Who Pays What?
An Analysis of Beverage Container Collection & Costs in Canada

A Primer

In 1970, British Columbia became the first jurisdiction in Canada to implement a deposit-return system for soft drink cans and bottles. The system was based on a return-to-retail (R2R) model, with deposits and refunds being managed by retailers and brandowners. Since then, nearly all provinces in Canada have followed suit, introducing programs aimed at increasing the collection and recycling of used beverage containers. In 2012, Canadian provinces collected approximately 70% of all the non-refillable beverage containers sold. (All data in this report is based on calendar or fiscal year 2012-2013 or 2012).

With the goal of documenting these collective efforts and offering valuable insight into the field of beverage container recycling, CM Consulting released *Who Pays What: An Analysis of Beverage Container Collection and Costs in Canada* in 2002, a comprehensive review and analysis of beverage container reuse and recycling initiatives across Canada. Meant to be an evolving document, the report is published bi-annually and has proven to be an invaluable tool and reference guide for government as well as professionals in the beverage industry and recycling field.

This sixth edition of *Who Pays What*™ includes a number of revisions, including new sections on collection and recycling rates that account for contamination, best practices for preventing and mitigating deposit fraud, policies to encourage the use of recycled content, and an examination of new technology and methods to improve system cost efficiencies. Also new in this edition is a section on the economic benefits of deposit-return to municipalities.

Notwithstanding these new additions, the overall intent of the report remains unchanged: to serve as an essential resource guide for government and industry professionals by providing an in-depth examination of beverage container reuse and recycling programs across Canada. *Who Pays What*™ continues to feature a detailed description of container recovery programs in each province, including the costs of these programs, how they are performing, and who is ultimately responsible for program oversight and operation. Furthermore, the report continues to provide an analysis of the environmental benefits of container reuse and recycling, along with a discussion on commodity markets for different materials.

As beverage container recycling programs in Canada grow and evolve, CM Consulting looks forward to continuing to provide the most updated and comprehensive information on these initiatives, their effectiveness, and costs.

I trust you will find this report informative in your efforts. Please do not hesitate to contact me if you require other data or further analysis, or have comments and suggestions that might make the report more helpful to you in the future.

Respectfully Yours,

Clarissa Morawski, Principal

Executive Summary

Objectives and Content of this Report

Twelve years ago, CM Consulting released *Who Pays What: An Analysis of Beverage Container Collection and Costs in Canada*, a first-of-its-kind report that takes an in-depth look at beverage container reuse and recycling initiatives across Canada. Published bi-annually, *Who Pays What*™ is embraced as an essential resource for government as well as professionals in the beverage industry and recycling field.

Now in its sixth edition, *Who Pays What*™ is recognized as the defining text in the field of beverage container recycling in Canada and brings together current data on collection rates, program costs, performance measurements, and environmental benefits of container recycling and reuse. This edition features new and updated content, which reflects on the latest developments in the field of beverage container recycling in Canada. New sections include those on collection and recycling rates that account for contamination, best practices for preventing and mitigating deposit fraud, policies to encourage the use of recycled content, and an examination of new technology and methods to improve system cost efficiencies. Also new in this edition is a discussion on the economic benefits of deposit-return to municipalities.

Performance Measurement

Typically, performance is measured using the **collection rate**, which represents the percentage of beverage container material (by weight or by unit) placed on the market in a given jurisdiction (excluding exports) that is shipped to the recycler by the primary processor (i.e. MRF). Measuring the performance of a deposit-return system (DRS) using the collection rate is fairly simple, since the refund provides an opportunity to track sales and collections to the last unit. Measuring the performance of multi-material collection systems, on the other hand, is much more complex since these programs collect beverage containers along with other, non-beverage containers. To determine the collection rate for containers collected in multi-material programs (like those in Manitoba, Ontario, and Québec for non-carbonated beverages), it is necessary to extract the beverage containers (by weight) from everything else that gets shipped to market, such as plastic ketchup bottles, glass pickle jars, and aluminum food tins.

Adding to this complexity is the fact that the collection rate usually represents the *weight* of beverage containers sent for recycling, as opposed to the number of *units*. This is problematic when one considers the growing issue of contamination. Contamination in recycling can happen when non-recyclable items are mixed in with recyclables (e.g. leftover liquids, dirt, or rocks in a beverage container) or when recyclable items are sorted improperly before they are shipped for recycling. If the weight of contaminants is not removed from the reported collection rate, the rate will be inflated. In view of this, it is important that program operators start reporting the **recycling rate** (the amount of beverage container material recycled as a percentage of the amount of beverage container material placed on the market in that jurisdiction and not just what is collected for recycling).

This requires applying the **processing efficiency rate** (PER) to the collection rate. The PER is the amount of beverage container material received by the recycler that is used in the recycling process expressed as a percentage of the amount of material shipped to the recycler. It is important to note that this procedure is required only for collection rates that are measured and reported in weight. The collection rates reported for deposit-return programs are not affected by processing efficiency because these rates are based on unit counts, not on weight. Knowing the PER (i.e. the contamination level) is critical for accurate performance measurement because it provides information on what was actually recycled, not on the material that was sent to disposal after secondary processing.

Key Findings

Beverage Container Collection Rates for 2012

Refillable Beer Bottles

Despite the dramatic decline in the use of refillable containers, Canada's collection rate for refillable beer bottles has been consistently high (97% nationally).

Non-refillable Containers

Non-refillable containers typically include aluminum or steel cans, and PET bottles. Figure ES.1 provides a summary of provincial collection rates for all non-refillable beverage containers in 2012, highlighting deposit versus non-deposit return programs. It is clear that provinces with deposit-return programs collect significantly more beverage containers for recycling.

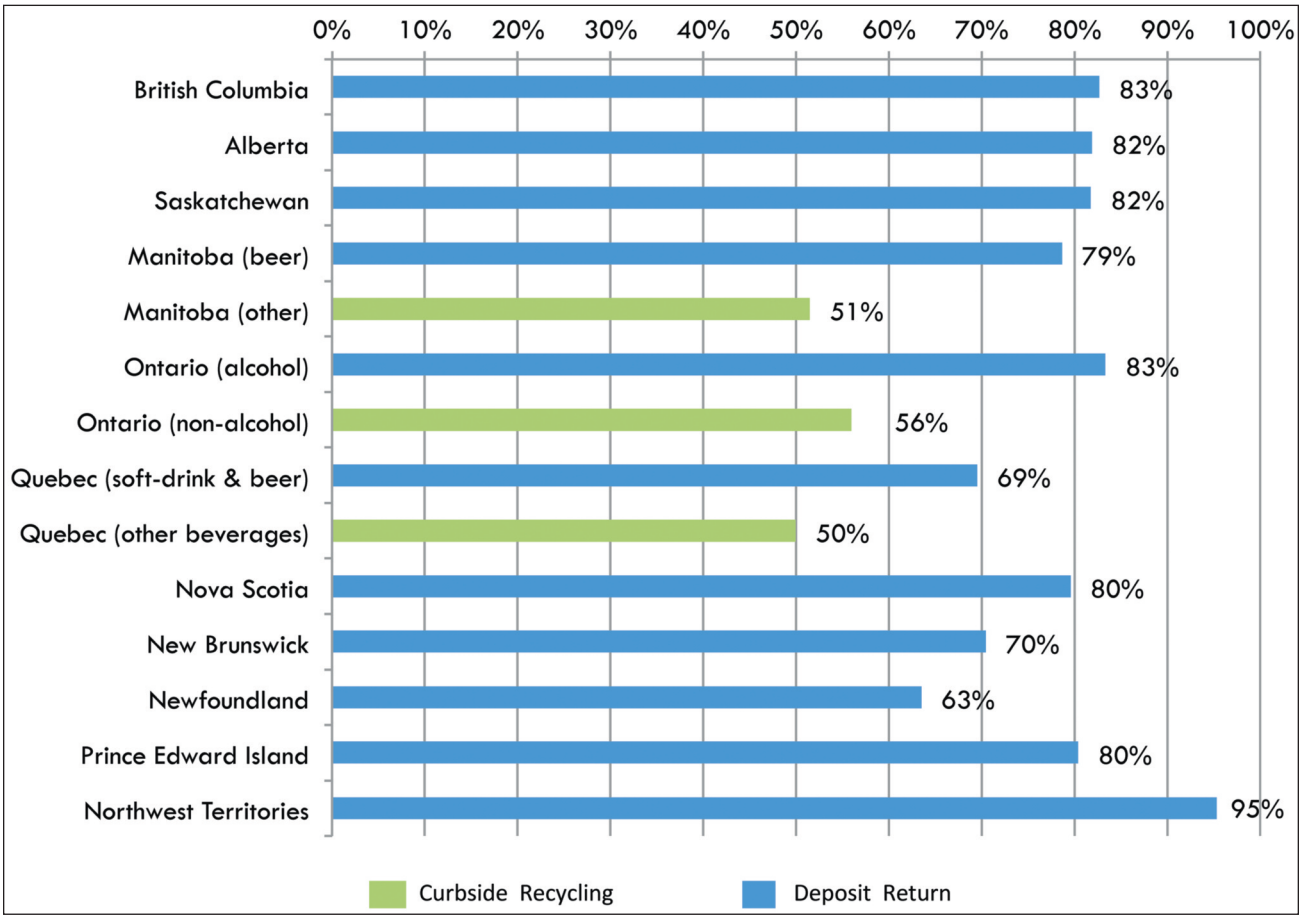
Environmental Benefits of Reusing and Recycling Beverage Containers

In 2012, Canada recycled and/or reused over 12 billion beverage containers. This level of recycling eliminated the release of over a million tonnes of greenhouse gas emissions, and is equivalent to taking over 200 thousand cars off the road.

What's New?

The field of beverage container recycling in Canada is always evolving. Since the last edition of *Who Pays What*™ was published in 2010, there has been some important updates and changes to provincial programs, from greater levels of automation to enhanced public space recycling. The most noteworthy of these new developments are described below.

Figure ES.1 Provincial Collection Rates – Non-Refillable Containers: Deposit vs. Non-Deposit



Alberta Depots First in Canada to Adopt Automated Counting and Sorting Technology

In June 2012, Alberta became the first province in Canada to adopt automated sorting and counting technology. The European manufactured equipment was successfully piloted at two bottle depots – one in Grande Prairie and the other in Edmonton – and will soon be installed at depots in St. Albert and Fort McMurray. Among other benefits, the technology has led to reduced wait times and more accurate refunds for customers. Depot owners have also seen lower direct labor costs as a result.

Goodbye to the Penny

On February 4, 2013, the Royal Canadian Mint stopped producing and distributing pennies to financial institutions. It is too early to know how the elimination of the penny will affect the costs to consumers that purchase beverages on an individual basis where different consumer fees worth pennies are charged. Typically, retailers apply a "round-up" or "round-down" rule to the net cost, but there is little information on how and if this will balance out for consumers in the end.

In Saskatchewan, SARCAN Recycling was forced to restructure its deposit-return system to eliminate penny pricing. Previously, SARCAN had offered a 1-cent refund for cans purchased outside of Saskatchewan. Other out-of-province containers, including those made out of glass or plastic, have never received any type of refund. This is now the case for all out-of-province containers, including aluminum cans. With the discontinuation of the penny, SARCAN was also unable to provide a 4-cent refund on beer bottles. Therefore, as of February 2013, the refund on refillable beer bottles has increased to 5-cents.

Away-from-home Collection

Knowing the amount of beverage containers that are consumed and discarded away-from-home (AfH) is critical to determining accurate collection rates and designing effective recovery programs. While the majority of beverages are still consumed in households (50-70%), it is estimated that anywhere between 30-50% of beverages are consumed AfH, in areas where recycling services may not be available. In an effort to increase the recycling of such containers, various initiatives led by both government and the beverage industry have been sprouting across the country. Examples include the Canadian Beverage Container Recycling Association's (CBCRA) "Recycle Everywhere" program in Manitoba, *La Table pour la récuperation hors foyer* in Québec, and "Go Recycle," a public spaces recycling program launched by the City of Richmond and the beverage industry in British Columbia.

CBCRA Files an Industry Stewardship Plan (ISP) with Waste Diversion Ontario

In September 2013, the CBCRA submitted an industry stewardship plan (ISP) to Waste Diversion Ontario (WDO) to operate an approved recycling program in Ontario for empty non-alcoholic, non-dairy beverage containers. These containers are currently collected through the residential Blue Box recycling program. Upon approval of this plan, the CBCRA hopes to expand on the existing Blue Box program to increase the collection and recycling rates for used beverage containers from households. In addition, it expects to benchmark and increase the collection and recycling of beverage containers consumed away-from-home (AfH). One way the CBCRA plans to achieve this is by supplying recycling bins free-of-charge to municipalities, government buildings, businesses and private sector service providers across Ontario.

New Québec Government Backtracking on Previous Government's Decision to Increase Deposits

In July 2012, Québec's Environment Minister released a five-year strategic plan for Recyc-Québec. Part of this plan was to increase the value of the deposit on all deposit-bearing cans, PET and glass containers for beer, soft drinks, and some energy drinks from 5- to 10-cents by the end of 2012. This plan was shelved when the PQ government won the 2012 election. The Liberals have since returned to power in Québec and it is unclear if there will be any changes to the deposit system for carbonated beverages.

Consignation Cancelled in Québec

On March 28, 2014, BGE officially announced the cancellation of CONSIGNaction – a program launched in 2008 aimed at increasing the collection of deposit containers consumed away-from-home (AfH). The program offered a free pick-up service to convenience stores, restaurants, schools, golf courses, offices, events, and others in the IC&I sector that generate large amounts of empty containers from on-site beverage consumption.

Nova Scotia Compaction Trailer Pilot Project

In July 2012, Resource Recovery Fund Board (RRFB) Nova Scotia introduced a new compaction trailer for beverage containers and began a two-year pilot project at 18 high-volume Enviro-Depots in Halifax Regional Municipality. The compaction trailer transports more than five times as many beverage containers in one load than is currently possible. In addition to saving time and reducing greenhouse gases, the trailer has already reduced costs by over $120,000 annually.

Best Practices in Beverage Container Collection

Drop and Go

In an effort to simplify and make the redemption process more convenient for consumers, several North American jurisdictions have introduced a system whereby customers fill up pre-labelled bags with deposit containers and drop them off without the need for waiting, sorting, counting, or feeding the machines. Within 48 hours of dropping off containers at a designated location, the refund is credited to the customer's online account. Two examples of these systems are EZ-Drop in Oregon and CLYNK in Maine.

Reverse Vending Machines (RVMs)

In addition to depots and return-to-retail systems, another approach for collecting beverage containers for recycling is the use of reverse vending machines (RVMs). RVMs are commonplace in Europe and are usually located in grocery stores and other retail locations where beverages are sold. To receive their deposit refund, consumers place their empties into the machine where they are scanned, sorted by material type, and processed into separate bins.

Minimizing and Preventing Deposit Fraud

Despite Canada's success in becoming a global leader in the field of beverage container recycling, its programs – as with all systems that deal with large sums of money – will always be exposed to the risk of fraud. However, like any other business or operation, the risk of fraud can be identified, managed, and reduced. In this report, CM Consulting presents a list of best practices for preventing deposit fraud.

Economic Benefits of Deposit-Return Systems

Deposit-return systems for beverage containers create significantly more – 11 to 38 times more – jobs than curbside recycling. Together, The Beer Store (TBS) deposit system and the Ontario Deposit Return Program (ODRP) are responsible for creating approximately 500 direct jobs.[1] According to a recent study, Nova Scotia's deposit-return program creates approximately 600 jobs and $20.1 million in salaries and wages.[2] Deposit-return programs also result in significant cost savings for municipalities. These savings come from the reduced or avoided costs of collection, treatment, and disposal. Following the introduction of the ODRP in 2007, the City of Toronto reported a net savings to the City's curbside program of $448,000 in 2007 and $381,000 in 2008.[3]