

Used-beverage container recycling across Canada

en years ago, CM Consulting published the first version of *Who Pays What*, which documents the collective efforts in beverage container recycling in Canada. Since then, much has changed.

Improving container recovery programs goes well beyond keeping cans and bottles out of landfill; measuring the performance of container programs will provide useful insights for end-of-life management of other materials in the many "product stewardship" programs springing up across the country.

Beverage container recycling programs are varied in Canada — each has specific design features that address unique program goals. In assessing these initiatives, we must acknowledge how varied the data are, despite some common aspects.

Together, Canadian provinces collect approximately 73 to 75 per cent of their aluminum cans, 80 to 83 per cent of non-refillable glass, and 58 to 62 per cent of PET plastic beverage bottles. (All data is based on calendar or fiscal year 2010.)

In total, including all the other container types (such as other plastic bottles, juice boxes, gable top containers, pouches, and bi-metal cans),

by Clarissa Morawski

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Canadian provinces collected approximately 67 per cent of all the non-refillable beverage containers sold in 2010.

If we include refillable beer bottles, which continue to be collected at a rate of 98 per cent, the total collection rate for all beverage containers goes up to 72 per cent.

Measuring performance

As collection methods expand to include a wider *variety* of materials, so too does the range of *quality* of the collected material. The increasing contamination in certain materials necessitates new ways of evaluating performance measurements.

Provincial collection rates: all beverage containers (2010).



Measuring beverage container recycling is not an exact science. When a deposit is paid, the refund systems offer an opportunity to track sales and collection to the last unit. In general, the material collected is sorted by type and colour early on, so contamination plays a minor role.

In multi-material collection systems, accurate measurement is more difficult because beverage containers are mixed with other containers (e.g., peanut butter jars). It's impossible to know exactly how many were collected. In addition, because multi-material systems measure based on weight versus unit, any contaminant mixed in with the material further weakens the precision of measurements.

The unintended consequences of mixed-collection and weightbased systems are that more non-recyclables are collected; paper and containers contaminate each other, resulting in primary and secondary processors having to deal with greater costs, lower yield rates, more material to dispose of, and increased equipment downtime and maintenance. These downstream losses necessitate rethinking how we measure recycling performance.

Total beverage container collection rates for deposit vs non-deposit programs.



Who Pays What 2012 attempts to provide transparent performance measurements that identify not only how many containers are collected but also what percentage are recycled.

The collection rate typically used usually represents the number of units collected versus the number of units sold in a jurisdiction. In multimaterial programs, however, the collection rate typically represents the weight of beverage containers shipped from the primary processor or sorter to the recycler (e.g., to PET reclaimers, glass beneficiators, or aluminum smelters).

This weight-based reporting will also include the weight of contaminants that have found their way into the load as a result of mixed collection. These contaminants include contents (left-over liquids in the container) and other materials, such as rocks, other plastics, and metal bits.

To determine a recycling rate, CM Consulting applies the processing efficiency rate (PER) to the collection rate. This procedure is required only for reported collection rates measured in weight (Manitoba, Ontario, and non-carbonated beverage containers in Quebec). Collection rates reported per unit will remain the same.

To determine reasonable PER estimates, recently published rates from industry were considered and interviews were conducted with beverage-container recyclers from central Canada.

The PER is important because it identifies weaknesses in the system, showing (for example) when beverage container material is counted as



recycled when, in fact, it is not. (What was actually measured was the weight of unusable contaminants that were sent to disposal after secondary processing.)

Applying the "low contamination" range of PER rates (i.e., high PER) to collection allows derivation of the recycling rate. The table on page 20 shows that the recycling rate for glass, PET, and (to a lesser extent) aluminium cans in the Manitoba, Ontario and Quebec multi-material systems is reduced from the collection rate by a low level of contamination in the reported tonnes. The recycling rates in deposit-return programs are not affected by processing efficiency because these rates are based on a unit count.

Evolution, benefits and the future

Our deposit-refund programs have evolved by gaining efficiencies from on-site and on-truck compaction, accounting system streamlining, anti-fraud measures, reduced sortation, and greater levels of automation, all of which support cost reductions.

Residential curbside programs are also expanding to accept a wider variety of containers and to offer recycling in more public spaces. Recycling efforts that focus on away-fromhome container discards are being launched in Manitoba, Quebec, and Ontario. "If the containers are clean, most will remain in Canada to be used by Canadian secondary processors and manufacturers."

Canada gains economic benefits derived from our success in beverage container recycling. In 2010 alone, approximately \$143 million worth of revenue was generated from nearly 1.4 million tonnes of empty beverage containers sold to recyclers in Canada or abroad.

Canadian jobs are also directly linked to our success in collection and recycling. For each tonne of container material collected, processed, and recycled, labour is required. If the containers are clean, most will remain in Canada to be used by Canadian secondary processors and manufacturers. The benefits for these industries and Canadians include reduced energy required in manufacturing processes, lower emissions, and consistent access to Canadian-sourced raw material.

As programs further increase collection, special attention should be placed on ensuring that the quality of material collected is not compromised to the point it's no longer valuable domestically. Indeed, recycling must be organized to make sense both environmentally and economically.

Quality standards in sorting and processing should be set high enough by program operators and regulators to: maintain a competitive



Contamination rates from multi-material collection (by weight).

	Aluminum Cans	Non-Refill- able Glass	PET Bottles
British Columbia	89%	93%	78%
Alberta	89%	90%	79%
Saskatchewan	92%	87%	83%
Manitoba (beer)	81%	N/A	N/A
Manitoba (other)	47%	36%	45%
Ontario (alcohol)	80%	88%	48%
Ontario (non-alcoholic beverages)	56%	55%	43%
Quebec (soft drinks and beer)*	66%	77%	70%
Quebec (other beverages)	191	59%	40%
Nova Scotia	86%	82%	82%
New Brunswick	78%	78%	79%
Newfoundland	67%	64%	74%
Prince Edward Island	86%	71%	89%
Northwest Territories	88%	82%	85%

Comparing collection and recycling rates from multi-material collection systems.

"In 2010, \$143 million was generated from nearly 1.4 million tonnes of empty beverage containers sold to recyclers in Canada or abroad."

secondary commodity marketplace for the supply of containers; reduce the risk associated with commodity trading; and, to provide an opportunity for Canadian manufacturers to increase their use of recycled-content plastic, glass, and aluminum.

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