respectively.

*“Sales of flavored, non-carbonated drinks are likely to surpass soda sales by 2010.”*

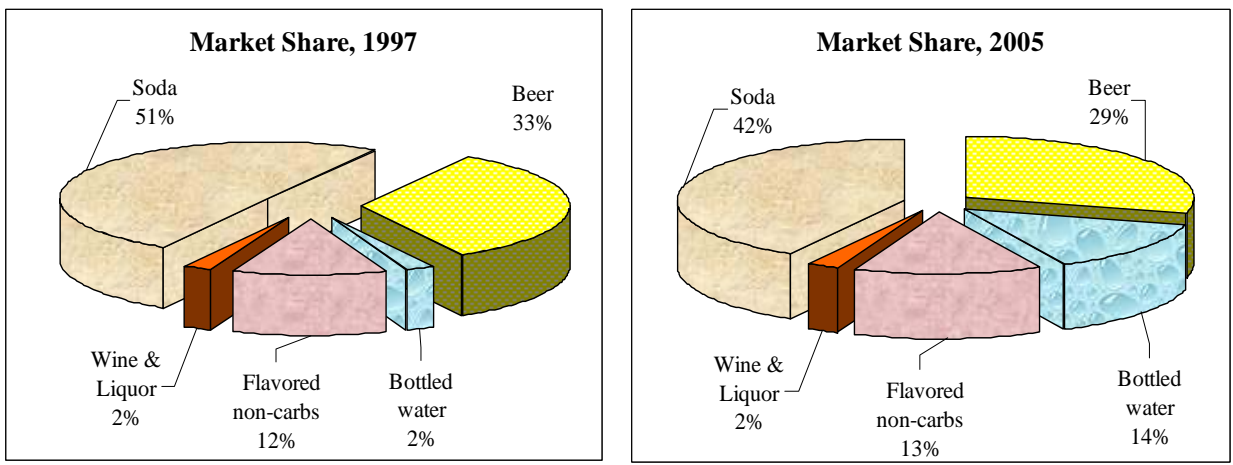


In terms of combined market share, the 7 percentage points lost by soda and beer were picked up by non-carbonated, non-alcoholic beverages. Sales of sports drinks, fruit juices and drinks, and ready-to-drink teas each increased by one billion units per year, while energy drinks—barely a blip on the radar in 2002—reached two billion units in 2005. Combined, these flavored, non-alcoholic drinks grew from 23.5 to 28.3 billion units: an increase of just under 5 billion units.

During the same period, sales of wine and liquor grew from 3.9 to 4.7 billion units: sales of table wine and spirits grew by 32% and 10% respectively, but this category remained at only 2% of the overall market.

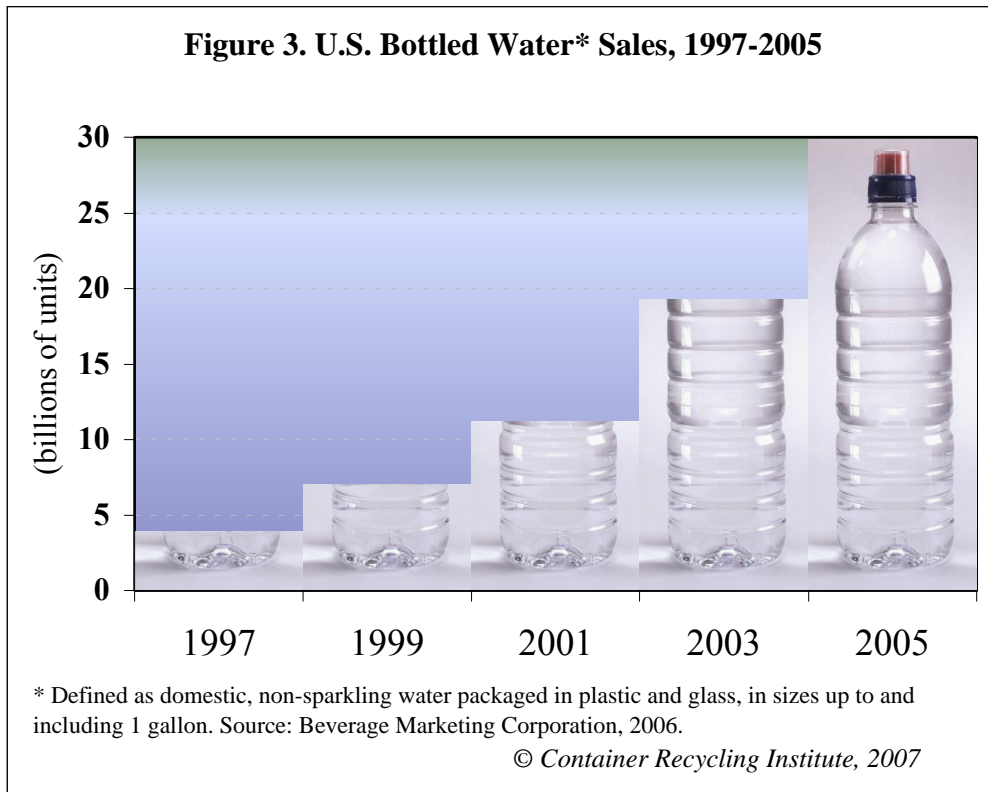
As Figure 1 shows, sales of non-alcoholic non-carbonated drinks (including bottled water) are likely to surpass soda sales by 2010. This assumption is based on conservative estimates: that growth rates for water, energy, and sports drinks will slow compared to the last five years, and that carbonated soft drinks will gain about half a billion in total annual unit sales, rather than stay at a plateau as they have been for the past few years.

**Figure 2. Market Share for Major Beverage Categories, 1997**



Notes: Soda includes domestic sparkling water. Flavored non-carbs include sports, energy, and fruit drinks; and iced tea. Dairy excluded. Bottled water includes sizes less than or equal to 1 gallon. Total units sold were 171 billion in 1997, and 215 billion in 2005. Derived by the Container Recycling Institute using data from the Beverage Marketing Corporation.

**Water, water everywhere:** Growth in the non-carbonated categories was eclipsed by growth in bottled water sales. Non-sparkling bottled water sales doubled in three years: going from 15 billion units sold in 2002 to 29.8 billion sold in 2005. This is almost seven times the 3.8 billion units sold in 1997. Sales of plastic water bottles 1 liter or less increased more than 115%, from 13 billion in 2002 to 27.9 billion in 2005.



In total, non-carbonated, non-alcoholic beverages grew from 21% to 27% of total beverage market share from 2002 to 2005, while carbonated soft drinks, sparkling water, and beer dropped from a combined 77% to 71%. In 1997, beer and soda made up 84% of the beverage market and non-carbonated beverages held a mere 14%, as Figure 2 shows.

**Mounting litter and waste:** CRI estimates that in 2005, an estimated 144 billion containers were wasted in the United States. Wasted means not recycled: sent to landfills or incinerators, or littered along our country’s roads and parks, fields and streams, and rivers and beaches. This includes approximately 54 billion aluminum cans, 52 billion plastic bottles and jugs, 30 billion glass bottles, and about 10 billion pouches, cartons, and drink boxes.

*“Approximately 18 million barrels of crude oil equivalent were consumed in 2005 to replace the 2 million tons of PET bottles that were wasted instead of recycled.”*

**Environmental and economic implications:** Almost two thirds, or 37 billion, of the 58 billion non-carbonated, non-alcoholic beverages purchased in 2005 were packaged in polyethylene terephthalate (PET) plastic bottles.<sup>6</sup> A full 96% of the bottled water was sold in PET bottles, the vast majority being “single serve” sizes, including the 10-12 oz., 16 oz, 20-24 oz, and 1 liter sizes. These bottles are prone to being littered, and have a lower recycling rate than any of the most common packaging materials. In 2005, 23.1% of the 5 billion lbs of PET sold in the U.S. were recycled, or 1,170 million lbs--up from 775 million lbs recycled in 1995. But the amount recycled only tells part of the story. In 1995, the nationwide recycling rate for PET was almost 40%, and the amount of PET wasted (sent to landfills) was 1,175 million lbs. By 2005, wasting had nearly tripled—to 3,900 million lbs (or almost 2 million tons), as Figure 4 shows.<sup>7</sup>

It is also important to note that the 23.1% PET recycling rate in 2005 includes plastic carbonated soft drinks (CSD) bottles which are recycled at a higher rate than water and other non-carbonated beverages, due to the high recovery rates in eleven states where they have a 5- or 10-cent refund value. In 2005, the American Chemistry Council did not break out CSD as they have done for the past 16 years, but in 2004 the CSD recycling rate was 33.7% and the recycling rate for all other PET bottles was 14.5%. It is reasonable to assume that the rate for non-carbonated beverages was below 20% in 2005.

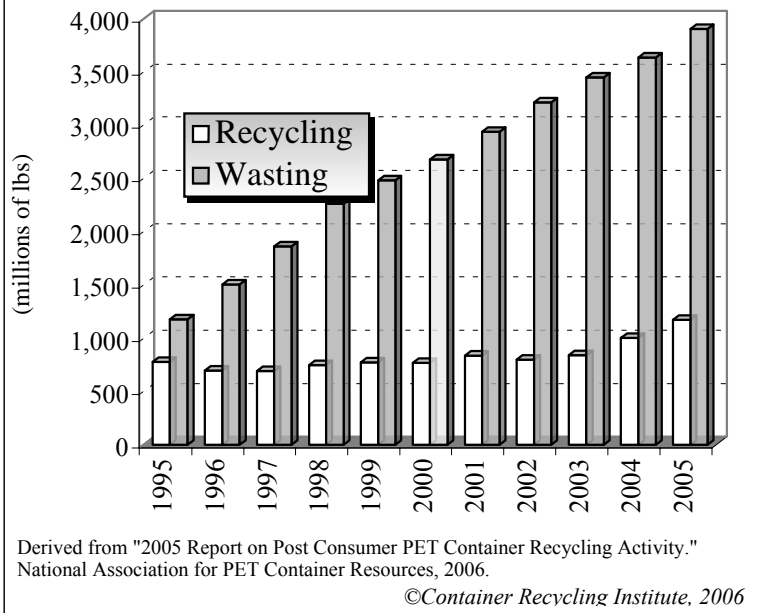
PET plastic is a petroleum product. Because it is presently recycled at such low rates, tens of billions of new plastic bottles must be manufactured each year from virgin materials—fossil fuels—to replace those bottles that were not recycled. The Container Recycling Institute estimates that approximately 18 million barrels of crude oil equivalent were consumed in 2005 to replace the 2 million tons of PET bottles that were wasted instead of recycled.

When PET plastic bottles are made from virgin materials rather than used bottle resin,

more greenhouse gases are produced as well. An estimated 800 thousand metric tons of carbon equivalent (MTCE) were released in the process of making approximately 50 billion new PET bottles from virgin rather than recycled materials.

When the 54 billion wasted aluminum cans, 7 billion wasted HDPE bottles and jugs, and 29 billion glass bottles are considered, the total emissions of greenhouse gasses from new [“replacement”] container manufacturing comes to about 4.8 million tons, and the unnecessary expenditure of energy comes to 53.5 million barrels of crude oil equivalent.<sup>8</sup>

**Figure 4. PET Plastic Bottle Recycling and Wasting, 1995-2005**



There are a host of other environmental impacts too numerous to catalog in this brief paper, but they include damage to wildlife and marine life, and air and water pollution associated with raw materials extraction, processing, and industrial container production; as well as landfilling and incineration.

<b>Table 3. Energy Impacts of Replacing Beverage Containers Wasted in 2005 (a)</b>					
	<b>Potential Energy Savings (a)</b>	<b>Containers Wasted, 2005 (b)</b>		<b>Energy Wasted Through "Replacement Production" in 2005 (c)</b>	
<b>Container Type</b>	(MBtu/ton recycled)	Units (billion)	Tons (million)	Barrels of Crude Oil Equivalent (million)	Households' Total Annual Energy Needs Met (million)
Aluminum cans	207	54	0.8	28.6	1.7
PET plastic bottles	53	49	2.0	18.0	1.1
HDPE plastic bottles	51	7	0.4	3.7	0.2
Glass bottles	3	29	6.9	3.2	0.2
<b>Total</b>		<b>139</b>	<b>10.0</b>	<b>53.5</b>	<b>3.3</b>

(a) Source for per ton energy savings: "Waste Management and Energy Savings: Benefits by the Numbers." Choate, Ferland et. al., US Environmental Protection Agency, Washington DC, Oct. 2005.

(b) Sales, recycling, and wasting figures derived from the Aluminum Association, the U.S. Department of Commerce, the U.S. EPA Office of Solid Waste, the American Plastics Council, the National Association of PET Container Resources, and the Beverage Marketing Corporation. CRI has made some estimates for glass and HDPE recycling using historical data.

(c) Factors used: 5.78 MBtu/barrel crude oil. Source for average annual residential energy consumption (94.6 MBtu per household): U.S. Department of Energy, Energy Information Administration, NA Look at Residential Energy Consumption in 2001.0

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While the environmental benefits of recycling beverage containers are well known, the economic benefits are less so. Few policymakers are aware of the fact that many businesses benefit from using post-consumer glass bottles, plastic bottles and aluminum cans. Both processors and end-users of these scrap containers would benefit from having a steady supply of high-quality post-consumer beverage containers to use as feedstocks to make new containers and other products. Recovering more beverage containers from the waste stream makes environmental sense, and it makes economic sense.

**Reversing the tide of trash:** CRI estimates that the national beverage container recycling rate was 33% in 2005, down twenty percentage points from the high of 53% in 1992. But in the eleven states<sup>9</sup> that have container deposit systems or “bottle bills” in place, where a small refundable deposit is placed on one-way (non-refillable) beverage containers, recycling rates range from 65-95%: 2-3 times higher than in the states without deposit laws. Of the eleven deposit states, only three—Maine, Hawaii, and California—include non-carbonated containers. Because the market share of “non-carbs” has increased from nearly zero twenty years ago to 27% of the beverage market today—and because this trend shows no signs of slowing—we are

likely to see continued efforts to update existing deposit laws to include these popular drinks that would have been included in the laws if they had been on the market at the time the laws were enacted.

Consumers are spending more on packaged beverages, and getting less for their money, so it would seem that adding a small—fully refundable—deposit of a nickel or a dime to bottled water, sports, fruit, and energy drinks would not pose a hardship for any segment of the population. Attempts should also be made to improve the efficiency and effectiveness of curbside recycling programs nationwide, and to increase recycling options in public spaces. Society stands to gain significant environmental benefits from keeping 144 billion beverage containers out of our nation’s landfills, roads, streams, and parks each year.

## NOTES:

*This report was written by Jenny Gitlitz and Pat Franklin, February 2007.*

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<sup>1</sup> Excluding milk, coffee, instant mixes, and frozen concentrates.

<sup>2</sup> U.S. Bureau of Labor Statistics.

<sup>3</sup> Includes fountain and packaged beverages. Source: *Beverage World*, June 2003 and May 2006.

<sup>4</sup> Dairy beverages, wine coolers, packaged coffee, and frozen concentrates are excluded from this analysis. Sales data were derived by the Container Recycling Institute as part of its “Beverage Market Data Analyses,” conducted in 1999, 2003, and 2007, using data from “Beverage Packaging in the U.S.” (2000, 2003 and 2006 editions), Beverage Marketing Corporation; *Beverage World* magazine (June 2003 and May 2006); the Beer Institute; and other industry sources.

<sup>5</sup> The U.S. population grew from 289 million in 2002 to 296 million in 2005.

<sup>6</sup> The remaining third were divided (5-7% each) among aluminum cans, HDPE plastic bottles, glass bottles, aseptic boxes, paper cartons, and foil pouches.

<sup>7</sup> National Association of Plastic Container Resources (NAPCOR), December 2006.

<sup>8</sup> Derived by the Container Recycling institute using emissions factors in “Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks.” 2nd Edition. U.S. Environmental Protection Agency (EPA530-R-02-006) May 2002.

<sup>9</sup> The states are Oregon, Vermont, Maine, Massachusetts, Connecticut, New York, Delaware, Michigan, Iowa, California, and Hawaii.