

Calendar Year 2010 Report of  
Beverage Container Sales,  
Returns, Redemption, &  
Recycling Rates



California Department of Resources Recycling and Recovery

**July 2011**

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# Executive Summary

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The Department of Resources Recycling and Recovery (CalRecycle) announces calendar year 2010 recycling and redemption rates for California Redemption Value (CRV) beverage containers. Public Resources Code Section 14551(a) requires CalRecycle to publish the recycling and redemption rates biannually. The recycling rate is the number of CRV beverage containers redeemed divided by the number of CRV beverage containers sold. The redemption rate is the recycling rate with the addition of food and beverage containers not currently included in the program but which have been recycled, and refillable beverage containers. The overall calendar year 2010 recycling rate is 82 percent and the redemption rate is 84 percent, which equates to more than 16.5 billion CRV beverage containers recycled by Californians.

California remains number one in the nation in total quantity of bottles and cans recycled.

The improved economics of recycling and increased public awareness of the beverage container recycling program are contributing factors that continue to deliver positive benefits to California's environment. Products manufactured from recycled feedstock often require less energy than using virgin resources and lower energy consumption results in fewer greenhouse gas emissions, which are considered a significant contributor to climate change.

Each year California consumes nearly 263.3 million barrels of oil<sup>1 2</sup> and emits 156.9 million metric tons of greenhouse gases<sup>3</sup> through residential use and passenger cars. The annual impact of recycling 16.5 billion beverage containers saved the equivalent of 7.3 million barrels of oil and reduced the equivalent of 676,000 metric tons of carbon in greenhouse gas emissions, which equates to eliminating the energy consumption of more than 396,000 households for one year.<sup>4</sup>

# Introduction and Other Main Sections

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## ***Background of the California Beverage Container Recycling Program***

California's Beverage Container Recycling Program is unique among states that have a beverage container return system. In most other bottle deposit states, the cans and bottles are returned to the store from which the containers were purchased. Californians enjoy a more convenient form of container recovery with more than 2,000 certified recycling centers and hundreds of curbside recycling programs statewide.

The Division of Recycling within CalRecycle administers the program. Enacted by the 1986 California Beverage Container Recycling and Litter Reduction Act (AB 2020, Margolin, Chapter 1290, Statutes of 1986), the program aspires to make beverage container recycling integral to the California economy. The program's primary goal is to achieve and maintain high recycling rates for each beverage container type covered in the program, thereby reducing beverage container litter in the state.

The program is funded through redemption payments made to CalRecycle by beverage distributors on each beverage container sold in the state. Redemption payment revenues are deposited into the California Beverage Container Recycling Fund. Consumers receive CRV payments from the fund when they return empty beverage containers to certified recycling centers.

Beverage containers currently covered by the program include those filled with carbonated mineral and soda water and other similar carbonated soft drinks, non-carbonated soft drinks, wine coolers and distilled spirit coolers, beer and malt beverages, non-carbonated water including non-carbonated mineral water, sport drinks, coffee and tea drinks, vegetable juice in containers 16 ounces or less, carbonated and non-carbonated fruit drinks that contain any percentage of fruit juice, and 100 percent fruit juices that are packaged in containers less than 46 ounces.

In 2010, more than 20.2 billion CRV beverage containers were sold in California, of which 16.5 billion were returned for recycling, making the overall recycling rate 82 percent for that year. Starting in 2009, CalRecycle reached one of the primary goals of the program which is to achieve an 80 percent recycling rate for all CRV aluminum, glass, plastic and bimetal beverage containers sold in California. The program involves recycling centers, beverage manufacturers and distributors, retail dealers, local conservation corps, and other participants to ensure Californians have convenient opportunities to recycle their beverage containers. The Division of Recycling is responsible for participant certification and registration, regulatory compliance, and grant funding distribution, as well as technical and educational assistance to industries and groups involved in beverage container recycling.

## ***How Information Is Gathered***

CalRecycle gathers beverage container sales and returns information directly from program participants. This information is subject to audit and is considered reliable in depicting accurate recycling rates.

Recyclers provide beverage container returns information to CalRecycle. As consumers return empty beverage containers through the various recycling systems, recyclers receive CRV reimbursements in addition to other program funds as specified by statute. The claims for payment by recyclers provide data on the quantities of beverage container materials actually received. Recyclers report data by weight and material type and CalRecycle staff converts the data into container counts.

Sales information is gathered from distributors when they pay the redemption payment of five cents for each beverage container under 24 fluid ounces and ten cents for each beverage container of 24 fluid ounces or greater.

In calculating recycling rates for each material type, CalRecycle divides the volume of beverage containers returned by the volume of beverage containers sold. The calculation is performed bi-annually. The first calculation is performed for the period January through June and the second calculation is performed for the period July through December. Combining the sales and returns calculations from the two periods provides the calendar year recycling rate.

## ***Recycling and Redemption Rates Analysis***

The “All Materials” calendar year 2010 recycling rate is 82 percent and the redemption rate is 84 percent. During calendar year 2010, returns of CRV beverage containers decreased 4 percent overall, while sales showed a decrease of 3 percent.

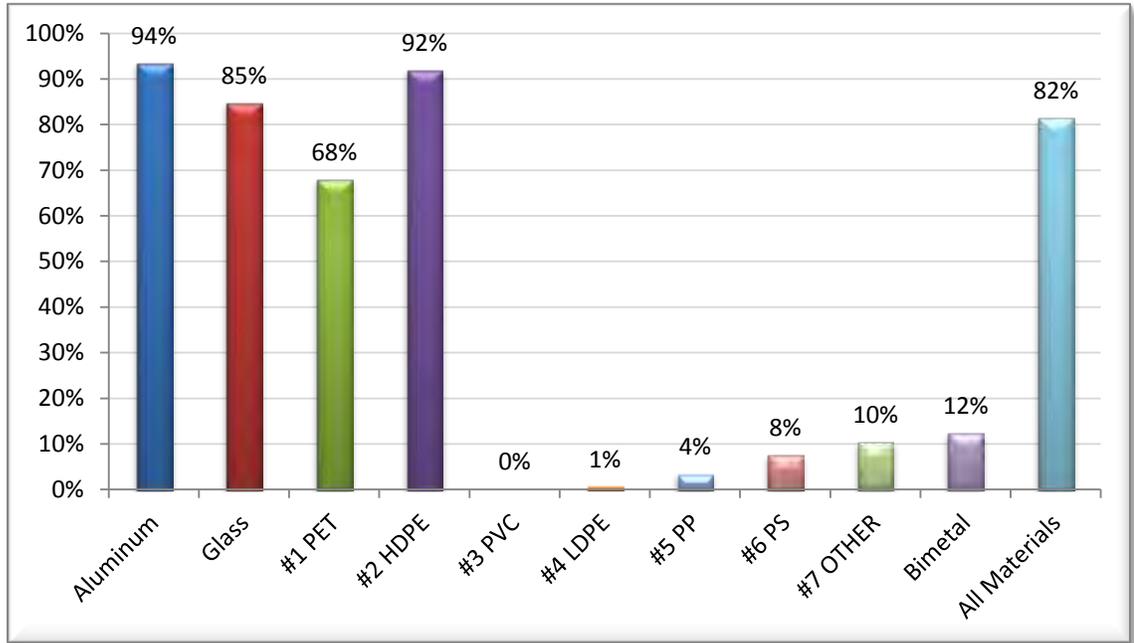
Of the 20.2 billion CRV beverage containers sold, 16.5 billion CRV beverage containers were returned in 2010. In addition, more than 1 billion empty postfilled food and drink containers were returned for recycling. Postfilled food and drink containers are containers not currently covered under the program.

Factors that may influence recycling and redemption rates are:

- Economy – consumers more likely to redeem beverage containers for CRV;
- Continued consumer education and convenience;
- Continued growth in curbside and collection programs; and
- Increased awareness and commitment for a greener environment.

Chart #1 shown below and Table #1 provide the recycling rates by material type for calendar year 2010.

**Chart #1 – Calendar Year 2010 Recycling Rates by Material Type**



**Table #1 – Calendar Year 2010 Recycling Rates by Material Type**

Aluminum	94%
Glass	85%
#1 PET	68%
#2 HDPE	92%
#3 PVC	0%
#4 LDPE	1%
#5 PP	4%
#6 PS	8%
#7 OTHER	10%
Bimetal	12%
All Materials	82%

### ***Comparative Analysis of Beverage Container Sales and Returns, Postfilled Returns, and Recycling and Redemption Rates***

Changes in beverage container sales and returns, postfilled returns, and recycling and redemption rates between 2009 and 2010 are shown in Table #2. Table #2 includes aluminum, glass, #1 PET plastic, and #2 HDPE plastic only, since these material types have moderate to high volumes making a year-to-year percentage change more meaningful.

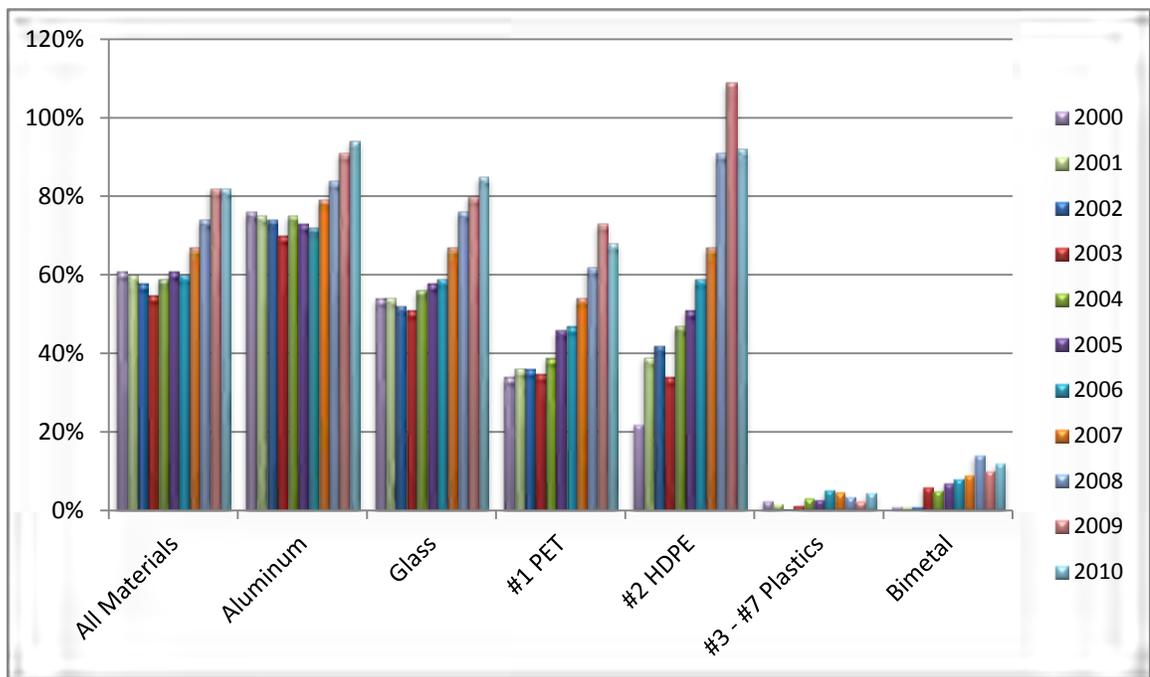
Plastic resins #3 - #7 and bimetal are not listed because they are based on very low volumes of sales and returns. Relatively small changes in the number of containers redeemed can result in a large percentage change that may be misleading. For example, a single manufacturer changing from one material type to another can have significant impacts on the percent change.

**Table #2 – Changes in Beverage Container Sales and Returns, Postfilled Returns, and Recycling and Redemption Rates from 2009 to 2010**

Material Type	% Change Sales	% Change CRV Returns	%Change Postfilled Returns	Change in Redemption Rate Points	Change in Recycling Rate Points
Aluminum	-4%	-1%	26%	3	3
Glass	-7%	-1%	-5%	4	5
#1 PET	-2%	-9%	11%	-5	-5
#2 HDPE	-2%	-17%	7%	-4	-17

To illustrate long-term trends in the recycling rate, Chart #2 shows recycling rates for calendar years 2000 through 2010 for all material types. Chart #2 indicates a positive trend with increasing recycling rates from 2004 to 2009 after a period of declining rates from 2000 through 2003. During 2010, there were investigations into whether CRV claims for plastic containers were being filed and processed correctly; this could account for the downward trend for #1 PET and #2 HDPE plastics.

**Chart #2 – Comparison of Recycling Rates Calendar Years 2000 – 2010 All Material Types**



## ***The Rise of CRV to Increase Recycling of Containers***

CalRecycle first began collecting redemption payments from beverage distributors and disbursing CRV to recyclers in late 1987. The initial redemption payment and refund value was established at one cent per container. In 1989, the program increased the redemption payment to two cents for every beverage container sold, while the CRV was two cents for a single beverage container and five cents for every two beverage containers (SB 1221, Hart, Chapter 1339, Statutes of 1989).

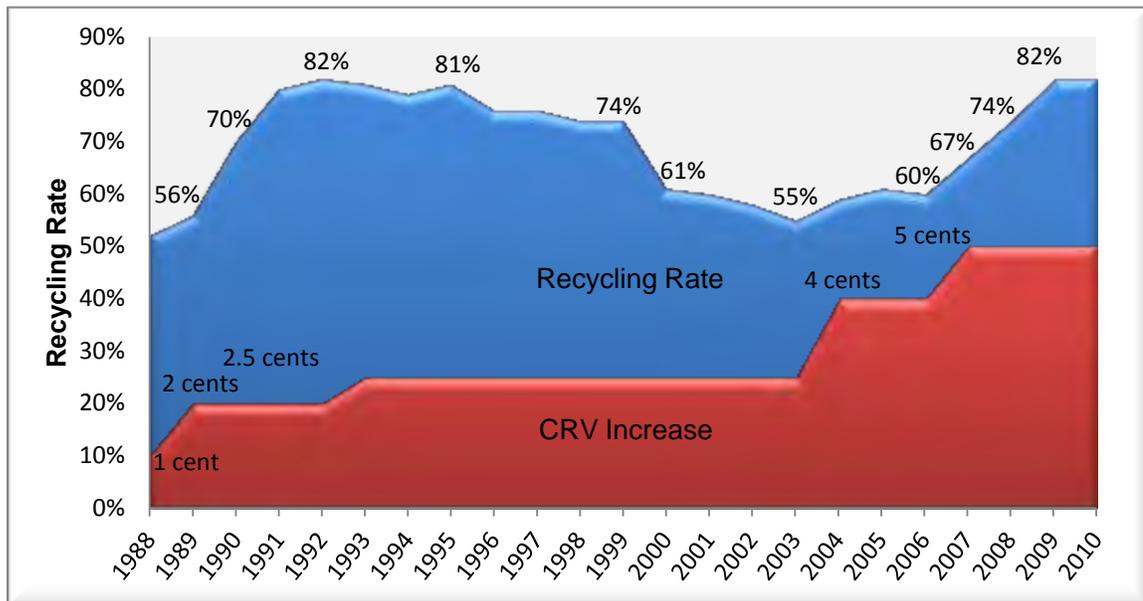
In 1989, the “All Materials” recycling rate was 56 percent. The recycling rate increased over the next three years, resulting in an “All Materials” recycling rate of 82 percent in 1992 when the refund value increased to two and one-half cents per container under 24 ounces and five cents per container 24 ounces or greater. However, as sales increased more rapidly than returns, the “All Materials” recycling rate declined from 82 percent in 1992 to a low of 55 percent in 2003.

Effective Jan. 1, 2004, the refund value was increased to four cents per container under 24 ounces and eight cents per container 24 ounces or greater (AB 28, Jackson, Chapter 753, Statutes of 2003). The recycling rate for “All Materials” increased four percentage points to 59 percent in 2004 and an additional two percentage points to reach 61 percent in 2005.

With the enactment of AB 3056 (Assembly, Natural Resources Committee, Chapter 907, Statutes of 2006), effective Jan. 1, 2007, the refund value paid to consumers increased to five cents for beverage containers less than 24 ounces, and 10 cents for containers 24 ounces or greater, while the redemption value paid by distributors remained four and eight cents, respectively, for the period of Jan. 1, 2007 to June 30, 2007. On July 1, 2007, the redemption value paid by distributors increased to five and 10 cents.

Chart #3 depicts the relationship between the CRV paid and the recycling rate over time. In general, within two or three years of each CRV increase, the recycling rate increased and then peaked. Chart #3 shows the “All Materials” recycling rate from the beginning of the program through 2009. As shown in Chart #3, there has been a significant increase in the years since the CRV increased on Jan. 1, 2007.

**Chart #3 – CRV Increase vs. Recycling Rate**



The sharp decreases in recycling rates during calendar years 2000 and 2001 were due primarily to a change in the total sales resulting from the passage of SB 332 (Sher, Chapter 815, Statutes of 1999) and SB 1906 (Sher, Chapter 731, Statutes of 2000). These two pieces of legislation added new beverages and beverage container types, primarily new plastic resins, to the program. These actions created a notable rise in the sales of beverage containers, specifically PET. As a result, returns lagged behind sales causing a notable decline in the recycling rates.

### ***Recycling and Redemption Rate Analysis by Material Type***

The following reports the recycling and redemption rates for each material type and for the aggregate of all material types, covering the changes from calendar years 2009 and 2010:

#### **Aluminum**

Aluminum sales decreased 4 percent while returns decreased 1 percent. This resulted in an increase of 3 percentage points in both the recycling and redemption rates when compared to calendar year 2009.

#### **Glass**

Glass sales decreased 7 percent while returns decreased 1 percent. This resulted in an increase of 5 percentage points in the recycling rate and 4 percentage points in the redemption rate when compared to calendar year 2009.

#### **#1 PET Plastic**

#1 PET plastic sales decreased 2 percent while returns decreased 9 percent. This resulted in a decrease of 5 percentage points in both the recycling and redemption rates when compared to calendar year 2009.

## #2 HDPE Plastic

#2 HDPE plastic sales decreased 2 percent while returns decreased 17 percent. This resulted in a decrease of 17 percentage points in the recycling rate and a decrease of 4 percentage points in the redemption rate when compared to calendar year 2009.

## Plastic Resins #3 - #7 and BiMetal

For plastic resins #3 - #7 and bimetal, changes in sales and returns presented as percentages may be misleading due to the small numbers of containers. The percent changes for plastic resin #3 - #7 sales vary from a decrease of 49 percent to an increase of 71 percent. The percent change in returns for these material types range from a decrease of 49 percent to an increase of 256 percent. As noted below, percentages may be misleading and not reflective of significant change, for example the 256 percent increase in returns for plastic resin #6 PS only represents an increase of approximately 3 million containers.

## “All Materials”

“All Materials” sales decreased 3 percent while returns decreased 4 percent. This resulted in no discernable change to the recycling and redemption rates when compared to calendar year 2009.

## Participant Shares Analysis by Material Type

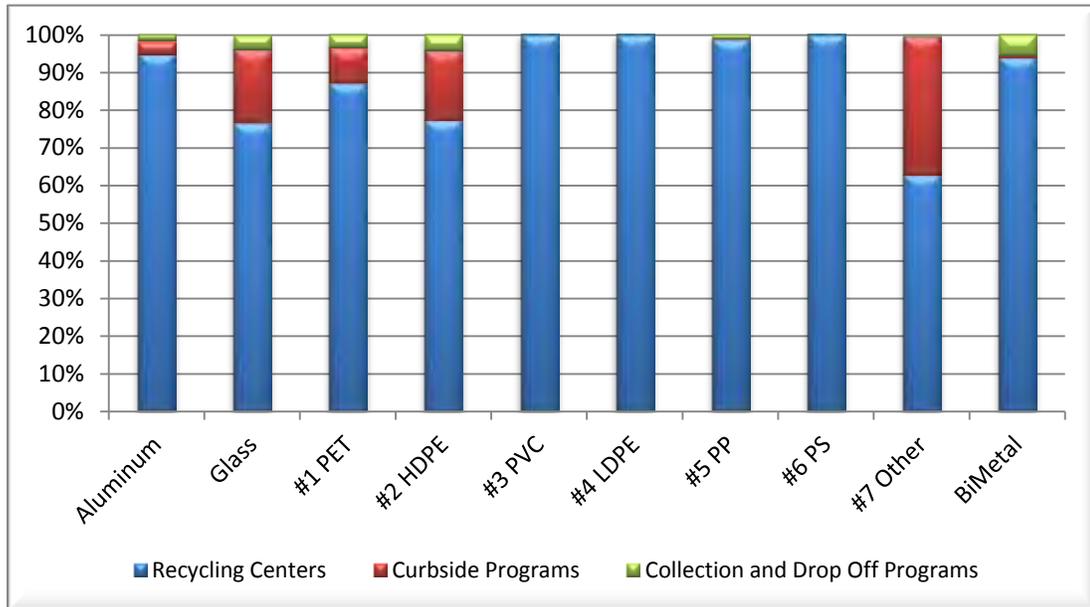
CalRecycle analyzes participant shares annually and reports the percentages of returns of CRV and postfilled material by participant type.

In 2010, most beverage container material types were redeemed primarily at recycling centers. Table #3 and Chart #4 illustrate the percentages of each material redeemed by participant types including recycling centers and reverse vending machines (RC/RV), curbside programs (CS), dropoff or collection programs, and community service programs (CP/SP) for calendar year 2010.

**Table #3 – CRV Material Participant Shares Analysis for 2010**

	ALUMINUM	GLASS	#1 PET	#2 HDPE	#3 PVC	#4 LDPE	#5 PP	#6 PS	#7 OTHER	BIMETAL
RC/RV	95%	77%	87%	77%	100%	100%	99%	100%	63%	94%
CS	4%	20%	10%	19%	0%	0%	0%	0%	37%	1%
CP/SP	1%	3%	3%	4%	0%	0%	1%	0%	0%	5%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Chart #4 – CRV Material Participant Shares for 2010**

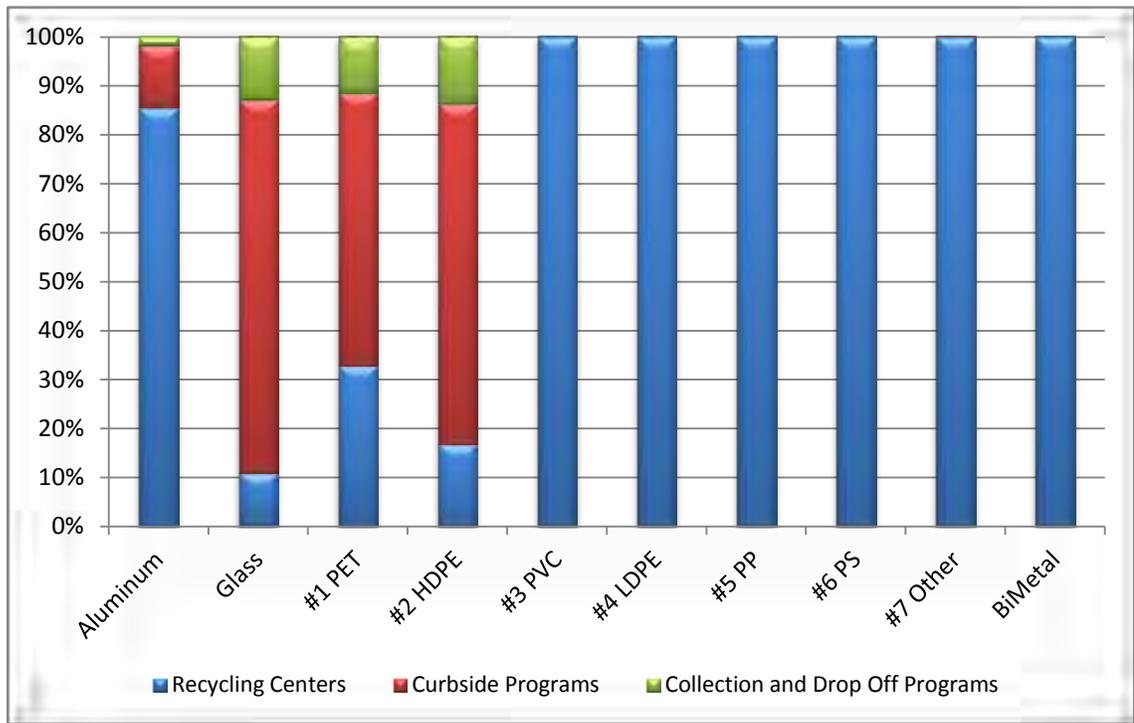


A postfilled container means any container that had previously been filled with a beverage or food which is not currently covered under the program (i.e., non-CRV containers). Table #4 and Chart #5 illustrate the percentage of postfilled material collected by participant types.

**Table #4 - Postfilled Material Participant Shares Analysis for 2010**

	ALUMINUM	GLASS	#1 PET	#2 HDPE	#3 PVC	#4 LDPE	#5 PP	#6 PS	#7 OTHER	BIMETAL
<b>RC/RV</b>	85%	11%	33%	17%	100%	100%	100%	100%	100%	100%
<b>CS</b>	13%	76%	56%	69%	0%	0%	0%	0%	0%	0%
<b>CP/SP</b>	2%	13%	11%	14%	0%	0%	0%	0%	0%	0%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Chart #5 – Postfilled Material Participant Shares for 2010**



In 2010, postfilled containers for glass, #1 PET, and #2 HDPE were collected primarily through curbside programs, while postfilled aluminum was collected primarily through recycling centers. The primary factor illustrated by the participant shares analysis is the impact of CRV on the mode of collection. CRV material that is light and easy to handle, such as aluminum, will be brought primarily to recycling centers where consumers receive a refund. Non-CRV material that is heavier or less easy to handle such as glass, #1 PET plastic, and #2 HDPE plastic will have a larger percentage collected by donation programs, including curbside, dropoff and collection programs, and community service programs. This is not the case for plastic resins #3 - #7 and bimetal. Curbside programs rarely report these material types because they require extensive sorting to extract the CRV containers.

### ***Market Share Changes and Their Impact on the “All Materials” Recycling Rate***

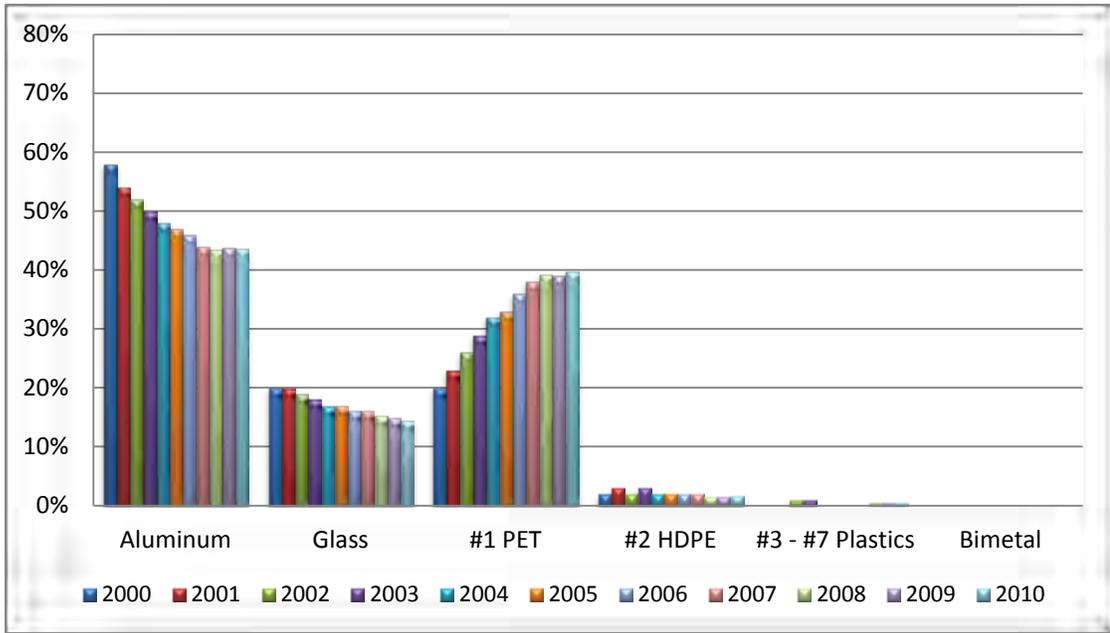
Traditionally, aluminum had always had the largest market share per sales volume compared to other material types. The “All Materials” recycling rate generally followed the same trend as aluminum. However, since the inclusion of new beverages and container types into the program in 2000, there has been a decrease in the aluminum market share and an increase in the market share of #1 PET plastic.

A contributing factor to the decline in shares of aluminum beverage containers sales may be a growing preference for the use of plastic containers by the beverage container industry as well as

by consumers. In addition, convenience stores offer refrigerated, single serve soft drinks and bottled non-carbonated water in resealable plastic containers. This is not prevalent with aluminum or glass container types. As a result, aluminum and glass market shares of beverage container sales and returns have been on a slow decline since the year 2000, while at the same time, #1 PET plastic's market share continues to increase. The market share for returns indicate the same trends as seen in the market share for sales.

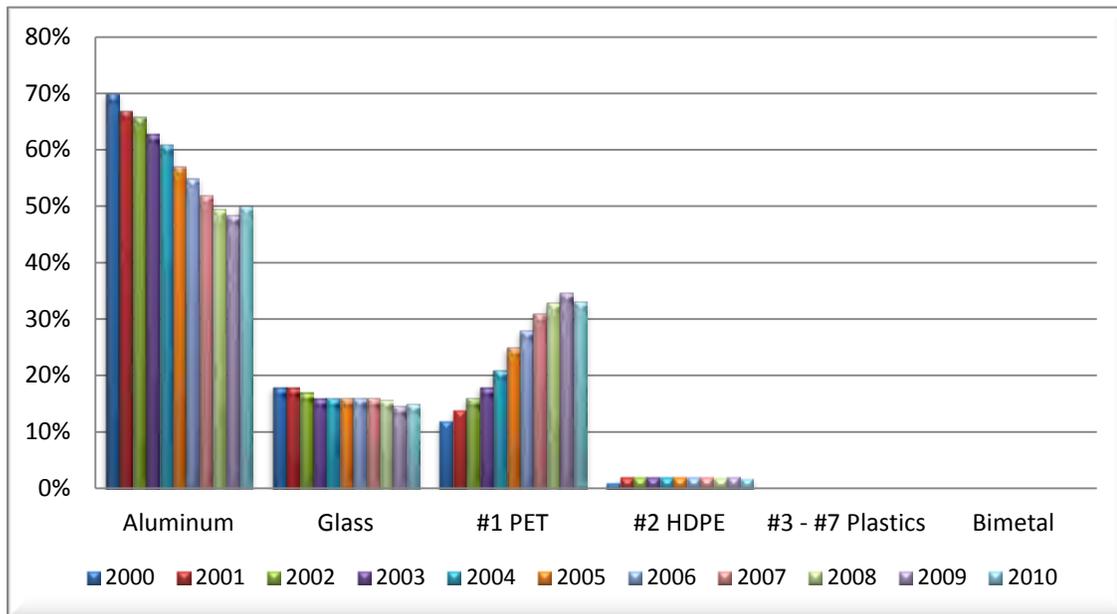
Chart #6 illustrates the transition of beverage container sales market shares from aluminum and glass to #1 PET plastic based on market changes.

**Chart #6 – Market Share of Beverage Container Sales Calendar Years 2000 – 2010**



Both charts #6 and #7 illustrate the very limited market shares of #2 HDPE, plastic resins #3 - #7 and bimetal. Chart #7 illustrates the decrease in market shares of returns for glass and #1 PET plastic and an increase in the market shares of returns for aluminum. This increase in aluminum returns could be attributed to the individual consumer potentially receiving not only payment for CRV but for scrap value.

**Chart #7 – Market Share of Beverage Container Returns Calendar Years 2000 – 2010**



### ***Impact of Adding Plastics #3 - #7 to the Beverage Container Recycling Program***

In January 2000, when new beverages were added to the program, changes to the California Beverage Container Recycling and Litter Reduction Act also brought new container types, specifically plastics #2 HDPE, #3 PVC, #4 LDPE, #5 PP, #6 PS, and #7 Other.

The plastics #3 - #7 resin containers had not been commonly collected previously and had limited established markets. They have been sold in limited volumes with a combined beverage container sales market share of less than one percent. Even if 100 percent of the #3 - #7 resin plastic beverage containers had been redeemed in 2010, the “All Materials” recycling rate would not have changed by more than one percent. While their low recycling rates are not causing any significant reductions in the “All Materials” recycling rate, CalRecycle continues to work to raise awareness of the recyclability of these containers and to establish markets for them.

A primary tenet of the beverage container recycling law is to ensure that every container material type proves its own recyclability. To support this goal it includes the processing payment and processing fee components. When the cost of recycling is greater than the scrap value of a beverage container material type, the beverage manufacturer using that packaging material type must pay a processing fee to offset the recyclers’ expenses. Recyclers receive processing payments as reimbursement for their expenses. For containers that may not be economical to recycle, this mechanism makes producers of beverage containers responsible for a portion of the costs of recycling. If the cost of the processing fee exceeds the benefit of the container used, it may encourage manufacturers to use containers that can be recycled more economically.

## ***Departmental Actions to Increase Recycling Rates***

- Since 2006, provided more than 100,000 Recycling Starter Kits to assist offices, exercise clubs, schools, and other businesses in starting a beverage container collection program. The kits include a recycling bin and technical assistance to start and maintain the program. Orders may be placed for the kits at <http://www.calrecycle.ca.gov/BevContainer/Consumers/RSKOrder.htm>.
- Leveraged media outreach by advertising the toll-free information hotline (1-800-RECYCLE) and the consumer-friendly URL bottlesandcans.com, which redirects to a location on the CalRecycle website ([www.calrecycle.ca.gov/BevContainer/](http://www.calrecycle.ca.gov/BevContainer/)). This source of recycling information is used extensively and is updated regularly to provide consumers and program participants with the latest information on program changes. To assist in developing a consistent statewide message, CalRecycle provides public access to marketing resources, which can be ordered by telephone at 1-800-RECYCLE or downloaded from <http://www.calrecycle.ca.gov/BevContainer/Consumers/PosterOrder.htm>.

## ***Environmental Benefits from Recycling Beverage Containers***

To determine the amount of greenhouse gas emission reductions achieved through recycling, CalRecycle used the U.S. Environmental Protection Agency Waste Reduction Model (WARM) to calculate the total greenhouse gas emissions in metric tons of carbon equivalents. The U.S. EPA model was created to assist solid waste planners and organizations in tracking and calculating greenhouse gas emission reductions. The model totals the greenhouse gas emissions of the baseline and of alternative waste management practices – recycling, source reductions, landfilling, and more.

In 2010, a total of 20.2 billion aluminum, glass, #1 PET, and #2 HDPE CRV beverage containers were sold in California. Of these, Californians recycled 16.5 billion, or 82 percent of aluminum, glass, #1 PET, and #2 HDPE beverage containers. By recycling these beverage containers, Californians saved resources and reduced greenhouse gas emissions equivalent to:

- 676,000 metric tons of carbon equivalents;
- 7.3 million barrels of oil; and
- 396,000 households' annual energy consumption<sup>5</sup>.

There is still room for improvement as a total of 3.7 billion aluminum, glass, #1 PET, and #2 HDPE CRV beverage containers were landfilled or littered. If these additional beverage containers were recycled, Californians could further save resources and reduce greenhouse gas emissions equivalent to:

- 85,000 metric tons of carbon equivalents;
- 1.2 million barrels of oil; and
- 67,000 households' annual energy consumption<sup>6</sup>.

Chart #8 shows the reduction of greenhouse gas emissions by primary material type (aluminum, glass, #1 PET, and #2 HDPE beverage containers) using the current 82 percent recycling rate for 2010 versus if these beverage containers had a 100 percent recycling rate.

**Chart #8 – Greenhouse Gas Emission Reductions Based on 82 Percent of Beverage Containers Recycled v. 100 Percent Recycled**

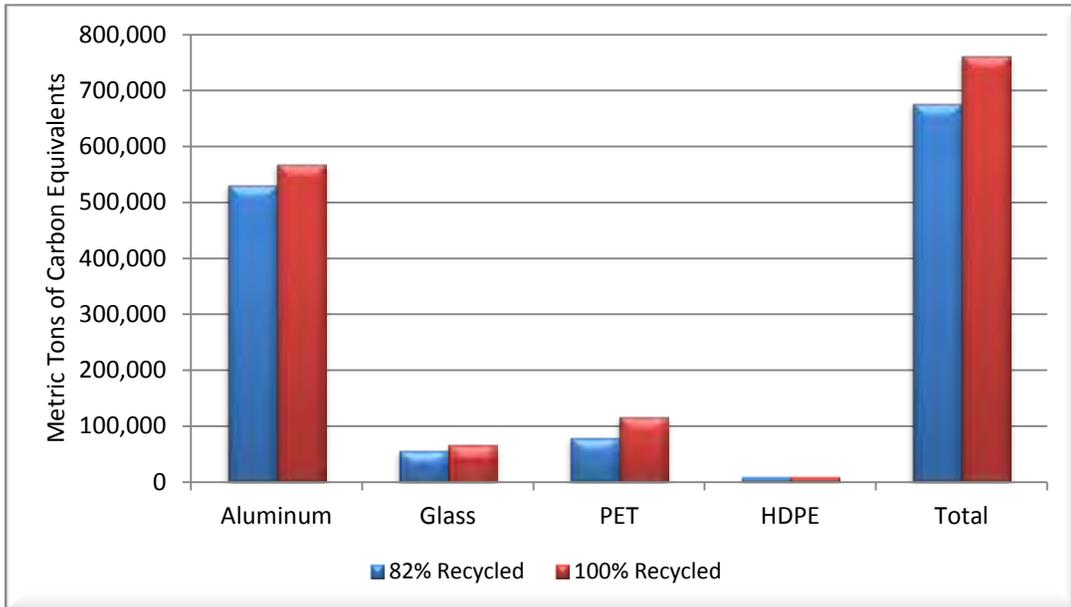
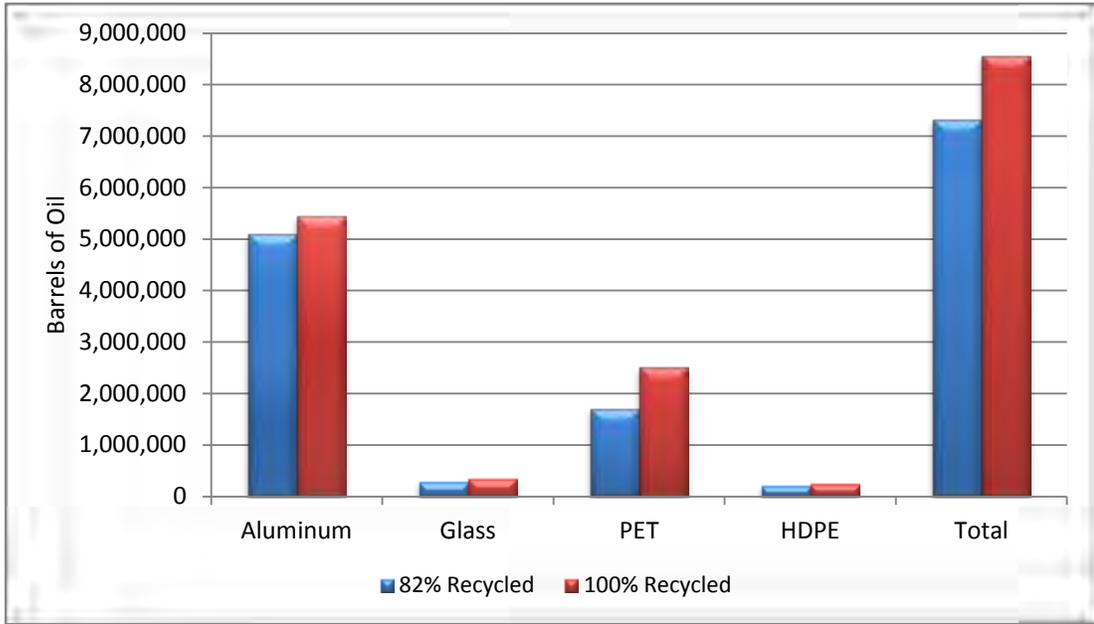


Chart #9 shows the energy savings in barrels of oil by material type using the current 82 percent recycling rate for 2010 versus a 100 percent recycling rate. As shown in the chart, the energy impacts vary by each material type, but recycling results in significant energy savings for all of the top four materials.

**Chart #9 - Energy Savings Based on 82 Percent of Beverage Containers Recycled v. 100 Percent Recycled**



The annual energy consumption in the residential sector in California is 263.3 million barrels of oil<sup>7 8</sup>. The total energy savings based on the 2010 volume of aluminum, glass, #1 PET, and #2 HDPE container materials returned for recycling in California, as compared to the material being landfilled, is 7.3 million barrels of oil, or 3 percent of the total annual energy consumed by California residences.

Energy savings associated with recycling various materials are driven largely by the difference between manufacturing the material using virgin feedstocks and manufacturing the material using recycled feedstocks. The energy factors presented demonstrate that conscientious recycling and waste management can lead to substantial energy savings and greenhouse gas emission reductions.

# Source Reference Notes

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<sup>1</sup> US Energy Information Administration Database, retrieved from

[http://www.eia.gov/state/seds/hf.jsp?incfile=sep\\_sum/plain\\_html/rank\\_use.html](http://www.eia.gov/state/seds/hf.jsp?incfile=sep_sum/plain_html/rank_use.html)

<sup>2</sup> Based on conversion of 1 barrel of oil = 5.8 million BTU

<sup>3</sup> California Environmental Protection Agency, Air Resources Board, retrieved from

[http://www.arb.ca.gov/cc/inventory/data/tables/ghg\\_inventory\\_scopingplan\\_00-08\\_2010-05-12.pdf](http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-08_2010-05-12.pdf)

<sup>4</sup> Based on Waste Reduction Model (WARM) developed by the US Environmental Protection Agency, retrieved from [http://epa.gov/climatechange/wycd/waste/calculators/Warm\\_home.html](http://epa.gov/climatechange/wycd/waste/calculators/Warm_home.html)

<sup>5</sup> ibid

<sup>6</sup> ibid

<sup>7</sup> US Energy Information Administration, retrieved from

[http://www.eia.gov/state/seds/hf.jsp?incfile=sep\\_sum/plain\\_html/rank\\_use.html](http://www.eia.gov/state/seds/hf.jsp?incfile=sep_sum/plain_html/rank_use.html)

<sup>8</sup> Based on conversion of 1 barrel of oil = 5.8 million BTU

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**CALENDAR YEAR - REDEMPTION AND RECYCLING RATES**

Table 1 / May 10, 2011

<i>Rates</i>		<i>Containers</i>					<i>1 of 5</i>
<b>ALUMINUM</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>94</b>	<b>94</b>	<b>8,830,503,071</b>	<b>8,262,251,598</b>	<b>0</b>	<b>183,283,911</b>	
2009	91	91	9,200,376,864	8,354,269,499	0	145,503,506	
2008	84	84	9,539,853,194	8,004,343,689	0	44,421,762	
2007	79	79	9,613,050,224	7,616,879,727	0	88,490,455	
2006	72	72	10,018,815,900	7,217,550,376	0	10,495,163	
2005	73	73	9,649,079,960	7,073,940,741	0	16,864,583	
2004	76	75	9,764,193,509	7,361,715,276	0	3,312,941	
2003	67	70	9,595,275,797	6,682,353,680	0	56,635,725	
2002	74	74	9,420,894,816	6,971,154,448	0	85,989,348	
2001	75	75	9,426,681,445	7,036,772,391	0	75,404,003	
2000	76	76	9,521,709,518	7,086,969,721	0	73,859,460	
1999	80	80	9,189,990,393	7,348,438,576	0	155,372,430	
1998	80	80	9,273,717,898	7,381,508,007	0	178,559,988	
1997	80	80	9,192,062,677	7,391,944,684	0	206,552,057	
1996	80	80	9,046,339,201	7,257,109,422	0	157,451,082	
1995	84	84	8,996,915,732	7,565,437,626	0	293,381,456	
1994	82	82	9,640,060,625	7,859,363,654	0	150,118,131	
1993	84	84	9,473,124,532	7,926,540,025	0	214,496,528	
1992	85	85	9,849,092,574	8,378,479,015	0	204,306,718	
1991	85	85	9,735,460,863	8,235,715,915	0	170,214,314	
1990	76	76	9,859,752,871	7,478,135,392	0	153,794,134	
1989	64	64	9,231,958,871	5,940,283,700	0	49,407,050	
1988	62	61	8,829,125,615	5,416,522,775	0	358,327,175	
<b>GLASS</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>95</b>	<b>85</b>	<b>2,925,441,274</b>	<b>2,482,262,726</b>	<b>618</b>	<b>420,232,943</b>	
2009	91	80	3,131,130,270	2,519,321,210	1,697	440,461,371	
2008	84	76	3,339,106,477	2,523,961,411	7,525	391,349,224	
2007	75	67	3,489,108,046	2,330,774,614	9,638	389,179,670	
2006	66	59	3,608,513,760	2,112,947,786	2,821	370,369,583	
2005	65	58	3,466,533,078	2,013,762,725	2,130	353,661,624	
2004	63	56	3,479,268,354	1,955,998,098	128,867	342,089,880	
2003	58	51	3,389,513,062	1,723,047,987	364,085	314,717,017	
2002	59	52	3,426,758,463	1,788,856,334	380,457	314,008,206	
2001	62	54	3,469,509,699	1,868,554,693	378,452	362,368,007	
2000	60*	54*	3,342,291,557	1,828,493,003	4,193,806	315,211,767	
1999	71	60	2,699,056,360	1,563,428,698	56,547,053	381,756,617	
1998	75	63	2,547,082,395	1,533,478,471	78,152,008	379,486,791	
1997	79	67	2,488,007,100	1,575,406,811	90,836,718	383,973,447	
1996	82	69	2,432,063,268	1,574,020,543	102,421,509	400,541,247	
1995	86	74	2,477,905,727	1,731,621,270	111,828,496	376,815,597	
1994	84	73	2,554,889,789	1,735,423,078	125,310,440	384,421,672	
1993	86	75	2,524,975,195	1,753,023,220	147,140,942	369,469,526	
1992	95	72	2,638,669,944	1,718,900,206	168,996,240	718,914,546	
1991	85	71	2,837,961,367	1,802,801,890	198,954,148	508,723,118	
1990	60	57	3,252,914,365	1,644,555,614	215,792,631	183,272,912	

<b>Rates</b>			<b>Containers</b>				<i>2 of 5</i>
<b>GLASS</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
1989	45	40	3,136,247,664	945,069,624	304,045,641	216,179,258	
1988	44	35	3,165,716,125	664,948,766	441,803,396	324,349,294	
<b>#1 PET</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>68</b>	<b>68</b>	<b>8,047,937,685</b>	<b>5,479,307,708</b>	<b>0</b>	<b>176,256,081</b>	
2009	73	73	8,181,154,963	6,005,759,655	0	158,405,528	
2008	62	62	8,603,054,451	5,322,655,475	0	146,233,004	
2007	54	54	8,318,703,619	4,526,823,914	0	137,690,275	
2006	47	47	7,798,923,048	3,644,524,984	0	141,107,582	
2005	46	46	6,858,895,480	3,124,591,752	0	130,597,359	
2004	39	39	6,415,159,040	2,512,392,756	0	121,121,275	
2003	36	35	5,553,858,516	1,947,144,218	0	125,886,380	
2002	36	36	4,732,756,528	1,687,585,835	0	106,089,707	
2001	37	36	4,032,761,142	1,435,601,027	0	112,531,165	
2000	34	34	3,239,139,000	1,181,701,068	0	73,332,339	
1999	79	65	1,278,411,247	829,974,260	0	223,909,692	
1998	69	57	1,284,678,834	731,421,805	0	193,778,325	
1997	69	58	1,206,774,464	698,322,157	0	168,565,032	
1996	69	59	1,028,068,545	607,521,858	0	127,904,829	
1995	74	64	760,783,391	488,882,966	0	99,011,197	
1994	80	71	605,667,834	429,468,272	0	77,573,604	
1993	76	70	577,329,580	403,344,084	0	58,323,616	
1992	75	68	549,907,144	371,540,845	0	58,814,794	
1991	58	56	530,597,819	299,758,173	0	20,829,383	
1990	31	31	558,856,452	171,828,692	0	8,298,647	
1989	7	7	556,680,692	37,863,612	0	1,221,987	
1988	5	4	560,093,605	24,327,749	0	2,971,618	
<b>#2 HDPE</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>235</b>	<b>92</b>	<b>328,475,429</b>	<b>302,278,255</b>	<b>0</b>	<b>483,678,996</b>	
2009	239	109	333,773,107	363,460,377	0	452,634,864	
2008	210	91	340,429,976	311,121,660	0	420,195,579	
2007	172	67	380,601,853	256,710,868	0	411,767,176	
2006	168	59	368,095,875	217,278,376	0	412,468,760	
2005	149	51	390,610,134	199,446,347	0	393,714,308	
2004	131	47	425,894,436	198,752,419	0	370,342,710	
2003	97	34	525,379,842	176,430,068	0	342,980,733	
2002	118	42	427,072,126	181,466,591	0	331,509,039	
2001	110	39	457,575,262	177,141,048	0	336,565,235	
2000	98	22	385,191,241	93,243,804	0	345,788,475	
<b>#3 PVC</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>0</b>	<b>0</b>	<b>740,085</b>	<b>950</b>	<b>0</b>	<b>23</b>	
2009	0	0	986,777	1,846	0	0	
2008	8	8	948,340	78,331	0	1,399	
2007	14	14	752,626	107,992	0	6	
2006	19	19	314,221	60,124	0	529	
2005	6	6	570,261	36,597	0	1,693	
2004	5	5	922,688	45,486	0	3,719	

<b>Rates</b>			<b>Containers</b>				<b>3 of 5</b>
<b>#3 PVC</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
2003	5	4	1,151,133	48,650	0	7,218	
2002	1	1	3,518,723	19,920	0	5,642	
2001	2	1	3,519,764	51,490	0	4,172	
2000	2	2	2,259,829	46,244	0	9,514	
<b>#4 LDPE</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>1</b>	<b>1</b>	<b>17,732,929</b>	<b>134,941</b>	<b>0</b>	<b>9,340</b>	
2009	1	1	10,393,343	85,146	0	5,705	
2008	0	0	8,828,872	14,277	0	3,222	
2007	0	0	6,888,846	10,778	0	5,543	
2006	0	0	6,462,289	5,782	0	12,055	
2005	0	0	6,900,494	8,140	0	1,265	
2004	0	0	5,862,416	2,951	0	473	
2003	0	0	7,301,050	2,575	0	13,214	
2002	0	0	13,679,022	2,417	0	10,423	
2001	1	0	14,066,167	9,638	0	106,864	
2000	0	0	893,623	228	0	47	
<b>#5 PP</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>4</b>	<b>4</b>	<b>695,958</b>	<b>24,392</b>	<b>0</b>	<b>2,890</b>	
2009	1	1	1,353,506	12,435	0	3,300	
2008	1	1	1,709,379	13,082	0	623	
2007	3	3	2,210,175	77,063	0	572	
2006	2	2	3,945,154	73,484	0	3,867	
2005	1	1	3,074,850	22,976	0	942	
2004	1	1	3,139,197	21,889	0	0	
2003	1	1	1,790,682	12,098	0	6,925	
2002	2	1	1,107,605	16,537	0	5,057	
2001	8	7	514,294	34,721	0	6,094	
2000	10	10	811,660	79,025	0	2,529	
<b>#6 PS</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>8</b>	<b>8</b>	<b>61,330,815</b>	<b>4,664,795</b>	<b>0</b>	<b>309,558</b>	
2009	3	2	62,646,529	1,309,518	0	429,732	
2008	1	1	51,728,106	607,647	0	21,768	
2007	1	1	33,996,598	387,283	0	40,131	
2006	1	1	32,432,195	247,029	0	12,488	
2005	1	1	32,641,452	205,317	0	19,544	
2004	0	0	52,667,652	82,155	0	22,238	
2003	0	0	74,408,481	32,680	0	50,193	
2002	0	0	73,390,428	26,699	0	9,144	
2001	0	0	49,856,952	39,758	0	13,855	
2000	0	0	26,362,287	66,534	0	3,281	
<b>#7 OTHER</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>11</b>	<b>10</b>	<b>27,481,289</b>	<b>2,864,262</b>	<b>0</b>	<b>378,301</b>	
2009	9	8	37,945,726	2,998,099	0	383,619	
2008	7	7	35,934,816	2,427,064	0	271,432	
2007	7	6	40,366,526	2,579,342	0	266,837	
2006	5	4	41,525,903	1,788,663	0	229,111	

<b>Rates</b>			<b>Containers</b>				<b>4 of 5</b>
<b>#7 OTHER</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
2005	6	6	29,787,510	1,801,073	0	76,924	
2004	10	10	25,369,712	2,541,878	0	126,225	
2003	1	1	25,520,391	290,781	0	33,095	
2002	0	0	20,544,424	41,234	0	10,531	
2001	0	0	10,842,578	19,820	0	10,112	
2000	1	1	14,656,909	80,409	0	23,362	
<b>BIMETAL</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>13</b>	<b>12</b>	<b>23,385,562</b>	<b>2,893,998</b>	<b>0</b>	<b>326,352</b>	
2009	10	10	38,733,488	3,694,325	0	301,084	
2008	14	14	31,632,517	4,306,701	0	347,164	
2007	10	9	38,942,741	3,699,321	0	401,092	
2006	8	8	41,529,914	3,235,096	0	356,523	
2005	8	7	47,178,540	3,508,551	0	432,928	
2004	6	5	65,019,282	3,020,186	0	1,057,274	
2003	6	6	68,296,985	4,098,082	0	520,747	
2002	2	1	56,396,942	785,045	0	156,002	
2001	1	1	47,846,889	523,120	0	164,993	
2000	1	1	25,093,499	297,767	0	63,323	
1999	11	11	2,270,648	260,797	0	15,370	
1998	13	13	2,088,892	264,603	0	10,246	
1997	19	19	2,252,193	432,794	0	27,375	
1996	17	17	2,230,519	388,095	0	29,890	
1995	21	21	2,268,190	484,539	0	21,375	
1994	17	17	2,506,373	430,610	0	10,470	
1993	19	19	3,655,432	683,945	0	16,945	
1992	12	12	6,453,684	796,519	0	42,330	
1991	14	14	6,353,803	878,207	0	59,958	
1990	3	3	10,529,837	314,760	0	34,415	
1989	2	2	10,643,975	199,890	0	354,570	
1988	0	0	7,683,421	13,237	0	300	
<b>All MATERIALS</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>2010</b>	<b>84</b>	<b>82</b>	<b>20,263,724,097</b>	<b>16,536,683,625</b>	<b>618</b>	<b>1,264,478,395</b>	
2009	84	82	20,998,494,573	17,250,912,110	1,697	1,198,128,709	
2008	75	74	21,953,226,128	16,169,529,337	7,525	1,002,845,178	
2007	69	67	21,924,621,254	14,738,050,903	9,638	1,027,841,756	
2006	61	60	21,920,558,259	13,197,711,698	2,821	935,026,546	
2005	62	61	20,485,271,759	12,417,324,219	2,130	895,371,171	
2004	61	59	20,237,496,286	12,034,573,093	128,867	838,076,736	
2003	56	55	19,242,495,939	10,533,460,820	364,085	842,851,246	
2002	60	58	18,176,119,077	10,629,955,059	380,457	837,793,099	
2001	62	60	17,513,174,192	10,518,747,707	378,452	887,174,501	
2000	62	61	16,558,409,123	10,190,977,803	4,193,806	808,294,098	
1999	76	74	13,169,728,648	9,742,102,332	56,547,053	761,054,109	
1998	76	74	13,107,568,019	9,646,672,886	78,152,008	751,835,350	
1997	78	76	12,889,096,434	9,666,106,446	90,836,718	759,117,911	

<b>Rates</b>			<b>Containers</b>				<b>5 of 5</b>
<b>All</b>	<b>Redemption</b>	<b>Recycling</b>	<b>Sales*</b>	<b>Recycled</b>	<b>Refillable</b>	<b>Postfilled</b>	
<b>MATERIALS</b>							
1996	78	76	12,508,701,533	9,439,039,918	102,421,509	685,927,048	
1995	83	81	12,237,873,040	9,786,426,401	111,828,496	769,229,625	
1994	80	79	12,803,124,621	10,024,685,614	125,310,440	612,123,877	
1993	82	81	12,579,084,739	10,083,591,274	147,140,942	642,306,615	
1992	85	82	13,044,123,346	10,469,716,585	168,996,240	982,078,388	
1991	82	80	13,110,373,852	10,339,154,185	198,954,148	699,826,773	
1990	70	70	13,682,053,525	9,294,834,458	215,792,631	345,400,108	
1989	56	56	12,935,531,202	6,923,416,826	304,045,641	267,162,865	
1988	55	52	12,562,618,766	6,105,812,527	441,803,396	685,648,387	

\* Because of the delay between the time a container is distributed for sale and the time it is returned for recycling, the Department has determined the average "Return Time" as two months. The sales shown reflect this two month lag period.

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# Biannual Report of Beverage Container Sales, Returns, Redemption & Recycling Rates

<b>RATES</b>	<b>CONTAINERS</b>
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ALUMINUM	Redemption	Recycling	Sales*	Recycled	Refillable	Postfilled
JUL - DEC 2010	92	92	4,690,972,850	4,335,150,421	0	78,255,150
JAN - JUNE 2010	95	95	4,139,530,221	3,927,101,177	0	105,028,761
JUL - DEC 2009	91	91	4,868,254,684	4,412,768,853	0	101,199,661
JAN - JUNE 2009	91	91	4,332,122,180	3,941,500,646	0	44,303,845
<b>GLASS</b>						
JUL - DEC 2010	90	81	1,560,018,180	1,256,831,829	318	211,907,776
JAN - JUNE 2010	101	90	1,365,423,094	1,225,430,897	300	208,325,167
JUL - DEC 2009	85	77	1,667,765,942	1,276,277,514	805	211,175,108
JAN - JUNE 2009	96	85	1,463,364,328	1,243,043,696	892	229,286,263
<b>#1 PET</b>						
JUL - DEC 2010	63	63	4,499,646,536	2,856,964,781	0	92,837,810
JAN - JUNE 2010	74	74	3,548,291,149	2,622,342,927	0	83,418,271
JUL - DEC 2009	69	69	4,522,439,326	3,136,311,034	0	82,339,591
JAN - JUNE 2009	78	78	3,658,715,637	2,869,448,621	0	76,065,937
<b>#2 HDPE</b>						
JUL - DEC 2010	228	86	170,100,621	146,622,140	0	247,960,206
JAN - JUNE 2010	242	98	158,374,808	155,656,115	0	235,718,790
JUL - DEC 2009	225	102	176,283,701	180,495,866	0	225,952,036
JAN - JUNE 2009	254	116	157,489,406	182,964,511	0	226,682,828
<b>#3 PVC</b>						
JUL - DEC 2010	0	0	154,034	433	0	17
JAN - JUNE 2010	0	0	586,051	517	0	6
JUL - DEC 2009	0	0	582,064	846	0	0
JAN - JUNE 2009	0	0	404,713	1,000	0	0
<b>#4 LDPE</b>						
JUL - DEC 2010	1	1	10,571,451	94,225	0	5,841
JAN - JUNE 2010	1	1	7,161,478	40,716	0	3,499
JUL - DEC 2009	0	0	5,599,955	11,654	0	1,699
JAN - JUNE 2009	2	2	4,793,388	73,492	0	4,006
<b>#5 PP</b>						
JUL - DEC 2010	5	5	347,076	15,714	0	1,624
JAN - JUNE 2010	3	2	348,882	8,678	0	1,266
JUL - DEC 2009	1	1	855,145	8,855	0	3,272
JAN - JUNE 2009	1	1	498,361	3,580	0	28

(Continued on next page)



# Biannual Report of Beverage Container Sales, Returns, Redemption & Recycling Rates

Table 2  
May 10, 2011

<b>RATES</b>		<b>CONTAINERS</b>				
#6 PS	Redemption	Recycling	Sales*	Recycled	Refillable	Postfilled
JUL - DEC 2010	7	7	32,775,033	2,267,490	0	190,656
JAN - JUNE 2010	8	8	28,555,782	2,397,305	0	118,902
JUL - DEC 2009	2	2	32,560,740	718,512	0	120,354
JAN - JUNE 2009	3	2	30,085,789	591,006	0	309,378
<b>#7 OTHER</b>						
JUL - DEC 2010	10	9	15,815,205	1,426,915	0	202,429
JAN - JUNE 2010	13	12	11,666,084	1,437,347	0	175,872
JUL - DEC 2009	6	5	26,384,690	1,437,591	0	202,963
JAN - JUNE 2009	14	13	11,561,036	1,560,508	0	180,656
<b>BIMETAL</b>						
JUL - DEC 2010	11	11	12,824,642	1,376,413	0	118,218
JAN - JUNE 2010	16	14	10,560,920	1,517,585	0	208,134
JUL - DEC 2009	7	7	26,579,935	1,790,673	0	119,930
JAN - JUNE 2009	16	16	12,153,553	1,903,652	0	181,154
<b>ALL MATERIALS</b>						
JUL - DEC 2010	80	78	10,993,225,628	8,600,750,361	318	631,479,727
JAN - JUNE 2010	88	86	9,270,498,469	7,935,933,264	300	632,998,668
JUL - DEC 2009	81	80	11,327,306,182	9,009,821,398	805	621,114,614
JAN - JUNE 2009	87	85	9,671,188,391	8,241,090,712	892	577,014,095

## CALCULATION OF REDEMPTION AND RECYCLING RATES

A = number of empty beverage containers returned

B = refillables returned

C = postfilled food or drink packaging containers returned

D = number of beverage containers sold

$$\text{Redemption Rate} = \frac{A + B + [C - (0.05 \times (A + B))]}{D}$$

$$\text{Recycling Rate} = \frac{(A+B)}{D} \quad \text{(The value in brackets [ ] is included only when greater than zero.)}$$

CONTAINER PER POUND RATES (GRV/POSTFILLED)	ALUMINUM	GLASS	#1 PET	#2 HDPE	#3 PVC	#4 LDPE
JAN - AUG 2010	29.3/32.25	1.9/0.93	15.0/6.05	5.9/4.9	9.8/NA	39.4/NA
SEPT - DEC 2010	28.2/32.25	1.9/0.93	14.3/6.05	5.9/4.9	9.2/NA	37.8/NA
PER POUND RATES (CRV/POSTFILLED)	#5 PP	#6 PS	#7 OTHER	BIMETAL		
JAN - AUG 2010	3.2/NA	120.2/NA	4.7/NA	4.7/NA		
SEPT - DEC 2010	3.2/NA	82.1/NA	5.0/NA	4.7/NA		

**FOOTNOTE:** \* Because of the delay between the time a container is distributed for sale and the time it is returned for recycling, the Department has determined the average "Return Time" as two months. The sales shown reflect this two month lag period.

\* Beginning 2003, all recycling and redemption rates are presented as whole numbers.