Beverage Container Recycling

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Container Recycling Institute
May 29, 2012

Container Recycling Institute:

Striving to make North America a global model for the collection and quality recycling of packaging materials.

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AGENDA

- Overview of container deposit-refund in North America
- Where beverage containers are generated
- Recycling economics, generally
- Economics of container deposit-refund
- Different models of container deposit-refund (operational & financial)
- Impact on municipalities
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Beverage containers are 5.4% of the waste stream, by weight, but 20% of the waste stream, by energy or GHG

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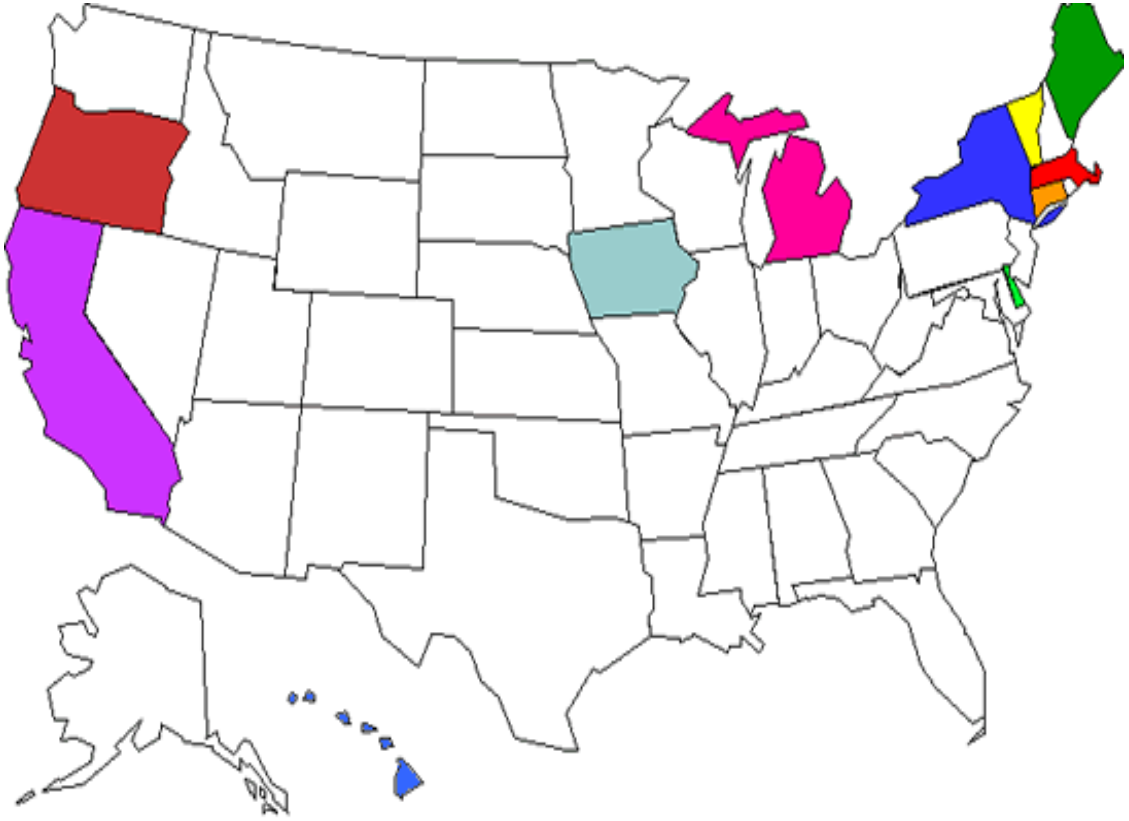
U.S. States with Container Deposit Laws

50% of all beverage containers recycled in the U.S. come from these 10 states



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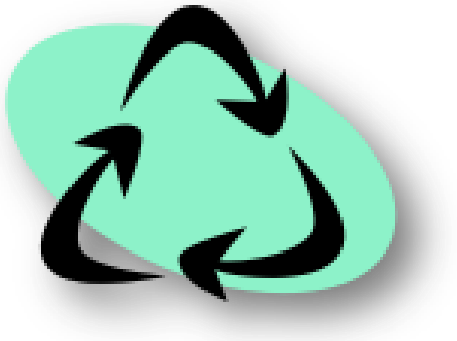
Canadian Provinces with CDL

- Quebec
- British Columbia
- Newfoundland
- Nova Scotia
- Ontario
- Alberta
- New Brunswick
- Saskatchewan
- Prince Edward Island
- Yukon

Worldwide Trend Toward New and Expanded Beverage Container Deposit Laws (Since 2000)

- Total of 45 programs worldwide
- NEW since 2005: Germany, Hawaii, the Northern Territory of Australia, Guam, Estonia, Croatia, Fiji and Turks and Caicos
- Now 6 states have expanded laws (CA, OR, HI, CT, NY and ME)
- OR, NY and CT Expanded in 2009 (water)
- Ontario expanded in 2007 (wine, liquor); Alberta added milk in 2009

Recovery Rates



- California: 82% (includes curbside)
- OR: 75% (2009)
- HI: 76% for 2010/11
- CA, OR and HI have a 5-cent deposit (CA is 10 cents on larger containers)
- Range from 67% in NY (2007) to 97% in MI (10 cent deposit)

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Where are beverage containers generated?

- Consumed on the go
- Bars, restaurants, shopping malls, gas stations, convenience stores, vending machines, schools, sporting events, concerts, fairs, etc.
- Industry estimates that one third of all beverages are consumed away from home (based on location of sale)
- For PET, an estimated 63% are generated away from home (BEAR, 2002)

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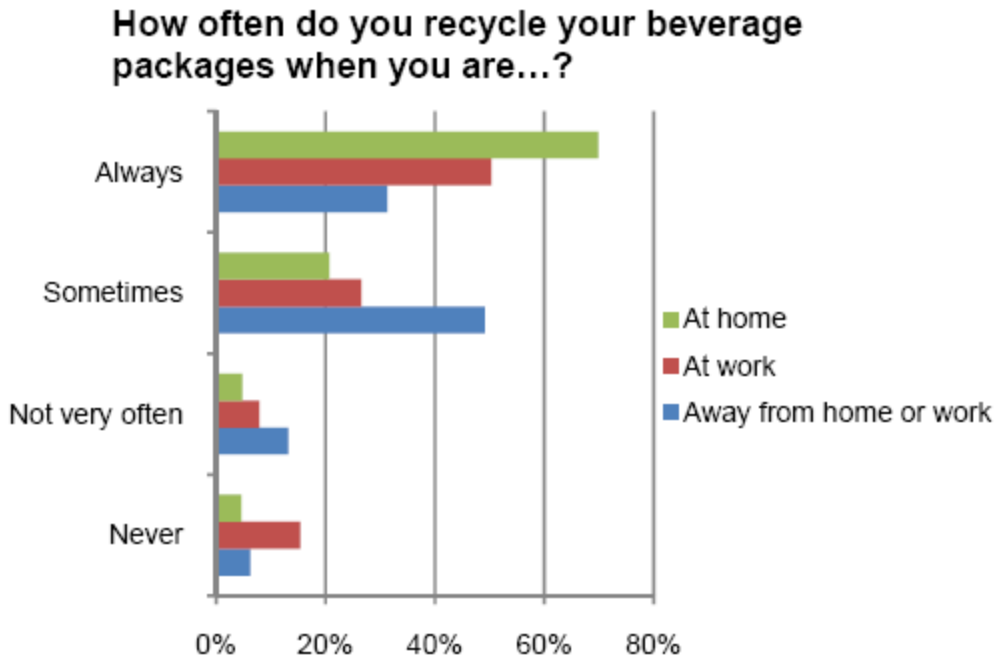
“Consumers are much less likely to recycle their beverage packages when away from home or at work”



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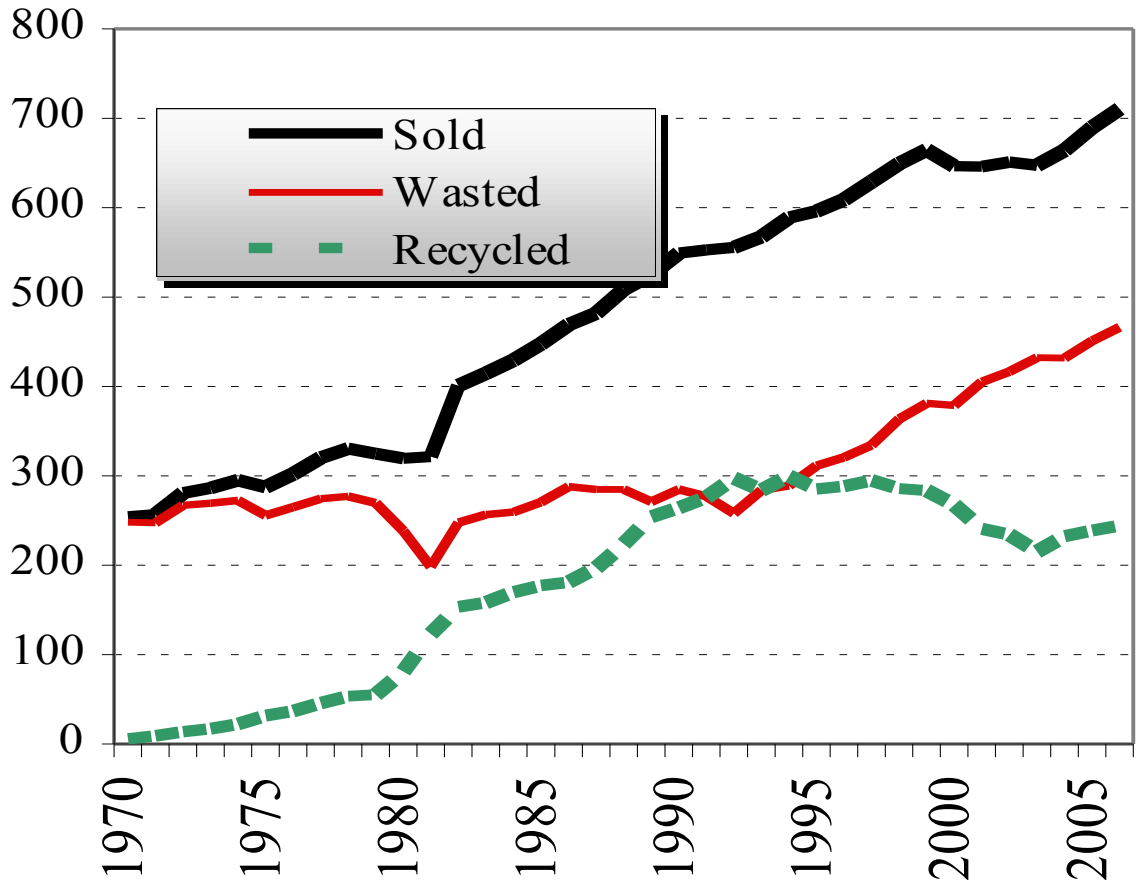
Source: July 2010 Beverage Pulse, “Environmental Concerns: The impact on beverage and package decisions”

Fig 2. Per Capita Beverage Sales, Recycling & Wasting, 1970-2006



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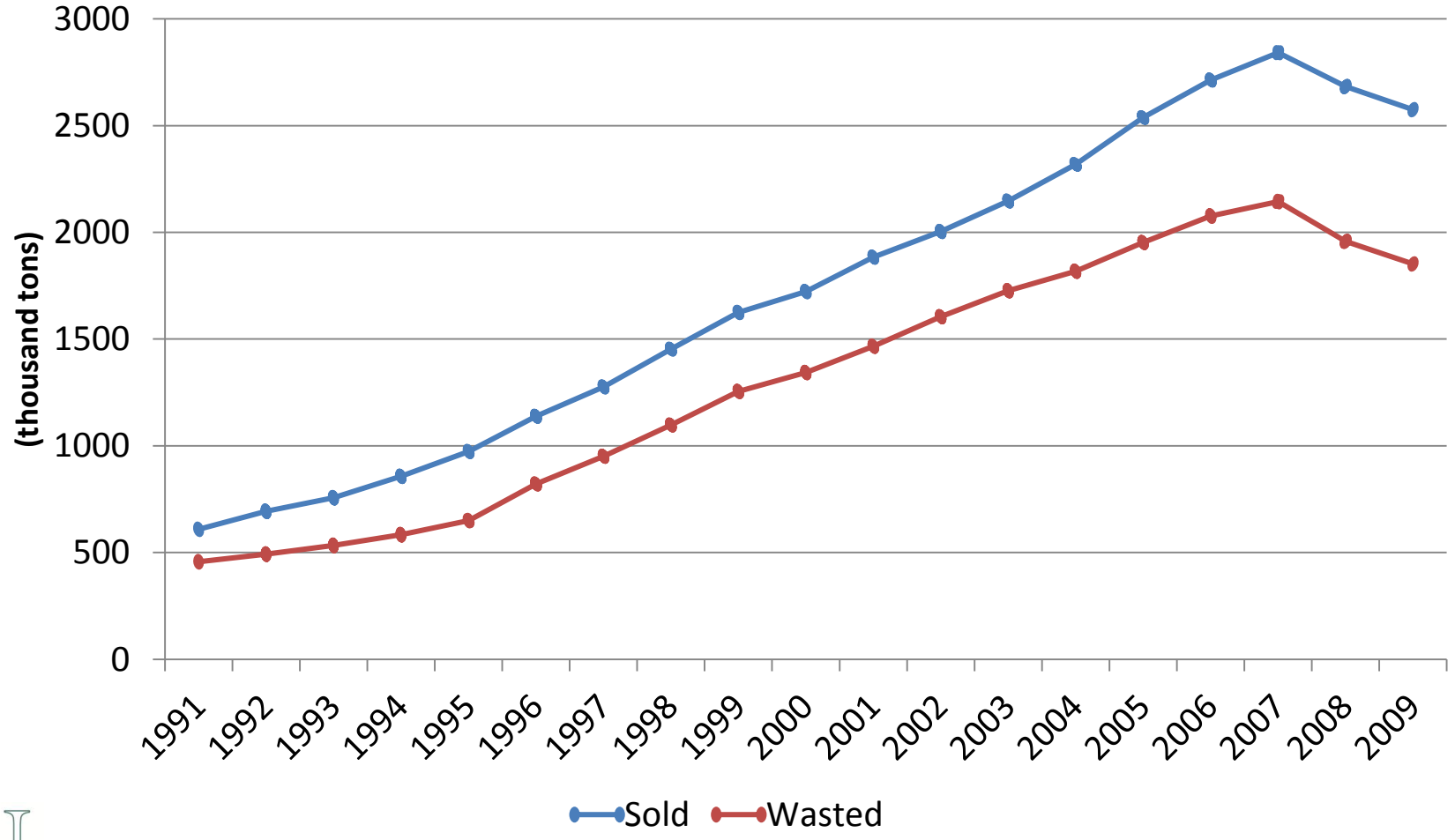
PET Bottle Sales and Wasting in the U.S., 1991-2009



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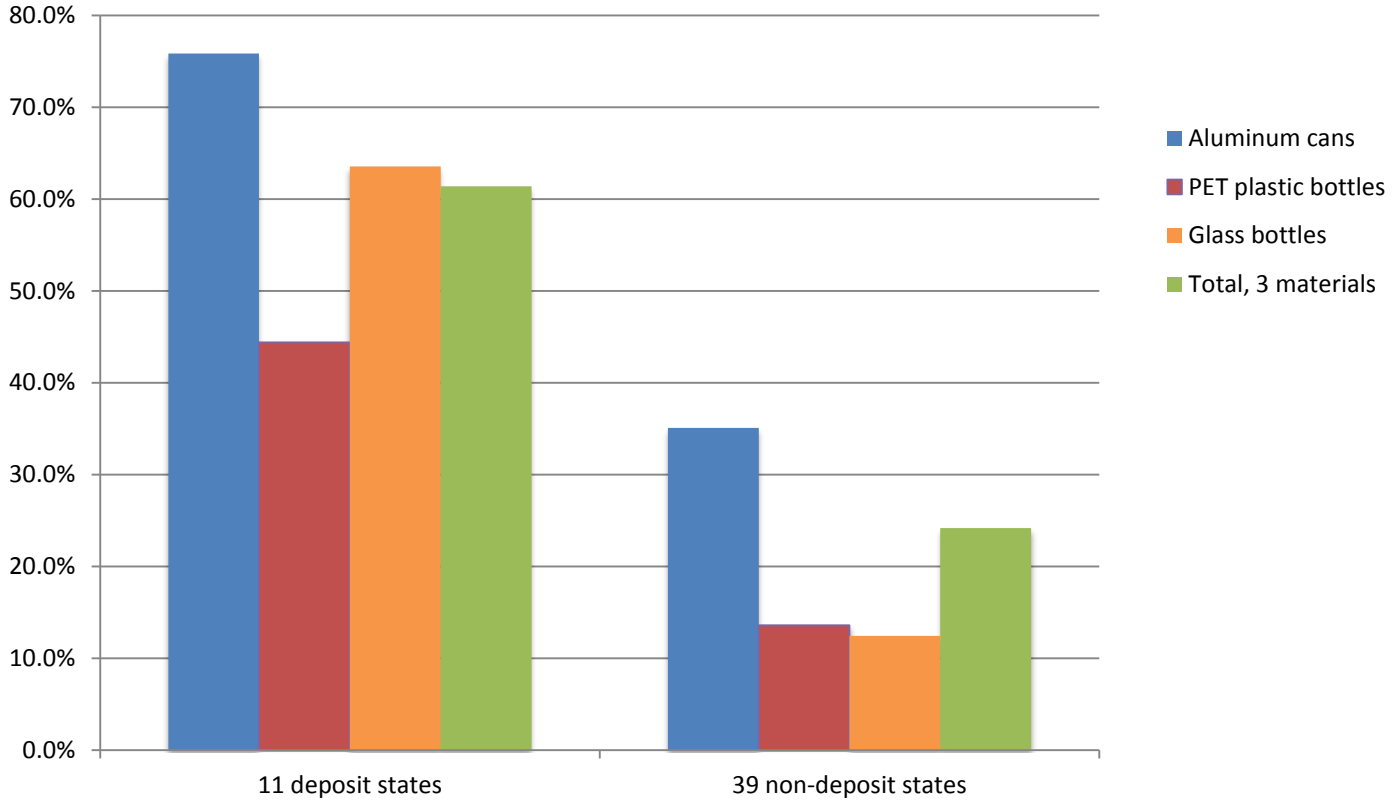
Container Deposit Return Programs Result in Higher Beverage Container Recycling Rates

Average Beverage Container Recycling Rates
(By Weight)



Source: CRI's 2008 Beverage Market Data Analysis (using 2006 data)

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Ontario Canada: Wine/Spirits out of "Blue Box" …. added to deposit program

Wine/Spirits	CY '06 Blue Box	07/08 Deposit	2010 Deposit
Glass	69%	69%	80%
PET	22.1%	34%	53%
Tetra/Bag in box	N/A	29%	33%
Aluminum Cans	44.9%	74%	82%
TOTAL		67%	77%

- The Beer Store Overall Recycling Rate: 94%
  (for combination of beer program and wine/spirits)

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$ VALUE OF LANDFILLED MATERIALS

Material Type (beverage only)	Price per ton	Value of Existing Scrap Recycling	Value of Scrap Currently Wasted
Aluminum	$1,300	$910 million	$1 billion
PET	$640	$325 million	$1.3 billion
Glass	$25	$68 million	$175 million
Total	N/A	$1,303	$2.475 billion

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"Cost Per Ton" concept is very misleading when used with different mixes of material types

- Ontario Blue Box net costs per ton, based on 2010
- Cost methodology is determined by activity-based-costing, peer reviewed, so that each producer pays their fair share
- Aluminum, PET were at historic lows, and prices have increased dramatically
- Aluminum -$532/ton (net revenue)
- PET $1,000/ton
- Glass $118 – 152/ton
- Newspaper $19/ton
- Plastics, laminates and composites can cost up to 20 times as much as other materials
- Collection frequency strong driver of cost

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Cost to Recycle in Ontario, Canada
(by category, per ton)

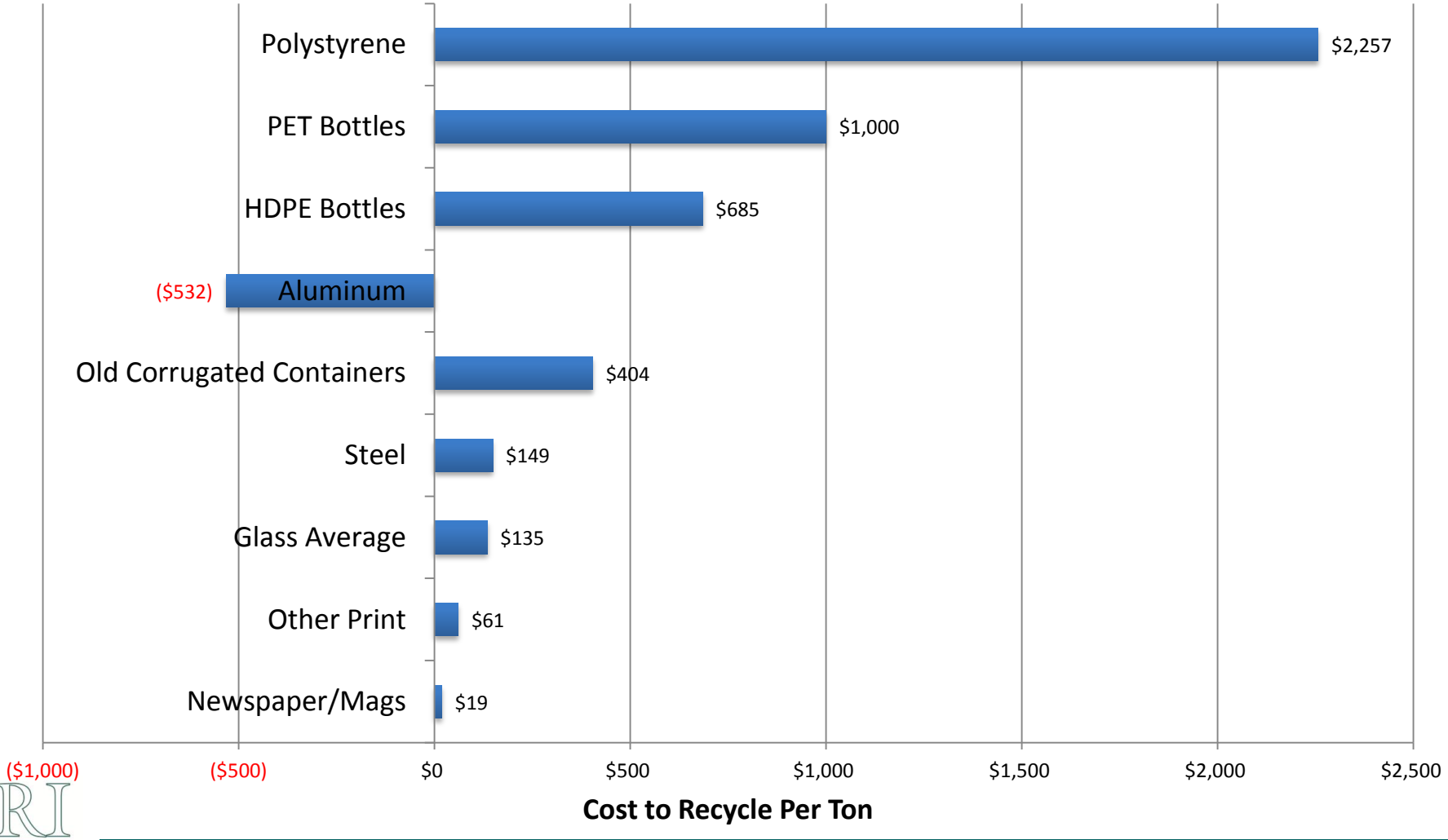

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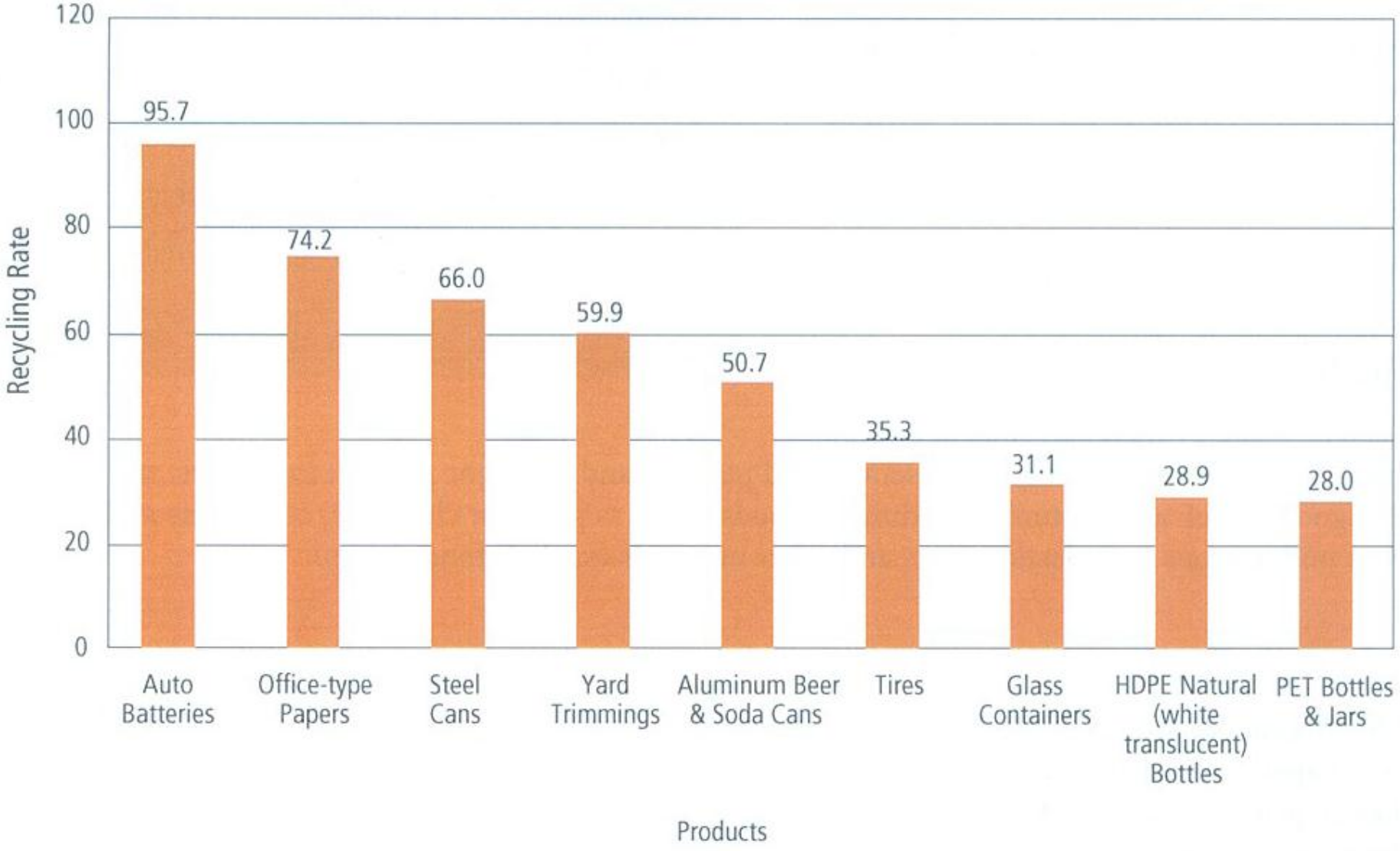
Figure 3. Recycling Rates of Selected Products, 2009*



*Does not include combustion (with energy recovery).

Source: USEPA

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NET Cost of Container Deposit Programs

- Net cost = expenses – revenues (scrap value and unredeemed deposits)
- California, less than ½ cent per container
- Hawaii, 1 cent per container
- Oregon, no external funding

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California program

- Aluminum and PET: cost of recycling is less than scrap value (2012)
- Manufacturers make no payments for AL and PET
- California curbside programs receive payments that total over $100 million per year for recycling beverage containers
  - Return of deposit ($81 million in 2010)
  - Processing payments ($9 million in 2010)
  - Curbside payments ($15 million in 2010)
  - Plus scrap value (approx. $30 million in 2011)

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Operational Models

- Return-to-retail only
- Redemption centers only
- Combination of return-to-retail and redemption centers
- Mobile collection sites in rural areas
- Community collection programs (charities, libraries, etc.)

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Financial Models

- Single state fund (California and Hawaii)
- Single industry-operated fund (Oregon, Canadian provinces)
- No common fund, each distributor manages their own revenues and expenses (all other US states, some European programs)

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Cost Savings for Municipalities

SAVINGS ON:

- Collection costs for recyclables
- Processing costs for recyclables
- Collection costs for disposal
- Landfill tipping fees
- Litter collection pick-up costs
- Collection from public litter bins
- Storm drain (or waterway) cleanup costs

REVENUE LOST:

- Sale of recyclables (scrap value)

Bottle Bills Decrease Taxpayer Burden

"…it (the Returnable Container Act - RCA) has internalized the cost of solid waste management for beverage containers covered by the RCA…Therefore the taxpayer does not have to subsidize the disposal of empty beverage containers."

Then-Governor of New York George Pataki

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Congressional Research Service, 1993 regarding container deposit-refund and curbside recycling

- "Both systems can serve as elements of comprehensive recycling programs. Neither constitutes a comprehensive program by itself. Neither excludes the use of the other."
- "Deposit systems skim potential sources of revenue from curbside programs, but they also reduce the operating costs of curbside programs. Local governments would appear to achieve greater diversion of solid waste from disposal at a lower cost per ton if both a bottle bill and a curbside collection program were in place."

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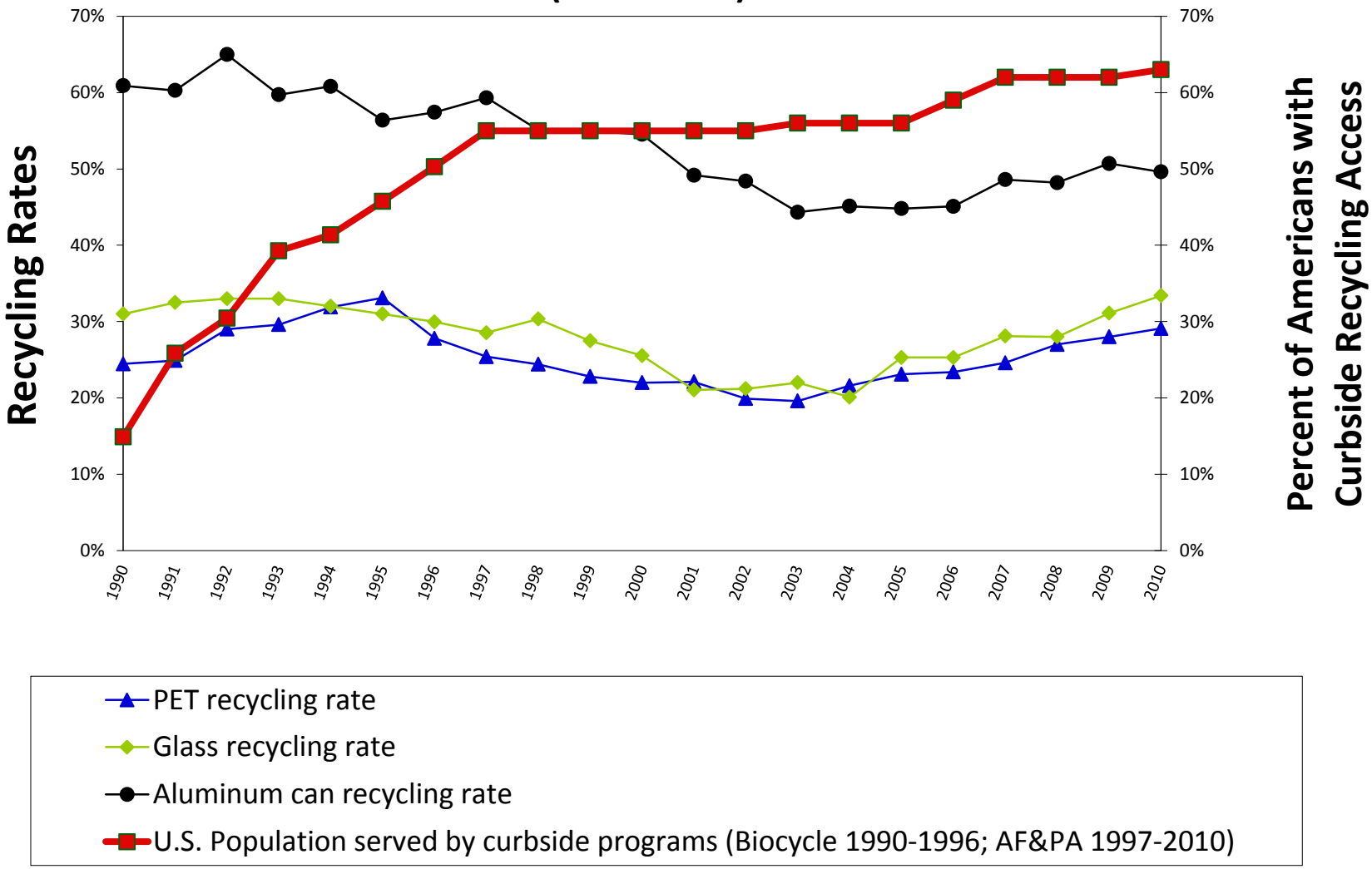
Comparing Curbside Recycling Access and Beverage Container Recycling Rates (1990-2010)



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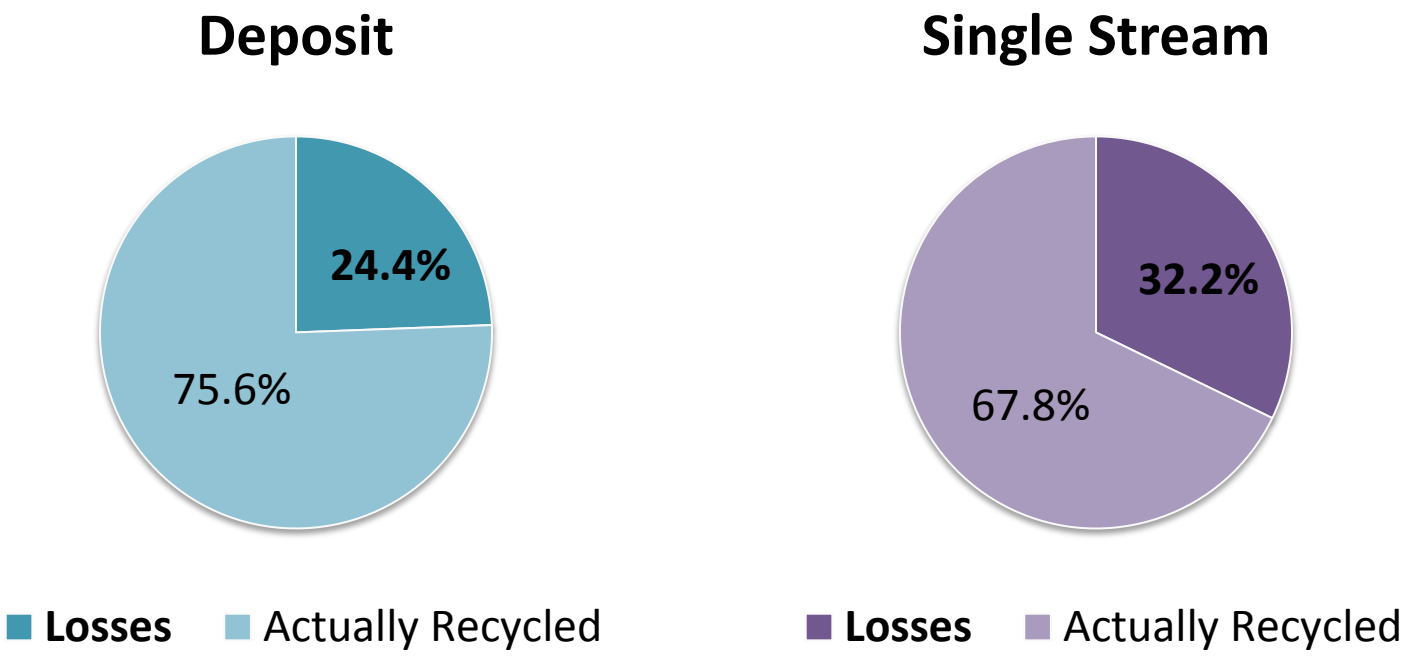
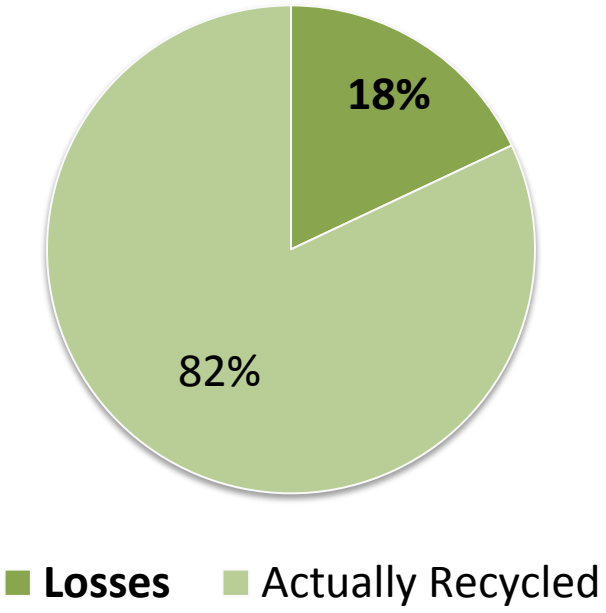
In the average single-stream collection program, if you collect 100 tons of recyclables at the curb, on average, 75 tons will actually be recycled into new products, and most of the rest will be landfilled.

Plastics, PET



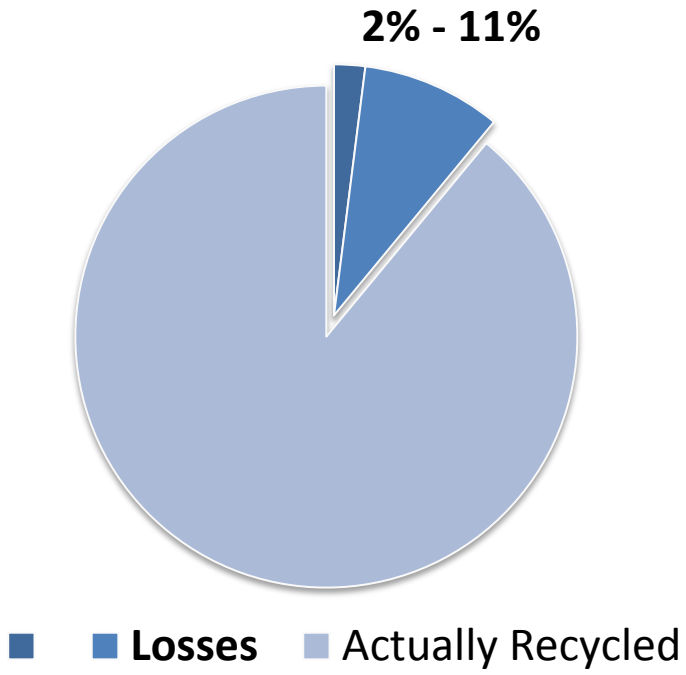
U.S. (PET) reclaimers reported yield losses ranging from **24.4** percent for deposit bottles to **32.2** percent for curbside material. Some non-PET items can be recycled elsewhere, like caps.
Source: NAPCOR/APR

Paper



Paper mills that receive materials from single-stream MRFs have contamination rates that are as high as **18** percent.

Aluminum

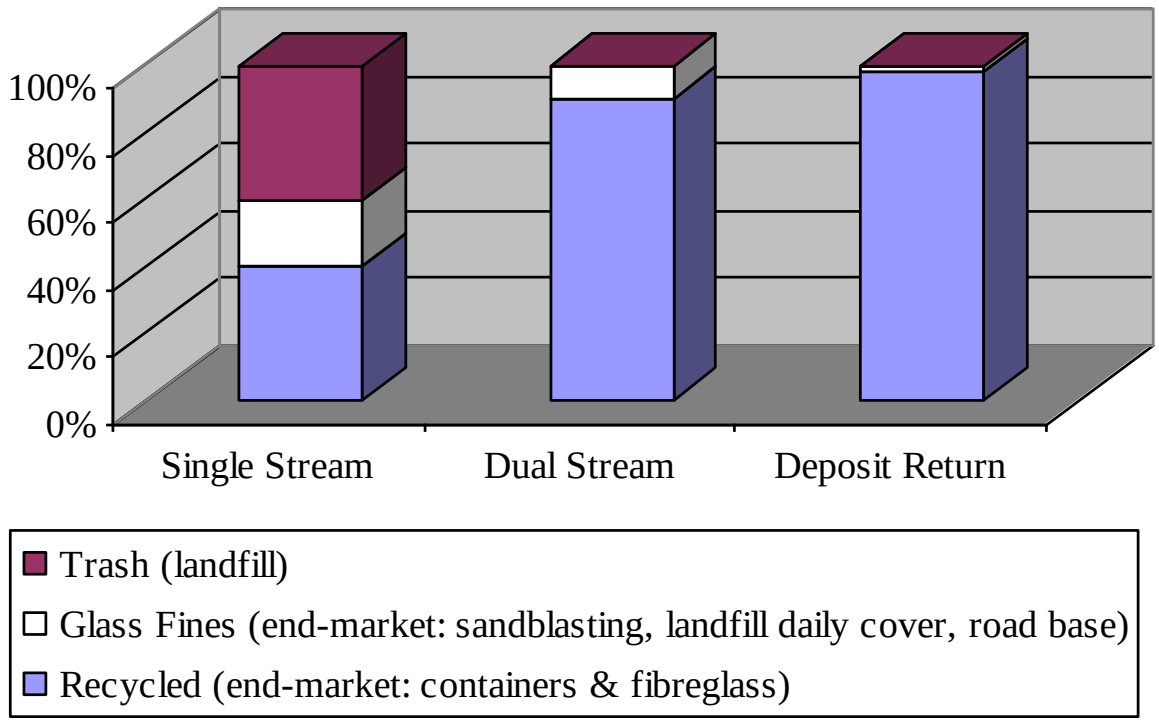


Single-stream contamination rate of aluminum ranges from **2** to **11** percent.

Single Stream and Glass

- At a SS MRF, even with best practices, container glass recycling is costly and extremely challenging because of breakage and contamination.

Figure 1: End-Markets for Collected Glass
(Source: Strategic Materials)



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Deposit vs. Single Stream Glass

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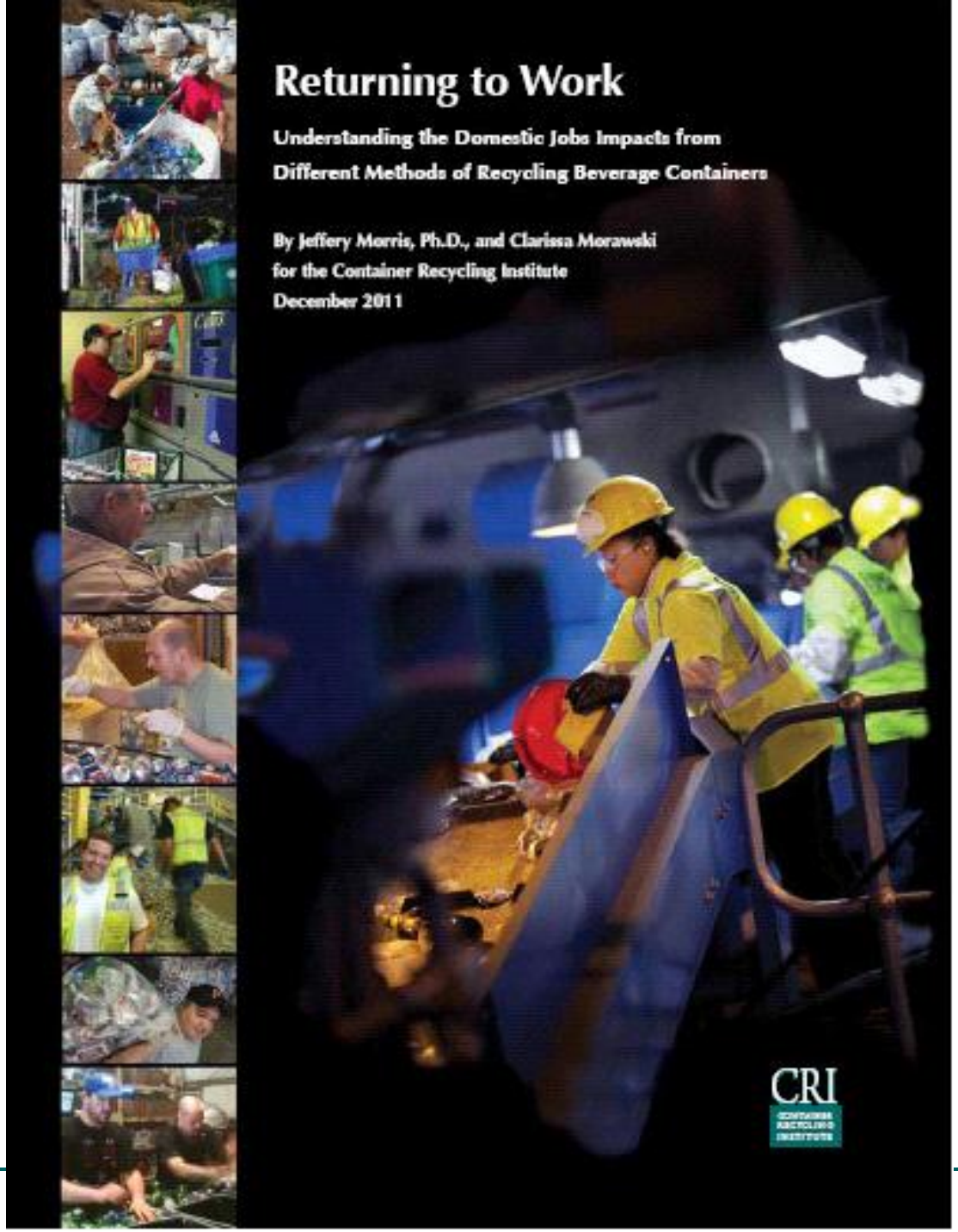

Prepared by:

Sound Resource Management

Sound Resource Management

CM Consulting

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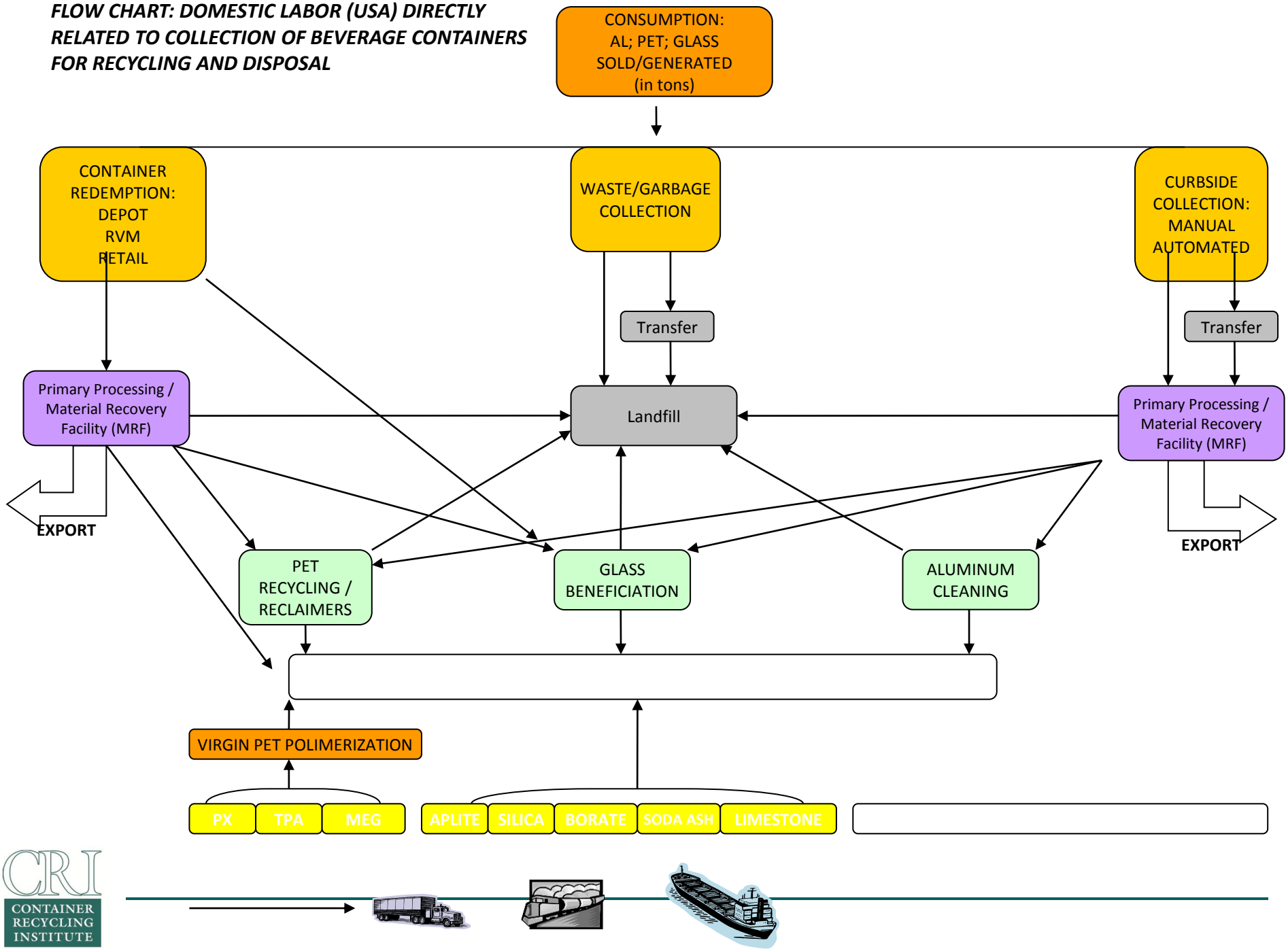
FLOW CHART: DOMESTIC LABOR (USA) DIRECTLY RELATED TO COLLECTION OF BEVERAGE CONTAINERS FOR RECYCLING AND DISPOSAL



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Conclusions

- Improved material quality directly impacts U.S. jobs; clean/separated recyclables more likely to stay in the U.S. for use by domestic manufacturers rather than be exported to foreign markets

- A deposit refund collection system for beverage containers creates many more domestic jobs than curbside collection.

Jobs Calculator

- Input two-letter code for State to automatically calculate the number of jobs that will be created
- User can customize and change certain inputs
- http://www.container-recycling.org/
- http://www.container-recycling.org/issues/jobs.htm
- Jobs page has CRI Study, “Returning to Work,” the jobs calculator, and links to several other studies on recycling jobs

Beverage Container Litter can be reduced

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Bottle Bills Reduce Litter

State	Beverage Container Litter Reduced	Total Litter Reduced
NY	70 - 80%	30%
OR	83%	47%
VT	76%	35%
ME	69 - 77%	35 - 56%
MI	80%	38%
IA	77%	38%

Source: "Trade-offs Involved in Beverage Container Deposit Legislation", US GAO, 1990.

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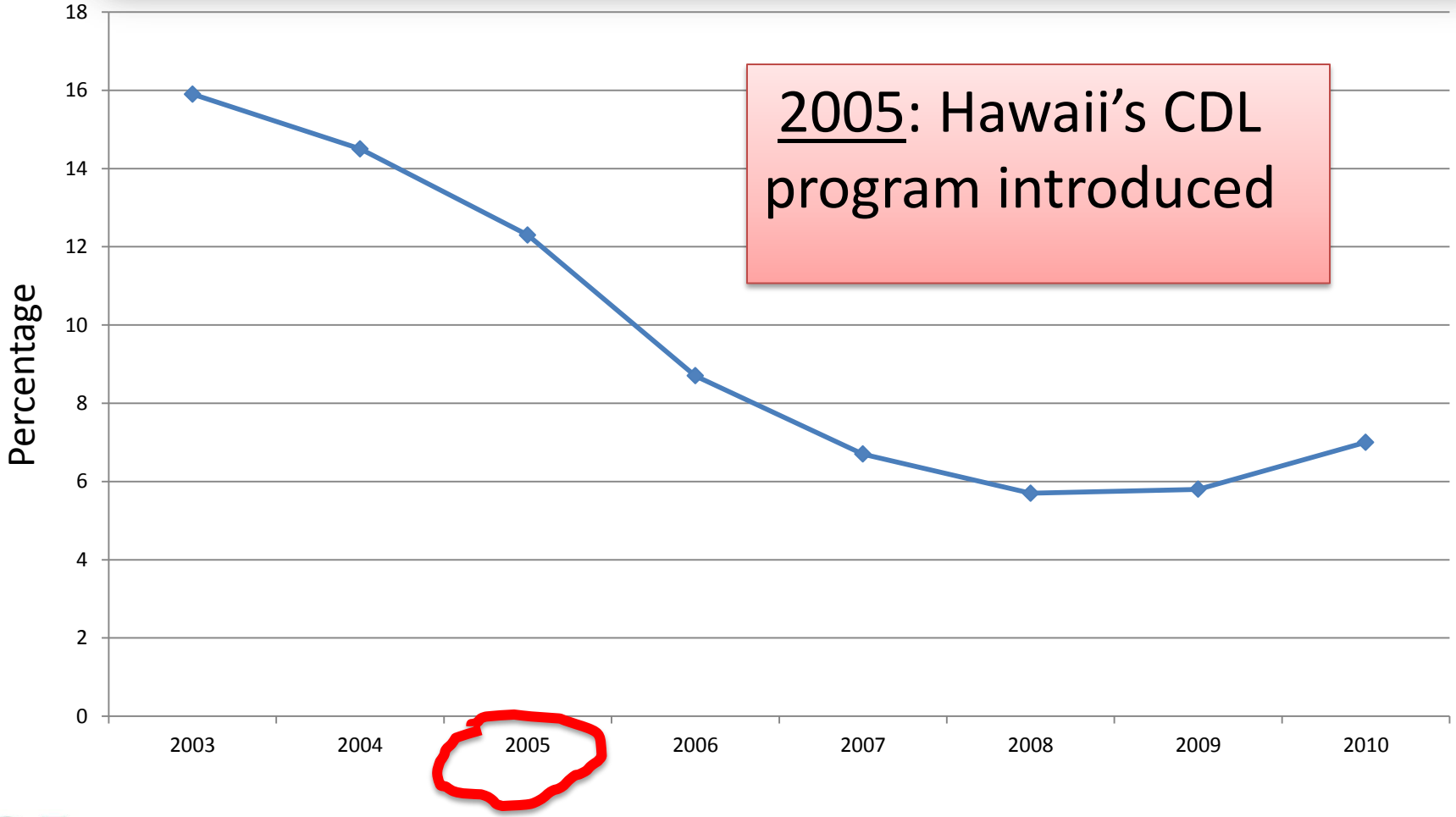
Hawaii Beverage Containers As Percentage of Total Litter



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Source: Ocean Conservancy International Coastal Cleanup, 2003 - 2010

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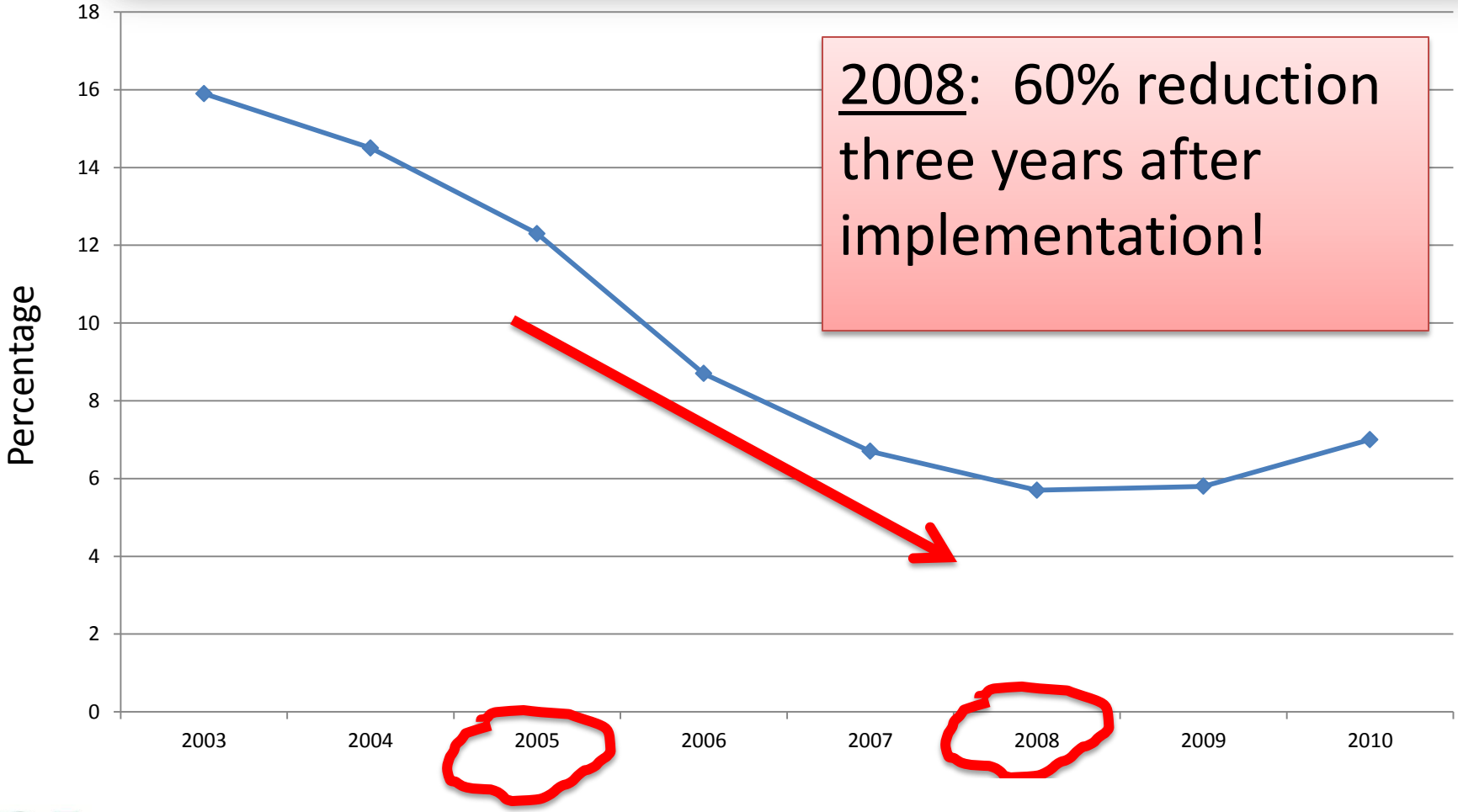

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