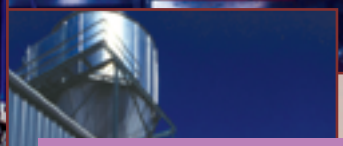
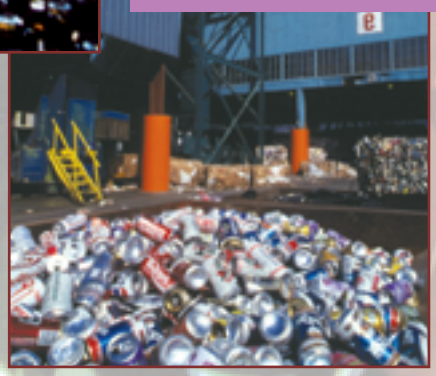
Reprinted from
RESOURCE RECYCLING
North America's Recycling and Composting Journal

Recovering Canada's containers





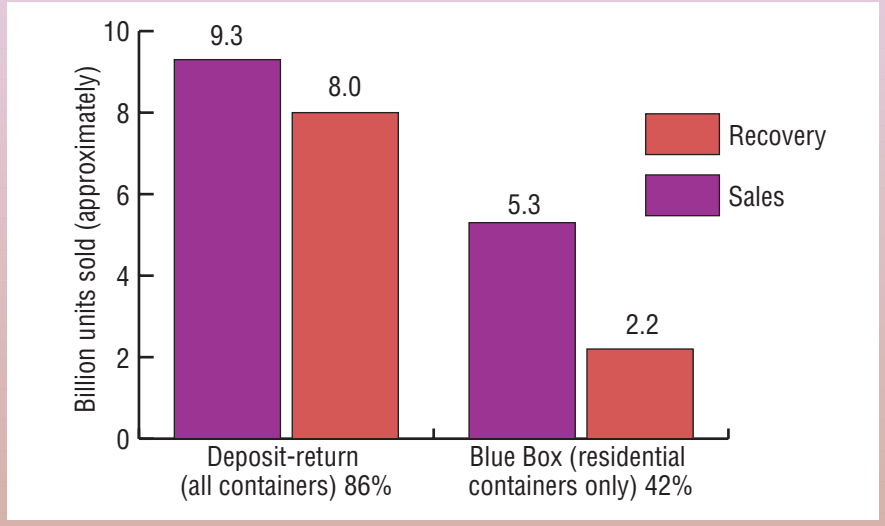
by Clarissa Morawski

Analyzing the performance and costs of Canada's beverage container recovery programs reveals a stark disparity between deposit-return and curbside collection programs.

Canadians are proud of their success when it comes to recovering beverage containers. Overall, Canada maintains a total recovery rate of 70 percent, representing just over 10 billion units collected per year. About 63 percent of beverage containers are sold into a deposit-return regime, with an 86 percent recovery rate (see Figure 1), and the remaining 37 percent are sold into a curbside system, with roughly half that recovery rate. In general, refillable beer bottles, which make up over 25 percent of all the beverage containers sold in the country and are captured at a rate of 97 percent, largely contribute to the overall national success. Second in line are aluminum beer cans, which comprise about 8 percent of the total and are captured at a rate of 85 percent.

Chipping back this success are the curbside programs, such as in Ontario (non-beer containers make up about 26 percent of the total units sold) and Quebec (non-beer and non-soft-drink containers make up about 8 percent of the total sold) where beverage recovery rates are estimated to be about 42 percent from the residential sector only. Containers consumed away from home are not

Figure 1 Sales vs. Recovery (fiscal year 2001-2002)



Source: CM Consulting, 2003

Clarissa Morawski is principal of CM Consulting (Toronto). She may be reached at (416) 682-8984 or morawski@interlog.com.

Table 1 Who pays what, in dollars ($Cn) 2001-2002

Stakeholder cost/surplus	British Columbia wine/spirits	British Columbia non-alcohol	Alberta all (excluding domestic beer and milk)	Saskatchewan all (excluding refillable beer and milk)	Manitoba all (excluding refillable beer and milk)	Ontario all (excluding all beer)
Beverage industry cost	0.0	0.0	0.014	0.0	0.0	See Ontario packaging fee schedule
Operating agent cost/surplus	—	(0.006)	(0. 004)	(0.0003)	0.0014	—
Provincial liquor commission cost/surplus	0.04	0.0	0.0	0.0	0.0	5,000,000
Municipal government cost	0.0	0.0	0.0	0.0	n/a (1)	n/a (2)
Recycling consumer costs	0.022	0.008	0.0	0.018	0.02 (1)	0.0
Wasting consumer cost	0.115	0.069	0.056	0.09	0.0	0.0
Consumer non-system related cost	0.0	0.0062 (4)	0.0	0.034	n/a (1)	0.0

(1) In Manitoba, part of the revenue generated from the two-cent levy on beverage containers subsidizes recovery of other materials in the municipal waste stream. The portion of revenue dedicated to beverage container recovery is unavailable. The beverage industry is charged the levy and passes it on to consumers at the point of purchase.
(2) In Ontario and Manitoba, all residentially generated containers are collected via municipally operated curbside recycling. In Quebec, wine, spirits, water, juice and new age beverage containers are collected via municipally operated curbside recycling. As such, beverage container units are mixed in with non-beverage containers making it difficult to allocate per unit costs. In addition, data on unit sales for Ontario and Quebec is not available.
(3) In Quebec, the five-cent per unit cost represents the deficit (handling fees minus unredeemed deposits). Material revenues, transportation and processing costs are considered proprietary.
(4) In British Columbia, surplus CRF revenue not used to off-set the program costs for 2001 will be used to fund the system in 2002. CRFs are adjusted annually to account for any deficit or surpluses that may have occurred the previous year.
Source: CM Consulting, 2003

accounted for in these provinces.

Performance

Refillable beer bottles continue to be collected at high rates (97 percent), which can be attributed to several factors:

- These containers have been part of a deposit-return program for nearly three decades.
- A portion of these products is consumed in licensed establishments.
- And most notable, bottles are sold in multi-paks, making the perceived refund in 10-cent multiples of 6, 12 and 24, or $0.60, $1.20 and $2.40, seem higher ($Cn).

Aluminum beer cans carry a 10-cent deposit-refund and are recovered at rates of 75 to 93 percent, with non-beer aluminum (five-cent refund) being recovered at rates of 66 to 83 percent. Aluminum cans in Ontario's curbside program are recovered at a rate of about 40 percent, which is a miserable performance rate when one considers that one third of the country lives in Ontario. This means that one billion valuable cans go to landfill every year (net worth $23 million).

PET and glass bottle recovery remains steady at 70 to 80 percent recovery in deposit programs. In curbside programs, the recovery rate for PET is 38 percent from the residential sector (representing about 37 percent of PET bottle unit sales). PET bottles sold away from home (representing about 67 percent) do not have an associated recovery rate. But given the reported negligible recycling away from home, provincial recycling rates in non-deposit programs are closer to 42 percent to 14 percent (slightly higher than the 2002 U.S. PET recycling rate of 19 percent). With double-digit annual growth in the plastic water bottle market, the rate likely will continue to decline following the United States' lead of a 50 percent decrease in the PET recovery rate since 1995.

Other beverage packaging, such as juice boxes, bag-the-box, polycoat, HDPE and bi-metal, are achieving relative gains in all recovery systems as programs mature and awareness expands.

Management and operation of beverage recovery programs vary between industries, provinces and municipal authorities. The majority of Canadian deposit-return programs are overseen by the beverage industry, either directly or through third party, not-for-profit agencies. Several provinces, however, have agencies managing the systems on their behalf. For nearly ten years, these agencies have built an informal relationship for sharing information, research and development, and, in some cases, even negotiating joint-marketing tenders. Known as the Canadian Recycling Affiliates, this group of agencies work cooperatively to lower system costs and improve overall program efficiency. Municipal authorities operate curbside recovery for non-deposit beverage containers as well as other items.

Shifting the costs from industry to consumers

In most deposit-return programs around the world, the beverage industry pays the bulk of the system's costs. In Canada however, programs have evolved in a way that minimize or eliminate industry's financial obligation and pass it on to their customers in the form of a front-end or a back-end fee. These fees include container recycling fees (zero to eight cents per unit), environmental handling charges (three to seven cents), a non-refillable levy (two cents) and a half-back refund on non-refillables (five to 10 cents on a 10- and 20-cent deposit). Most of the above fees (except the CRF) raise more revenue than required to fund the beverage recovery program. Excess funds are used to finance other environmental programs, or used as provincial general revenues.

Handling fees

Handling containers (collection and sorting) are the most costly element of any recovery system, and therefore warrant close monitoring. Traditionally, handling fees were two cents per unit; more recently, however, depots (those who charge the fee) have been lobbying for more money, arguing that fees have not kept up with the cost of living and inflation. As a result, fees have increased in most provinces over the past five years.

Generally, one fee is charged on all units in order to keep things fairly simple. However, the onset of activity based costing has forced more complex fee schedules to be devised, reflecting the extra work, time or space required for some containers. A large glass container, for example, is more costly to handle than an aluminum can. Across Canada, handling fees range from two to eight

Quebec	New Brunswick		Nova Scotia	Newfoundland	Prince Edward Island
soft-drinks	wine/spirits	all (excluding refillable beer and milk)	all (excluding refillable beer and milk)	all (excluding refillable beer and milk)	wine/spirits
0.005	0.0	n/a	0.0	0.0	0.0
—	n/a	n/a	(0.029)	(0.005)	—
—	0.0096	—	0.0	0.0	n/a
n/a (3)	0.0	0.0	0.0	0.0	0.0
0.0	0.067	n/a	0.0	n/a	n/a
0.050	0.183	n/a	0.15	0.075-0.12	n/a
0.0	0.025	n/a	0.046	0.025	n/a

cents per unit size and type.

In the forum of deposit-return programs, keeping handling fees at a reasonable level in the future will be one of the more challenging areas of cost control within deposit-return systems.

Who Pays What

In order to provide a clearer picture of the associated program costs, CM Consulting has developed a new approach called *Who Pays What* (see Table 1). This new approach provides a transparent picture of the associated program costs per unit as they relate to the various funders, or stakeholders, of the system. The funders may include industry, municipalities, the province, beverage consumers that recycle as well as beverage consumers that don't recycle (wasting consumer).

The *Who Pays What* analysis shows that in British Columbia, Saskatchewan, Manitoba, Nova Scotia, Newfoundland and New Brunswick (for liquor) the beverage industry bears no direct costs to run the provincial beverage recovery program. To this end, Alberta implemented a front-end fee called a CRF in September 2002, similar to the program in British Columbia, that will reduce the beverage industry's cost to zero for fiscal year 2003 and beyond.

Beverage producers (including milk) in Ontario will be required to pay levies on all their packaging sold into the residential stream under the Blue Box Program Plan developed under the Waste Diversion Act. The Act mandates that brand owners and first importers of products destined for the residential recycling system (the Blue Box Program) pay for 50 percent of the program's net costs. Ontario will be the first jurisdiction in North America to force brand owners and first importers to financially support municipal recycling programs (similar to Europe).

Material-based levies for stewards have been established for Ontario's multi-material collection programs. The levies were based on a province-wide system cost of $62 million from fiscal year 2001. Table 2 illustrates this fee schedule by container type for specific volume units. Costs for 2002 were determined to be $84 million (an increase of 35 percent), making it reasonable to assume that these levies will increase as well (except aluminum, which currently provides stewards with a credit).

Table 2 Expression of proposed Ontario levies by beverage container type

Container type	Canadian cents per unit sold
2-liter gable top	0.3
1-liter gable top	0.19
250ml Tetra pak	0.05
1.36 liter steel can	0.56
473ml clear glass bottle	0.85
750ml clear glass bottle	1.25
2-liter PET bottle	0.39
600ml PET bottle	0.2
4-liter HDPE water bottle	0.43
Outer milk bag – LDPE film	0.05
355ml aluminum can	-0.08

Source: Blue Box Program Plan, February 2003, WDO.

Quebec likely will implement a similar levy-based funding structure for the curbside system, which would see all beverage packaging (including milk, but excluding soft drink and beer containers) carry an industry levy. Quebec packaging levies have not been determined yet.

In Canada, the beverage industry will only be required to fund beverage-container recovery in Ontario and Quebec. In all other Canadian provinces, beverage companies do not bear any program costs for container recovery. In light of these developments, the beverage industry may want to reconsider their position on deposit-return programs – in Canada, at least.

The bulk of system costs are borne by the consumer that chooses not to return their container – the wasting consumer. This consumer chooses to forfeit their deposit by not returning the container for recycling.

A small portion of a front-end or back-end consumer fee is used directly to offset the system costs. In half-back provinces, most, or all, of the half-back is used to fund non-related environmental programs.

Program costs

In order to determine the net costs of the deposit-return programs in Canada, income statements from the various operating agencies are available. In some cases, operators use the unredeemed deposit revenue to help off set their costs. Therefore, in determining

the net cost of a provincial program, it is reasonable to identify a net cost without unredeemed deposit revenue and a net cost with unredeemed deposit revenue. This data is illustrated in Table 3.

In some cases, where the deposit levels are greater than or equal to 10 cents per unit (Atlantic Provinces), the unredeemed deposit revenue is large enough to incur a net system surplus (Nova Scotia and Newfoundland). Hence, a system where deposit levels are greater than and equal to 10 cents, using unredeemed deposits as system revenue would achieve several objectives. First, the recovery rate would rise by about 10 percent (from an average of 75 to 86 percent). Second, the industry and recycling consumers likely would incur no associated costs, as all the costs would be borne by the wasting consumer who, by choice, has accepted the financial penatly of throwing the container away — an elegant model consistent with the polluter pays principal.

As a result of Ontario's Waste Diversion Act, recycling collection program costs by material were calculated using activity-based costs (see Table 4).

Table 3 Net costs in Canadian cents, per unit sold (2001-2002)

	British Columbia		Alberta all (excluding domestic beer and milk)	Saskatchewan all (excluding refillable beer and milk)	Nova Scotia all (excluding domestic beer and milk)	Newfoundland all (excluding domestic beer and milk)
	wine/spirits	non-alcohol				
Without unredeemed deposits	7.9	2.8	2.5	3.4	2.2	4.4
With unredeemed deposits	6.2	0.83	1	1.8	(0.37)	(.004-2.1)

Source: CM Consulting, 2003

Table 4 Container recovery costs per unit recovered (residential recycling, 2001)

Container type	Cost per tonne (based on a blue box program cost of $ 62 million)	Units per tonne average	Cost/surplus per unit in cents	Recovery rate
Aluminum cans	($1,055.06)	70,400	(1.5)	40%
PET < 1 liter	$453.78	30,360	1.5	38%
PET > 1 liter	$453.78	13,640	3.3	38%
Glass < 1 liter	$186.00	3,740	5.0	58%
Glass > 1 liter	$186.00	1,980	9.4	58%
Drink boxes	$299.00	35,860	0.8	5%
Gable top 501ml-1 liter	$299.00	29,260	1.0	5%
Gable top > 1 liter	$299.00	13,420	2.2	5%

Source: CM Consulting, 2003

Bang for your buck

The next logical step with any cost analysis is to begin comparing both systems in terms of their costs relative to their performance. Also developed by CM Consulting, the *Bang for your Buck* analysis measures how much it costs per unit to attain a certain level of performance. The results of this analysis will provide an apples-to-apples system-cost comparison in Canada and will be published by CM Consulting in 2004.

How to access more information on Canada

Each spring, CM Consulting releases an annual report entitled: *Who Pays What - An Analysis of Beverage Container Recovery and Costs in Canada*. The report aims to describe, clarify and offer some essential insight into the field of beverage container recovery programs. By offering current data, discerning analysis and identifying a number of trends in beverage container recovery, the *Who Pays What* report provides a comprehensive examination of container reuse and recycling programs in Canada today. **RR**

This report can be downloaded from www.resource-recycling/WPW_FINAL_REPORT.pdf.

Reprinted with permission from Resource Recycling, *P.O. Box 42270, Portland, OR 97242-0270; (503) 233-1305, (503) 233-1356 (fax); www.resource-recycling.com.*