

Preliminary Analysis of Beverage Container Recovery Costs in the BEAR Report^{1 2}

Our review suggests that the costs of at least three of the five recovery programs analyzed in the BEAR report are inaccurate. Adjusting the results completely changes the study's conclusions with respect to costs. Therefore we believe that the study is of limited value for evaluating or setting policy.

The most surprising and most quoted conclusion from both the preliminary and final reports is the low cost attributed to the California redemption program.³ Our review of the report suggests that the California costs are significantly understated because they fail to include all costs that should be attributed to the program in 1999. We believe that BEAR also underestimated traditional deposit system costs using reverse vending machines (RVMs). Conversely, the assumptions surrounding curbside collection of beverage containers appear to overstate the cost of this approach.

As shown in the attached table and described in detail below, the California program is much more expensive than BEAR's estimates and it is less costly than curbside collection on a per-ton basis. While the system in place in California may be less expensive than other forced deposit systems, several circumstances specific to California serve to drive down those costs. Therefore it is unlikely that a similar system would perform the same way in another state. We would therefore add our emphasis to the disclaimer in the BEAR report that the study is not designed to "project the costs and impacts of expanding or replicating existing or newly designed programs in the future."⁴

Discussion: Validity of Key Cost Estimates

Our review raised significant questions about the validity of the estimates and the relative ranking of options. Addressing a few key issues dramatically changes the study's conclusions about the cost of various programs in place today.

Though increased substantially from an earlier draft, the California program costs⁵ are still artificially low. Rather than \$118/ton (0.55¢/ctr), a more realistic estimate is \$275/ton (1.27¢/ctr).

¹ "Understanding Beverage Container Recycling" A Value Chain Assessment prepared for the Multi-Stakeholder Recovery Project, Stage 1, Global Green USA and BEAR, DATE TBD.

² Analysis prepared for the National Soft Drink Association by Northbridge Environmental Management Consultants, Westford, MA.

³ California's system imposes deposits, but operates differently from traditional deposit programs or "bottle bills." Government plays a dominant role in the program and most redemption occurs through scrap dealers, rather than beverage retailers.

⁴ BEAR report page ES-1.

⁵ Unless otherwise noted, costs described in this analysis are net costs including collection and processing of material less scrap value earned.

BEAR's gross cost estimate of \$147 million for 1999 (BEAR Table 3-10) fails to include \$9 million in grants and administrative expenses of distributors. Our calculation of recycling and processing costs using Department of Conservation cost data adds another \$10 million for a revised gross cost of \$166 million.

The BEAR figures also ignore program amendments taking effect in 2000 which add even more to the program's cost. These amendments do not relate to expansion of the program to noncarbonated beverage containers (an element not analyzed in the BEAR report). These amendments were effectively put in place to spend-down the enormous surpluses built up in the program in prior years. These costs should be included and they are significant, adding another \$46 million to gross program costs. The additions cover increased administrative payments, grants, handling fees, subsidies to beverage recycling programs, and publicity.

Revised gross costs are \$212 million or \$509/ton (2.34¢/ctr); using BEAR's scrap value, net costs after scrap are \$275/ton (1.27¢/ctr), not \$118 (0.55¢/ctr) as reported. True costs of the program may be even higher, since it is unclear how scrap price subsidies or transportation costs are factored into BEAR's analysis.

We should also note that BEAR's own figures were already revised upwards dramatically since early figures were released in November stating that the California program costs were only 0.14¢. Since then, BEAR increased their estimates almost four-fold. Unfortunately, their estimates still do not capture the full cost of the system.

Cost of deposit programs with reverse vending machines is unrealistically low.

The cost of redeeming and processing containers through reverse vending machines (RVMs) is reported to be \$293/ton (1.13¢/ctr).

The assumed cost to retailers of redemption through RVMs is 1.71¢ per container (BEAR Table 3-7). This is well below actual costs experienced by retailers if all costs are included. Charges from reverse vending companies (lease payments, throughput charges) are only part of the cost. Stores also dedicate space to the equipment, empty the machines, clean the space frequently, and store the materials. In a recent survey of 171 New England supermarkets, only 5 had costs below 1.7¢.⁶

Using our supermarket survey average, the net cost for this option rises from 1.13¢ in the BEAR report to 1.90¢. With the information available in the BEAR report, we were not able to compute the corresponding increase in the cost per ton precisely as noted on the summary table. We estimate the cost per ton at approximately \$510, well above the \$293 in the BEAR report.

While deposits remain the most expensive options analyzed, our adjustment suggests that RVMs do not offer as much cost savings as BEAR calculated.

⁶ Northbridge research for the Connecticut Food Association, forthcoming Winter/Spring 2002.

Curbside and dropoff costs are inflated by very low scrap value assumptions for recovered material.

Sale of recovered material provides an important cost offset for all these programs; although containers are expensive to handle, these materials are relatively valuable commodities. The study computes weighted average scrap values, based on the market value for each material and the share of each material recovered in the various states and programs.

The study's assumptions about the share of material recovered differ significantly between programs: in deposit states, aluminum comprises 31% of material recovered (an atypically high percentage based on our research); in California aluminum is 26% of recovery; in curbside and dropoff programs, aluminum drops to only 6%. It is not clear whether this low percentage results from the inclusion of other beverage and non-beverage containers in the mix (since curbside and dropoff programs collect all containers, not just carbonated beverage containers) or some other factor. In any event, the assumptions in the BEAR report lead to a very low scrap value for these programs.

While we acknowledge the difficulty of computing a national average, BEAR's assumptions minimize scrap credit for curbside and dropoff programs and thereby increase the costs of these options. We believe a more appropriate scrap value for curbside and dropoff would fall somewhere between the \$118/ton used in the study and the \$368 cited for traditional deposits. For this exercise, we chose to apply the weighted scrap value per ton used for the California analysis, thereby lowering the net cost for curbside from \$266/ton (1.72¢/ctr) to \$151/ton (1.4¢/ctr).

Unclaimed deposits are not a legitimate credit to apply against program costs in this analysis.

Unclaimed deposits are transfer payments from consumers to states or beverage distributors and manufacturers. They do not affect the cost of one recycling system versus another; they do affect the distribution of the cost impact of the systems, however.

The study confuses this issue by presenting costs both with and without unclaimed deposits as cost offsets (see, for example, BEAR Tables ES-1 and 3-1). While the magnitude of unclaimed deposits is important for examining the equity of various options (who pays for the program), it does not affect program costs.

In light of BEAR's expressed intent to not count "transfer mechanisms" because they are "a cost to one party and a benefit to others,"⁷ showing costs net of unclaimed deposits is not appropriate.

⁷ BEAR page ES-4.

Discussion: Applying the Cost Estimates

Applying BEAR's curbside or dropoff costs to evaluate policy changes will yield erroneous results.

The limitations on the use of the study data are most apparent with regard to curbside and dropoff program costs, because these costs are presented as if the container portion of these programs would or could operate in isolation. In fact, they do not. For most US residents, curbside and dropoff programs capturing a wide range of materials are already in place and will remain in operation, regardless of how beverage containers are managed. The scope and economics of these programs depend heavily on the other materials collected (such as newspaper, other fiber, and non-beverage containers), complicating efforts to isolate the cost impact of beverage containers alone.

Policy-makers could easily misuse the study data. A state legislator might recommend the (apparently) inexpensive California system for recycling beverage containers, seeking to replace costly curbside collection with a less expensive system. In fact, many of the curbside costs attributed to beverage containers in the study would simply be shifted to other materials. Actual savings to the curbside program would be limited or nonexistent.

Similarly, efforts to increase capture of beverage containers through curbside or dropoff programs would not come at the average costs of curbside or dropoff reported in the study, but at a much lower, marginal cost.

Most policymakers consider incremental changes in programs, requiring a marginal cost analysis. The study is not designed for that purpose and this limitation on the costs must be emphasized.

Deposit and redemption program costs apply only to carbonated beverage containers.

While the study defines beverage containers broadly, the costs of deposit programs and the California program only relate to carbonated containers. Carbonated beverage containers account for about three-fourths of the total number analyzed.

Expanding the scope of deposit programs or the California redemption program fundamentally alters the economics of those programs. Maine's unique experiment to expand deposits to noncarbonated products brought about the establishment of an entirely new and far more expensive system to collect noncarbonated beverage containers. In California, the newly expanded program recovered only 13% of noncarbonated containers in its first year. By nearly tripling the number of plastic containers included in the program, the economics of container recovery in California are much different today than is reflected in the 1999 estimate from the BEAR report.

Deposit and California system costs in the report cannot be applied to noncarbonated beverage containers.

Revised Summary of Beverage Container Recovery Costs from the BEAR Report^{8 9}

- Our review focused on costs of three of the five recovery programs analyzed in the report. We concur with BEAR’s findings that traditional deposit systems are the most expensive programs analyzed and dropoff recycling is the least expensive.
- The California system costs are understated in the BEAR report. A more realistic cost is \$275/ton, up from the \$118/ton in the BEAR report.
- Reverse vending machine costs are understated as well. Our revised cost is \$510/ton, well above the \$293/ton figure in the BEAR report.
- Curbside costs are overstated, but difficult to estimate precisely. Our revised estimate is \$151/ton, down from \$266/ton in the BEAR report.
- See the attached document for more information¹⁰

Revised Cost Estimates for Beverage Container Recovery					
	Traditional Deposit System (Manual)	Traditional Deposit System (RVM)	California Redemption System	Residential Curbside System	Residential Dropoff System
Cost/ton					
Net System Collection and Processing Costs	\$722	~\$510* (\$293)	\$275 (\$118)	\$151 (\$266)	\$44
Cost/container					
Net System Collection and Processing Costs	2.67¢	1.90¢ (1.13¢)	1.27¢ (0.55¢)	1.40¢ (1.72¢)	0.30¢
<p><i>Where we adjusted the estimates, original figures from the BEAR report are shown below in ().</i> <i>* Approximate figure. The adjustment was made to the cost per container, but it could not be precisely converted to cost per ton based on information provided in the BEAR report.</i></p>					

⁸ “Understanding Beverage Container Recycling” A Value Chain Assessment prepared for the Multi-Stakeholder Recovery Project, Stage 1, Global Green USA and BEAR, DATE TBD.

⁹ Revised figures prepared for the National Soft Drink Association by Northbridge Environmental Management Consultants, Westford, MA.

¹⁰ “Preliminary Analysis of Beverage Container Recovery Costs in the BEAR Report,” prepared by Northbridge.