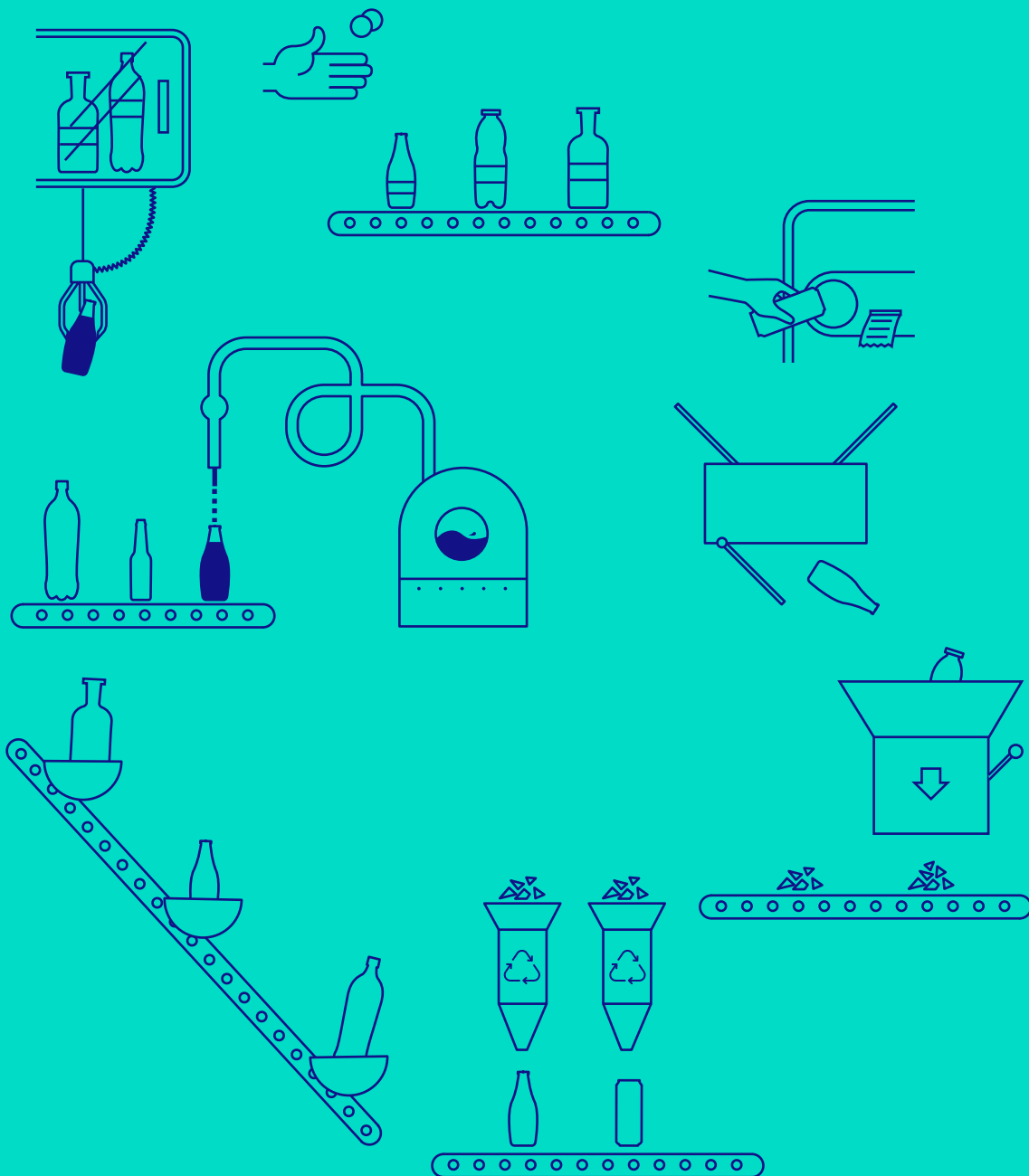


# WHO PAYS WHAT?

## AN ANALYSIS OF BEVERAGE CONTAINER COLLECTION AND COSTS IN CANADA

NOVEMBER, 2020



## Author's Note

CM Consulting provides the information contained in this report in good faith, and every attempt has been made to ensure that all facts and analyses presented are as accurate as possible. Sales and collection data, as well as information on recycling costs and fees, used in this report are taken directly from publicly accessible annual reports released by program operators, stewardship agencies, or other involved entities. Other information was obtained through interviews and e-mail correspondence. Users should be aware that CM Consulting is not liable for the use or application of this research. There is no guarantee provided in respect of the information presented, and any mention of trade names or commercial products does not constitute endorsement or recommendation for use.

### **CM Consulting**

Working with industry, government, and not-for-profits, CM Consulting is recognized worldwide for the comprehensive information and analysis it provides – information that is relied upon to make informed policy and programming decisions. Established in 1998 by Clarissa Morawski, CM Consulting was founded on the principle that industry and consumers must assume greater responsibility for ensuring that the manufacture, use, reuse and recycling of their products and packaging has a minimum impact on the environment. CM Consulting specializes in waste minimization and Canadian stewardship policy with a specific focus on extended producer responsibility programs, cost and performance.

The CM Consulting team consists of Clarissa Morawski (Principal), Jason Wilcox (Projects Manager), and Samantha Millette (Writer & Research Analyst).

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## List of Abbreviations

<b>ABCRC</b>	Alberta Beverage Container Recycling Corporation	<b>IC&amp;I</b>	Industrial, Commercial, and Institutional
<b>ABCC</b>	Alberta Beer Container Corporation	<b>ISB</b>	Industry Standard Bottle
<b>ABDA</b>	Alberta Bottle Depot Association	<b>ISP</b>	Industry Stewardship Plan
<b>ADC</b>	Alberta Dairy Council and Atlantic Dairy Council	<b>IWMC</b>	Island Waste Management Corporation
<b>AfH</b>	Away-from-home	<b>LCBO</b>	Liquor Control Board of Ontario
<b>AGLC</b>	Alberta Gaming, Liquor and Cannabis Commission	<b>LDB</b>	Liquor Distribution Branch
<b>BAC</b>	Brewers Association of Canada	<b>LLDPE</b>	Low-density polyethylene
<b>BCMB</b>	Beverage Container Management Board	<b>MMRP</b>	Multi-Material Recycling Program
<b>BDL</b>	Brewers Distributor Limited	<b>MMSB</b>	Multi-Materials Stewardship Board
<b>BGE</b>	Boissons Gazeuses Environnement	<b>MMSM</b>	Multi-Material Stewardship Manitoba
<b>BIB</b>	Bag-in-a-Box	<b>MMSW</b>	Multi-Material Stewardship Western
<b>BRCCC</b>	Brewers Recycled Container Collection Council	<b>MRF</b>	Material Recovery Facility
<b>CBCRA</b>	Canadian Beverage Container Recycling Association	<b>MtCO<sub>2</sub>e</b>	Metric tonnes of carbon dioxide equivalent
<b>CHF</b>	Container Handling Fee	<b>OI</b>	Owens-Illinois
<b>CRF</b>	Container Recycling Fee	<b>PER</b>	Processing Efficiency Rate
<b>CSA</b>	Collection System Agent	<b>PET</b>	Polyethylene terephthalate
<b>CSP</b>	Collection Service Provider	<b>PPP</b>	Printed Paper and Packaging Organization
<b>DRS</b>	Deposit-return system	<b>PRO</b>	Producer Responsibility
<b>ÉEQ</b>	Éco Entreprises Québec	<b>PVC</b>	Polyvinyl chloride
<b>EfW</b>	Energy-from-waste	<b>RFF</b>	Recycling Fund Fee
<b>EHC</b>	Environmental Handling Charge	<b>RPRA</b>	Resource Productivity & Recovery Authority
<b>EPR</b>	Extended Producer Responsibility	<b>RRFB</b>	Resource Recovery Fund Board Inc.
<b>GHG</b>	Greenhouse Gas	<b>RVM</b>	Reverse Vending Machine
<b>GJ</b>	Gigajoule	<b>SO</b>	Stewardship Ontario
<b>HDPE</b>	High-density polyethylene	<b>TBS</b>	The Beer Store (aka Brewers Retail, Inc.)
		<b>WDO</b>	Waste Diversion Ontario

## Province Short Codes

<b>AB</b>	Alberta
<b>BC</b>	British Columbia
<b>MB</b>	Manitoba
<b>NB</b>	New Brunswick
<b>NL</b>	Newfoundland and Labrador
<b>NS</b>	Nova Scotia
<b>NT</b>	Northwest Territories
<b>NU</b>	Nunavut
<b>ON</b>	Ontario
<b>PEI</b>	Prince Edward Island
<b>QC</b>	Québec
<b>SK</b>	Saskatchewan
<b>YT</b>	Yukon

# Who Pays What 2020: An Analysis of Beverage Container Collection & Costs in Canada

## A Primer

In 2002, CM Consulting published for the first time *Who Pays What: An Analysis of Beverage Container Collection & Costs in Canada*, the first-of-its-kind report to document beverage container recycling and reuse programs across Canada. Since that time, the report has been updated and re-published biennially, using data from the preceding calendar or fiscal year. However, this year's report is different. Due to delays in preparation of the report caused by Covid-19, 2019 data is now available for most provinces, and because we want to be as current as possible, we have elected to use this most recent data in our report. This means there is a three-year gap between the data we reported in 2018, which uses 2016 data, and this 2020 report, which uses 2019 data.

Over the last nearly two decades, Canada has shown itself to be a leader in beverage container recovery. In 2019 (data for two provinces is from 2018-2019), over 11 billion beverage containers were collected for reuse and/or recycling across the country, the vast majority of which were recovered through deposit return systems (DRS).

Canada's first province to establish a mandatory DRS for beverage containers was British Columbia (B.C.) in 1970. Fast-forward 50 years and all but one territory, Nunavut, has followed suit. Outside of Canada, interest in DRS as an economic tool to change consumer behaviour and collect high numbers of beverage containers for high-quality recycling continues to grow, particularly as governments seek to implement solutions to high-profile issues like plastic pollution. There are now over 40 jurisdictions worldwide that have implemented mandatory DRS, and several other countries (including Scotland, England, Turkey, Romania, Portugal, Slovakia, Latvia, Malta, New Zealand, Singapore, and Jamaica) have announced that they will soon do the same.

Thanks to the passage of the European Union's Single-Use Plastics Directive (SUPD) in June 2019, DRS will most likely spread to even more countries in Europe over the next decade. The SUPD requires EU member states to collect 90% of plastic beverage bottles by 2029, with an interim target of 77% by 2025. Practically speaking, the 90% target implies the implementation of DRS, since achieving recycling rates of over 90% for beverage containers is virtually impossible any other way. The SUPD also requires that all new plastic bottles must contain a minimum of 30% recycled content by 2030.

This requirement will most certainly increase the market demand for recycled material and help drive the circular economy for plastics.

Now in its 10<sup>th</sup> year, this report is widely recognized as an invaluable tool for government officials and those in the beverage industry and recycling sectors seeking to understand how these systems work, how their performance is measured, and how they are financed. In addition to delivering a comprehensive overview and analysis of program performance and system costs, this report delves into the economic and environmental benefits of beverage container reuse and recycling, including avoided greenhouse gas emissions and municipal cost savings. A discussion on recycling processes, end-markets, and measures to increase the use of recycled content in beverage containers is also included.

Governments around the world are increasingly aware of the inaccuracies of the data being provided by curbside system operators, more specifically the impact of contaminants and losses which occur after materials are sorted in non-deposit systems. Determining those downstream losses is a critical step to attaining real recycling values. This is clearly outlined in the Canadian Standards Association's Recycling Guideline<sup>1</sup> as well as being a legislative change within the European Union's new Waste Framework Directive. With this in mind, CM Consulting aims to provide the best and most reliable data possible. We aim to ensure that the data is robust and applied methodologies are made fully transparent. Today more than ever, as producers have a greater responsibility for managing and financing their collection programs, there must be checks and balances with non-vested informed oversight.

Due to data being unavailable, we are disappointed that this 2020 update excludes collection and recycling rates for Quebec's and Manitoba's non-deposit containers collected via curbside and public space recycling programs. In the case of Quebec, we rely on waste characterization studies to derive our recycling rates, and the most recent year for which Quebec data is available is 2012-2013. Although the study was updated for 2016, it did not contain the granular level detail necessary to run the numbers to calculate recycling rates. Similarly, we are unable to acquire data for the province of Manitoba that is suitable for entry into our report. Due to lack of transparency, granularity, and methods and analysis behind the rate, we made a decision to omit Manitoba data from the 2020 *Who Pays What* report because we are unable to corroborate the numbers that have been officially reported by the producers.

We trust you will find this report both useful and informative. Please contact us if you require other data or further analysis, or have comments or suggestions that might make the report more helpful to you in the future.

Respectfully yours,



Clarissa Morawski, Principal

## Post-Script to the Primer

Around the globe, the challenges presented by the Covid-19 pandemic have had a profound impact on the way people do things, and beverage container management has proven to be no exception. Due to concerns about the potential health risks of recovering used containers, several jurisdictions chose to temporarily stop accepting refundable containers, thereby closing off the return channels for customers in those provinces. While it's still too early to know what the impact on return rates these temporary closures may have caused, it's quite possible that our next report (which will be based on 2020 data) will show a significant drop in recycling rates for DRS programs, particularly if people did not hold on to these containers and put them in their curbside recycling bins instead, or worse, in the trash.

Aside from the potential impact on DRS recycling rates, the temporary closure of redemption locations has also had profound short-term effects on the supply of some recycled containers, particularly refillable glass beer bottles. By closing off return channels, the health crisis prevented brewers from retrieving their bottles, which jeopardized their ability to continue supplying the market. It is likely that in future reports, we will see a significant downturn in the sale of refillable beer bottles for 2020. This will actually exacerbate a trend that has been ongoing for over a decade and may even contribute to the eventual complete disappearance of the refillable beer bottle for domestically brewed beer in Canada.

Another trend that Covid-19 has accelerated is the use of unstaffed drop-off stations (e.g., Return-it's 'Express & GO' system) to return empty containers, and the allowance for other forms of refund payment other than cash (e.g., onto a card or directly into a customer's bank account). Every program that has implemented this type of 'express' return-option has seen a sharp rise in its use since the gradual re-opening. For example, in Newfoundland, the rate of use for the bulk drop-off system pre-COVID was 42%. In September 2020, that rate was at 56%. It's expected that this method of returning containers will only become more popular over time and that more and more returns will be done using bulk return systems.

While Covid-19 may be top of mind, there are also policy developments at the federal level that may have an impact on Canada's beverage container return systems. In October 2020, Canada's Environment Minister unveiled a list of single-use plastic items that will be banned by the end of 2021. The government's proposed ban bares many similarities to the EU's Single-Use Plastics Directive (SUPD), although the EU version goes further and also calls for a 90% recovery rate on single-use plastic beverage containers and for mandatory minimum recycled content requirements for beverage containers. At some point in time, Canada may very well add recovery targets for single-use plastic beverage containers into the law, which could trigger, as it seems to have in Europe, an expansion of DRS. Currently, there are only two provinces—Ontario and Manitoba—that do not use DRS to recover all non-alcoholic beverage containers below a certain size threshold, and it's estimated that both of them have recycling rates below 70% for beverage containers. A set of legally binding targets at the federal level could force those provinces to adopt DRS to achieve those targets.

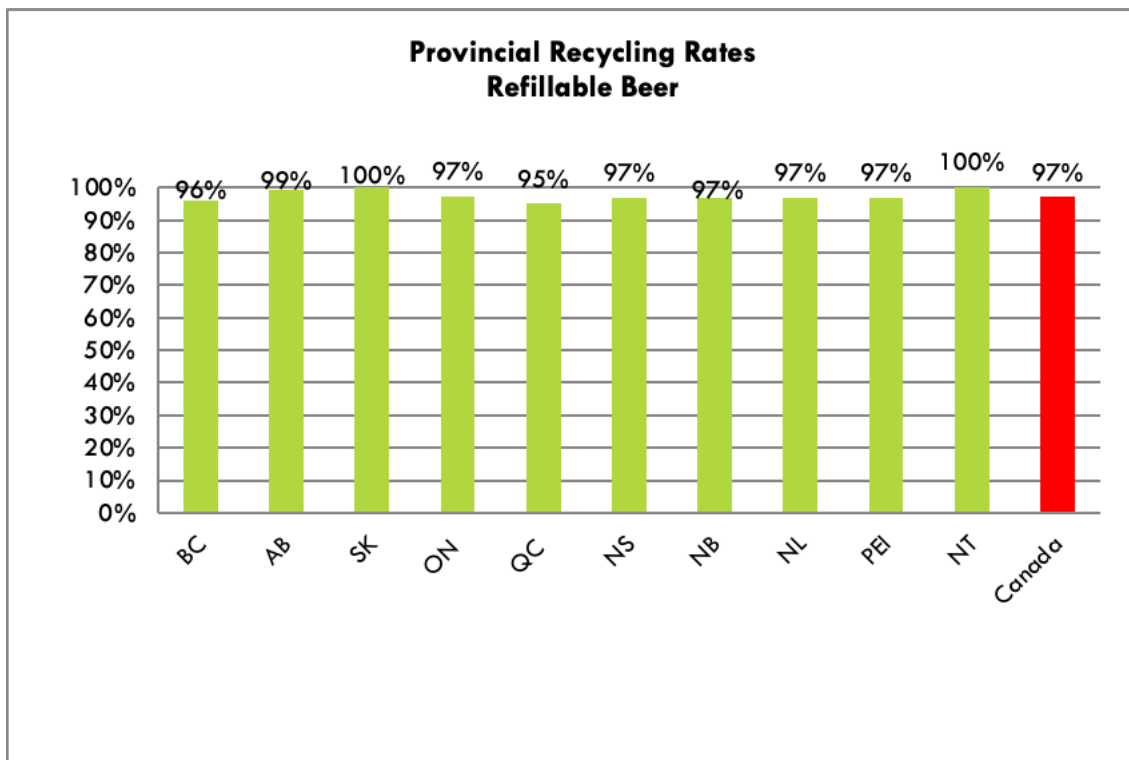
# Key Findings

## 2019 Beverage Container Recycling Rates

### Refillable Beer Bottles

While CM Consulting can no longer obtain exact sales and returns numbers for each province, the national collection rate for refillable beer bottles is estimated to be 95-99%.

Figure 1 Provincial Recycling Rates, Refillable Beer (2019)

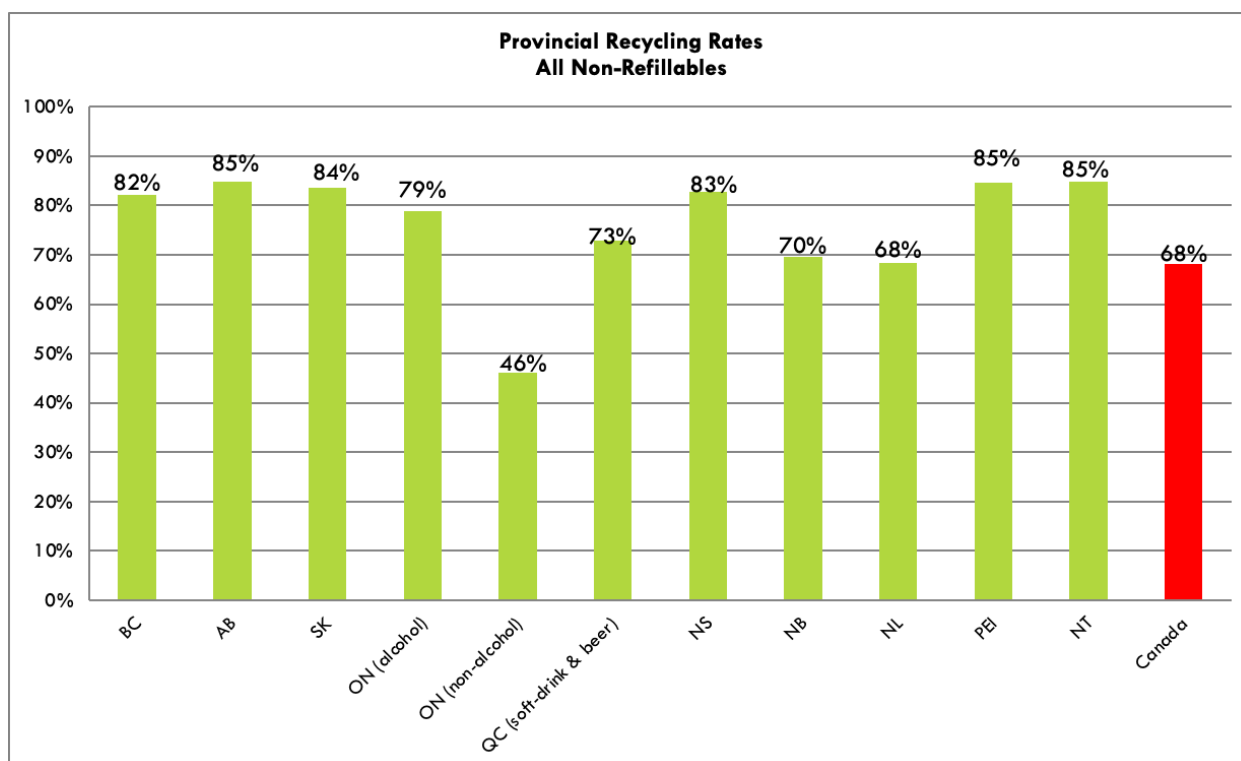


### Non-Refillable Containers

Non-refillable containers include aluminum and steel cans, PET bottles, glass bottles, and gable top/aseptic cartons. Regardless of material type, these containers are always recycled at higher rates in jurisdictions that use DRS. Of the 11 deposit-based programs across Canada, most had recycling rates over 80% and all but one had rates over 70%. Ontario's recycling rate for non-refillable, non-

alcohol containers—which are recovered through municipal curbside recycling programs and public recycling bins—was only 46%. Reliable performance rates for non-deposit containers in Manitoba and Quebec were not available for 2018 or 2019. The rate for New Brunswick does not include alcohol containers, as data for these was not made available for this report.

**Figure 2 Provincial Recycling Rates, All Non-Refillables (2019)**



## Environmental Benefits

There are many benefits to reusing and recycling beverage containers. Not only does it keep valuable materials out of landfills, it also reduces greenhouse gas (GHG) emissions and the energy required to produce new containers from raw materials. In 2019, Canadians recycled and/or reused over 11 billion beverage containers. This level of diversion saved over 17 million GJ of energy and eliminated over a million metric tonnes of CO<sub>2</sub> equivalent emissions, equal to taking roughly 240,000 cars off the road.

## Economic Benefits

DRSs create jobs and result in significant cost savings for municipalities. In this report, we present a compilation of over 30 studies that examined the costs and benefits of implementing or expanding DRS for beverage containers, all of which show net positive effects on municipal budgets.



## Part 1: Program Performance

### Measuring what Matters

We've all heard the expression, "You can't manage what you don't measure." It may be an old management adage, but it also applies to recycling. Without performance measurement, it is difficult—if not impossible—for governments and organizations to design and implement effective recycling programs and to ensure that they are meeting their objectives.

When it comes to beverage containers, program performance is typically measured using the collection rate, a calculated value derived from dividing the amount of material collected by the amount of material sold. For DRSs, using the collection rate as an indicator of performance makes sense because the accounting is in units, and because beverage containers are collected separately from other types of packaging. Determining the collection rate is simple since the refund provides an opportunity to track sales and collection to the last unit.

Measuring the success of multi-material collection systems, on the other hand, is much more complex. The complexity lies in that beverage containers are collected commingled with other types of containers, including PET from non-beverage sources, like ketchup bottles and PET thermoformed packaging for foods. Adding to this complexity is the fact that contaminants (e.g., food or liquid left in containers, non-recyclables) are included in the weight of collected containers. This makes the usefulness of the collection rate as a performance measure meaningless since it does not reflect the actual recycling of beverage containers. In order to measure what is actually recycled in these programs, the weight of non-beverage container material must be subtracted from the total tonnage. For this reason, CM Consulting uses *recycling rates* to measure the performance of programs in this report. In order to estimate recycling rates for beverage containers collected via the multi-material program in Ontario, the authors applied reasonable and important assumptions to all available data (see Appendix A).

### Getting the Numbers Right: Accounting for Contamination

One of the challenges of single-stream (also called "commingled") recycling collection is the increase in contamination. Contamination occurs when non-recyclables are mixed with recyclables, or when recyclable items are sorted improperly before they are shipped for processing. For recyclers, higher contamination rates mean higher costs, lower yields, and more material to dispose of. Contamination also leads to downtime in production processes, which costs machine maintenance, work hours, and lost time.

Compared to DRSs, the material collected via single-stream programs is of much lower quality, with more residuals and out-throws. A study of glass recycling showed that only 40% of glass from single-stream collection is used in the production of new containers and fiberglass. In contrast, colour-sorted glass recovered via DRSs results in 98% being recycled and only 2% marketed as glass fines.<sup>2</sup> For plastics, recyclers report yield rates of about 68-70% for material collected from single-stream programs, compared to bales of PET from DRSs which generally have a yield rate of about 85%.<sup>3</sup>

## Process Loss

All bales of beverage containers will experience some level of yield loss due to the caps, labels, and glue that remain on the containers after sorting. This is true even in DRSs. PET bottles, for example, can lose up to 15% by weight of their material in the system. Some of these losses are fines, which can be sold as a by-product, but most are disposed of in landfill. When it comes to aseptic containers, 20% of the material (by weight) is aluminum and plastic and is considered process loss because it is disposed of after separation from the pulp.

As program operators seek to increase the recovery of beverage containers, it is important that they account for process loss by ensuring that both the numerator (i.e. amount of beverage container material collected) and denominator (i.e. amount of beverage container material sold) include or exclude the weight of this material in a consistent manner. This requires applying the processing efficiency rate (PER) to the collection rate (see Table 1 for definitions). It should be noted, however, that this step is only required for collection rates that are measured in weight, as is the case in Manitoba, Ontario, and Quebec (for non-carbonated beverages), since recycling rates for these programs decrease as the level of contamination rises. Collection rates reported for DRSs are not affected by processing efficiency because they are based on unit counts.

**Table 1 Rate Definitions**

<b>Collection Rate</b>	<p>The amount of beverage container material collected (by weight or unit) that is shipped to the recycler by the primary processor (e.g. MRF) expressed as a percentage of the amount of beverage container material placed on the market, excluding exports. Some programs use “recovery rate” and “collection rate” interchangeably.</p> <p>Note: If material is measured by weight, the weight of caps, labels, and glue should be considered in both the numerator and denominator.</p>
<b>Processing Efficiency Rate</b>	<p>The amount of beverage container material received by the recycler that is used in the recycling process (excluding energy-from-waste (EfW)) expressed as a percentage of the amount of material shipped to the recycler. The higher the PER, the lower the level of contamination, and vice versa.</p>
<b>Recycling Rate</b>	<p>The amount of beverage container material used in the recycling process (excluding EfW) expressed as a percentage of the amount of beverage container material placed on the market, excluding exports. The RR takes into account the weight of materials rejected due to contamination.</p> <p>Note: In DRSs, the collection rate and the recycling rate are the same, because the accounting is in units.</p>

Knowing the PER is critical for accurate performance measurement because it sheds light on what was *actually* recycled, not just how much material was collected and then sent to disposal after secondary processing. CM Consulting estimated PERs based on rates published by industry and through interviews with recyclers that process beverage container material in Canada. Figure 3 presents typical contamination rates (low and high) that are common in today's bales of recyclables shipped to recyclers.

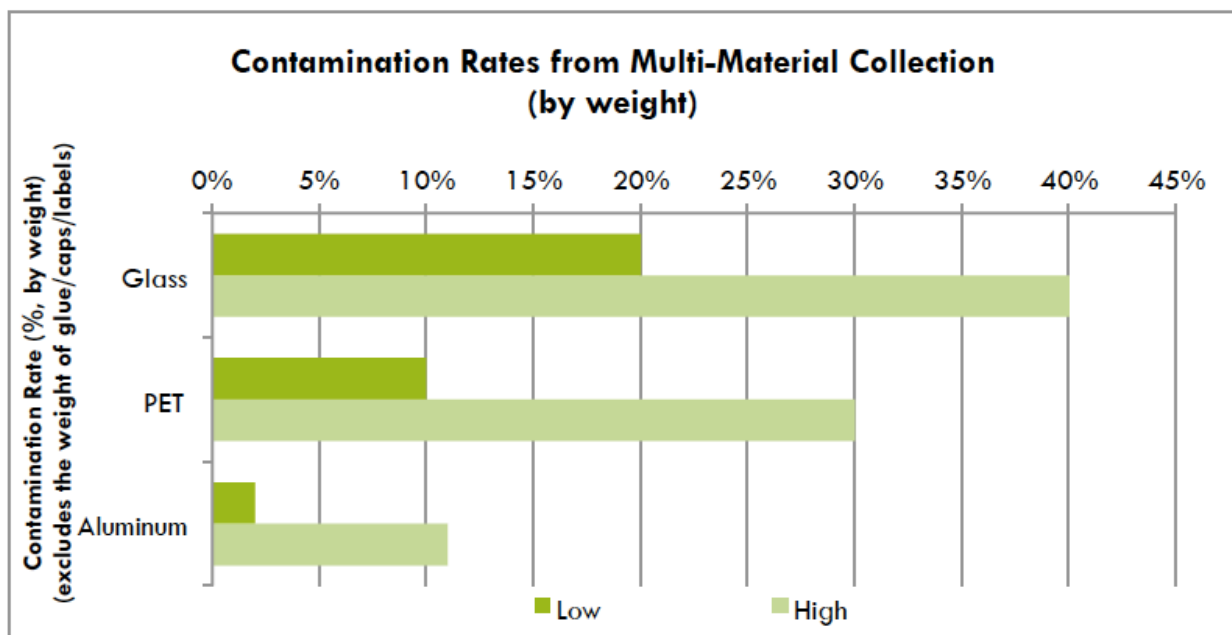


Figure 3 Contamination Rates from Multi-Material Collection (by weight)

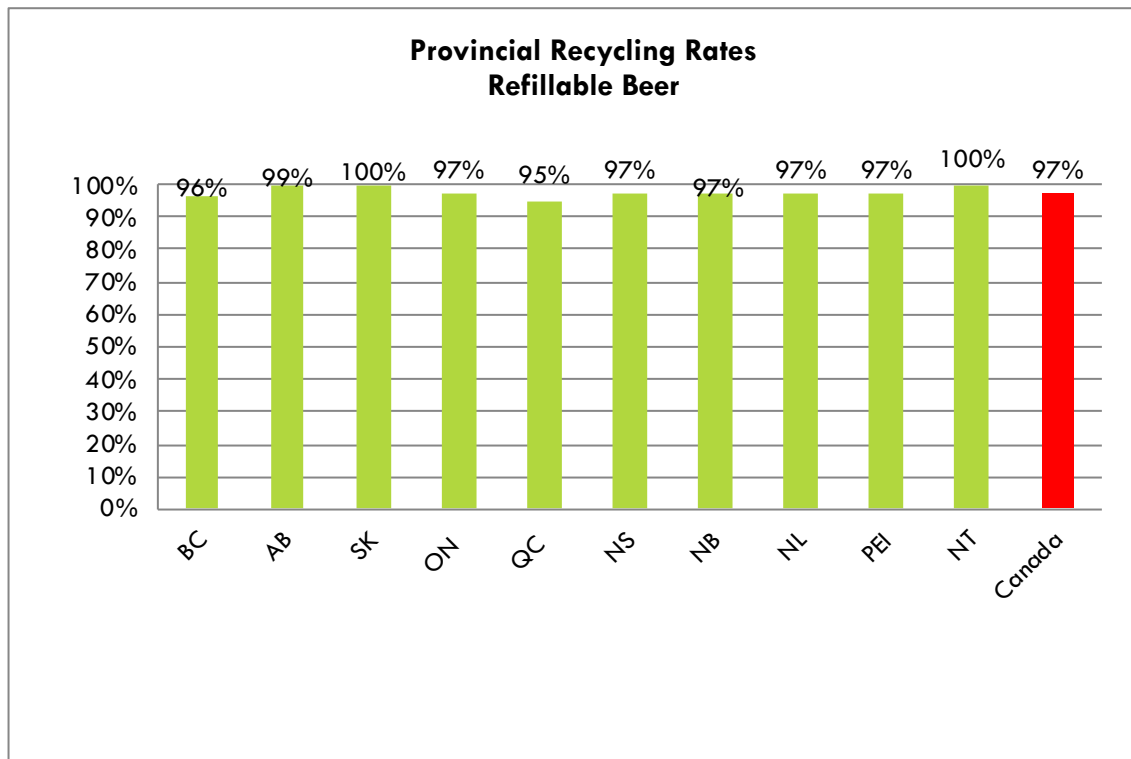
## Material-Specific Recycling Rates

### Refillable Beer Bottles

Provincial operating agencies and the Brewers Association of Canada (BAC) are responsible for monitoring and reporting the collection/recycling rates for refillable beer bottles. These bottles are recycled at a very high rate, both nationally and on a provincial level. The recycling rate of refillable containers has a considerable influence on the trippage rate, which, in turn, determines the environmental benefit to be gained from reuse. “Trippage” is the term used to describe the average number of trips a container makes before it is recycled by the bottler, damaged by the consumer (and thus not returned for deposit), or otherwise landfilled. In Canada, the average trippage rate for industry standard bottles (ISB) is 15 times.

Figure 4 summarizes the recycling rates for refillable beer bottles collected through brewer-run provincial programs in fiscal year 2019. Although other types of beverages (e.g. water, milk, soft drinks) also come in refillable bottles, collection/recycling rates for these containers are not reported and so are not available to the public.

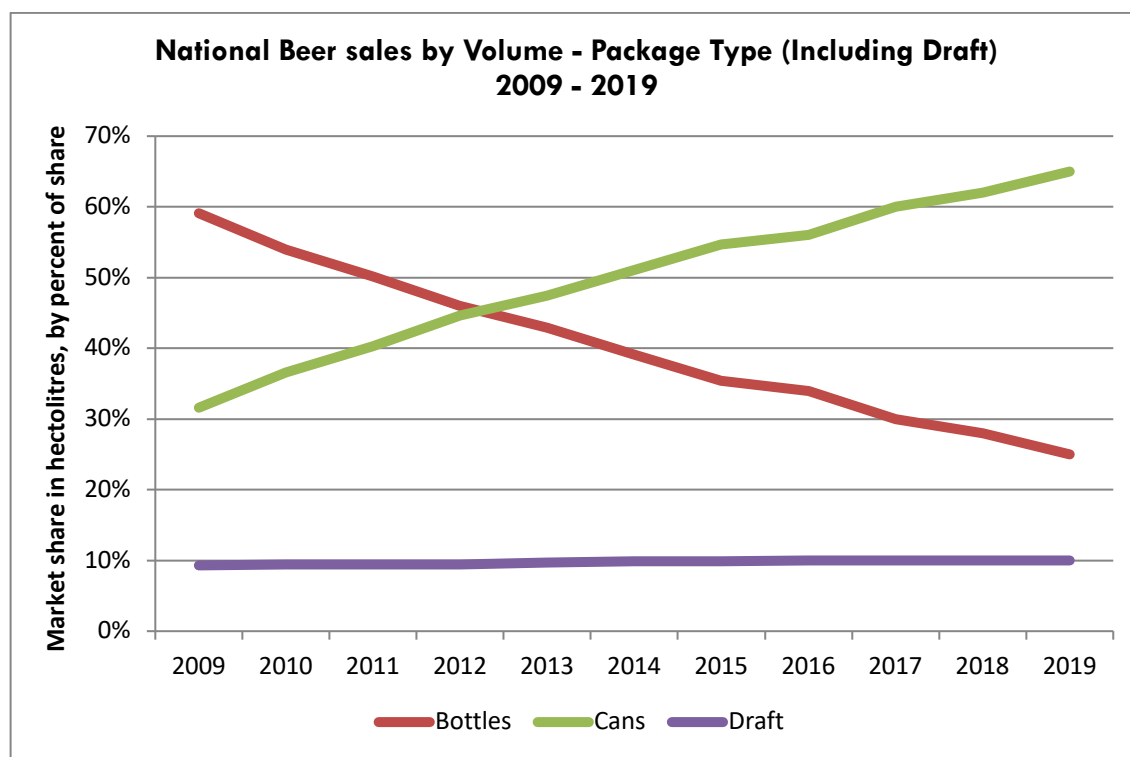
Figure 4 Provincial Recycling Rates, Refillable Beer (2019)



### The Decline in Refillable Beer Bottles

Historically, the majority of beer sold in Canada has been packaged in the refillable ISB. However, in recent years there has been a dramatic decline in the use of such containers. Statistics from the BAC show that from 2009 to 2019, nationwide market share for beer sold in glass bottles dropped from 59% to 25% of overall hectoliters sold. These figures include non-refillable glass bottles, mostly imports, which are a growing segment of the market.

Figure 5 National Beer Sales by Package Type (Including Draft) (2009-2019)



Only in Ontario and Quebec does the refillable beer bottle remain popular. Based on available data, we estimate that about 70% of the refillable beer bottles sold in Canada are sold in these two provinces, and it is in these two provinces where the greatest decline has occurred. Over the years of this report, CM Consulting has published the sales of beer in these two provinces by unit, to track the performance of the refillable bottle. Figures 6 and 7 show how the refillable beer bottle's market share (mostly ISB, but also individually branded refillables like Steam Whistle or Sleeman) has declined in Ontario and Quebec over the last 10-11 years. It is worth noting that this only represents sales of domestic refillable bottles vs. domestic cans.

Sales figures for Ontario are exact and taken from publicly accessible reports, and the same is true for Quebec for the earlier years. In recent years it has become more difficult to find the exact sales and returns for Quebec refillable beer containers, and therefore the numbers for 2017 and 2019 are estimates based on data provided by Canada's Brewers minus sales figures for non-refillable glass beer bottles available from Recyc-Quebec.

Figure 6 Ontario Beer Sales, Refillable Bottles vs. Aluminum Cans (2008 – 2019)

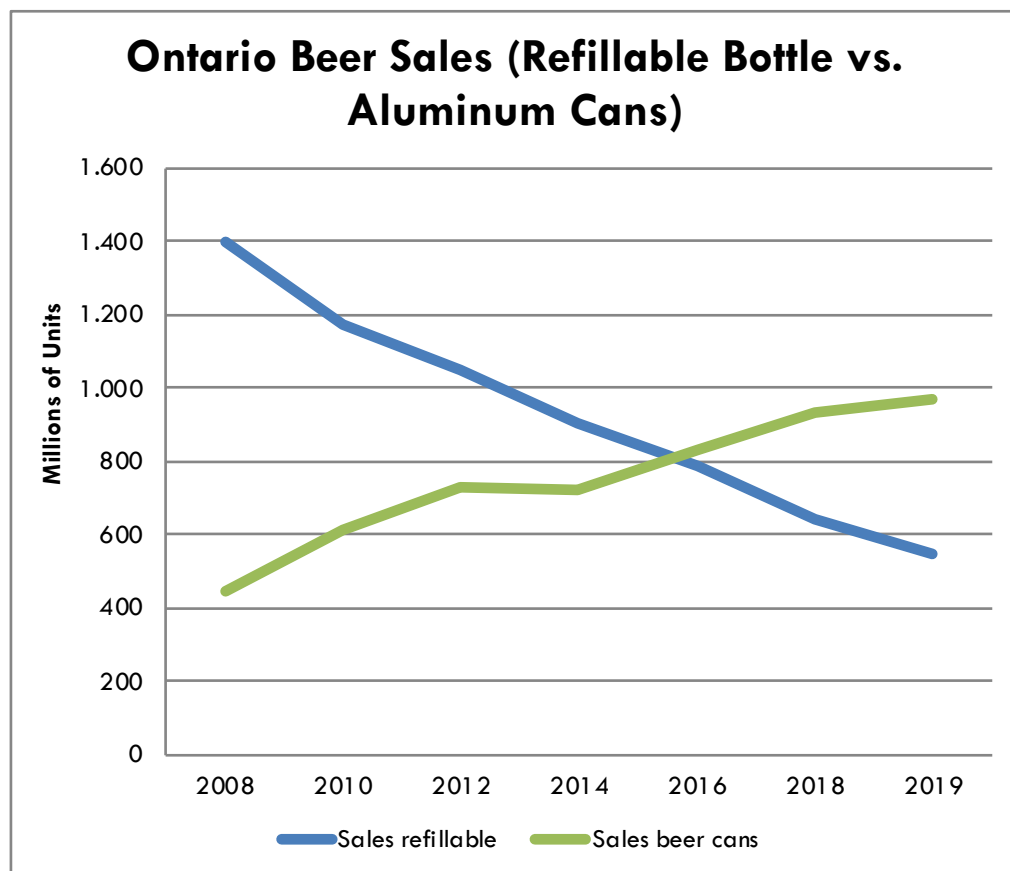
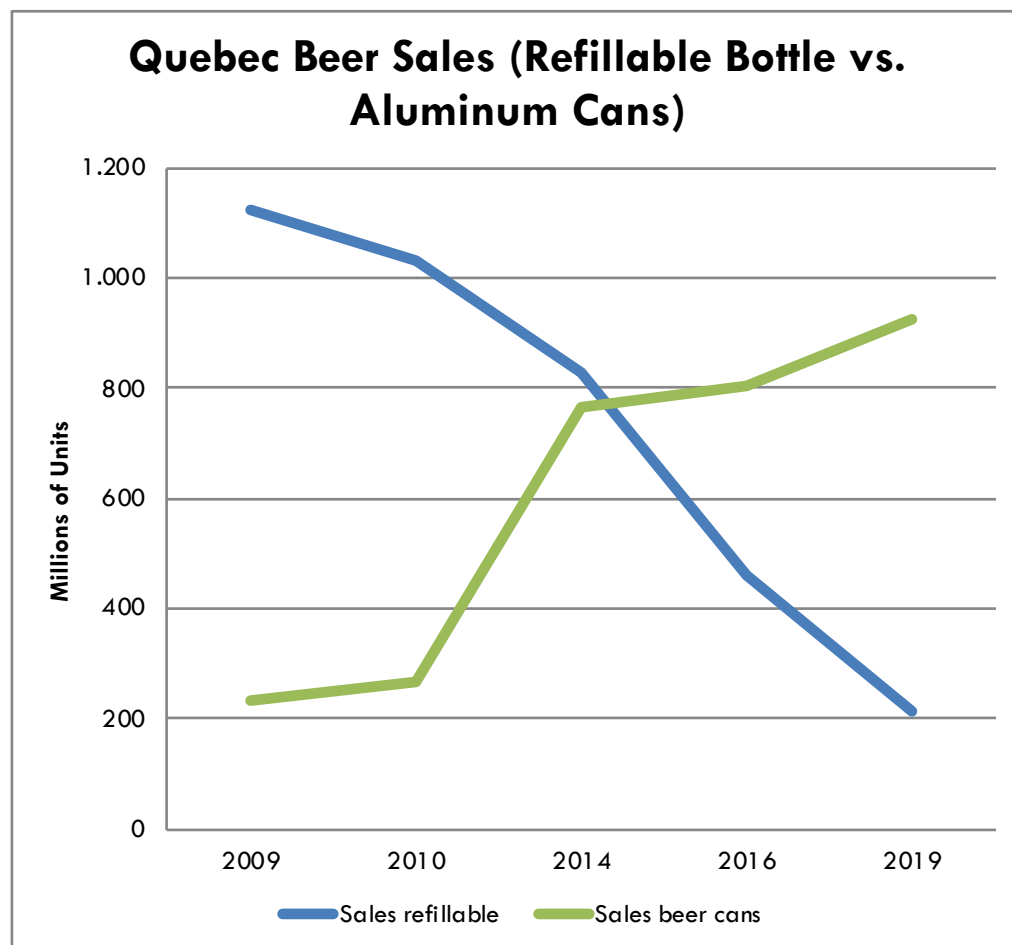


Figure 7 Quebec Beer Sales, Refillable Bottles vs. Aluminum Cans (2008 – 2019)



Several factors can explain this decline, one of which is a shift in the retail landscape towards large retailers or “big box” stores. Without policies in place to promote them, retailers have stopped carrying refillables in an effort to reduce the labour, space and general management requirements associated with having to take them back.

Another contributing factor to the decline in refillables and corresponding increase in single-use containers is that refillable systems require a greater level of cost internalization by beverage producers. Whereas producers of beverages in single-use packaging generally only incur a share of the end-of-life management costs, producers of refillable containers incur the full costs of collection and refill. This un-level playing field creates an economic incentive to use non-refillable containers over reusable ones. Other reasons for the decline include changes in the relative costs of container materials (aluminum and plastic), a shift to lighter packaging, and a change in consumer preference and behavior.

Recent policy changes in both Ontario and Quebec are expected to accelerate this declining trend over the coming years. In Ontario, more grocery stores, LCBO Community Outlets, and possibly soon corner stores are selling beer and alcohol. None of these outlets take back empty containers. It is

anticipated that consumers who purchase beverages at these locations will be more likely to opt for cans. If the Ontario government does indeed permit corner store sales, this could irreparably damage the market for the refillable. In Quebec, the primary reason that the refillable container's market share remained over 40% until 2016 was a quota that forced brewers to produce 37.5% of their sales in refillables. In 2019, the government repealed that quota, which will undoubtedly lead to lower production of refillables.

The refillables situation is only expected to get worse with the pandemic. Country-wide, temporary closures of redemption locations affected the ability for producers to get refillable bottles back to refill. It is anticipated that our next report will show a steep drop in refillable beer bottle use in Canada for 2020. While it may recover somewhat over the following year or two, it is highly unlikely that we will see a return to 2010 levels.

## Non-Refillable Containers

Table 2 shows provincial recycling rates for different types of non-refillable containers in 2019. Entries of “-” indicate that data for that category of containers was either not available or not applicable for that province. The table does not include data for Alcohol containers in New Brunswick. The table includes data for only one non-deposit beverage container collection program, the Blue Box program in Ontario. We can see that with the exception of Newfoundland, all of Canada's DRs are achieving total non-refillable recycling rates of 74% or higher, much higher than Ontario's Blue Box program at 46%.

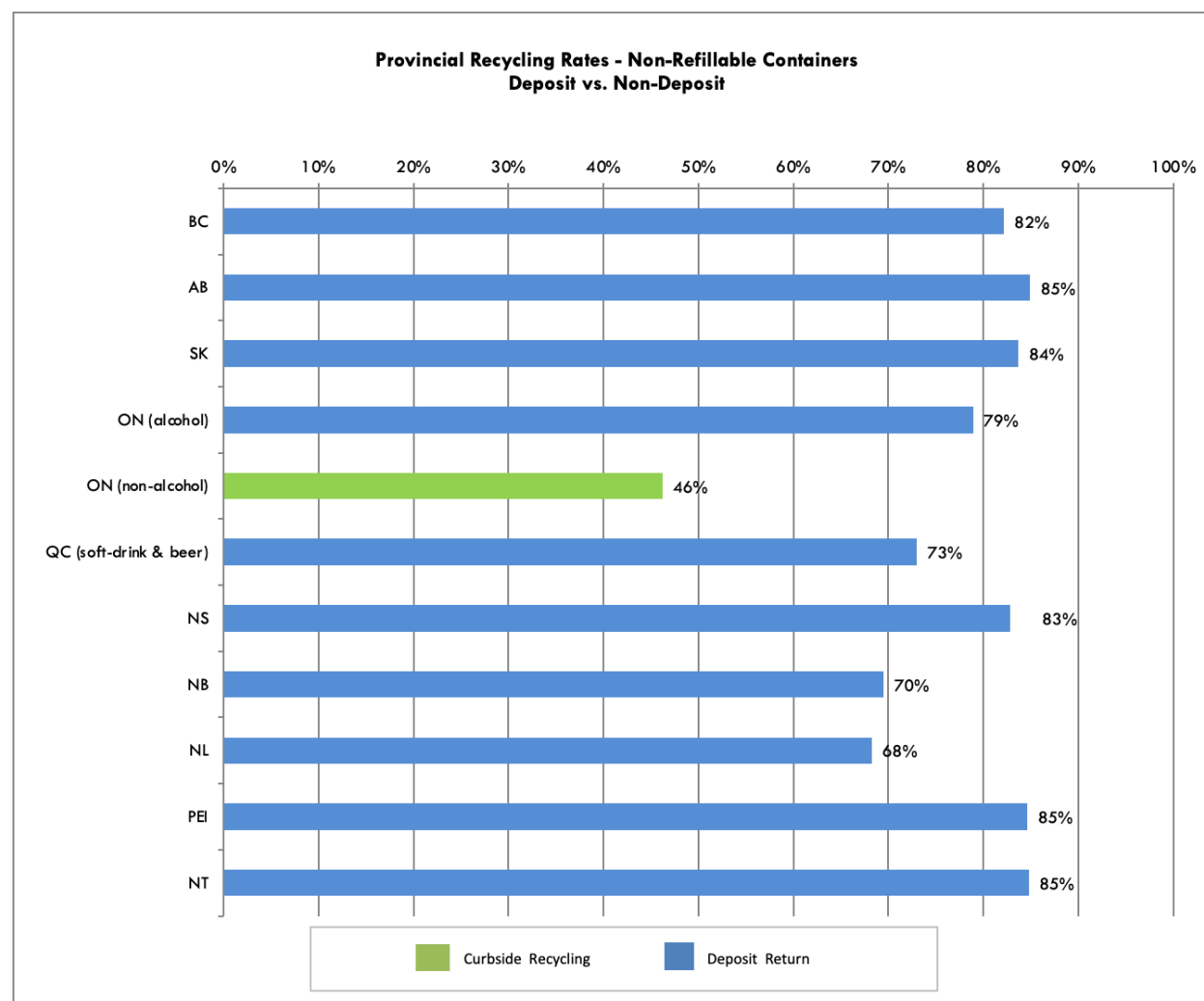
**Table 2 Provincial Recycling Rates, Non-Refillable Containers (2019)**

	BC	AB	SK	ON (alcohol)	ON (non-alcohol)	QC (soft-drink & beer)	NS	NB	NL	PEI	NT	Canada
Aluminum Cans	86%	89%	85%	78%	46%	75%	89%	71%	71%	89%	86%	73%
Non-Refillable Glass	92%	93%	89%	84%	N/A	60%	87%	60%	77%	89%	100%	83%
PET Bottles	75%	82%	88%	53%	43%	65%	79%	73%	71%	80%	85%	60%
Other Plastics	75%	82%	-	-	54%	-	49%	22%	41%	-	85%	-
Bi-Metal	84%	84%	-	-	64%	-	41%	46%	41%	13%	62%	70%
Gable/Tetra Pak/BIB	56%	71%	61%	27%	35%	-	53%	46%	41%	65%	64%	53%
Total Non-Refillables	<b>82%</b>	<b>85%</b>	<b>84%</b>	<b>79%</b>	<b>46%</b>	<b>73%</b>	<b>83%</b>	<b>70%</b>	<b>68%</b>	<b>85%</b>	<b>85%</b>	<b>68%</b>
Refillable Beer	96%	99%	100%	97%	-	95%	97%	97%	97%	97%	100%	97%
Total containers	<b>82%</b>	<b>85%</b>	<b>84%</b>	<b>83%</b>	<b>46%</b>	<b>75%</b>	<b>84%</b>	<b>72%</b>	<b>75%</b>	<b>86%</b>	<b>90%</b>	<b>70%</b>



Figure 8 summarizes the total non-refillable recycling rate, by province, for 2019. The visual clearly shows the stark difference between the performance of Ontario's curbside program and the DRSs, which are much more successful.

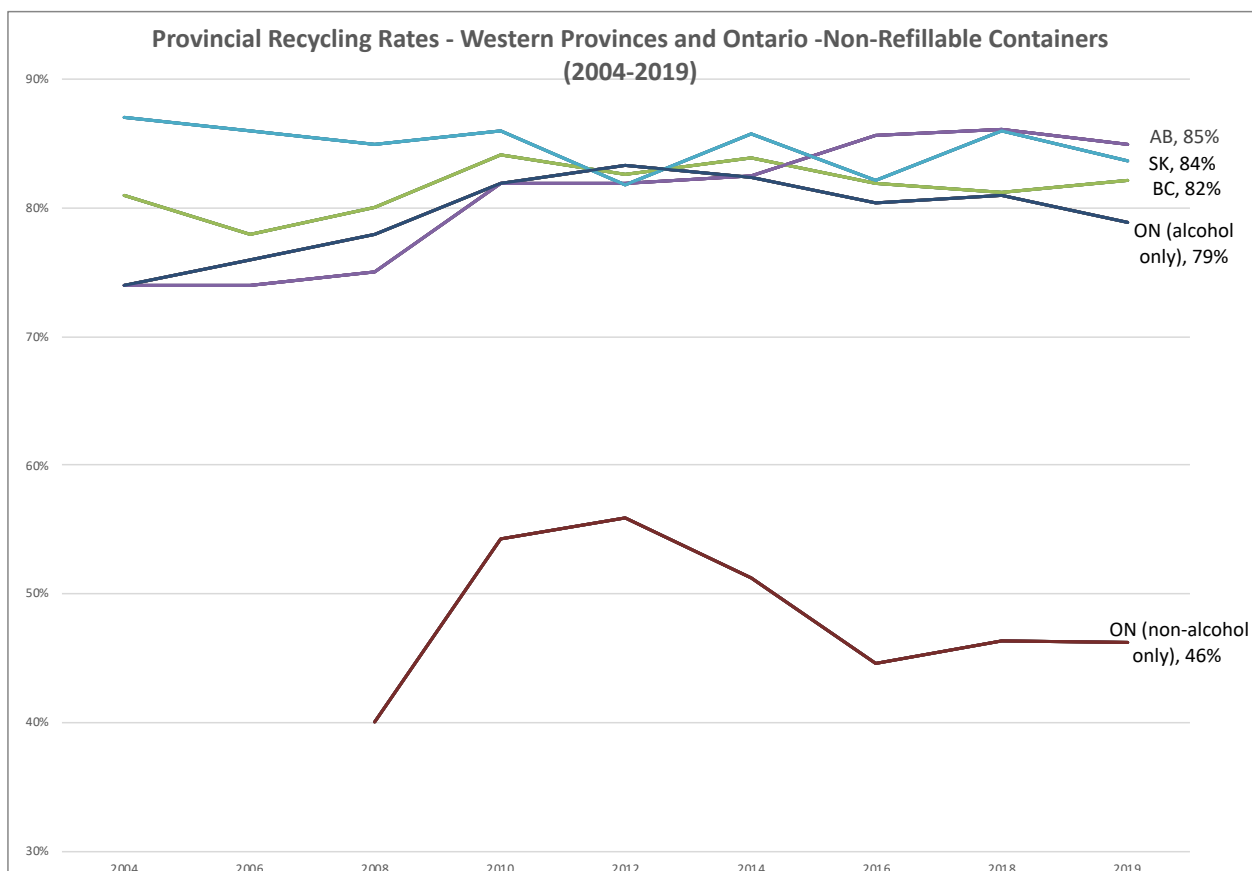
Figure 8 Provincial Recycling Rates, All Non-Refillables (2019)



*\*note that in NB, the data does not include Alcohol containers.*

Figure 9 provides historical data on non-refillable recycling rates in the western provinces and Ontario for the years 2004 to 2019. Most provinces have seen their rates increase gradually. Alberta stands out with a 10 point increase since 2008, while Ontario, which only has a DRS on alcohol containers, has seen a fall in beverage container recycling rates from 56% in 2012 to 46% (lowest of all available rates) in 2019.

Figure 9 Select Provincial Recycling Rates, Non-Refillable Containers (2004-2019)



## Aluminum Cans

Figure 10 presents 2019 recycling rates for aluminum cans by province. The outlier in the chart is the low rate of curbside collected aluminum cans in Ontario. The aluminum can recycling rate in B.C. is higher than that presented by Encorp because this number also includes beer cans (see Figure 11).

It is worth pointing out Quebec's recycling rate of 75%, which, compared to other deposit jurisdictions, is relatively low. Quebec's poor performance for these containers is likely attributable to the low deposit on beer cans (5-cents), which is half the value of the deposit in most other provinces. Another contributing factor is the fact that Quebec's DRS is limited to carbonated beverage cans (i.e. soft drinks and beer). This creates confusion for consumers, which in turn lowers overall performance. Thankfully, in January 2020 the Quebec Government announced that it will expand the system to include different kinds of alcohol and beverage containers by late 2022, and will also increase the level of the deposit.

Figure 10 Provincial Recycling Rates, Aluminum Cans (2019)

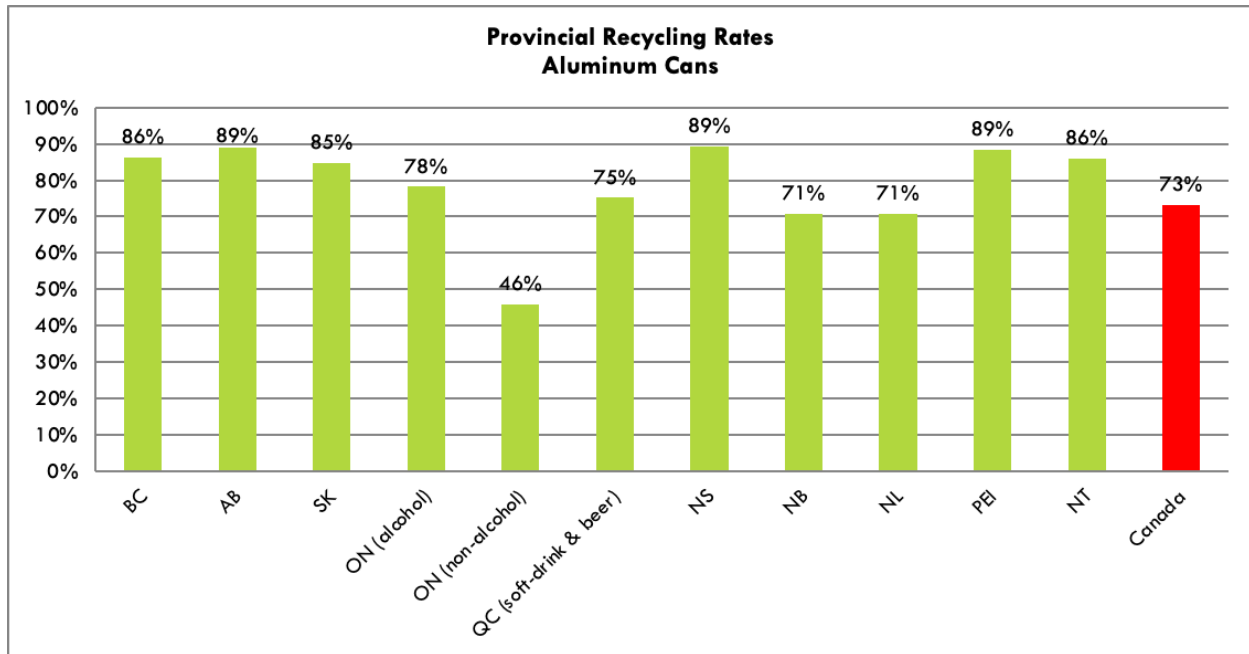


Figure 11 shows 2019 recycling rates for aluminum beer cans vs. non-alcoholic beverage cans in Ontario and B.C. When comparing these rates, it is important to consider deposit levels, which have a significant influence on rates of return. In B.C., the deposit on beer cans, which show a 90% recycling rate, is 10-cents. Up until November 2019, this was double the deposit charged on non-alcoholic beverage containers (previously 5-cents, now 10-cents), which shows a recycling rate of 80%. It is also important to consider the collection system used to recover each type of container. As shown in the table, there is a clear difference in recycling rates for beer and soft drinks cans in Ontario (78% vs. 46%), where beer cans are on deposit and soft drink cans are collected curbside.

Figure 11 Provincial Recycling Rates, Aluminum Beer Cans vs. Soft Drink Cans, in Ontario and B.C. (2019)

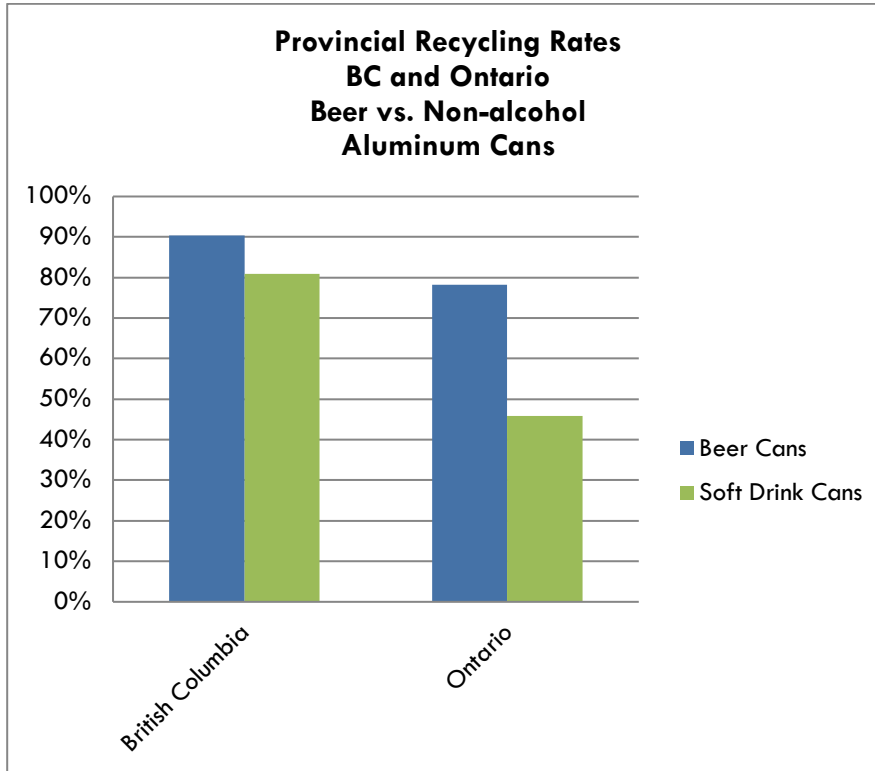
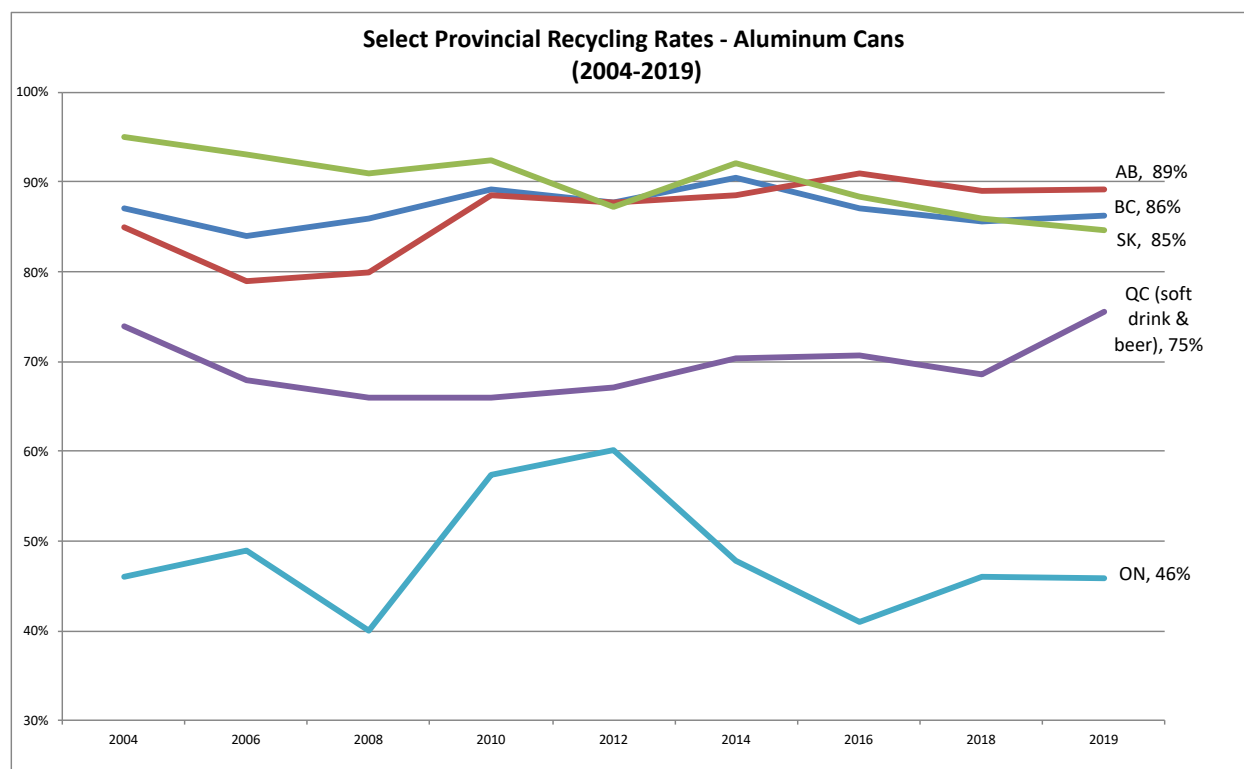


Figure 12 shows how recycling rates for aluminum beverage cans have changed over time in the three westernmost provinces. Alberta saw a significant increase from 2004 to 2019, especially in 2008-2010, and has had the highest rate in the country since 2016. B.C. has seen rates increase and decrease during this period, but essentially remains consistent.

The rates in Ontario and Quebec have also stayed roughly equal in the time CM Consulting has been reporting on them. Saskatchewan has seen the recycling rate for aluminum cans fall during this time frame; it's worth noting that aluminum is the only material that did not see an increase in that province over the years 2016-2019. In 2017, Saskatchewan increased the deposit on all containers that were 1 litre or more in size. This change affected the recycling rates of other container types, but not aluminum, since cans are rarely found in the large size format.

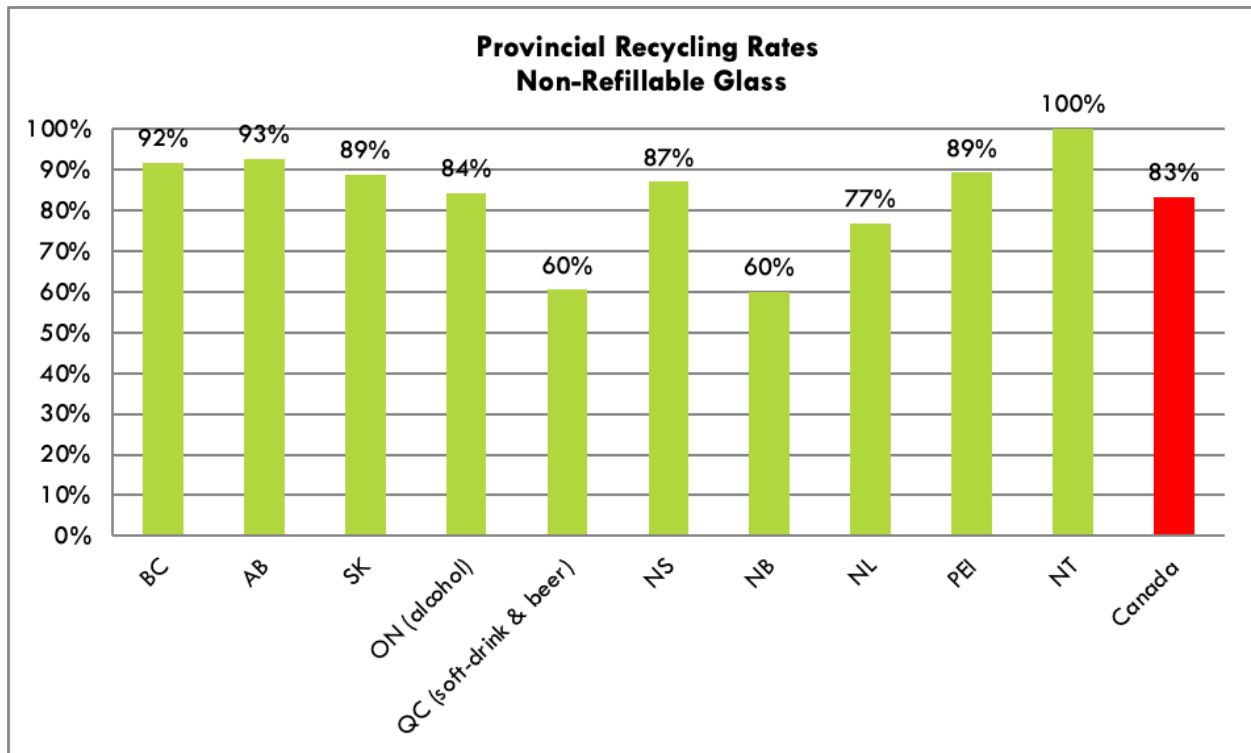
A clear explanation for the increased recycling rate in Alberta is the deposit increase that occurred in 2008. With greater incentive to return the containers, Albertans increased their returns.

**Figure 12 Provincial Recycling Rates in Select Provinces, Aluminum Cans (2004-2019)**

## Non-Refillable Glass

Figure 13 presents provincial recycling rates for non-refillable glass in 2019. If we remove the outlier Northwest Territories, the province with the highest recycling rate for this material is Alberta at 93%, followed by B.C. at 92%. For this category of materials, dependable rates could not be obtained for the DRS Alcohol program in New Brunswick, or for the curbside collection programs in Manitoba or Quebec. It is worth noting that in Manitoba, even if we had determined how much glass was recovered, none of the recovered glass is actually recycled, but is recovered and turned into roadbed.

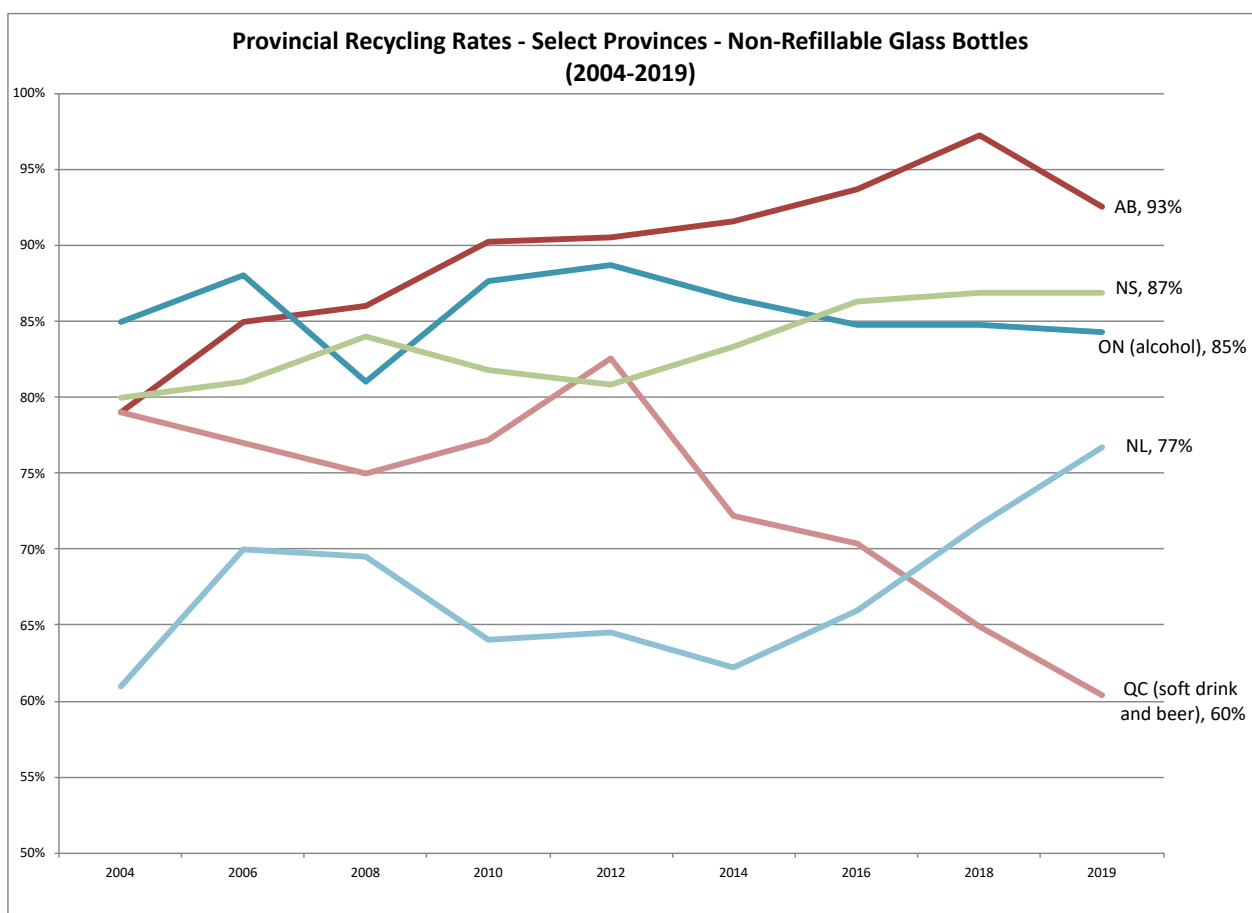
Figure 13 Provincial Recycling Rates, Non-Refillable Glass (2019)



As shown in Figure 14, some provinces have seen recycling rates for non-refillable glass bottles change significantly over the last 16 years. Consider Alberta, for example, whose recycling rate went from 79% in 2004 to 93% in 2019, or Quebec, whose 79% rate in 2004 dropped to 60% during the same time period.

There are a number of reasons why return rates fluctuate over time. For example, the drop in Ontario from 2006 to 2008 can be explained by the introduction of the Ontario Deposit Return Program (ODRP), which expanded the scope of containers subject to deposit. While the 2006 recycling rate includes only non-refillable glass from beer bottles, the 2008 rate includes glass from wine, spirit, and cooler bottles, which were collected at a lower rate in the early years of the program (2007 and 2008).

Figure 14 Provincial Recycling Rates, Non-Refillable Glass (2004-2019)



## PET Bottles

Figure 15 shows provincial recycling rates for PET beverage bottles in 2019. Like for other materials, dependable rates were not available for curbside programs in Manitoba and Quebec. Most DRSs show a recycling rate of 70% to 80% for this material, and the province of Saskatchewan leads the way at 88%. Ontario's DRS shows the lowest PET recycling rate (53%) of all deposit systems, but it only covers PET alcohol containers.

Figure 15 Provincial Recycling Rates, PET Bottles (2019)

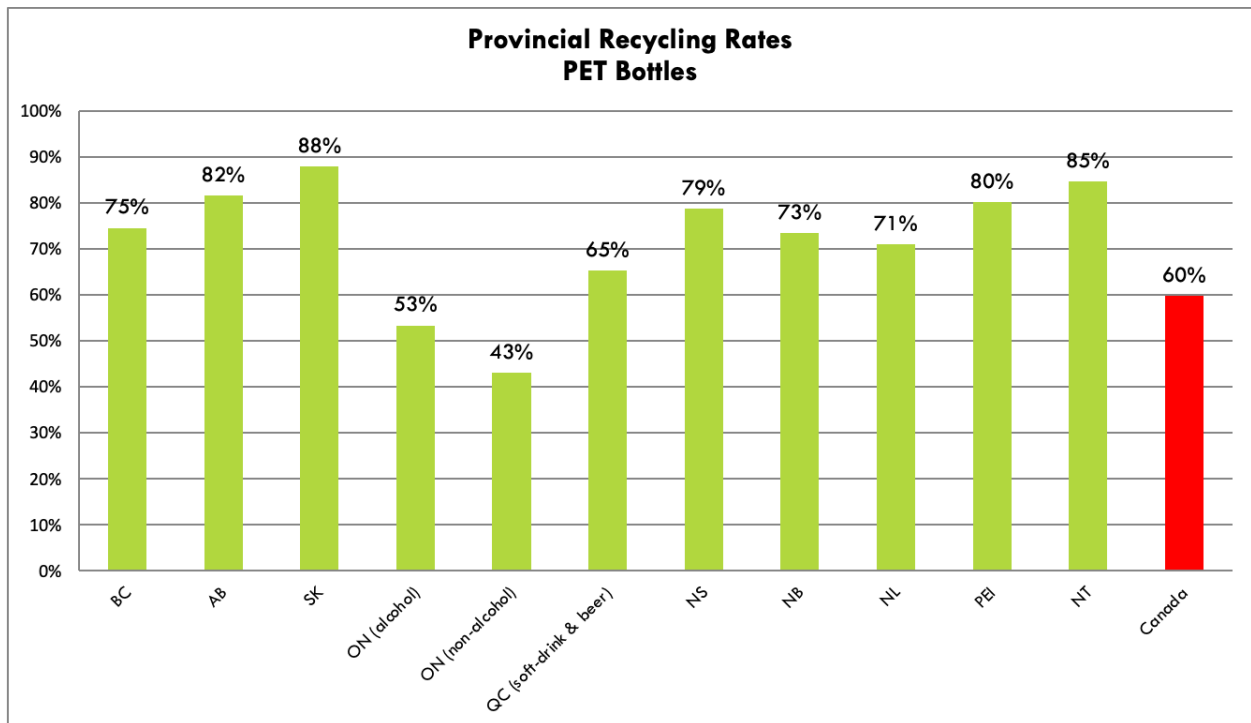
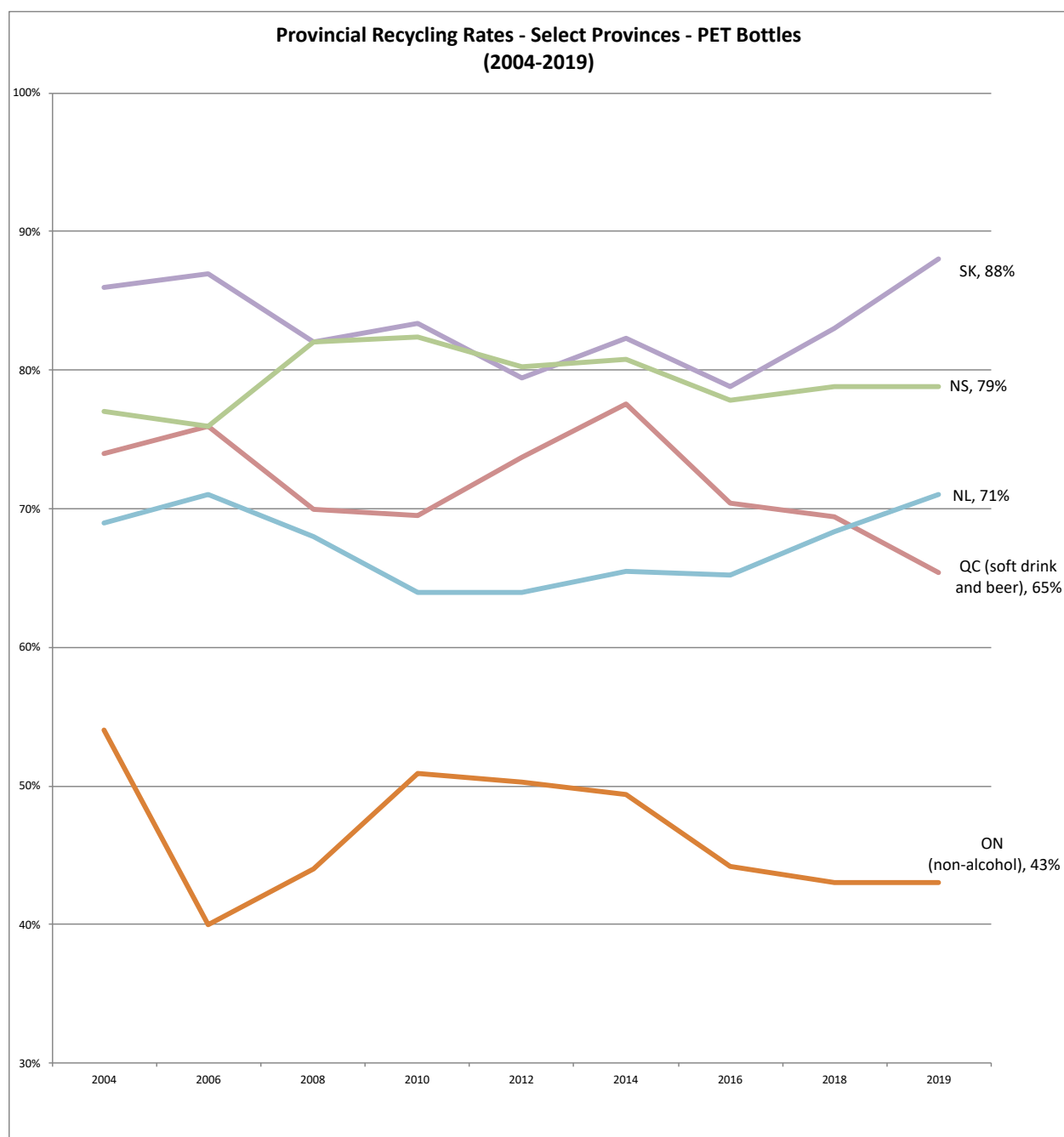


Figure 16 shows how PET bottle recycling rates have changed over time in select provinces. Newfoundland and Nova Scotia have maintained essentially the same rates over the period of study with slight increases, while the programs in Quebec (covering beer and carbonated beverages only, not bottled water) and Ontario (where bottled water and soft drinks are collected curbside only) have seen decreases. Noteworthy is Saskatchewan, where a significant increase has occurred in the last two years, likely because of the deposit increase in 2017 on large format containers, a category dominated by PET.



Figure 16 Provincial Recycling Rates, PET Bottles (2004-2019)

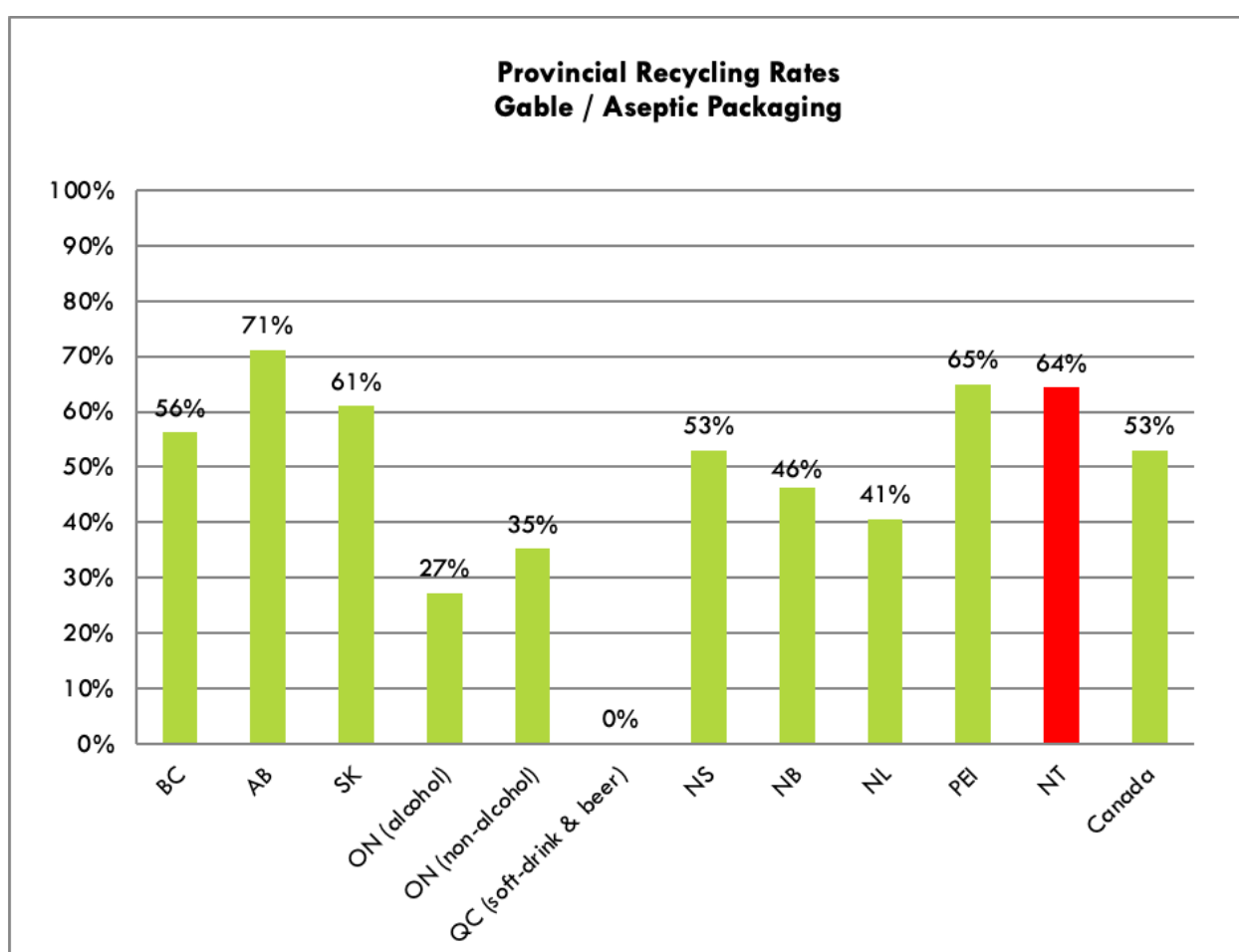


### Gable Top and Aseptic Cartons, Bi-Metal Cans, and Other Plastics

Overall, the recycling rates for gable top and aseptic cartons, bi-metal cans, and other plastics are on the rise. Most provinces show increases in recycling rates since the last version of this report, which covered 2016 data. Figures 17 and 18 show 2019 recycling rates for these materials in provinces that report them.

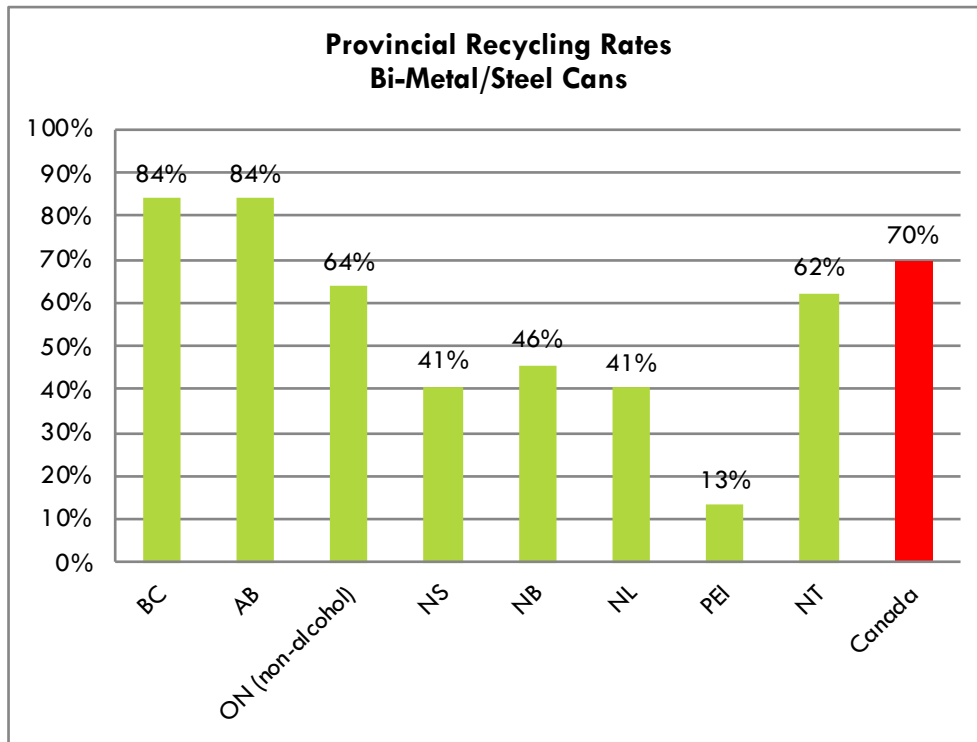
When it comes to gable top and aseptic containers, Alberta remains the only province to recover more than 70% of these, with a rate of 71%. Most of the other provinces recover between 50% and 65% with a few still below the 50% mark.

Figure 17 Provincial Recycling Rates, Gable/Aseptic Packaging (2019)



For bi-metal cans, the highest recycling rate was reported in B.C. and Alberta (84%). Other provinces report rates of between 13% and 64% (see Figure 18).

Figure 18 Provincial Recycling Rates, Bi-Metal/Steel Cans (2019)



## Milk Containers

The majority of milk containers are made from high-density polyethylene (HDPE). In Alberta, 92% of milk sold is packaged in plastic.<sup>4</sup> Overall, milk jugs have a much higher recycling rate than cartons. This may be due to several factors, including the fact that there is a strong secondary market for HDPE material.

The way in which milk container recycling rates are calculated varies by province. In some, the calculation is based on waste audit data, while in others it is based on actual sales and collection data. In some cases, the recycling rates are estimated by extrapolating from the collection rates of a more wide ranging material category, such as “cartons”, which include aseptic and gable top containers. Where milk containers are collected as part of a multi-material collection system, one collection rate is reported for the entire category of materials and no distinction is made between, for example, milk containers and orange juice containers.

In Alberta, because recycling rates are reported by material as opposed to by beverage type, it is impossible to determine a specific rate for milk containers. The Northwest Territories used to report milk containers alone, but no longer does. As such, no rate is available. In B.C., Manitoba, Ontario, and Québec, most (if not all) milk containers are collected through municipal curbside programs along with other materials like paper and non-beverage packaging. Because of this, it is impossible to calculate a recycling rate specific to beverage containers. The same can be said for milk container recycling rates in the provinces of PEI and New Brunswick.

While Nova Scotia also collects milk containers via curbside, specific collection rates have historically been available from the Atlantic Dairy Council (ADC). According to the ADC, over 67% of fluid milk packaging was recycled in Nova Scotia in 2018 (up from 66% in 2017). The ADC notes that this is “exceptionally high considering that the system is voluntary and does not depend on [DRS] for results.”<sup>5</sup>

## Part 2: Away-from-Home Recycling

### How Much is Generated Away-from-Home?

While the majority of beverages continue to be consumed at home, on-the-go consumption has risen steadily over the past two decades in line with increasing urbanization. It is estimated that 30-40%<sup>6</sup> of beverages are consumed and discarded away-from-home (AfH), and as the Millennial generation as a percentage of Canada's total population continues to grow, this number is likely to rise. According to Coca-Cola's 2016 *Away-from-Home Beverage Landscape Study*, Millennials consume twice as many beverages AfH than older generations.<sup>7</sup>

**Table 3 Examples of Away-from-Home (AfH) Locations Where Containers are Discarded**

Location Category	Examples
<b>Public Spaces</b>	Parks, streets, transit stops, greenways
<b>Industrial, Commercial, and Institutional (IC&amp;I)</b>	Bars, restaurants, hotels, amusement parks, shopping malls, convenience stores, offices (and other workplaces), gas stations, coffee shops, some multi-residential units (with private waste service), government buildings, arenas, libraries, public daycares, community centres, colleges, universities, elementary and secondary schools
<b>Special Events</b>	Outdoor music festivals, sporting events, concerts, fairs, markets

Knowing how many beverage containers are discarded AfH is critical to determining accurate recycling rates and designing effective recovery programs. Despite this importance, data on AfH beverage recovery is extremely limited. There are several reasons for this, one being the lack of information available on the number of IC&I establishments in each province that participate in beverage container recycling programs. Another reason is that waste and recycling services for IC&I buildings, events, hospitals, schools, and other AfH locations are typically contracted to private companies, for which there are no regulatory requirements to track and report volumes collected at each location. Unless volumes are estimated at the point of collection by the hauler, it is difficult to know how much material was collected at a specific location since standard practice is to weigh loads at the end of a route.

Table 4 summarizes some of the research that has been conducted to assess the percentage of beverage containers consumed AfH, including a brief description of the methodologies used to arrive at those estimates. CM Consulting relies on these findings to estimate a recycling rate for containers discarded AfH.

Table 4 Estimated Away-from-Home Beverage Container Market Share

Source	Study Methodology	AfH Beverage Container Market Share (%)
<b><i>Plastic Bottles: Turning Back the Plastic Tide. First Report of Session 2017-19, prepared by the House of Commons Environmental Audit Committee, December 2017<sup>8</sup></i></b>	Not specified	<i>By container type:</i> Plastic: Around 15%
<b><i>Final Report - Drinks Recycling On-The-Go: Consumption, Recycling, and Disposal of On-The-Go Drinks Containers, prepared by WRAP, February 2019<sup>9</sup></i></b>	To obtain an estimate of drinks consumed AfH, a nationally representative sample (age, gender, region, and work status) of 4,000 UK adults were asked about their drinks consumption from plastic bottles, glass bottles, metal cans, and take-away hot drinks cups.	<i>By container type:</i> Plastic: 55% Aluminum cans: 45% Glass: 43%
<b><i>The Environmental and Economic Performance of Beverage Container Reuse and Recycling in British Columbia, Canada, prepared by Container Recycling Institute, August 2015</i></b>	Not available to the public	<i>All beverage containers:</i> 30-40%
<b><i>IPSOS Study conducted in Ontario for CBCRA in 2012<sup>10</sup></i></b>	Not available to the public	<i>By container type:</i> Glass: 28% Aluminum cans: 28% PET: 28% HDPE: 20% Gable top cartons: 10%  <i>All beverage containers:</i> 26% (estimated range is between 15 and 30%)
<b><i>Australian Beverage Packaging Consumption, Recovery and Recycling Quantification Study, prepared by Clare Davey, 2008</i></b>	Based on sales data. Containers purchased at grocery stores were considered to be consumed at-home. The difference between at-home sales and total sales is assumed to represent containers consumed away-from-home.	<i>By container type:</i> Glass: 25% Aluminum: 25% Plastic: 45%
<b><i>Beverage Packaging Environmental Council (BPEC) study, 2006<sup>11</sup></i></b>	Not available to the public	<i>By container type:</i> Glass: 33% Aluminum: 24% Plastic: 42%  <i>All beverage containers:</i> 37%
<b><i>Understanding Beverage Container Recycling: A Value Chain Assessment, prepared by R.W. Beck, in collaboration with</i></b>	Figures for PET and aluminum are based on carbonated soft-drink point of sale data from the Container Consulting Inc. Sales at vending machines, venues, and	<i>By container type:</i> Glass: 34% Aluminum cans: 13% PET: 63%

<b>Franklin Associates, Tellus Institute, Boisson &amp; Associates, and Sound Resource Management, 2002</b>	convenience stores are assumed to be consumed away-from home, while sales at food stores are assumed to be consumed at home. Figures for glass are R.W. Beck estimates based on an understanding of the types of beverages packaged in glass.	
<b>American Beverage Association (ABA) report</b>	Not available to the public	<i>All beverage containers: 30-34%</i>
<b>Mise en Marché et Récupération des Contenants de Boisson au Québec prepared by Francois Lafortune</b>	Based on methodology used for 2002 report by R.W. Beck (see above)	<i>By beverage type:</i> Milk containers: 5% Soft-drink containers: 17% Juice containers: 22% Wine/spirits containers: 22% Water bottles: 50%

## Existing Initiatives to Enhance Away-from-Home Collection

A number of Canadian jurisdictions have implemented pilot projects and long-term programs in an effort to encourage the recycling of beverage containers consumed AfH. Many of these initiatives are based on a cost-sharing model in which an industry partner or non-governmental organization sponsors a program in partnership with a community.<sup>12</sup> Examples of public spaces recycling programs in place in Canada today are described below.

### Manitoba

Canada's first province-wide AfH beverage container recycling program was Recycle Everywhere. Created and administered by the Canadian Beverage Container Recycling Association (CBCRA)—a not-for-profit, industry-funded organization (IFO) whose members include beverage brand owners and distributors—Recycle Everywhere distributes recycling bins free of charge to public spaces to encourage recycling outside of the home. In 2019, over 5,000 Recycle Everywhere bins were distributed to locations in the province, including municipal sites, IC&I sites, parks, schools, government buildings, and First Nation communities.<sup>13</sup> According to CBCRA, the cumulative total of bins distributed since the program began in 2010 had surpassed 68,000 by the end of 2019.

### British Columbia

B.C.'s first public spaces recycling program "Go Recycle!" started off as a pilot project in 2011. Launched in the City of Richmond by the Canadian beverage industry, the pilot included over 80 strategically placed bins, and specially designed instructional and promotional signage.<sup>14</sup> To measure the program's effectiveness, the city conducted pre- and post-implementation waste audits of the pilot area and found that the number of recyclable beverage containers placed in trash bins

decreased by 27%.<sup>15</sup> The study also found a 29% reduction of recyclable non-beverage containers in the garbage, and a 35% overall reduction in the amount of waste generated.

Encorp also runs an outdoor public spaces recycling program. Since 2009, the organization has been supplying municipalities and B.C. parks with dedicated beverage container recycling bins free of charge. These bins are placed in high pedestrian traffic areas where beverages are consumed on-the-go. The bins are non-locking and are accessible to anyone that wants to collect the containers and return them for a refund of the deposit. Based on audits conducted by local municipalities, up to 99% of the beverage containers are diverted from the trash.<sup>16</sup>

In 2019, Recycle BC organized a series of roundtable discussions with local government representatives in BC focused on the topic of public space PPP recycling. A consultation is scheduled for 2020 and will include a proposal for a streetscape program design that includes a financial incentive to eligible municipal collectors. The purpose of this incentive is to finance a “reasonable cost” of recycling PPP on-street, as well as to contribute to public education and awareness activities.

## Other Initiatives

- In November 2016, the city of Airdrie in Alberta approved phase 2 of an enhanced recycling program which will see bins for organics, mixed recycling, and beverage containers installed in Airdrie’s public spaces and facilities. Waste audits from phase 1 of the project showed that there was 33% contamination in the beverage container bin and 21% contamination in the recyclable paper bin.<sup>17</sup>
- In September 2017, the city of Regina in Saskatchewan announced that it would install blue recycling bottle baskets—attached to existing garbage cans—to provide residents with a convenient option to recycle beverage containers in public spaces. The baskets are intended to allow a passerby to collect the beverage containers from the baskets and bring them to SARCAN for the deposit value. In 2018, 39 bottle baskets were added, bringing the total number to 65 placed throughout the city. The project is being sponsored by SARCAN Recycling through a public space recycling grant.<sup>18</sup>
- In August of 2020, Nestle Waters Canada funded the placement of an unknown number of public space recycling bins in the Puslinch, Ontario area, where the company is headquartered. The program concentrates on high traffic areas such as parks and at arenas.



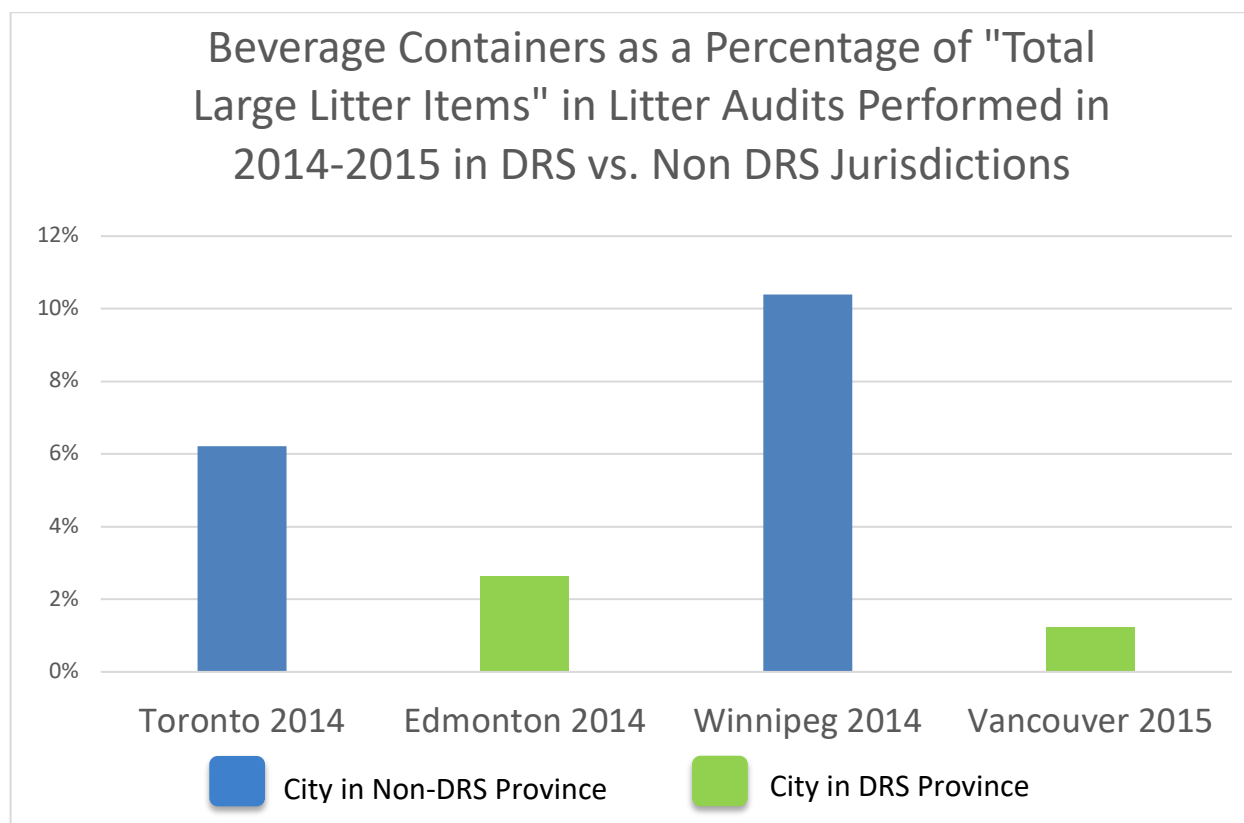
## Share of Beverage Containers in Litter – Deposit vs. Non-Deposit Jurisdictions

In addition to increasing recycling rates, one of the main benefits of DRSs and one that cannot be accomplished without it—is litter reduction. Quite simply, this is because attaching a monetary value to a beverage container, in the form of a refundable deposit, decreases the likelihood that the containers will be littered or remain as litter in the environment, as consumers and other citizens will be motivated to return them for recycling so that they can claim the refund.

Of course, the impact of a DRS on litter reduction depends on a number of factors, including the level of the deposit/refund and the program scope. For example, if a province only includes beer and soft drinks in its DRS, littering rates for those containers will differ from littering rates for bottled water containers that are excluded from the program's scope. In the same way, littering rates will be higher in DRS jurisdictions with lower deposit values, as there is less of a financial incentive to do the right thing.

In 2014-2015, AET Group Inc. of Kitchener performed litter audits in four major Canadian cities, two of which (Vancouver and Edmonton) are in provinces where DRS covers all beverage containers, and two of which (Winnipeg and Toronto) where only certain types of beverage containers are subject to deposit (beer in Winnipeg, and alcohol in Toronto). The results in Figure 19, expressed as a percentage of large litter items (over 4 square inches), show that in the cities where all beverages are covered by DRS, beverage containers are a smaller portion of visible large litter than in cities where only certain containers are included in the deposit system.

**Figure 19 Beverage Containers as a Percentage of "Total Large Litter Items" in Litter Audits Performed 2014-2015 in DRS vs. Non-DRS Jurisdictions**



## Who Pays for Away-From-Home Recycling?

The primary cost drivers associated with starting and operating a public spaces recycling program are the same as residential collection, and include the purchase of recycling bins and signage, new collection vehicles and/or modifications to existing vehicles, hauler fees, program monitoring and management, labour, costs to sort and process materials, and ongoing promotion and education.

In general, the costs of AfH recycling are borne by the entity (public or private) responsible for waste management at the location in question. For example, recycling in an office building is the responsibility of the property manager or owner. Similarly, recycling initiatives undertaken by a school are the responsibility of the school board or principal. When it comes to publicly owned and serviced areas, like parks, arenas, and municipal buildings, recycling is financed directly by the municipality. Only in Manitoba, Ontario and Québec does industry bear a share of AfH recycling costs.

Unlike municipal curbside recycling or DRSs, the costs associated with AfH collection are rarely studied or discussed. It is therefore difficult – if not impossible – to determine how much of

taxpayers' money goes towards these programs. That being said, collection of recyclables from public spaces is much more expensive, ton for ton, than at-home collection. Collecting recyclables from parks containers, for example, requires staff to exit their vehicles and walk from container to container, emptying each one as they go. Compared to residential automated collection where one driver can service hundreds of homes in one day, this is extremely time-consuming.<sup>19</sup> Another factor to consider is collection frequency. Public space receptacles are typically emptied 5 to 7 times per week, whereas residential trash and recycling bins are usually only picked up once a week. Lastly, the cost to purchase public space recycling bins is also more expensive.

A June 2019 report prepared for the City of Cornwall's Department of Infrastructure and Municipal Works<sup>20</sup> provides cost estimates associated with 3 different types of public space recycling programs. The Continuous Improvement Fund (CIF), a partnership between the Association of Municipalities of Ontario, the City of Toronto, Stewardship Ontario, and the Resource Productivity and Recovery Authority, recommends option 1 (recycling of beverage containers only), which was estimated to have a total cost of \$22,000.

**Table 5** Estimated Costs of Various Public Space Recycling Options for City of Cornwall, Ontario<sup>21</sup>

Cost Item	Option 1 - Recycling of Beverage Containers Only	Option 2 - Single Stream Recycling (all designated recyclables in one container)	Option 3- Dual Stream Recycling (containers and paper collected in 2 separate containers)
Recycling Containers	\$15,000	\$15,000	\$30,000
Design and Printing of Educational Materials & Signage	\$5,200	\$5,200	\$10,400
Summer Student	-	\$5,040	-
Tipping Fees Associated with the Landfilling of Contaminated Recycling	-	\$500	-
Waste Audits	\$500	\$500	\$500
Contractor Collection	\$1,300	\$1,300	\$2,600
<b>Total Cost</b>	<b>\$22,000</b>	<b>\$27,540</b>	<b>\$43,500</b>

Dufferin County (Ontario)'s Long-Term Waste Management Strategy, dated March 2018, states that installing 20 public space recycling stations would have an estimated capital cost of about \$50,000 and an annual operating cost of about \$1,600.<sup>22</sup>

## Part 3: Provincial Program Summaries

This section summarizes the key features of each province's beverage container recycling program, including a description of the regulatory framework, performance targets, system operator(s) and program stewards, funding mechanisms, collection system, and results achieved. Some provincial summaries also include a "What's New" section to bring attention to important program updates that have occurred since the last report.

### British Columbia



#### Regulatory Framework

Established in 1970 under the *Litter Act*, British Columbia (B.C.)'s DRS is one of the longest-standing beverage container recycling programs in the world. In 1998, to address changes in beverage container packaging, the province replaced the *Litter Act* with the *Beverage Container Stewardship Program* regulation, which expanded the program's scope to all ready-to-drink beverages, except for milk and milk substitutes. This regulation was replaced in 2004 with the *Recycling Regulation*, a new piece of legislation

that consolidated all B.C. product stewardship regulations into one.

The *Recycling Regulation* sets out the requirements that apply to all producers and stewardship programs with specific product category provisions listed in schedules. Most of the provisions of the original beverage container program are now contained in Schedule 1 of the *Recycling Regulation*. Under this regulation, product stewards (usually the producer or brand-owner, or an agency operating on their behalf) are required to submit stewardship plans that describe the structure and operation of a system for collecting and recycling beverage containers that meets various criteria, including convenient access to redemption locations. The *Recycling Regulation* (under Sections 7 and 8) also requires that all redeemed containers be refilled or recycled, and that none be landfilled or incinerated.

Encorp Pacific's original stewardship plan, approved by the Ministry in 2007, was renewed in 2014 and 2017 with no changes. Its revised draft Stewardship Plan for 2020-2024 has been submitted to the BC Ministry of Environment and Climate Change Strategy and was open to public consultation from July 15 to September 15, 2020. This stewardship plan proposes a number of changes to the beverages and containers included in the program that reflect recent changes in regulation; one of

those changes is that effective February 1, 2022, milk and milk substitute containers will be obligated under Schedule 1 of the Recycling Regulation, making them part of the DRS. A final version of the 2020 - 2024 Stewardship Plan will be submitted to the Ministry in October for consideration and approval by the government.

In 2009, the Canadian Council of Ministers of the Environment (CCME) approved a Canada-wide Action Plan for Extended Producer Responsibility (EPR) where jurisdictions, including B.C., committed to working towards the development of EPR programs for an agreed-to list of product categories. To meet this commitment, B.C. amended its *Recycling Regulation* in 2011 to include packaging and printed paper (PPP).

Under the updated regulation, producers of PPP that enters the residential waste stream were given until November 2012 to submit their stewardship plans (or be included in such a plan) to the Ministry of Environment; the implementation date was set for May 2014. To date, the only plan that has received approval is the one submitted by Recycle BC (then Multi-Material BC). In June 2019, Recycle BC's new five-year Packaging and Paper Product Extended Producer Responsibility Plan was approved by the Ministry of Environment and Climate Change Strategy. Some of the key focuses of this new Program Plan include program performance and reporting enhancements, expanded accessibility and special projects, and streetscape collection.<sup>23</sup>

## Performance Targets

The *Recycling Regulation* establishes a minimum recovery target (collection rate) of 75% for each sub-category of beverage containers listed in Schedule 1. However, there are no penalties for failing to achieve these targets, and there is no specific requirement for continuous improvement.

In addition to the provincial requirements, Encorp Pacific (Canada) has set its own recovery rate targets, which are outlined in its Draft 2020-2024 Stewardship Plan (see Table 6).<sup>24</sup>

**Table 6 Encorp Pacific (Canada)'s Recovery Rate Targets (2020-2024)**

	2020	2021	2022	2023	2024
Aluminum Cans	81.3%	82.3%	83.4%	84.6%	86.0%
Non-Refillable Glass	92.3%	93.3%	94.3%	94.8%	95.0%
<1L Plastic	73.6%	74.6%	75.6%	76.8%	78.0%
>1L Plastic	86.1%	86.3%	86.5%	86.7%	87.0%
Drink Boxes	60.9%	63.9%	67.0%	71.0%	75.0%
Bag in Box	54.1%	57.0%	60.0%	63.0%	66.0%
Bi-metal Cans	85.0%	86.0%	87.0%	88.0%	89.0%
Gable Top	69.3%	70.3%	71.8%	73.3%	75.0%
Pouches	30.8%	40.8%	45.5%	50.0%	55.0%
Overall Recovery Rate (unit based)	78.9%	80.0%	81.2%	82.5%	83.7%

Beyond recovery rate targets, Encorp has set targets for consumer access and awareness levels. A 97% consumer access level is the goal set within the approved plan. Regarding public awareness, the

performance target Encorp aims to achieve is 95% awareness of the DRS and 90% awareness of locations to which containers can be returned.

For beer and cider containers covered under the Brewers Recycled Container Collection Council (BRCCC) stewardship plan, BRCCC has set a minimum recovery (collection) target of 87.5% overall and for each container type.<sup>25</sup> BRCCC has also set an accessibility target of 385 return locations by 2019 (or 80% of the population living within a 10 minute drive of a return location).

Recycle BC's new Program Plan also includes recovery (collection) targets that go beyond the current 75% recovery rate established by the director. The overall targets for 2018-2022 are as follows: 75% for 2018 and 2019; 77% for 2020 and 2021; and 78% for 2022.<sup>26</sup> The plan also establishes material-specific targets for paper (90% by 2020), total plastic (50% by 2025), rigid plastic (55% by 2022 and 60% by 2025), flexible plastic (22% by 2022 and 25% by 2025), metal (67% by 2020), and glass (75% by 2020). These targets are consistent with those of the European Union as well as those set in the Plastics Charter, which was tabled by Canada at the 2018 G7 meeting in Charlevoix, Quebec (i.e. recycle and reuse 55% of plastic packaging by 2030 and recover 100% of all plastics by 2040).<sup>27</sup> Recycle BC notes in its Program Plan that it will "exclude any quantities of material collected on behalf of others to ensure there is no 'double-counting' of recovered tonnes by Recycle BC and other agencies on behalf of whom material is collected. This includes, for example, some deposit containers which are disposed by residents in their curbside recycling bins. These containers are sold to Encorp Pacific and are not included in Recycle BC's calculations of performance.

### **Who is Responsible?**

There are three corporate entities that collect and recycle beverage containers in B.C. on behalf of producers: Encorp Pacific (Canada), BRCCC, and Recycle BC.

Originally formed in 1994 and then as a product stewardship agency in 1998, Encorp is the federally incorporated, not-for-profit organization responsible for all ready-to-drink beverage containers for soft drinks, juice, water, wine, coolers and spirits, plus non-refillable beer bottles sold in B.C. Encorp represents approximately 358 stewards for the products identified in its Stewardship Plan, operating the network of "Return-It" depots across the province, where virtually all types of beverage containers (other than milk and milk substitutes, and non-refillable bottles and beer cans) can be returned for a refund of the deposit.

BRCCC is the stewardship agency for all refillable glass beer and cider bottles, as well as all aluminum beverage alcohol cans. Established by brewers, the BRCCC is a not-for-profit society composed of members representing companies or organizations that together represent over 95% of the beer produced in B.C. and the majority of import production. BRCCC subcontracts Brewers Distributor Limited (BDL), a joint venture company owned by Labatt Breweries of Canada and Molson Coors Canada, to act as its agent. On behalf of the BRCCC, BDL is responsible for collecting container fees from brand-owners, managing unredeemed deposits and material revenues, and coordinating collection of refillable glass beer, cider, and cooler bottles as well as imported and domestic metal beverage alcohol cans, and the secondary packaging that accompanies those items. This collection

happens predominantly in conjunction with the distribution of full goods (i.e. reverse logistics) to alcohol retailers, but BDL also collects from Return-It depots.

Since May 2014 (and until the end of January 2022), milk containers are collected via the residential recycling program operated by Recycle BC. Recycle BC is the non-profit stewardship organization responsible for ensuring that printed paper and packaging (PPP) is collected and recycled on behalf of its members. Recycle BC provides PPP collection and recycling services either directly to communities or by working in partnership with municipalities, First Nations, private companies, and other non-profit organizations.

## **Program Financing**

### *Deposit Return Program*

The total cost of running the DRS in 2019 was \$96.1 million. Handling fees represented the biggest expense (\$54.2 million, accounting for 56.4% of total costs), followed by operational costs (\$30.7 million, accounting for 32% of total costs), which includes expenses related to depot operations as well as transportation and processing. Administration and consumer awareness costs accounted for about 11% of total expenditures.

In 2019, Encorp's total revenues amounted to \$84.2 million. Revenues from the sale of processed containers represented approximately 18% (\$14.8 million) of the total funds received by Encorp that year, while unredeemed deposits, totaling \$12.7 million, represented about 15% of total revenues. Unredeemed deposits are the difference between the deposits collected (\$90.3 million) from consumers and the refunds issued (\$77.6 million). Deposits, which are charged on all beverage containers covered under the program, are laid out in the *Recycling Regulation*. Prior to a regulatory change in 2020, deposits varied by container type and size, with non-alcoholic beverages up to and including 1L carrying a 5-cent deposit (which had increased to 10-cents in November 2019), alcohol containers up to and including 1L carrying a 10-cent deposit, and all containers over 1L carrying a 20-cent deposit. Starting October 1, 2020, all containers, regardless of size, have a unified deposit of 10-cents.

When the revenues from unredeemed deposits and material sales are insufficient to cover the costs of collecting and recycling a specific container type, a non-refundable CRF is added to the container to make up for the deficit. Encorp collected a total of \$43.9 million in CRFs in 2019, representing the largest (52%) source of funding. CRFs are charged based on the net cost for recovering and recycling beverage containers and vary depending on the market value—which fluctuates with economic conditions—and the collection rate for a particular container. CRFs are adjusted on an annual basis and are rounded up to the nearest penny. As of July 2020, CRFs ranged from 0-cents/unit (no fee) to 17-cents/unit. For some container types, specifically liquor plastic, liquor glass, and alcohol bag-in-a-box, the CRF is included in the price of the product.

As a result of the CRF, producers of non-alcohol beverages bear no direct costs for the operation of the system. Any surplus funds (after expenses are paid) are placed into reserves. A minimum level of



reserves must be maintained in order to ensure the program's financial stability over the long-term and to avoid cross-subsidization of container types. To prevent reserves from accumulating beyond their targeted ranges, Encorp can adjust or even eliminate CRFs in any given year, or it can increase its expenses to improve the recovery rate for a specific container type. As of 2019, Encorp had \$22.1 million in operating reserves.

Unlike the costs of managing of non-alcohol containers, the collection and recycling of alcohol containers is fully funded by the producers. In the case of refillable bottles, manufacturers are assessed a per-dozen fee to cover the costs of collection, sorting, and return of containers based on projected and audited costs.<sup>28</sup> In the case of beer cans, BRCCC retains unredeemed deposits with respect to can sales and retains revenues from material sales to offset costs related to administration, transportation, collection, and sorting fees and infrastructure. Revenues collected from both cans and bottles pay return location partners for the collection, sorting, and return of BRCCC containers. In the case of the Liquor Distribution Branch, BRCCC operates under an agreement with the agency to pay it handling fees for each unit collected from its stores. Licensee retail stores that register as contracted collection partners are also paid a per unit handling fee.<sup>29</sup>

In 2019, BRCCC received a total of \$73.0 million in deposits, and paid out a total of \$64.4 million in refunds.

### Curbside Program

B.C.'s residential PPP recycling program is financed 100% by the companies that supply PPP to residents. The total cost for operating the program in 2019 was \$101.2 million.<sup>30</sup> Producers pay quarterly fees to Recycle BC based on the weight and type of material they sell. For municipalities and/or private companies offering curbside recycling and/or multi-family recycling, Recycle BC provides a fixed fee per household as a financial incentive. Municipalities, non-profits, and private companies operating depots for residential drop-off receive a fixed fee per tonne. Under this model, municipal waste management costs are fully or partially offset, effectively shifting the cost of recycling from taxpayers to businesses. The current contract term for collectors expires December 31, 2023 and in 2022 Recycle BC will prepare revised financial incentives.<sup>31</sup>

### **Collection System & Facilities**

As of 2019, Encorp's collection network consists of 168 independently owned and operated Return-It depots (who have agreements with Encorp), 1 Return-It Express Plus location, and 2 Express & GO unstaffed stations. These depots provide services to 98.6% of BC's population (consumer access increases to 99.5% when the retail collection points are included. In addition to non-alcoholic beverage containers, these depots collect materials from nine approved stewardship programs, including electronics, batteries, used paint, and motorized yard tools.

Encorp uses 38 transporters to move the material it collects to 15 processing facilities throughout the province, where the containers are compacted and prepared for shipment to various recyclers. Within urban centers, Encorp uses dedicated transporters that pick up from depots, retailers and



other collection sites. In rural areas, they utilize transporters that provide back-hauling, which results in environmental, logistical, and cost savings. In 2020, Encorp added a hybrid-electric delivery truck with compaction unit to its fleet to reduce its greenhouse gas emissions. One hybrid-electric collection truck will replace two conventional diesel trucks and increase the amount of beverage containers transported by six times.

In 2019, as in previous years, aluminum cans collected by Encorp were sold and shipped to a re-melt facility in the United States where they were turned back into sheet stock for new cans. Plastic containers were sold to Merlin Plastics and shipped to two different facilities in Alberta and B.C. to be cleaned and pelletized to become secondary feedstock for manufacturers of various plastic products and fibres. Glass bottles were processed in B.C. and shipped to various end markets, including a facility in Alberta that makes fibreglass insulation; a facility in Seattle (US) that produces new bottles, and a facility in Quesnel, B.C. that produces sandblasting materials.<sup>32</sup> Some glass was also crushed and sent to municipal sites to be used as construction aggregate. In the case of polycoat containers, these were sold to ICF International and shipped to manufacturing plants in South Korea, Thailand, and Japan, where the recovered fibre was used to make tissue paper. New this year, polycoat containers were also sent to a second supplier, Continous Metal Recovery, at their facility in Des Moines, Iowa, where they are used to make building boards. Previously, stand-up pouches were shipped to a manufacturing company in South Korea for production into composite decking. In 2018, Encorp found a viable end market for this material through TerraCycle in New Jersey, who is using it to create products such as composite decking and storage totes. The plastic bladders found inside bag-in-box containers went to this same facility, while the cardboard from the outer-layer was recycled by local processors. Other metal containers, including bi-metal, were sold to scrap dealers in BC for metal recovery.

As of 2019, BRCCC, through BDL, provides for returns of beer containers and associated packaging at 1,140 retail and authorized depot redemption centres across BC<sup>33</sup>, including 71 authorized depots, 651 licensee retail stores, 198 government liquor stores, and 220 rural agency locations. According to a drive time study conducted by BDL in 2018, 80% of the BC population lives within a 10-minute drive of a BRCCC authorized return location. In addition to these return points, on-site collection services are provided to thousands of licensed establishments (i.e. restaurants and bars). In 2018, BDL performed the collection, sorting, and storage of containers from one warehouse location. The transportation of product and collection of containers is done through a fleet of BDL vehicles as well as third party carriers, where needed. In 2019, 100% of aluminum beer cans collected were sent to recyclers and processed for metal recovery. In the case of refillable glass bottles, 99% were sent to brewers for reuse, with 1% sent directly to a glass recycler for recycling.

Although this will change in February 2022, milk containers are currently collected as part of Recycle BC's residential PPP recycling program. This program uses three collection methods: curbside collection from single-family households, multi-family collection from a central location in buildings with five or more residential units, and depot collection. Local governments have the option to act as collection agents on behalf of Recycle BC, but are not required to do so. In 2019, 98.6% of B.C. households had access to depots, with a total of 176 communities participating in the program.<sup>34</sup>

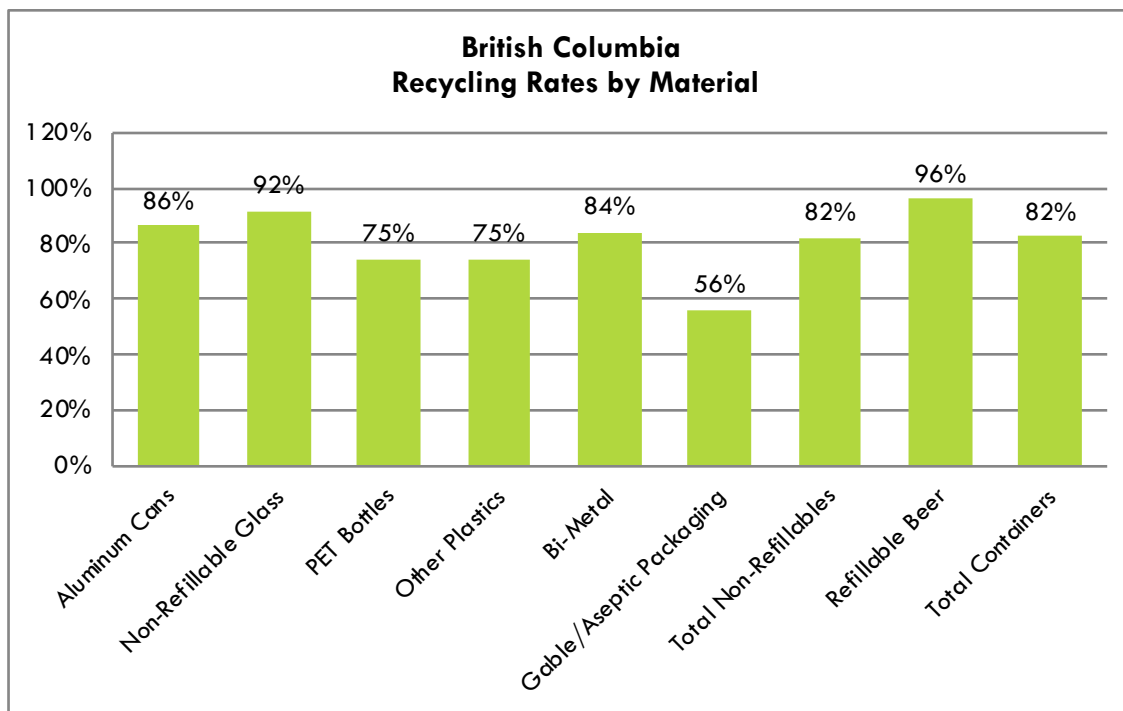
## Program Performance

In 2019, for the second consecutive year, Encorp increased its recovery rate and collected over 1 billion beverage containers (209.4 units per capita) for an overall program return rate of 78%.

The BRCCC container categories, beer cans and beer bottles are consistently high. In 2019, BRCCC collected over 640 million containers for an overall program return rate of 91%. Industry standard refillable beer bottles had the highest return rate at 96%, while non-standard bottles were collected at a rate of 86%. The primary reason for the relatively low collection rate for non-standard refillable bottles was the introduction of a new refillable bottle to the category, that was previously non-refillable. The return rate for aluminum beer cans was 89.5%.

Figure 20 summarizes B.C.'s beverage container recycling rates for 2019. These numbers include beer containers collected by BDL, which explains why the rates for aluminum and total containers are higher than those reported by Encorp. Refillable beer had the highest recycling rate (96%), followed by non-refillable glass (92%) and aluminum cans (86%). At the other end of the spectrum, gable/aseptic packaging is only recovered at a rate of 56%.

Figure 20 British Columbia Recycling Rates by Material (2019)



With respect to awareness of Encorp's Return-It program, an online survey conducted in 2019 revealed that 99% of B.C. consumers were aware of all container types that can be returned for a deposit refund. There is also a high level of public awareness for BRCCC's program for beer containers. According to a 2019 survey undertaken by BRCCC, 93% of respondents are aware of the DRS for beverage alcohol containers.

## What's New?

### *Regulatory Changes*

As part of the B.C. Government's recent amendments to the *Recycling Regulation*, the minimum deposit on beverage containers was increased from 5 to 10-cents, and the previous section obligating a 20-cent deposit on larger containers was struck.<sup>35</sup> Prior to this change, on November 1<sup>st</sup>, 2019, Encorp made the decision to double the deposit on non-alcoholic beverage containers from 5- to 10-cents, but the 20-cent deposit on larger containers had remained the same. As of October 1, 2020, Encorp implemented a 10-cent unified deposit on all containers, regardless of size.<sup>36</sup> This change enables having one unified deposit for all beverage containers to simplify the overall system and make it even easier for consumers to recycle all their beverage containers.

Other changes that impact beverage container collection in B.C. include a regulatory amendment that obligates used containers for milk and milk substitutes under the Schedule 1 beverage container program as of February 1, 2022. This means that these containers will be part of the DRS, and will no longer be collected as part of the Recycle BC recycling program. The regulatory changes also mean that deposit refunds can now be provided in forms other than cash, including store credits, and to credit or debit cards.

### *Roll-out of Return-It Express and Express & Go and no-sorting of cans*

Beginning on July 1<sup>st</sup>, 2019, Encorp expanded its Return-It Express program. Rather than requiring customers to sort their containers and wait in line, this service allows them to drop off their unsorted containers and have their refunds uploaded directly to their online account. As of November 2020, over 130,000 customers have registered for the Express program since it was launched.

2019 also saw the launch of Encorp's solar-powered Express & Go stations, unstaffed drop-off locations designed for underserved areas where it is difficult to cite a traditional depot. Two of these sites were set up in 2019, one in Tofino and another at Simon Fraser University in Burnaby. In 2020, three more Express & GO stations were added as part of a COVID response.

### *Pilot Program for Aluminum Cans*

In an attempt to make the return process more efficient and convenient for consumers, on July 6, 2020, Encorp announced a 6-month pilot program at several of its depots that will allow customers to return both alcohol and non-alcohol aluminum beverage cans together, without having to sort them.

## Alberta



### Regulatory Framework

Alberta's DRS for beverage containers was established through the *Beverage Container Recycling Regulation*, which was enacted under the *Environmental Protection and Enhancement Act*. First introduced in 1972, the Regulation has undergone several amendments over the years, including one in 1989 to include additional goods such as carbonated and/or flavored waters, fruit and vegetable juices, and prepared teas, and one in 1997 to include aseptic and gable top cartons. The Regulation's scope was

further expanded in 2001 to include all domestic beer containers. This meant that domestic beer producers would now be treated the same as other beverage producers in terms of program compliance, reporting requirements, and financial obligations (like handling fees paid to depots).

Another big change came in November 2008 when—for the first time in 20 years—Alberta increased the level of its deposits from 5-cents to 10-cents and 20-cents to 25-cents. The last major amendment to the Regulation was made in June 2009, when Alberta became the first jurisdiction in North America to include milk containers in a regulated deposit refund program. As a result of this expansion, every beverage container sold in Alberta is now part of the DRS.

As of 1997, regulatory authority for the program is given to the Beverage Container Management Board (BCMB). Incorporated under the *Societies Act* as a management board under the *Beverage Container Recycling Regulation*, the BCMB operates in accordance with a number of general by-laws set by the Board of Directors, including, among others, the *Administrative By-Law*, the *Handling Commission Criteria By-Law*, and the *Collection System Agent By-Law*.

### Performance Targets

There are no legislated targets for beverage container collection or recycling, however the Government of Alberta has an aspirational goal of reaching an 85% overall return rate. There are no penalties for failing to achieve this target.

The BCMB's 2018 annual report includes an overall return rate target of 85.7% for 2019.<sup>37</sup> Overall return rate targets have also been set for 2020 (86.1%) and 2021 (86.3%).<sup>38</sup> The BCMB has also established material-specific return rate targets for cans and glass (including refillables) (90.6% by 2019), plastics (81.6% by 2019), and polycoats (72% by 2019). In addition to collection targets, the BCMB has also set targets for performance indicators such as public awareness, accessibility, system efficiency and effectiveness, and fiscal stewardship.

### Who is Responsible?

Alberta's beverage container recycling system is administered by the BCMB. The BCMB is a not-for-profit, industry-led Board made up of representatives of Alberta beverage manufacturers, container depots, and the public. As a Delegated Administrative Organization (DAO), it operates at arm's length from government and has authority under the Ministry of Environment and Parks to impose requirements on recycling program stakeholders. The BCMB reports directly to Alberta Environment and Parks and submits annual reports on program performance. Its main responsibilities include registering brands, issuing permits, establishing handling fees, negotiating operating standards, and monitoring compliance with regulatory requirements.

To collect containers from return locations, the BCMB works in partnership with the Alberta Beverage Container Recycling Corporation (ABCRC), the Alberta Beer Container Corporation (ABCC), and the Alberta Bottle Depot Association (ABDA).

The ABCRC is the approved collection system agent (CSA) for Alberta's non-refillable beverage containers. It works on behalf of manufacturers of non-alcoholic beverages to collect and recycle non-refillables from depots, and process and ship them to recyclers. To facilitate this collection, it outsources 100% of transportation services to a third-party company, and contracts with a regional processor in Lethbridge for a small portion of processing capacity. The ABCRC also operates two of its own processing facilities: one in Edmonton and the other in Calgary.

The ABCC is the collection service provider (CSP) for beer manufacturers and is responsible for collecting and processing standard-sized, refillable beer bottles. Since 2009, the ABCC has outsourced the management of non-refillable beer containers to the ABCRC.

The ABDA represents bottle depot owners in Alberta. Depot operators are responsible for collecting, sorting, and counting containers for ABCRC.

Producers of alcohol containers are represented by a provincial government agency, the Alberta Gaming, Liquor, and Cannabis Commission (AGLC). The AGLC uses ABCRC to manage its wine and spirit containers and the ABCC to manage its beer containers.

### **Program Financing**

The total cost of running Alberta's beverage container recycling system in 2019 was \$132.3 million. Handling commissions represented the single largest expense (\$95.3 million, 72% of total costs), followed by processing (\$14.4 million) and transportation (just under \$9.8 million), which together accounted for 18% of total expenditures. Other costs include those for administration (\$5.6 million), and marketing and technology (\$2.6 million).

Like many other provinces, Alberta's beverage container recycling program is self-funded and receives no government money. ABCRC's costs associated with collecting, handling, transporting and processing empty beverage containers are covered through a mix of unredeemed deposits, the proceeds from the sale of recycled beverage containers to various recyclers, and container recycling fees.

In 2019, unredeemed deposits accounted for 30% of the program's total revenues at \$37.8 million. This is the difference between the deposits collected (\$253,472,797) and the deposits refunded (\$215,631,057). There are two different deposit amounts, one for beverage containers designed to hold 1 litre or less (10-cent deposit), and one for beverage containers designed to hold over 1 litre (25-cents). Consumers are refunded the deposit when they return empty beverage containers to an Alberta bottle depot. For every one of their containers that is returned, beverage manufacturers (through the ABCRC or a CSP) pay the depot a handling fee as compensation for handling and collecting the containers.

Container recycling fees (CRFs) generated a total of \$50.6 million in 2019, accounting for more than half (41%) of total revenue generated by the program. Administered by the ABCRC, the CRF is a fee that beverage manufacturers are required to pay to cover the net costs of recycling beverage containers that remain once the funds from unredeemed deposits and material sales are depleted. This fee is typically passed down to the consumer, which means that the beverage industry bears no direct costs for the operation of the program.

Because some containers are more expensive to recycle than others, the CRF varies by container type and size. As of July 2020, CRFs ranged from 1-cent to 25-cents per container. Some containers, like aluminum cans, do not carry a CRF because high material revenue and unredeemed deposits are sufficient to cover the collection costs. Depending on the retailer, the CRF may or may not be shown separately on sales receipts. Unlike deposits, these fees are non-refundable and are adjusted on an annual basis (usually on February 1).

Individual domestic brewers internalize their stewardship (collection, transportation, refilling, and recycling) costs. Precise costs are not publicly available.

### **Collection System & Facilities**

Alberta's collection network for beverage container recycling is one of the largest in Canada. In 2019, there were 221 independently owned "universal" depots (accepting all beverage containers) where Albertans could return their beverage containers for a refund of their deposit.

After drop-off at the depot, containers are counted and sorted by depot operators. Wine and spirit containers are sorted by color, refillables are sorted by brand and size, and non-refillables are sorted by material type, size, and color, where applicable. In some cases, depots will also compact the material before shipping it. Following sorting, the depots consolidate container loads in specified shipping containers (mega bags) for transport to processing facilities. The majority of processing is carried out in ABCRC-operated facilities in Edmonton and Calgary, although a small amount of processing occurs in a Lethbridge facility.

The transportation of beverage containers among the over 220 depots is done mostly by truck. Pick-up from depots is carried out by the ABCRC (for non-refillables) and the ABCC (for refillables). ABCRC

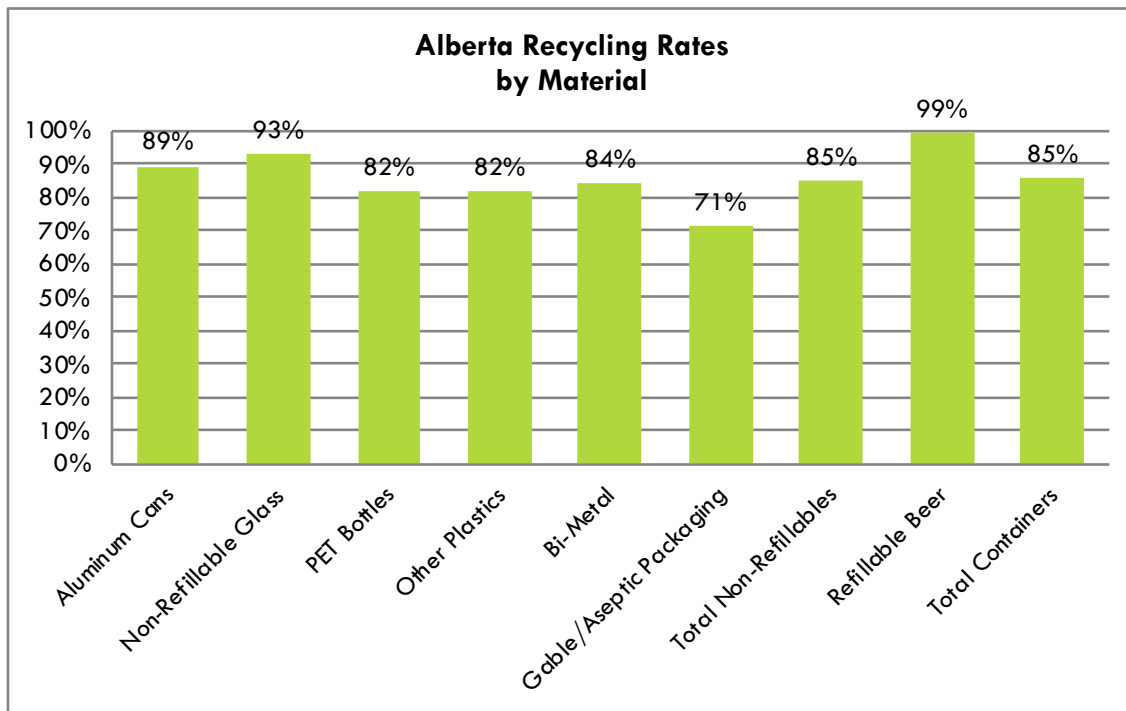
uses back-haul carriers (i.e. trucks that are returning to Calgary and Edmonton that would otherwise be empty) as much as possible.

In 2019, aluminum cans collected by ABCRC were sold and shipped to Novelis and Schupan Recycling, where they were recycled back into aluminum cans. Clear PET plastic, as well as HDPE, green PET, and other plastics were sent to Merlin Plastics where they were recycled into pellets for use in manufacture of new non-food bottles. Glass was sold to Vitreous Glass Inc. and manufactured into fiberglass. The fibre extracted from gable top and Tetra Pak containers was sold to The Paper Tigers Inc and ICF Global Inc, which used it to manufacture paper products. Drink pouches were sold to Merlin Plastics where they were used as an alternative fuel source for coal to power cement kilns, due to low volumes and scarce end markets. Boxes from bag-in-a-box containers were sent to Waste Management and recycled as old corrugated cardboard. Bi-metal cans were sold to General Recycling Industries Ltd, where they were smelted down for recycling into construction rebar, car parts, and grinding rods for mining.

### Program Performance

In 2019, Albertans returned 1.93 million beverage containers to Alberta depots, for an overall return rate of 85%. This is one of the highest overall non-refillable rates in the country. After refillable beer, non-refillable glass carries the highest recycling rate at 93%. Aluminum cans also have a high recycling rate of 89%.

Figure 21 Alberta Recycling Rates by Material (2019)



### What's New?

*More Depot Compaction*



In 2019, eight depots in Alberta agreed to compact aluminum beverage containers before sending them to ABCRC. This compaction resulted in numerous environmental benefits, including: 1,311 fewer trailer loads; 117,474 fewer km driven to transport the material; reduction in baler-associated CO<sub>2</sub> emissions by 40,089 kg, and a reduction in tractor fuel CO<sub>2</sub> emissions by 127,505 kg.<sup>39</sup>

### *New Balers for Calgary Facility*

In November 2018, ABCRC's Calgary plant received two new balers to process paper board, aluminum, PET plastic, gable top containers, HDPE, and bi-metal products. These new balers can process up to 90% more mega bags per hour than the previous models (or an average of 143,750 more beverage containers every hour).<sup>40</sup>

## Saskatchewan



### Regulatory Framework

Established by the Ministry of Environment in 1988, Saskatchewan's beverage container collection and recycling program was originally legislated under the *Litter Control Act* (1978) and the *Designated Container Regulations* (1990). Today, the program is supported by the *Environmental Management and Protection Act* (2010).

Although the DRS initially covered only soft drinks and cans, several amendments to the regulations expanded the program's scope to eventually include all ready-to-serve beverages packed in metal

cans, plastic bottles, non-refillable glass bottles, multi-material shelf stable containers, and paper-based polycoat gable top containers. As of April 1, 2017, the program also includes milk containers.

In February 2013, the Government of Saskatchewan approved the *Household Packaging and Paper Stewardship Program Regulations*. These regulations require stewards of printed paper and packaging (PPP), including beverage-related consumer packaging, to develop and operate a product management program, or join a stewardship agency to do so on their behalf. The stewardship agency formed to discharge the obligations of its members is Multi-Material Stewardship Western (MMSW), which was established under the *Saskatchewan Non-Profit Corporations Act*. The regulations cover any container that is not under deposit, including those made of glass, metal, paper, boxboard, cardboard, paper fibre, or plastic (or any combination of these).

### Performance Targets

There are no legislated targets set for Saskatchewan's DRS or the multi-material recycling program.

### Who is Responsible?



The beverage container recycling program is administered by SARCAN Recycling, a division of the Saskatchewan Association of Rehabilitation Centres (SARC). SARCAN operates under contract to the Saskatchewan Ministry of Environment, with which it negotiated a new four-year agreement in early 2020. The ministry is responsible for designating containers to be included under the program and for establishing deposit levels and the environmental handling charges (EHC) that consumers pay when purchasing a beverage.

Multi-Material Stewardship Western Inc. (MMSW) is the not-for-profit stewardship organization established to operate Saskatchewan's Multi-Material Recycling Program (MMRP). Established on January 1, 2016, its members include brand owners, first importers, retailers, restaurants, manufacturers, distributors, wholesalers, and other organizations that supply PPP to Saskatchewan residents. Its main responsibilities include executing agreements with municipal partners and collecting fees from its members to finance residential PPP recycling programs.

### **Program Financing**

The total cost to operate Saskatchewan's DRS in 2019-2020 was \$36.1 million, while total revenues for the fiscal year amounted to \$36.8 million. Contract revenues typically represent the greatest source of revenue for SARCAN, followed by unredeemed deposits.

In Saskatchewan, the refundable deposit ranges from 5-cents to 40-cents per unit, while the EHC ranges from 5-cents to 9-cents per unit, depending on container type and size. Unlike the deposit, which is fully refundable, the EHC is kept by the provincial government and is used to offset SARCAN's contract cost and contribute to general revenues. Additional funding for the program comes from the proceeds generated from material sales and from a provincial grant.

Saskatchewan's MMRP is a cost-sharing program between businesses and municipalities. Under the *Household Packaging and Paper Stewardship Program Regulations*, businesses that distribute or sell packaging and paper products in Saskatchewan—including beverage-related consumer packaging—are required to finance up to 75% of the net costs associated with running recycling programs.

According to its 2019 Annual Report, MMSW currently works with over 500 municipalities, First Nations communities and regional waste authorities to provide payment for recycling services based on a 60% capture rate of the materials reported by MMSW stewards. Municipalities that join the program and enter a service agreement with MMSW receive a fixed fee per household. During 2018, the model used by MMSW to calculate the payments to municipalities was updated (it was previously based on Manitoba data as limited Saskatchewan-specific data was available when the program was launched).<sup>41</sup> Under the new model (which became effective January 1, 2019), per household payments increased from \$11.75/household to \$15.00/household for collectors who provide depot services and to \$25.00/household for those that provide curbside services (with or without depots).<sup>42</sup>

### **Collection System & Facilities**

SARCAN's collection network consists of 73 depots in 65 communities across Saskatchewan, all of which offer a Drop & Go service. This service, originally launched in 2014 as a pilot project, allows customers to drop off their deposit bearing containers at the depot without having to wait in line. After signing up for the service, customers can simply attach identification tags to their bags, drop them off at a special receiving area, and leave. Deposit refunds are provided electronically through PayPal or by cheque, and an e-transfer payment option is currently being piloted. In 2019-2020, over 35,800 customer transactions were completed through Drop & Go, representing 3% of SARCAN's customer volume.<sup>43</sup>

After the containers have been counted and sorted by SARCAN staff, they are flattened and compacted into bales using multi-material flatteners. Depots also have pallets for stacking reusable beer bottles. After containers are flattened or palletized, they are placed into large totes and picked up by SARCAN trucks to be transported to one of the company's processing facilities in Saskatoon or Regina. Here, the materials are processed by material type; clear and coloured glass gets crushed, and plastic, aluminum, and paper cartons are baled and sent down stream for further processing.

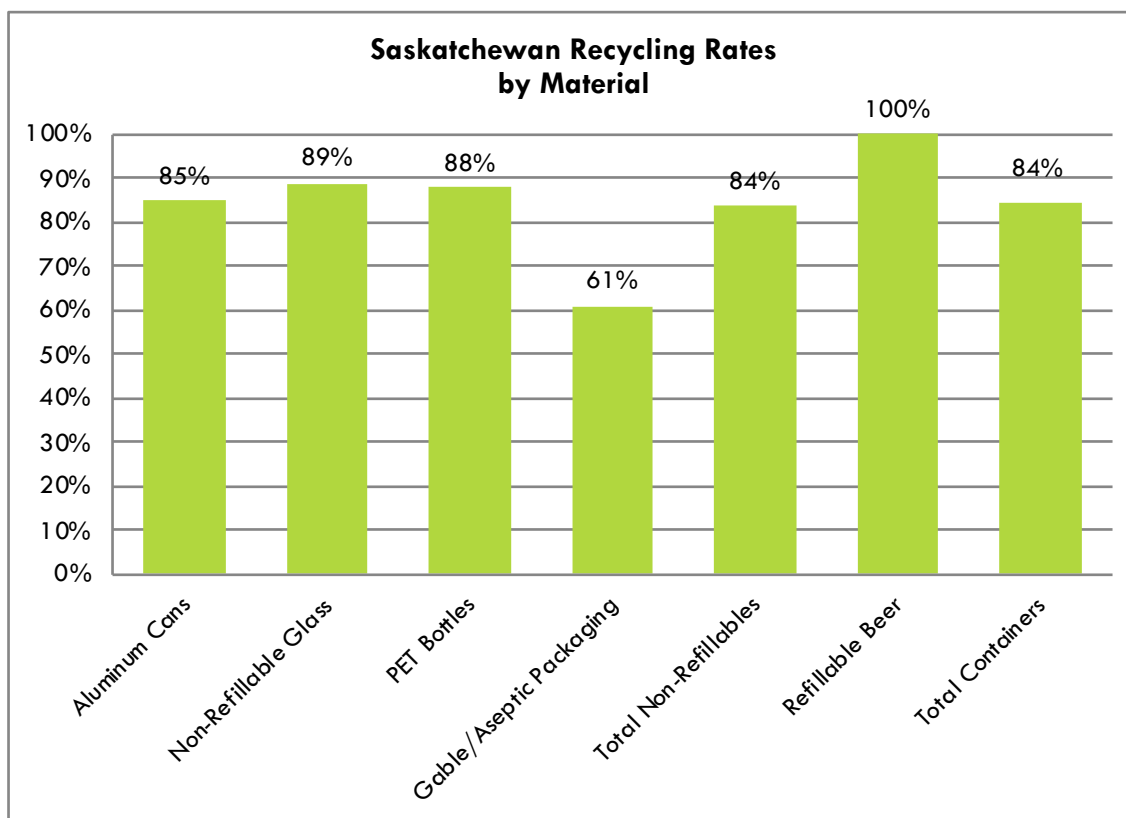
Refillable beer containers can be returned to Saskatchewan Liquor and Gaming Authority (SLGA) stores. All SARCAN depots and SLGA stores retain a 5-cent portion of the 10-cent refund as a handling fee. From there, they are sorted and sent back to the brewers for the full refund and for washing and refill.

Municipalities that provide residential recycling programs for waste packaging and paper can choose to participate in the MMRP. Participating municipalities have options in terms of how recycling service is provided to their residents – through curbside pickup or a central depot – depending on the size of the community and the associated costs. Residents have the option to recycle their deposit containers through this program if they prefer, but will forfeit their deposit. Containers collected via the MMRP will find their way to SARCAN through municipal contractors.<sup>44</sup>

### **Program Performance**

In 2019, over 445 million non-refillable beverage containers were returned to SARCAN recycling depots. The overall recycling rate for 2019 is 84%, giving the province one of the highest overall rates in the country. No province has a higher recycling rate for PET than Saskatchewan's 88%.

Figure 22 Saskatchewan Recycling Rates by Material (2019)



In terms of other performance measures, SARCAN completed a study on customer awareness in 2019 to gauge their attitudes towards the organization and its services. The results show that 100% of customers are aware of SARCAN's business. There is also a high level (81%) of awareness that deposits are now charged on dairy containers.

## What's New?

### *Deposit Hike*

Effective April 1, 2017, the refundable deposits charged on plastic, metal, and paper-based polycoat and aseptic containers, in sizes of 1 litre or more, increased from 20- to 25-cents. This was the first change to deposit amounts in Saskatchewan since 1992.

### *Counting Technology Pilot Project*

In December 2019, SARCAN commenced a one-year pilot project to test an automated counting line at one of its depots. The equipment is designed to sort and count aluminum cans and clear PET containers with less manual labour than SARCAN's traditional chute and bag stand system.

## Manitoba



### Regulatory Framework

Manitoba's regulatory framework, under the *Waste Reduction and Prevention Act* (1990), enables the Minister of Conservation to designate products or materials for waste reduction responsibilities. The first regulation to be developed under the Act was the *Beverage Container and Packaging Regulation* (1992). This regulation was established to assess environmental levies on packaging materials, as well as to hold beverage distributors responsible for developing a stewardship program. This regulation was later repealed and replaced by the *Multi-Material Stewardship (Interim Measures) Regulation*, which was enacted in 1995. The primary purpose of this Regulation was to create the Manitoba Product Stewardship Corporation (MPSC). One of the key mandates of the MPSC was to establish and administer a waste reduction and prevention program for designated PPP for Manitoba.<sup>45</sup>

In December 2008, Manitoba introduced a *Packaging and Printed Paper Stewardship Regulation*. The Regulation requires any business that supplies, distributes, or sells PPP in Manitoba to register as stewards and to remit fees that are used to cover up to 80% of the cost of municipal recycling programs. The Packaging and Printed Paper Program Plan was developed in response to the Regulation and was approved by the Minister of Conservation in September 2009. The program launched on April 1, 2010, and is run by Multi-Material Stewardship Manitoba (MMSM).

Beverage producers (except for beer) have a separate program plan through the Canadian Beverage Container Recycling Association (CBCRA). The CBCRA plan works in conjunction with the MMSM plan (for the residential produced beverage containers) and targets beverage containers consumed both at home and away-from-home (AfH). All sealed ready-to-serve beverage containers are included under the program; this includes aluminum, PET, HDPE, aseptic packages, and gable top containers. Dairy containers and beer are currently exempt.

Manitoba's Minister of Conservation approved CBCRA's first program plan in August 2011 (Until that time, the organization operated on a voluntary basis). CBCRA currently operates under the 2018-2022 program plan.

### Performance Targets

The Guidelines accompanying the *Packaging and Printed Paper Stewardship Regulation* include a requirement that stewards of obligated beverages are responsible for achieving a 75% recovery target. There is no timeline specified for when this target must be met.

### **Who is Responsible?**

The PPP regulation targets producers of designated PPP material supplied into Manitoba. In order to fulfill their obligations under the Regulation, obligated stewards created MMSM to design, implement, and operate a residential PPP program on their behalf. MMSM is a not-for-profit organization that is governed by a board of directors consisting of representatives from a number of sectors, including grocers, consumer producers, beverages, retailers, printed paper, and restaurants. In accordance with the Regulation, MMSM is responsible for providing the Minister with an annual report on program performance. This information is obtained from stewards, who are required to report annually to MMSM the total quantity of designated PPP supplied for household use in the province. The reported quantity of PPP is used to determine a steward's total fees payable to MMSM.

The beverage container program, "Recycle Everywhere," is managed by the CBCRA, a not-for-profit, industry-funded organization. The organization represents all of the obligated stewards of beverage containers supplied into Manitoba (excluding beer). While its members and stewards are also stewards of MMSM, the CBCRA is a separate and independent organization from MMSM, the latter of which also represents the interests of other PPP stewards. (The elements of the relationship between CBCRA and MMSM are set out in a Memorandum of Understanding, reviewed annually).

Whereas MMSM's focus is on the residential collection system, the CBCRA is tasked with enhancing both at-home and AfH collection. It does this by establishing partnerships with various public and private partners, including municipalities, schools, businesses, institutions, parks, festivals, and events that generate beverage container waste. CBCRA provides beverage container recycling bins for public spaces across the province free of charge, and partners take the recovered containers to a nearby recycler. To support their recycling programs, CBCRA also provides participating generators with the necessary signage, technical support, and promotion and educational materials. In addition to remitting a portion of its fees to MMSM, the CBCRA must report to MMSM all of its members' packaging (i.e. tonnes of aluminum cans; PET bottles; glass; Tetra Pak, etc.) sold into the province.

For beer, a brewers' association (Brewers Distributors Limited (BDL)) is responsible for delivering the products to retail stores and collecting the empty containers from the beer outlets.

Provincial oversight responsibility has been delegated to Green Manitoba, a special operating agency that works closely with the Department of Sustainable Development on regulation enforcement.

### **Program Financing**

Under the Regulation, stewards of designated PPP supplied into Manitoba are responsible for financing 80% of the total net cost of municipal residential recycling programs. Steward fees are

established by MMSM on an annual basis and are calculated using a four-step methodology that takes into account material-specific recycling rates and commodity values.

Stewards who supply beverage containers into Manitoba are charged a Container Recycling Fee (CRF) for every non-alcoholic, non-dairy beverage container they supply into the province. Effective February 1, 2019, the CRF ranges from 1- to 3-cents per unit depending on container size and type (it was previously a flat rate of 2-cents). Producers report and remit these fees to the CBCRA on a monthly basis. In most cases, beverage producers pass the CRF to the retailer, who passes it on to the consumer. This fee is visible on most store receipts.

In some cases, the commodity value only covers part of the cost of running the AfH recycling program. The revenue from CRFs is used to pay for the rest. A portion of the CRF is also remitted to MMSM (on behalf of each member), which uses it to pay for up to 80% of the net cost to collect and process beverage containers recovered through the residential collection system. In other words, the CRF is designed to cover the costs of recycling beverage containers from all channels, including both residential and AfH. Alcohol distributors pay MMSM directly for their PPP obligation.

As in other provinces where they are charged, the CRF is adjusted annually by the CBCRA based on the overall cost of the program, as well as the differential cost of recycling various materials. The intention is that the costs of each material group should reflect the true cost of recycling that type of container, with no cross-subsidization.

In 2019, the CBCRA collected \$8.8 million in CRFs, \$1.2 million of which was remitted to MMSM. CBCRA uses the remaining revenue to purchase and supply recycling bins to its partners, provide technical support, operate programs such as RE101 Schools and its post-secondary program, conduct waste audits, and to carry out awareness campaigns. Other costs include administrative expenses and steward services. Total expenses in 2019 were \$8.1 million.

For beer containers, retailers are paid a handling fee by BDL to compensate them for managing the collection of beer containers they receive. As of 2018, the handling fee was set at \$0.0204 per container (updated handling fee was not available). Other sources of revenue for the DRS include material revenues and unredeemed deposits.

### **Collection System & Facilities**

Residential sector beverage containers are collected via curbside recycling or drop-off centers. In 2019, 95% of Manitoba's population had access to this program. Generally, containers are collected, transported to MRFs, sorted, baled, and shipped to their respective end markets for recycling. With the exception of glass, all used beverage containers are sent out-of-province for final processing.

The CBCRA's program, which includes the AfH collection of containers, focuses its efforts on public spaces, IC&I locations, and special events. According to its 2019 Annual Report, the CBCRA has distributed a total of 68,314 Recycle Everywhere bins across the province since 2010.<sup>46</sup>

Beer containers (refillable and non-refillable) are collected via retail beer vendors, the Manitoba Liquor Commission, and rural agency stores. BDL collects empty domestic beer containers and back-hauls them to various distribution centres where recyclables are baled and shipped to market. Refillable bottles are sorted and sent back to the brewers for washing and refill.

### **Program Performance**

The Manitoba beer container recovery program, operated by Brewers Distribution Ltd (BDL) reports a return rate of 98.8%, for the Industry Standard (refillable) Bottle (ISB). The return rate for beer cans is 79.5%.

Verifiable performance data for Manitoba's beverage container recovery program for non-alcohol beverage containers is not available.

## Ontario



### Regulatory Framework

Established in 1994, Ontario's Blue Box Program is one of the oldest and most comprehensive curbside recycling systems in North America. Initially developed under the *Waste Diversion Act (WDA)* of 2002, the program covers most food and beverage containers, including those made from glass, PET, aluminum, and steel. Other containers, such as Tetra Pak, gable top cartons, and HDPE bottles, can be added to the program voluntarily. Eligible waste materials are designated in the *Blue Box Waste Regulation* under the *WDA*.

In November 2016, the *WDA* was repealed and replaced with the *Waste-Free Ontario Act (WFOA)*. The new legislation is comprised of two schedules: 1) the *Waste Diversion Transition Act (WDTA)* and 2) the *Resource Recovery and Circular Economy Act (RRCEA)*. The *WDTA* sets out the operation of existing waste diversion programs (including their wind up) and outlines the transformation of the current Waste Diversion Ontario (WDO) into the Resource Productivity and Recovery Authority (RPRA), a strong oversight body with new compliance and enforcement powers. The *RRCEA* outlines the scope of the new producer responsibility framework, which will make producers individually responsible and accountable for their products and packaging at end of life.

Accompanying the *WFOA* is the *Strategy for a Waste-Free Ontario: Establishing the Circular Economy* (the Strategy). Among other things, the Strategy includes a proposal to ban certain materials, including beverage containers, from landfill.

On August 15, 2019, the Minister sent direction letters to SO and the RPRA to begin transitioning the management of the Blue Box program to producers. Consultation on the proposed plan was open between September 30 and November 10, 2020, and it's anticipated that the Blue Box Program will transition to the new regulatory framework on January 1, 2023 through to December 31, 2025.<sup>47</sup>

On October 19, 2020, the Minister announced its plans to update the Blue Box recycling regulations. The proposed new regulations would standardize and increase the list of materials accepted in the Blue Box (including, among others, plastic and paper cups); expand Blue Box services to more communities; and set diversion targets for various categories of waste, including non-alcoholic beverage containers, for which the proposed target is 75% by 2025 and 80% for 2030<sup>48</sup>. According to the provincial government's website, the proposed regulation would not impact existing deposit return programs for alcohol beverage containers or their associated packaging. The regulation draft will be posted for 45 days for public comment, ending December 2<sup>nd</sup>.

In 2006, the Ontario government entered into an agreement with Brewers Retail Inc. (operating as The Beer Store) for the management of a province-wide DRS for wine, liquor, and non-common beer containers sold through the Liquor Control Board of Ontario (LCBO). The Ontario Deposit Return Program (ODRP), in force since February 2007, is regulated under O. Reg.13/07 made under the



*Liquor Control Act*, and applies to manufacturers, wineries, and government stores licensed to sell alcohol under the *Liquor License Act*.

## Performance Targets

The *Strategy for a Waste-Free Ontario: Building the Circular Economy* has identified a long-term goal of zero waste, and sets interim waste diversion targets for 2020 (30%), 2030 (50%), and 2050 (80%) for combined waste streams.<sup>49</sup>

With respect to non-alcohol beverage containers currently collected under the province's Blue Box program, the new proposed Blue Box regulations (announced in October 2020) sets out the following weight-based recovery targets: 75% for 2026-2029 and 80% for 2030 and beyond.<sup>50</sup> As stated on the government's website, "for producers of non-alcoholic beverage containers, producers would be responsible for a management requirement based on all the materials they supplied in Ontario, including the industrial, commercial, and institutional sectors."

To encourage reuse, Ontario Regulation 340 of the Ontario *Environmental Protection Act* requires a minimum of 40% of soft drinks to be sold in refillable containers, dropping to 30% if a 60% collection rate for non-refillable bottles is achieved. While soft drinks companies are still legally required to meet this quota, in reality, the refillable market share is less than 1% because the requirements are not enforced.

## Who is Responsible?

Since February 2003, Ontario stewards (brand owners and first importers) of designated Blue Box materials are responsible for financing 50% of the net costs of operating municipal recycling programs. Stewardship Ontario, a not-for-profit industry funding organization, was set up by Waste Diversion Ontario (now the Resource Productivity and Recovery Authority (RPPRA)) to represent industry stewards. SO is responsible for identifying and collecting fees from stewards and for transferring funds to municipalities. They are also responsible for reporting activities to the RPPRA.

Once the transition of the Blue Box Program is complete, obligated producers will no longer be required to organize under a single organization (currently SO) and each producer will be responsible for meeting their own obligations, including meeting any targets set through legislation. Producers will have the choice to organize under one or multiple producer responsibility organizations (PROs) depending on their products. Under the new framework, it is expected that producers will have the right to determine all aspects of the blue box program, including, for example, who provides collection service and the types of containers that are used for collection.

Under the previous waste diversion regime, municipalities with a population of 5,000 or more were responsible for operating multi-material curbside recycling programs for beverage containers and other PPP. Unlike the new regime, there is no legislated role for municipalities in the *WFOA*. Rather, municipalities are considered a potential service provider to producers in the management of their materials. Other options for municipalities include: continuing to provide the service but letting

producers pay for it; letting another provider take over using municipal infrastructure; or stepping back entirely. At this point, the municipal role in the system is still evolving.

As of November 30, 2016, the organization responsible for overseeing the Blue Box program is the RPRA, a non-Crown, not-for-profit organization. In addition to its oversight, compliance, and enforcement activities, the RPRA is responsible for operating a public-facing registry to receive and store data from producers and others who conduct resource recovery and waste reduction activities. The Authority is directly accountable to the Minister of Environment, Conservation, and Parks and is required to provide information to the Minister upon request.

With regards to the ODRP for alcohol containers, the LCBO is the responsible entity, with oversight from the Ministry of Finance. When the provincial government decided to establish the program, The Beer Store (TBS) already had a successful DRS infrastructure in place for beer. Therefore, rather than establishing its own system, the LCBO contracted collection (including return-to-retail collection for licensees), processing, and marketing responsibilities to TBS, under a 5-year service effective 2007. In 2015, the province extended its contract with TBS as part of the Master Framework Agreement, which ends on September 30, 2025.<sup>51</sup>

### **Program Financing**

The cost of Ontario's Blue Box program is currently split roughly 50/50 between municipalities and the companies that place PPP on the market. Each year, the RPRA conducts a datacall, requiring municipalities to submit tonnage and financial information for residential Blue Box material collected in their recycling programs. SO uses this data, along with material generation estimates, to determine "fair" fees to charge stewards based on the type of material they sold into Ontario. Each designated material is associated with a fee rate, which is set annually. Stewards pay these fees to SO in quarterly increments. In 2019, stewards paid SO a total of \$128.7 million in fees, of which \$121.2 million was transferred to municipalities<sup>52</sup>.

Under the new waste legislation, producers will be required to cover 100% of the cost of recycling the PPP materials they produce. The first group of municipalities and First Nations will transfer responsibility of their Blue Box programs to producers starting in January 2023. By December 31, 2025, it's expected that producers will be fully responsible for the costs of delivering recycling services.

The funding for the ODRP comes from three primary sources: material sales, unredeemed deposits and government revenue. The deposit ranges from 10- to 20-cents/unit, depending on container type and size. When eligible containers are returned to TBS for a refund, the LCBO pays the amount of the deposit to TBS, in addition to a per unit service fee. For the year ended March 31, 2018, expenditures related to service fees paid to TBS totaled \$44.7 million (including \$5.1 million of HST).<sup>53</sup> Service fee costs for 2018-2019 were not available.

### **Collection System & Facilities**

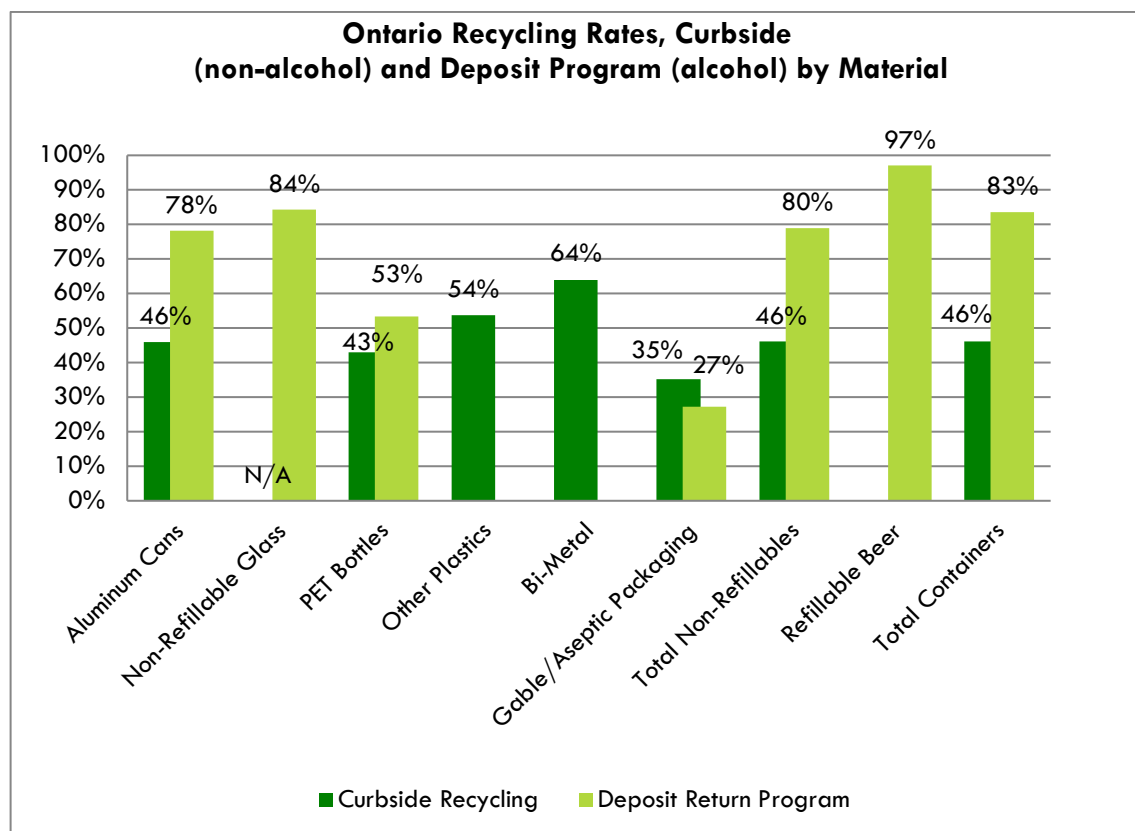
Alcohol containers, as well as any associated packaging (including cardboard boxes, boxboard, bottle caps, tabs, and plastic wrap) are collected through a return-to-retail system. As of December 31, 2019, there were a total of 1,165 redemption locations across Ontario, including 435 TBS locations, 320 on-site brewery stores (beer containers only), 327 TBS retail partner stores and LCBO Northern Agency stores, 3 LCBO stores, and 80 TBS contracted empty bottle dealers.<sup>54</sup> Refillable bottles are collected and separated to send to partner brewers for washing and refilling. Non-refillables are sorted by material type, separated into streams, and back-hauled to various distribution centers where they are sorted, baled, and shipped to recycling markets.

Non-alcohol beverage containers are collected through the Blue Box recycling program together with non-beverage packaging. Since the inception of the Blue Box program, collection has been the responsibility of municipalities, but this is set to change under the new legislation. The new producer responsibility framework will provide municipalities with new options – to act as service providers to producers who are required to pay for these programs, to work with private companies that may use municipal infrastructure, or to opt out altogether.

### **Program Performance**

In 2019, the total recycling rate for deposit beverage containers (TBS system and ODRP containers combined) was 83%. The rate for refillable beer bottles was 97%, and 79% for non-refillable containers. Of all alcoholic beverage containers, Tetra Pak/Bag-in-Box containers achieved the lowest recycling rate at 27%. Many of the remaining containers end up in municipal Blue Boxes.

Figure 23 Ontario Recycling Rates by Material – Curbside (Non-Alcohol) and Deposit Program (Alcohol) by Material (2019)



The curbside percentages presented for Ontario are the only curbside beverage container recycling rates reported in *Who Pays What 2020*, as dependable data was not available for Manitoba and Quebec. Recycling rates achieved in curbside programs are typically lower than rates in provinces with DRS. This is shown by comparing the rates by material from the two co-existing systems in Ontario. Non-alcoholic beverage containers collected through the Blue Box program show an overall recycling rate of approximately 46% while alcohol containers are recycled at a rate of 86%. The rate for non-alcohol aluminum containers is 46%, nearly 40 percentage points lower than the recycling rate of alcohol aluminum cans, which are subject to a deposit.

## Quebec



### Regulatory Framework

Established in 1984, Québec's DRS is regulated under the provisions of the *Environment Quality Act* (1972). The program covers all non-refillable soft drink and beer containers, including plastic bottles, metal and bi-metal cans, and glass bottles.

The details of the DRS for soft-drink containers are set out in the *Agreement Relating to the Consignment, Recovery, and Recycling of Non-Refillable Soft Drink Containers*, the most recent of which was signed on January 1, 2019 and is effective until December 31, 2020 (Note: the initial agreement was made on December 1, 1999). This is an agreement between the Ministry of Sustainable Development, Environment, and the Fight Against Climate Change (MDDELCC), the Société Québécoise de Récupération et de Recyclage (Recyc-Québec), the Association des Embouteilleurs de Boissons Gazeuses du Québec Inc., Boissons Gazeuses Environnement (BGE), and its registrants. A similar but separate agreement was reached with the beer industry called the *Agreement Relating to the Consignment, Recovery, and Recycling of Non-Refillable Beer Containers*.

In addition to the above agreements, beer and soft-drink producers are governed by the *Beer and Soft Drinks Distributors' Permits Regulation* under the *Act Respecting the Sale and Distribution of Beer and Soft Drinks in Non-Returnable Containers*. This Act requires anyone selling or distributing beer and soft drinks in Québec in non-refillable containers to obtain a permit from the MDDELCC. To receive a permit, the applicant must do one of two things: 1) enter into an agreement with Recyc-Québec and the Minister of MDDELCC for beer, and BGE and the Minister of MDDELCC for soft drinks, or 2) comply with beverage container regulations set out in Section 70 of the *Environment Quality Act*.

Other beverage containers, such as those used for water, sports drinks, and juice, are managed through curbside multi-material recycling programs ("collecte sélective"). Under the *Environment Quality Act* and the "*Regulation respecting compensation for municipal services provided to recover and reclaim residual materials*," municipalities that operate these programs are entitled to compensation for their services in the order of a percentage of the net costs incurred (100%).

### Performance Targets

On January 30, 2020, the Quebec government announced that it would be setting recovery targets for the DRS. As per the government's announcement, businesses will need to ensure that 75% of deposit containers are collected and recycled by 2025, increasing to 90% by 2030. The government has stated that failure to meet these targets will result in penalties.<sup>55</sup>

The *Agreement Relating to the Consignment, Recovery, and Recycling of Non-Refillable Soft Drink Containers* includes a 75% collection target for soft-drinks containers. The same 75% collection target

is set for beer containers under the *Agreement Relating to the Consignment, Recovery, and Recycling of Non-Refillable Beer Containers*.

### Who is Responsible?

The beer and soft drink container DRS is managed by the MDDELCC through Recyc-Quebec. Founded in 1990, Recyc-Quebec is a crown agency responsible for the promotion and development of reduction, reuse, recovery, and recycling programs for containers and packaging in Quebec. Its main responsibility is program oversight. Recyc-Quebec reports to the Minister and is responsible for interpreting the applicable regulations and for monitoring program performance.

Boissons Gazeuses Environnement (BGE), a non-profit organization established by the Quebec soft-drink industry, is responsible for administering the DRS for non-refillable soft drink containers on behalf of its members. BGE took over this role from Recyc-Quebec on December 1, 1999.

The DRS for beer containers is managed by the brewers themselves, but is overseen by Recyc-Quebec. Brewers and bottlers operate the recovery of containers at the retailers' facilities.

Financial responsibility for the collection of all beverage containers belongs to Éco-Entreprises Québec (ÉEQ), a private, non-profit organization created by companies that supply PPP material to Québec. ÉEQ is certified by the Government of Québec to develop a fee structure and collect contributions from companies in order to finance municipal curbside recycling programs. From 2008 to 2016, ÉEQ was also responsible for managing the province's AfH recovery program, which enabled the implementation of close to 20,000 recycling multi-materials installations across Quebec.

### Program Financing

The DRS for beer and soft drinks containers is almost entirely funded from unredeemed deposits. Since the program began, the deposit on aluminum, glass, and plastic soft drink and beer cans has been 5-cents. Beer cans and bottles larger than 450ml are subject to a 20-cent deposit. Information on program costs is not available because it is proprietary.

Industry contributes a much larger share to the municipal curbside program. Since 2005, the compensation plan enacted by Quebec's *Environment Quality Act* and the *Regulation Respecting Compensation for Municipal Services provided to Recover and Reclaim Residual Materials* has meant that targeted businesses are required by law to provide compensation to municipalities for the net costs to collect, transport, and process materials in a curbside recycling system. (Note: Although soft drinks and beer containers themselves are not subject to the compensation plan, any associated packaging is (e.g. boxboard cases, film plastic)). The financing of these costs is achieved through contributions by obligated stewards, calculated based on the materials and quantities generated. In 2011, significant changes were made to the compensation plan, which increased the rate of compensation payable to municipalities from 50% to 70% for the year 2010, 80% for 2011, 90% for 2012, and 100% for 2013 onwards. Municipalities also receive a flat amount equal to 8.55% of costs

to cover management costs relating to recycling activities, including for example overhead, P&E, and the cost of recycling bins.<sup>56</sup>

### **Collection System & Facilities**

Similar to Ontario, Québec has a hybrid collection system in which beverage containers are recovered via two separate channels.

Carbonated beverage containers (including beer, soft-drinks, and carbonated energy drinks) are recovered through the province's DRS, which is based on a return-to-retail collection system. Empty containers can be returned to approximately 10,000 licensed grocers, service stations, pharmacies, and other retail outlets located throughout Québec. By law, anyone that sells these containers must take them back. The majority of returned deposit-bearing containers are managed through reverse vending machines (RVMs), although manual collection is also used.

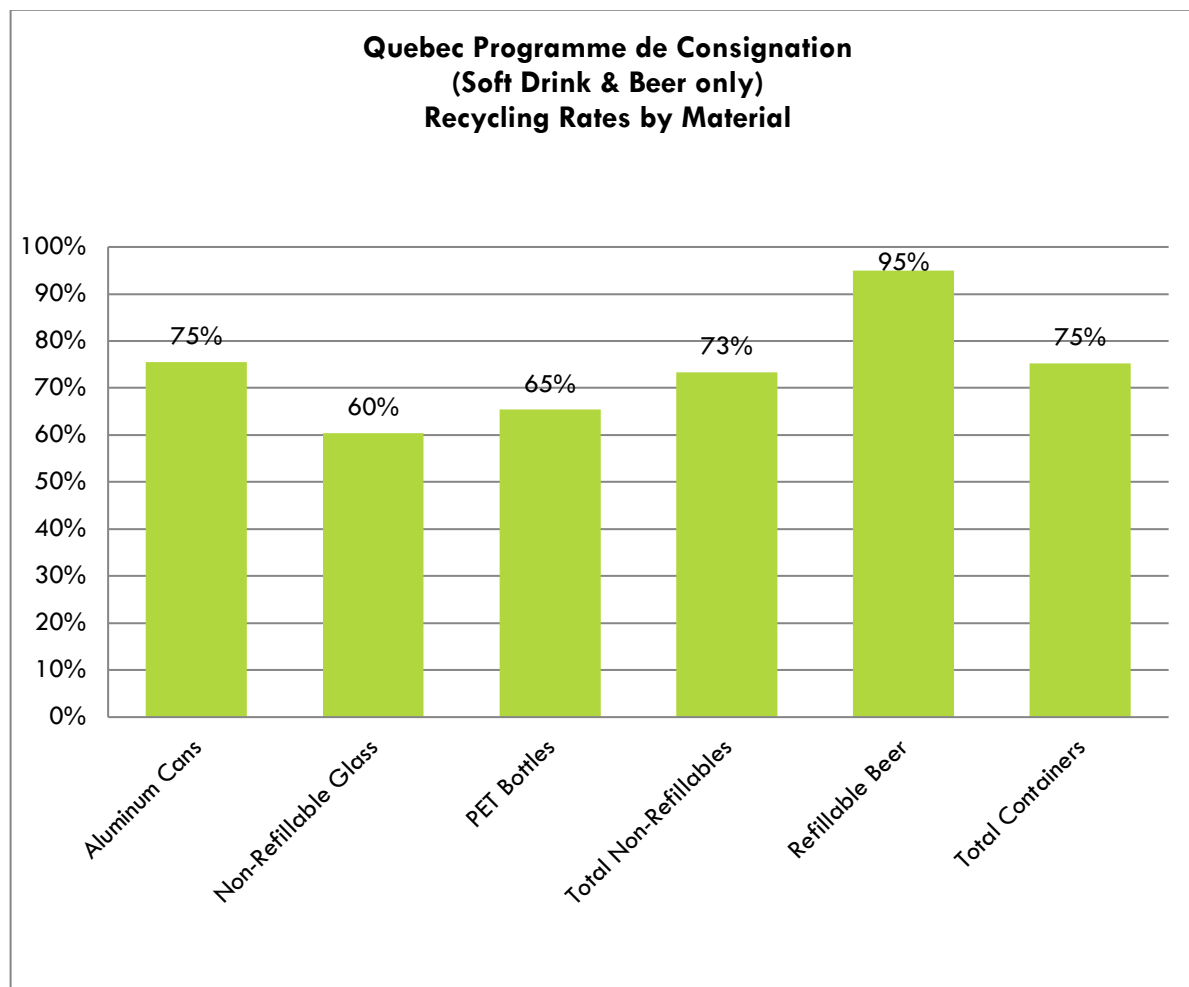
Following collection, the containers are sent to a processing plant where they are sorted by material and prepared for shipment to recyclers. Refillable beer bottles are sent back to brewers for washing and refill. (Note: the recovery of refillable and non-refillable containers are two distinct operations and are performed by different trucks).

All other beverage containers, including those for wine, spirits, water, non-carbonated flavoured drinks, juices, and milk are collected via curbside recycling programs, which are available to 99% of Quebec households.

### **Program Performance**

In 2019, the recycling rate for containers recovered via the DRS was 75% (this includes data for refillable bottles). Precise recycling rates for containers recovered through the curbside system are unavailable.

Figure 24 Quebec Recycling Rates for Deposit Program (Soft Drink &amp; Beer Only) by Material (2019)



## What's New?

### *Expansion Announced*

On January 30, 2020, the Quebec government announced that it will be expanding the DRS to include all glass, plastic, and metal bottles ranging from 100ml to 2L. As part of the plan, wine and alcohol bottles will be eligible for a \$0.25 deposits while other containers will have a \$0.10 deposit. The new system is expected to be gradually rolled out starting in Fall 2022. Multi-layer containers, such as milk cartons, will be included in a future expansion of the system.<sup>57</sup> The government expects that under this expanded program, more than four billion containers could be returned annually, including more than one billion plastic water bottles.



## New Brunswick



### Regulatory Framework

Established in 1992, New Brunswick's beverage container recycling program was implemented to reduce the amount of waste going to landfills or being littered along the province's roadways and waterways. The program is regulated under the *General Regulation – Beverage Containers* (1992) made under the *Beverage Containers Act* (1991).

Section 1 of the Act defines a beverage container as any ready-to-drink container that holds 5L or less of a beverage. This includes soft drinks, beer, wine and spirits, flavored waters, fruit juices, vegetables juices, and low alcohol drinks that are packaged in aluminum/metal, plastic, glass, Tetra Pak, gable top, bag-in-box or pouch containers. The regulation also covers refillable beer bottles. On April 1, 2020, the list of beverage containers included in the program expanded to include beverages with dairy (e.g. milk shakes, milk protein shakes, coffee drinks, drinkable kefir, drinkable yogurt, and egg nog), fortified plant-based beverages (only if also labelled as "not a source of protein"), unfortified plant-based beverages, and sports drinks (e.g. protein drinks and electrolyte beverages). Products labelled as "milk" (including cow's milk, goat milk, and flavoured milk), infant formula, and meal replacements are exempt and therefore do not have a deposit.

In October 2019, the New Brunswick Department of Environment and Local Government announced that it is developing an EPR program for PPP, in partnership with Recycle NB. The Minister has indicated that it will take six to 12 months to set the regulations.<sup>58</sup> This program would require manufacturers to finance the end-of-life collection and processing of the packaging materials they produce, which is likely to include milk containers.

### Performance Targets

There are no targets established in the Act or Regulation. However, at the time of it's writing, the Department of Environment established an unofficial target recovery rate of 80% by year five (1997) of the program.

### Who is Responsible?

Under the *Beverage Containers Act*, distributors (companies that sell deposit-bearing containers to retailers in New Brunswick) are required to package their beverages in containers that have a management plan approved by the Department of Environment. In this plan, they must indicate how their containers will be managed post-consumption, either through refilling or recycling. The Act also requires distributors to be registered by the Department, which has responsibility for program oversight.

In order to fulfill these obligations, the soft drink industry created Encorp Atlantic Inc. in 1992 to act as its stewardship agent (Note: Unlike many other stewardship agencies in Canada, Encorp Atlantic is a private company). As their agent, Encorp is responsible for managing the collection, transportation, and partial processing of its stewards' non-alcohol containers. It does this through its collection and transportation service provider, G.M. Rioux & Fils. Encorp is also required to manage the financial aspects of the program, which include collecting deposits from the distributors, paying handling fees, reimbursing redemption centers for the refunds paid out, and remitting a portion of the fees to the province.

As for alcohol containers (wine, beer, spirits, and coolers), New Brunswick Liquor (NB Liquor) is the responsible agent. NB Liquor collects the deposits from distributors and remits the provincial share of the environmental fee directly to the Environmental Trust Fund. To manage the operational aspects of the program (i.e. collection, transportation, and processing), the agency contracts with the Rayan Investments Ltd.

### **Program Financing**

New Brunswick's DRS operates as a "half-back" system, meaning that consumers who purchase non-refillable containers are refunded only half (50%) of their deposit when they return them for recycling. To illustrate, someone that pays a 10-cent deposit on the purchase of a non-alcoholic beverage will only receive a 5-cent refund upon redemption of this container. Likewise, someone that pays a 10-cent or 20-cent deposit on an alcohol container (depending on size) will only get back 5- or 10-cents. The exception is refillable beer bottles, where consumers are refunded the full 10-cents when returning these containers to a redemption center.

The portion of the deposit that is not refunded to the consumer is considered an "environmental fee." This fee, along with all of the unredeemed deposits and revenues generated from material sales, is used to cover program costs, which include costs for sorting, transportation, processing, and administration. Costs also include the handling fees paid to redemption centers as compensation for collecting, sorting, and storing redeemed beverage containers. The handling fee for empty refillable beer containers was \$0.03120/unit as of April 2017 (updated info not available). The handling fee for all other empty containers was \$0.04368 as of April 2017. Beverage distributors pay these fees directly to redemption centres without any government involvement.

Part of the revenue (2.5 cents) from the unrefunded portion of the deposit goes into New Brunswick's Environmental Trust Fund, which provides financial assistance for projects aimed at protecting, preserving, and enhancing the province's natural environment. In fiscal year 2019, Encorp Atlantic's contributions to the Environmental Trust Fund amounted to \$7.5 million (the total amount contributed to the fund since the beginning of the beverage container program is now \$141 million).<sup>59</sup> This fund is managed by the Department of Environment.

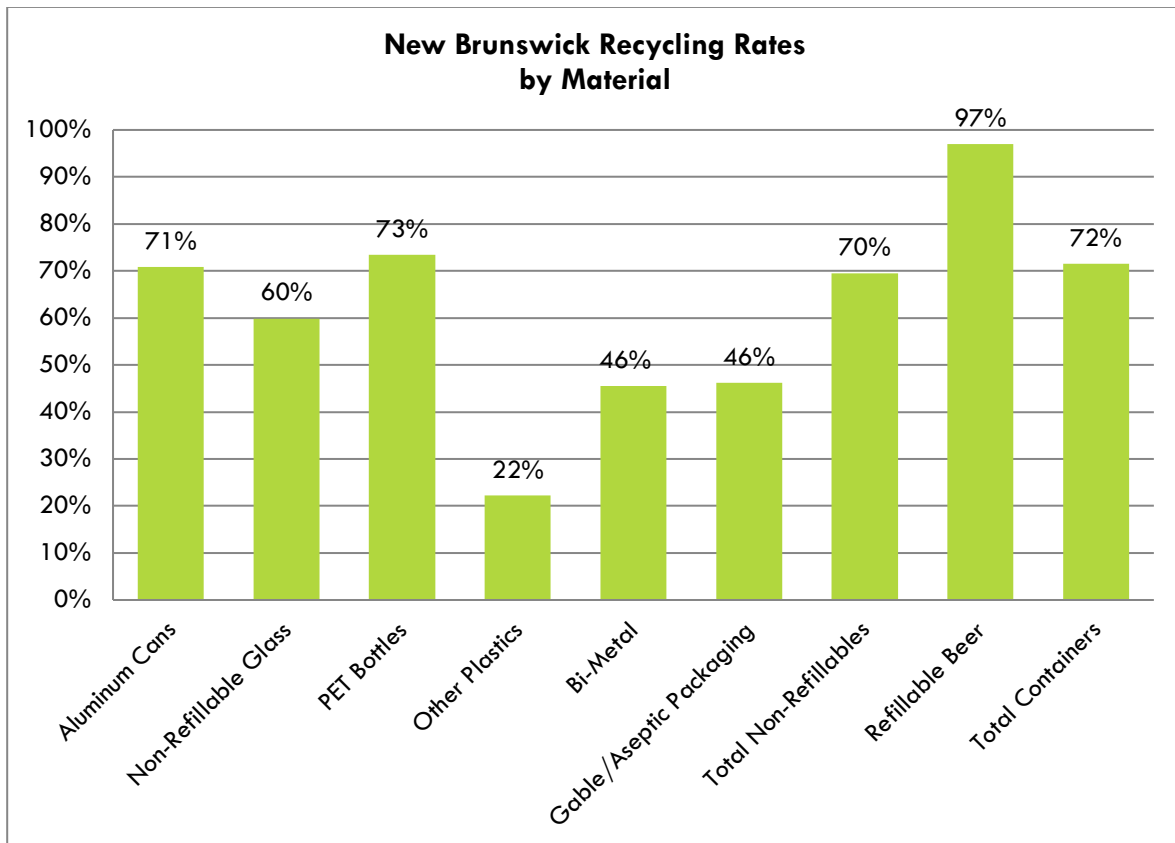
## Collection System & Facilities

Sixty-nine individually owned and operated redemption centers are located throughout the province. All redemption centers must be registered with the Department of Environment and Local Government before beginning operations. These centers collect, sort, and pay refunds to consumers for empty beverage containers and store them until they are picked up and transported to one of two processing facilities: Rayan Investments (for alcohol containers) or Encorp Atlantic (for non-alcohol containers). Refillable beer bottles are transported directly to the breweries to be washed and refilled.

## Program Performance

In 2018-2019, New Brunswick's overall recycling rate for non-refillable beverage containers recovered via the DRS was This is a slight increase over the rate reported in *Who Pays What 2018*. These data do not include alcohol, even though it is under DRS, because data for these containers was not available.

Figure 25 New Brunswick Recycling Rates by Material (2018-2019)



## **What's New?**

### ***New Deposit-Bearing Beverage Containers***

Starting April 1, 2020, many new beverage containers are now subject to a refundable deposit. These include beverages with dairy, plant-based beverages which are not fortified, fortified plant-based beverages not a source of protein, and sports drinks.

### ***Encorp Atlantic Launches Re-Express Pilot Project in Moncton***

In April 2018, Encorp Atlantic launched a new pilot project, Re-Express. Re-Express is one of the many recycling pilot projects part of the “re” (i.e. “research”) initiative with the aim of improving consumer convenience, improving redemption centre productivity, and establishing provincial standards for the beverage container program. Re-Express combines two concepts: an unstaffed bag drop-off beverage container depot and fixed-value bags. Both concepts were tested separately in Encorp Atlantic’s Re-Centre and Express Bag pilot projects, implemented in Moncton and Fredericton, respectively. Customers register online to get a card linked to their account. They collect their used beverage containers, drop them off at their convenience at the automated Re-Express depot, and collect their refund via an online account. They can receive their refund via cheque, Interac e-Transfer, or PayPal, and can also choose to donate their funds to a charity. There is also a cash-out option in-store via the project’s local retail partner, Sobeys Vaughan Harvey. Re-Express depots only accept fixed-value bags, meaning that participants are instructed to collect their containers in specially designed bags and fill them with 40 New Brunswick deposit-bearing beverage container for a \$2 refund per bag.<sup>60</sup> The pilot ended on March 31, 2019.

## Nova Scotia



### Regulatory Framework

Nova Scotia's DRS came into effect on April 1, 1996 and is regulated under the *Solid Waste-Resource Management Regulations* (1996) (promulgated under the *Environment Act*).

In addition to banning certain types of beverage containers from landfill, the regulations require distributors and retailers to charge a deposit on all designated beverage containers sold in the province.

The regulations apply to all ready-to-drink beverages, excluding milk, milk products, soya milk, rice beverages, certain meal replacements, formulated liquid diets, baby formulas, and beverage concentrates. Non-alcoholic beverage containers 5L or greater are also excluded.

The collection and recycling of milk containers is carried out under the *Nova Scotia Milk Packaging Stewardship Agreement*, a voluntary agreement signed in 2000 between Nova Scotia Environment, the Atlantic Dairy Council (ADC), and the province's seven solid waste-resource regions. Under the Agreement, the ADC voluntarily agreed to provide financial assistance to municipalities to manage milk packaging waste, effectively transferring the costs of recycling from taxpayers to producers. The agreement also states that in order to obtain a license in Nova Scotia, a milk distributor must either participate in this program or develop their own stewardship program and have it approved by the Department of Environment.<sup>61</sup>

### Performance Targets

Through the *Environment Act* and the *Environmental Goals and Sustainable Prosperity Act*, the provincial government is committed to achieving 50% waste diversion and to meet a per capita disposal target of 300kg per year by 2015. No specific targets have been set for the DRS.

### Who is Responsible?

Divert NS (previously known as the Resource Recovery Fund Board) is the not-for-profit organization responsible for operating Nova Scotia's DRS for non-refillable beverage containers. The organization operates at arms-length from government and was established in 1996 under Section 4 of the *Solid Waste-Resource Management Regulations*.

Distributors of regulated beverages are required to register with Divert NS in order to sell their products on the Nova Scotia market. The regulations also require distributors to submit sales and returns data as well as applicable deposits to Divert NS on a monthly basis. The regulations also place obligations on retailers; retailers are required to charge a deposit on the purchase of designated beverage containers and to display the deposit amount on the sales receipt. They are also required to display a notice stating to customers that a deposit will be charged, and to identify the location of the nearest redemption location.

Depot owners and operators also have responsibilities under the regulations. For example, in order to become a licensed Enviro-Depot, depot owners must register with Divert NS and sign a standard agreement, which lays out a number of rules and standards governing depot operation. Depots that fail to comply with these rules can have their licenses revoked.

Divert NS is not responsible for administering the DRS for beer bottles. This is managed by the Brewers Association.

Responsibility for the milk packaging recycling program is shared between the ADC, which provides the funding, and the province's seven waste management commissions, which operate the residential curbside programs and recycling facilities in which milk packaging is collected. Municipalities are required to submit data on volumes collected, processed, and recycled annually to Nova Scotia Environment.

### **Program Financing**

Similar to the other Atlantic provinces, Nova Scotia's DRS is based on a "halfback" model, where residents that purchase and return non-refillable beverage containers for recycling are refunded only half (50%) of the initial deposit paid. The deposits are set at 10-cents for non-alcohol containers less than 5L; 10-cents for alcohol containers 500ml or less; and 20-cents for alcohol containers greater than 500ml. All deposits received by beverage distributors are remitted to Divert NS. (*Note: The only exception to this halfback system is refillable domestic beer bottles. The deposits paid on these containers (\$1.20/dozen) are fully refundable, and are provided by the Brewers Association*).

The non-refundable portion of the deposit (5- or 10-cents, depending on the container) is one source of revenue. Revenue is also generated from the sale of recyclable materials and unredeemed deposits. Combined, this revenue is used to cover program costs, which include, among other things, handling fees paid to Enviro-Depots™ (in 2019-2020, Divert NS paid out a total of \$17.6 million in handling fees).<sup>62</sup> A portion of the unredeemed deposits is also distributed to municipalities to help offset the costs of their waste-diversion initiatives.

Unlike the DRS, which is funded primarily by consumers, the milk packaging recycling program is 100% industry financed. Through the *Nova Scotia Milk Packaging Stewardship Agreement*, the ADC provides funding to Nova Scotia's seven solid waste management commissions based on the number of milk containers collected for recycling through municipal programs. Municipalities receive compensation based on the average cost to recycle (including collection, processing, education, enforcement, and administration costs) and quantities collected. In 2012, the ADC contributed \$434 per tonne to municipalities for a total of \$681,289. This amount equates to an industry cost of around 1-cent per milk container sold in Nova Scotia. More up-to-date data is not available.

## Collection System & Facilities

Nova Scotia residents can return empty beverage containers to one of 78 Enviro-Depots™ and mobile service locations around the province for a refund. Residents also have the option of placing empty containers in their blue bag for curbside collection, although doing so will mean they forgo the refund. In these cases, the containers are recovered by non-public buy backs, which are compensated for those containers by either Divert NS (for non-refillable containers) or the brewers (for refillable bottles). Non-public buy-backs are waste management facilities operated either directly by municipalities or for municipalities under private contract.<sup>63</sup>

At each Enviro-Depot™ and non-public buy back, empty beverage containers (except glass) are stored in large bags or large plastic tubs (for glass only).<sup>64</sup> Containers are sorted so that each bag or tub contains one material type only, for example, aluminum, plastic, glass, etc. For certain containers, materials undergo additional sorting by colour or size.

Divert NS contracts two local carriers to collect and transport the containers to one of four local processing facilities. A compaction trailer is used for dedicated product types (either aluminum only or plastic only), and a dry van trailer is used for mixed loads, including glass. Three of the facilities (Kentville, Sydney, and Kemptown) process all beverage container types, while the other handles non-refillable plastics only. All containers undergo some form of processing, whether it is baling (all container types except for glass), flaking (for either baled or compaction trailer plastic), or crushing (glass only). After processing, Divert NS sells the material to end-markets.

As for refillable beer bottles, these containers can be returned to either the liquor store at which they were purchased or to Enviro-Depots™. Several bottle dealers operate Enviro-Depots and pick up beer bottles from other depot operators. These entities are paid a handling fee for each container received, but are required to have a truck-load of empties before the brewers will accept them for pick-up. Beer cans are sent directly to Encorp.<sup>65</sup>

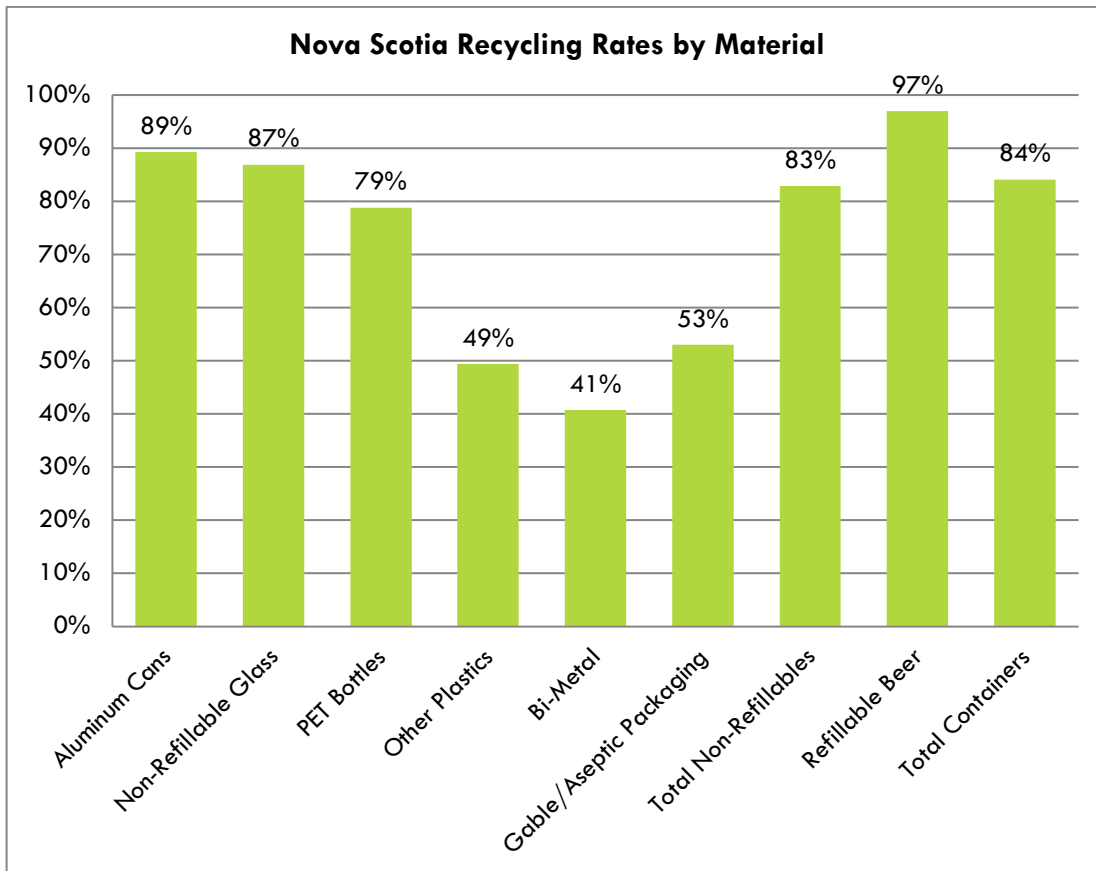
Milk packaging is collected separately via municipal curbside recycling programs.

## Program Performance

In 2018-2019, 384 million non-refillable beverage containers were returned for recycling at Divert NS Enviro-Depots, for an overall recycling rate of 83% (2019-2020 material-specific data was not available). Aluminum beverage cans saw the highest recycling rate (89%), followed by non-refillable glass (87%) and PET/HDPE beverage containers (79%). Steel containers saw the lowest return rate at 41%.

According to the Atlantic Dairy Council (ADC), over 67% of fluid milk packaging was recycled in Nova Scotia in 2018.<sup>66</sup>

Figure 26 Nova Scotia Recycling Rates by Material (2018-19)





## Prince Edward Island



### Regulatory Framework

In 1973, the government of Prince Edward Island passed the *Litter Control Regulations* (1973) under the *Environmental Protection Act* (1988), which banned the sale of beer in non-refillable containers. In 1984, the ban was extended to all non-refillable soft drink containers. As a result, all carbonated beer and soft drinks for sale in the province were to be packaged in refillable containers. In late 2007, the law prohibiting the sale of non-refillable containers was repealed and deposit-return legislation was enacted in its place.

The beverage container program was launched in May 2008 under the provisions of the *General Regulations* and the *Recyclable Beverage Container Deposit Regulations*, and covers all ready-to-drink beverage containers 5L or less (except dairy products, milk substitutes, or nutritional supplements). In addition to defining producer obligations and establishing minimum deposit levels, the Regulations make it illegal to sell beverage containers that are connected by plastic rings or any other connecting device, unless it is biodegradable or photodegradable.

### Performance Targets

The legislation does not specify any targets for the program.

### Who is Responsible?

PEI's DRS is overseen and administered by the province's Department of Environment, Water, and Climate Change (previously known as the Department of Communities, Land, and Environment).

All beverage distributors are obliged to register each product sold or distributed into the province. The registration form must indicate the return for refund message, the product name, and the type and size of container. Distributors must also indicate how they plan to recover empty containers from beverage container depots, and to list the facilities used for refilling or recycling their empty containers.

### Program Financing

PEI's DRS operates in a similar way to that of the other Atlantic provinces in that it is a "half-back" system. Under this system, a consumer that purchases a non-refillable beverage container and pays a deposit of 10-cents (for non-alcohol containers 5L or less or alcohol containers 500ml or less) or 20-cents (for alcohol containers larger than 500ml) will only receive half of that money back when they return the container for recycling. The only exception to this half-back system is the refillable domestic beer bottle. Consumers who return these containers for recycling are eligible for a full refund of their initial deposit (\$1.20 per dozen).

Together, 50% of the revenues generated from the non-refunded portion of the deposit, as well as from unredeemed deposits, is used to fund environmental projects carried out by the provincial government, such as watershed protection and pollution prevention. The other 50% is used to cover system costs.

In 2016-2017, the total cost to operate PEI's DRS was \$5.6 million (more recent data was not made available). In addition to expenses related to administration, transportation, and processing, this cost includes the handling fees paid to depot operators as compensation for handling returned beverage containers. As of 2020, the handling fee for empty beverage containers (except for refillable beer) was 4.211 cents per unit. In fiscal year 2016-2017, just under \$2.2 million in handling fees were paid out (38% of total program costs).

If there are funds that remain after all program costs are paid, the surplus goes towards solid waste management and/or environmental programs in PEI. The program's surplus in 2016-2017 was \$1.6 million.

The collection and recycling of milk packaging is part of the Island's Waste Watch program and is financed by the provincial government.

### **Collection System & Facilities**

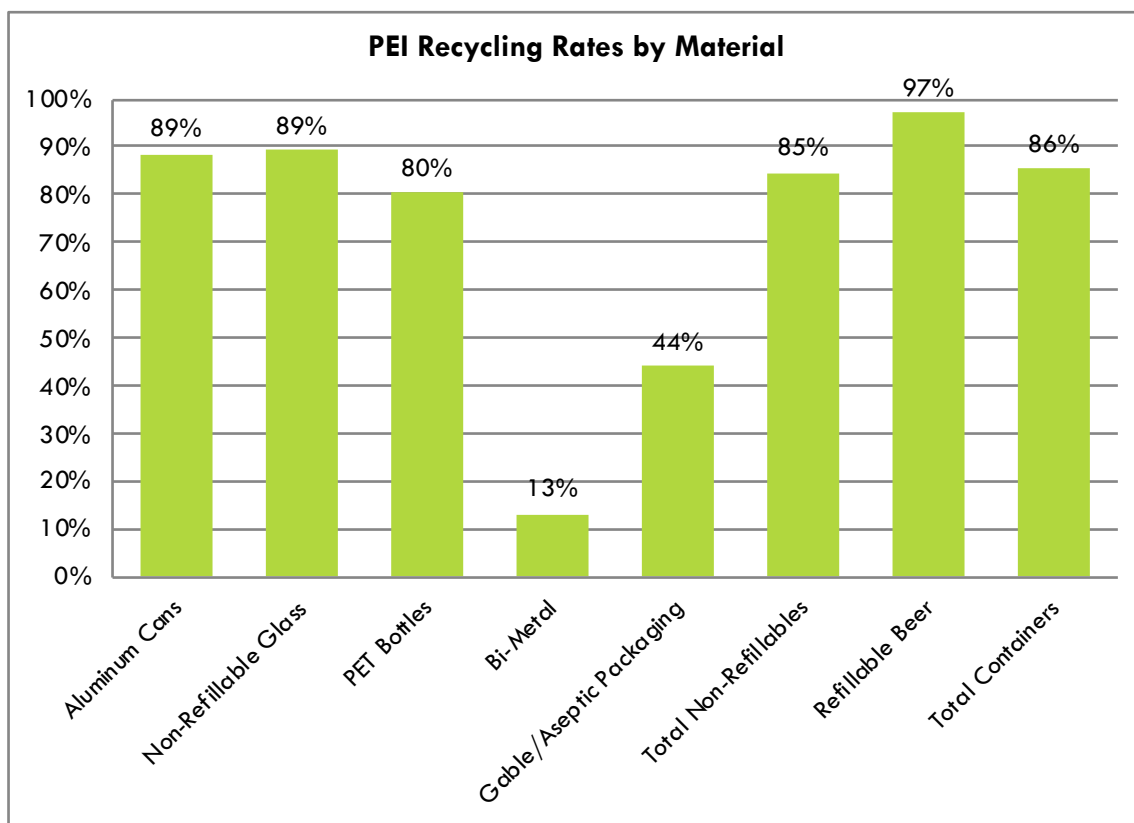
Residents can return their empty beverage containers to any one of 10 privately run depots located throughout the province. The collection, sorting, transportation, and processing of containers is contracted out to a local private supplier. A computerized inventory control system is used to track containers from the point of consumer refund, through processing and material sales.

Milk packaging and other containers that do not fall under the Regulations (i.e. food containers) are collected separately through the Island Waste Management Corporation (IWMC)'s Waste Watch Program, a mandatory curbside recycling program available to all residents. The program requires all residents, visitors, and businesses in PEI to separate the waste they produce into three streams: recyclables, compost, and waste.

### **Program Performance**

In fiscal 2019-2020, PEI had a non-refillable container recycling rate of 85%. Aluminum and non-refillable glass containers were recycled at a rate of 89%, while 80% of PET bottles were recycled.

Figure 27 Prince Edward Island Recycling Rates by Material (2019)



## Newfoundland and Labrador

### Regulatory Framework



Newfoundland and Labrador's DRS was established in 1997 by the *Beverage Container Control Regulations* (1996), enacted under the *Packaging Material Act* (1996). These regulations established an Environmental Trust Fund and gave regulatory authority to the Multi Materials Stewardship Board (MMSB) to operate the program.

In 2003, in order to allow for the development of other stewardship programs beyond beverage containers, the province repealed and replaced these regulations with the *Waste Management Regulations* (2003), made under the *Environmental Protection Act* (2002). Part 1 of the Regulations sets out the composition and duties of the MMSB, and also continues the Waste Management Trust Fund established under section 4 of the *Beverage Container Regulations*. Part 2 defines the program's scope, the minimum deposit/refund amounts to be applied, and the responsibilities of beverage distributors. It also prohibits the sale of any beverage container that is not refillable or recyclable.

The *Waste Management Regulations* apply to all ready-to-drink beverage containers sold or distributed in the province that contain 5L or less of a beverage, with the exception of milk and milk substitutes, infant formula, meal replacements, and concentrated products. Refillable beer bottles (including domestic beer) are also exempt.

### Performance Targets

The government's Provincial Solid Waste Management Strategy (2002) establishes the goal to divert 50% of solid waste from disposal in landfills. The initial target date for meeting this goal was 2010, but this was extended to 2020 when the government announced financing for the Strategy in 2007. As of March 2019, the province had reduced materials going to landfill by 25% (half way to the goal).<sup>67</sup> Although MMSB has stated that it will work towards this target, it has not set any specific goals for the beverage container program and there are no specific targets set out in the Act or regulations.

### Who is Responsible?

Newfoundland and Labrador's DRS is administered by the MMSB. Established in 1996, the MMSB is a provincial Crown agency that reports to the Minister of Municipal Affairs and Environment. MMSB's mandate is threefold: 1) develop and manage province-wide waste reduction and recycling programs, 2) develop and implement public education and awareness programs, and 3) utilize the Waste Management Trust Fund to support the implementation of the province's waste strategy. To deliver its mandate, MMSB works in partnership with stakeholders such as regional waste management authorities, municipalities, and third-party service providers such as Green Depot operators. The organization is governed by a Board of Directors, which consists of members representing industry, consumer stakeholder organizations, and the provincial government.

Aside from the MMSB, the *Waste Management Regulations* impose obligations on beverage distributors, retailers, and Green Depots. For example, distributors and retailers are required to register with and remit deposits to MMSB on a regular basis. Green Depots are required to register with MMSB and to operate within the terms and conditions of their permit. This includes accepting used beverage containers from consumers and paying out refunds.

### **Program Financing**

The total cost to operate the DRS in fiscal 2018-2019 was \$21.86 million (\$21.93 million in 2017-2018).<sup>68</sup> One expense is handling fees; MMSB pays depot operators 4.35-cents<sup>69</sup> per container as compensation for collecting, sorting, and handling used containers). Other than costs related to public education for the program (\$166,459), a further breakdown by cost category (i.e. administration, processing, etc.) was not available.

The MMSB is a self-financed agency that does not receive any direct funding from the government. The program is financed nearly 100% through deposits.

Consumers pay an 8-cent deposit when purchasing a designated beverage container and receive a refund of 5-cents when they return it for recycling. The deposit/refund is the same for beer cans, imported beer bottles, and alcoholic miniatures. For all other alcohol containers, consumers pay a 20-cent deposit and get a 10-cent refund (half-back). In this way, Newfoundland and Labrador's DRS is similar to, but not exactly like, that of other Atlantic provinces.

Part of the revenue generated from the non-refunded portion of the deposit (3-cents for non-alcohol containers and 10-cents for alcohol containers) is used to cover program costs. Other sources of revenue include unredeemed deposits (\$22.7 million in fiscal 2018-2019) and the proceeds from the sale of recovered material (\$3.0 million in fiscal 2018-19).<sup>70</sup> Funds that remain after program costs are paid are placed in the province's Waste Management Trust Fund, where they are used to support the implementation of the Provincial Solid Waste Management Strategy.

### **Collection System & Facilities**

Deposit containers are collected through a network of privately owned and operated Green Depots licensed by the MMSB. There are currently 56 of these depots in operation, including 40 main depots, 16 sub depots, and 20 mobile collection services. When dropping off containers, customers have the option of signing up for an Xpress account, which allows them to drop their bags and go. Within five business days of being dropped off, their bags are processed and the refund is deposited into their Xpress account. In 2018-2019, Xpress service accounted for 40.4 million units of returned containers (and 37% of all transactions), which is an increase of 5.1 million units over the previous year.<sup>71</sup>

After depot staff have counted and sorted the containers by material type, they are placed in large bags and transported to a processing facility in Mount Pearl, NL where they are prepared for

shipment to end-markets. Plastic containers are sent to a recycling plant in Amherst, Nova Scotia, where they are ground into chips that are used to make packaging and new plastic containers. Glass is sent to RAYAN in Moncton, New Brunswick, where it is crushed and then sold to markets in Canada and the US for the production of new glass bottles. Tetra and gable top containers are sent to a recycling plant in Hantsport, Nova Scotia, where the material undergoes a pulping process. Aluminum cans are transported to recycling facility in New York state where they are used in the production of new cans. Steel cans are sent to a local facility in St-John's where the steel is loaded onto trucks with other reclaimed steel and sent to markets throughout North America to be used in new steel products.

Because local brewers operate their own DRS, consumers must return domestic beer bottles (such as Labatt, Molson and Quidi Vidi) to a beer retailer or to a Brewers Bottle Depot if they want a refund of their deposit. Wholesalers are paid a handling fee for the empties, which are picked up at the retailer (corner stores and BRI outlets). These containers are returned to the brewers for washing and refill.

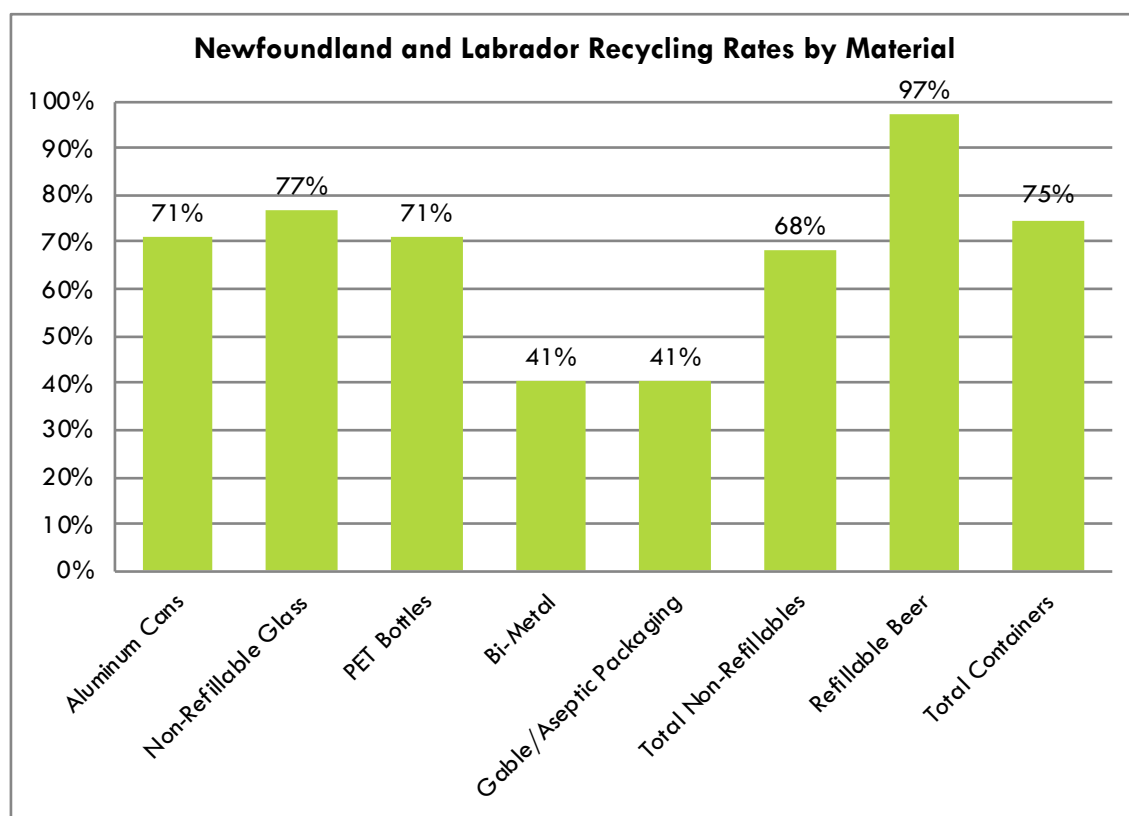
While some Green Depots may also accept domestic beer bottles for recycling, this is considered an added-service. MMSB does not pay them a handling fee to collect these containers, and so the amount of the refund might be reduced in order to cover these costs.

### **Program Performance**

In 2019, over 184 million containers were collected and recycled through MMSB's used beverage container recycling program). The recycling rate for the year was 68%, up 6 percentage points from 2016, and the highest recycling rate MMSB has reported to date.

Although these are generally very low rates for a DRS, Newfoundland and Labrador's low population density make it challenging to offer citizens quality access to recycling.

Figure 28 Newfoundland and Labrador Recycling Rates by Material (2019)



### What's New?

In December 2019, the provincial government published a report on the review of Newfoundland's solid waste management strategy. The review, which addresses several topic areas including waste diversion, recommends amending the provincial Waste Management Regulations to increase the deposit on non-alcohol beverages from 8-cents to 10-cents per container to align with the other Atlantic provinces. The Department of Municipal Affairs and Environment is currently reviewing the report before deciding on next steps.<sup>72</sup>

## Yukon



### Regulatory Framework

Yukon's DRS is regulated under the *Beverage Container Regulation* (1992) and *Recycling Fund Regulation* (1992) enacted under the *Environment Act* (1992).

When it was first passed in 1992, the *Beverage Container Regulation* applied only to aluminum cans and refillable beer bottles. It has since undergone several amendments to expand the program's scope, including one in 1996 to include glass and plastic containers, and one in 1998 to include tin and tetra pak containers. The last major amendment came into effect in August 2017 when containers for milk and milk substitutes were added to the program. As a result of this expansion, every beverage container sold or distributed in the Yukon is now part of the DRS.

### Performance Targets

There are no legislated targets for this program.

### Who is Responsible?

Environment Yukon is responsible for enforcing the two regulations, while the Department of Community Services is responsible for managing the program. This is in contrast to most other DRSs in Canada, which are run and administered by non-profit organizations.

Distributors of designated beverages must register with Environment Yukon and are required to submit sales and returns data to the Department of Community Services on a monthly basis. Deposits/surcharges must also be remitted. There is also an obligation for depot operators to obtain a permit from the Department of Community Services in order to collect empty beverage containers from consumers.

### Program Financing

The *Beverage Container Regulation* applies surcharges and refunds on beverage containers. There are two separate product categories that define the surcharge/refund that consumers pay and get back when returning an empty container for recycling. Beverage containers less than 750ml have a 10-cent surcharge with a 5-cent refund, and those of 750ml or more come with a 35-cent surcharge and a 25-cent refund. As of August 1, 2017, containers for milk and milk substitutes also have the under 750ml surcharge added to them at checkout.

The money collected from the non-refundable portion of the surcharge is collected by the retailer and remitted to the territory's recycling fund. Unredeemed deposits also go into this fund. The recycling fund is administered by Yukon's Department of Community Services and is used entirely to



support recycling activities. The fund is also used to promote container returns (e.g. the Yukon Recycling Club), make improvements to recycling facilities and depots, and pay staff wages.

Data on the exact costs to run the program are unavailable. They include the cost of handling fees paid to recycling depots, as well as a monthly operating allowance that they receive. Processing and handling fees are also paid to registered processors for each container received. Depending on the beverage container type, the non-refundable portion of the surcharge covers 40% to 96% of the cost of recycling.<sup>73</sup> The remainder is covered by territorial and municipal governments, which pay recyclers diversion credits to make up the difference.<sup>74</sup>

### **Collection System & Facilities**

Yukon residents can return their empty containers to a number of depots located throughout the territory. The recycling depots are operated by individuals, private businesses, or non-profit organizations. At the depots, containers are sorted and placed in bags or boxes, and then transported to either Raven Recycling or P&M Recycling, both located in the city of Whitehorse. From there, containers are processed and shipped south to various end-markets for recycling.

### **Program Performance**

In 2016, the territorial government reported that Yukon's DRS had an overall recycling rate of 82% (material-specific recycling rates were not available due to lack of data). Data for 2018 or 2019 was not available.

## Northwest Territories

### Regulatory Framework



Established in 2005, the Northwest Territories' (NT) DRS is regulated under the *Beverage Container Regulations* (2005) made under the *Waste Reduction and Recovery Act* (2003). These Regulations cover all ready-to-serve beverage containers sold or distributed in the NT, including soft drinks, energy drinks, water, juice, and alcohol containers, but not including power milk and infant formula. Milk containers (30ml or greater) were added to the program in February 2010.

Amended Regulations came into effect on February 1, 2016. These changes were intended to make the program simpler and more effective by simplifying container categories and increasing container handling fees. The amended regulations also included additional tools to enforce compliance.

The Environment Fund, into which all surcharges from the DRS are paid, is a special purpose fund defined under the *Financial Administration Act*.

### Performance Targets

There are no legislated targets for this program.

### Who is Responsible?

NT's DRS is administered by the Department of Environment and Natural Resources (ENR), whose responsibilities include: enforcing the Act and the accompanying regulations; coordinating and supporting local depots and regional processing centres; coordinating public information; ensuring continuous improvement of the program; reporting on the annual performance of the program; and undertaking audits of distributors, importers, stores, depots, and processing centres. The ENR also has the authority to create an advisory committee to provide advice and assistance relating to recycling programs established under the Act. This Committee was established in 2004 and consists of beverage distributors, retailers, community governments, the ENR, and the general public.

The *Beverage Container Regulations* also impose requirements on beverage distributors and manufacturers. Specifically, companies importing and distributing beverage containers in the territory are obligated to register with ENR and participate in the DRS. Distributors are also required to submit reports and remittances to the Environment Fund on a monthly basis, based on the number of containers that they distribute or sell.

Under the Regulations, retailers that purchase designated beverage containers from anyone that is not a registered distributor must register as a distributor with ENR. Retailers are encouraged to show the surcharge on the sales receipt when they sell ready-to-drink beverages, but are not required to.

Depot operators are responsible for collecting, sorting, and storing empty containers. They pay out refunds to residents and send the containers to a processing centre or south for recycling. In order to operate, beverage container depots must have a licence, which they obtain from the ENR. Almost anyone can apply for a depot operator license, including individuals, businesses, schools, non-profit groups, community councils, and local development corporations.

Processing centres must accept beverage containers from licensed depots and pay depot operators on a monthly basis for each beverage container received. The payment includes the refunds paid out to consumers as well as the depot's handling fee. Processing centres receive payment from the government, who reimburses them for the amount paid to depots plus their handling fee.

### **Program Financing**

Total revenues for the DRS in fiscal 2018-2019 amounted to \$5.9 million.<sup>75</sup> The program is financed through a surcharge applied to each beverage container sold in the territory. A small percentage, about 8% of total revenues, also comes from the sale of recycled material. Effective February 1, 2016, the total surcharge per container ranges from 15-cents to 38-cents, depending on container type and size.<sup>76</sup> The surcharge consists of both a refundable deposit and a non-refundable container recycling fee. The surcharge is typically passed from the beverage distributor down to the retailer, who then passes it on to consumers.

Unlike the deposit which is refundable, the container recycling fee—which makes up approximately 43% of the total surcharge—is not refunded to the consumer, and is instead placed into the Environment Fund where it is used to help cover program costs. Unredeemed deposits also go into this fund. The Environment Fund is a special purpose fund set up under the *Waste Reduction and Recovery Act* that is separate from the general government account. All expenses incurred for the DRS are paid out of this fund. Surplus funds (if available) are used by the government to implement new waste reduction and recovery initiatives.

In 2018-2019, the total cost to run the DRS was \$5.5 million (up from \$4.9 million in 2017-2018).<sup>77</sup> Of this total, handling fees paid to depots and processing centres accounted for 26% (\$1.4 million).<sup>78</sup>

Aside from the operators located in Inuvik, Hay River and Yellowknife, depots are eligible to receive monthly subsidies to help offset expenses related to operation. They are also eligible to apply for interest free loans to help offset start-up costs. Depot development grants are also offered to help with the costs of renovations or other improvements to depot facilities.

### **Collection System & Facilities**

As of March 31, 2019, there were 23 locally operated beverage container depots and six temporary satellite depots located throughout NT.<sup>79</sup> Five communities (Dettah, Enterprise, Ndilo, Kakisa, and Kátł'odeeche) utilize nearby depots for container returns.

In an effort to reduce customer wait times and increase system efficiencies, Drop and Go service was introduced at two depots (Yellowknife and Hay River) in August 2015. To use this service, customers register for an account, place their containers in a bag or box, attach a label, and drop them off. Refunds are automatically credited to the customers' accounts within 5 business days, at which time they may visit the depot to collect their cash.

Following collection and sorting, the territorial government pays for the containers to be picked up from the depots and sent to one of three regional processing centres (Yellowknife, Hay River, and Inuvik) where they are prepared for shipment to end-markets. Aluminum and paper-based containers are shipped to the US, and non-refillable glass and plastic are shipped to Alberta.

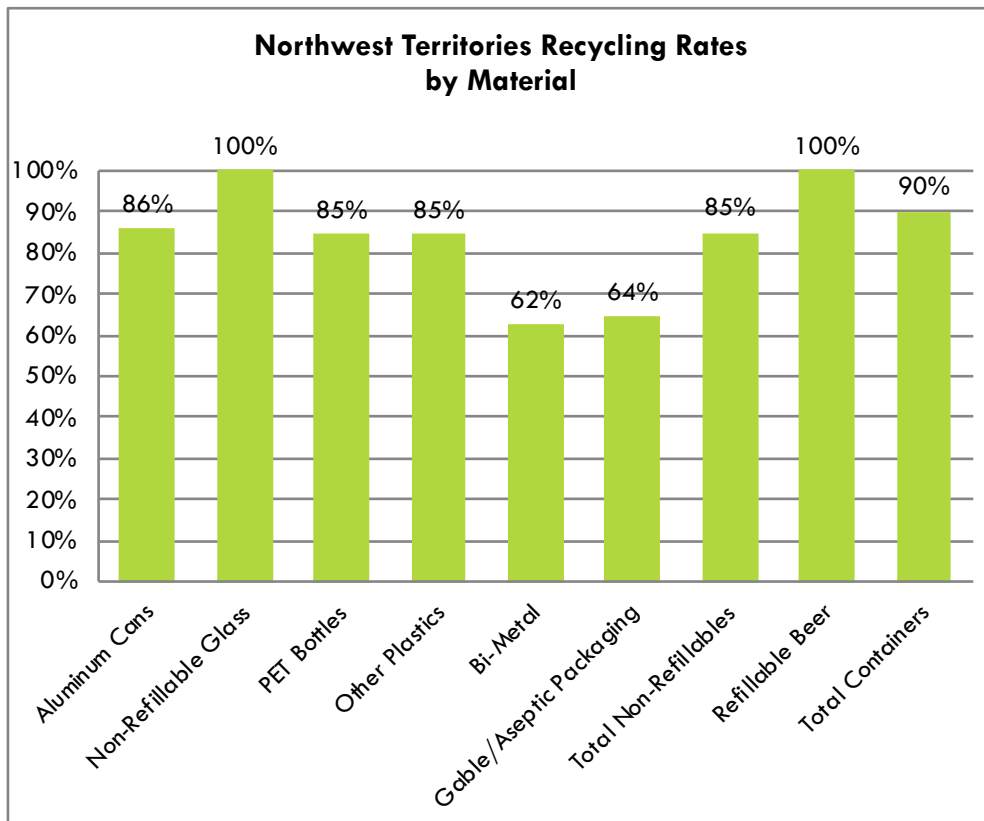
The collection of domestic refillable beer and cooler glass is not part of the DRS, but is carried out under an agreement with Brewers Distributor Ltd. Under this agreement, refillable glass bottles are returned to breweries in Alberta, where they are washed and refilled an average of 15 times.<sup>80</sup>

### **Program Performance**

Between April 1, 2018 and March 31, 2019, over 22 million single-use beverage containers were returned for reuse or recycling, translating into an overall single-use recycling rate of 85%. When broken down by material type, aluminum containers (alcohol and non-alcohol) showed rates of 86%, non-refillable glass 108% (likely explained by an error in categorization at some depots), and plastic containers 84%. Refillable beer also showed a return rate of over 100%.

Although the government reports a return rate of 108% for glass, we have lowered this to 100% in Figure 29 because that is the highest possible rate. This brings the reported overall return rate to 90%.

Figure 29 Northwest Territories Recycling Rates by Material (2018-19)



## Nunavut



Nunavut's DRS is operated by the Southeast Nunavut Company, which collects and bales liquor bottles and beer cans returned through the Nunavut Liquor and Cannabis Commission.<sup>81</sup> The Commission charges a deposit on all liquor purchases made in the territory, whether bottle, can, or other, and accepts returned empty liquor containers at its recycling centers in Iqaluit and Rankin Inlet. The Commission reported \$16 million in total liquor sales in 2018-2019, the majority (67%) of which is sold through Iqaluit stores.<sup>82</sup> The deposit is 29-cents for bottles and 14-cents per can.<sup>83</sup> For each container returned, the recycler retains

4-cents of the refund, which means that consumers returning spirit and wine containers receive 25-cents back (per bottle), while those returning cans receive 10-cents back. In 2018-2019, the Commission paid out \$232,554 in bottle deposit refunds. No data is available on the value of deposits collected, or the return rate.<sup>84</sup> However, according to the owner of Southeast Nunavut Company, the company pays out about \$3,000 to \$4,000 a week for returns and averages around a million cans a year that are crushed and cubed to be shipped out once a year for their aluminum value.<sup>85</sup>

In addition to the program described above, Nunavut has an unofficial recycling program for aluminum beverage cans. Arctic Co-operatives Limited (ACL). ACL is a service federation that is owned and operated by 31 independently owned and controlled Co-operatives located throughout Nunavut and the Northwest Territories.<sup>86</sup> ACL works with each Co-op to provide them with collection bags and boxes, as well as promotional materials. The ACL program operates in 23 communities and allows residents to drop off their empty cans at individual co-op stores.<sup>87</sup> There is no need to clean, crush, or count the cans, which makes the program manageable for local Co-ops and community groups to participate.<sup>88</sup>

Although there is no official deposit/refund on these containers, ACL provides \$1,500 to any community-oriented non-profit group for each full shipping container collected (a typical container holds 40,000 cans). This equates to about 4-cents per container. What groups do with the money and how they collect the cans is up to them. Typically, schools and sports teams organize collection drives and use the money towards fundraisers.<sup>89</sup>

Once collected, the containers are transported south for recycling via Nunavut Sealink and Supply, of which ACL is a majority owner. As of 2015, the program had collected and shipped a total of 1.2 million aluminum cans out of Nunavut since the program's inception.<sup>90</sup> More recent data is not available. With regards to financing, some revenue is generated by the proceeds from the sale of the aluminum cans to recyclers. However, this revenue is nowhere near sufficient to cover program costs, and a levy charged on disposable plastic grocery bags is used to cover the rest.<sup>91</sup>

The major challenges to introducing a territory-wide recycling program in Nunavut include infrastructure, transportation, depot management and operations, and the development of recycling legislation.

## Part 4: System Financing

### Consumer Fees

As with any diversion program, there are costs associated with implementing and operating a DRS. In many DRS jurisdictions, the bulk of these costs are paid for by the beverage industry. In Canada, however, our programs have been designed in such a way that minimize or eliminate the industry's financial obligation by passing on the costs to consumers in the form of a front- or back-end fee. Table 7 shows the consumer fees charged in each province and territory, by container type, as of March 2020. Ontario and Quebec do not have consumer fees and are therefore they are excluded from the table.

**Table 7 Consumer Fees by Province/Territory (cents/unit sold) (as of March 2020)**

Province/Territory	BC	AB	SK	MB	NS	NB	NL	PE	YT	NT
Type of Fee	CRF	CRF	EHC	CRF	Half-Back	Half-Back	Half-Back	Half-Back	RFF*	CHF*
Aluminum Cans	0	0	7	1	5	5	3	5	5	8
PET up to and including 1L	3	3	8	2 or 3	5	5	3	5	5	8
PET over 1L	5	11	8	3	5	5	3	5	10	10
PVC or HDPE up to and including 1L	3	3	8	3	5	5	3	5	5	8
PVC or HDPE over 1L	5	11	6	3	5	5	3	5	10	10
HDPE Milk up to and including 1L		3							5	8
HDPE Milk over 1L		11							5	10
Plastic up to and including 1L		3	8	3	5	5	3	5	5	8
Plastic over 1L		11	8	3	5	5	3	5	10	10
Polystyrene Cups (with sealed foil lid)	3	3		3	5	5	3	5		
Polypropylene up to and including 1L	3	11	8	3	5	5	3	5	5	8
Polypropylene over 1L	5	11	8	3	5	5	3	5	10	10
Pouch up to and including 1L	0	1		3	5	5	3	5		5
Glass up to and including 1L	7	10	9	3	5	5	3	5	5	13
Glass over 1L	18	11	9	3	5	5	3	5	10	13

Drink box up to and including 500ml	0	2	5	3	5	5	3	5	5	5
Drink box 501ml to 1L	5	2	5	3	5	5	3	5	5	5
Drink box over 1L		10	5	3	5	5	3	5	10	10
Gabletop up to and including 500ml	0	3	5	3	5	5	3	5		5
Gabletop 501ml to 1L	0	3	5	3	5	5	3	5		5
Gabletop over 1L	4	10	5	3	5	5	3	5		10
Gabletop Milk up to and including 1L		3								5
Gabletop Milk over 1L		10								10
Bi-metal up to and including 1L	3	7	7	3	5	5	3	5	5	5
Bi-metal over 1L	0	25	7	3	5	5	3	5	10	10
Bag-in-the-Box over 1L	7	1		3	5	5	3	5		10
Wine/Spirits under 500ml					5	5	10	5		
Wine/Spirits equal to or greater than 500ml					5	10	10	10		



category not applicable

material covered under another category

\* In NT, the 1 litre container for non-dairy product is included with the over 1 litre containers.

For dairy products, a one-litre container is included with the under 1 litre containers

\*In Yukon, the size threshold is 750 ml. All containers of 750ml or more,

regardless of contents or material, are charged 10 cents RFF.

\*In Manitoba, the CRF for PET plastic 0-500ml is 2-cents and for PET plastic >500ml it is 3-cents.

## Container Recycling Fee (CRF) in a Deposit-Return System

A Container Recycling Fee (CRF) is non-refundable fee levied on the purchase of certain beverage containers in B.C. and Alberta. It is separate from the deposit and represents the net cost to collect and recycle beverage containers after other revenues (from unredeemed deposits and the sale of recyclable materials) are used. Unlike deposits, the CRF fluctuates annually and varies with the value of the material collected and the collection rate. Containers with high collection rates generate less unredeemed deposit revenue and therefore require a higher CRF. The opposite is true for containers with low collection rates.

As of March 2020, the CRF in B.C. ranges from no charge to 18-cents per unit, depending on the type and size of container. Three container types, including aluminum, drink boxes up to and including 500ml, and bi-metal up to an including 1L saw their CRFs decrease between 2018 and 2020 by either 1- or 2-cents. The largest change in BC since the last report is for bag-in-a-box containers over 1L, which in 2018 had no fee and in 2020 have a fee of 7-cents per unit.

In Alberta, the recycling fee ranges from no charge to 25-cents per unit, with bi-metal containers over 1L having the highest fee. Like in B.C., aluminum cans in Alberta do not require a CRF (as of March 2020) since the revenue they generate from unredeemed deposits is high enough to cover the costs of recycling.



Typically, the CRF is paid by beverage producers and passed down to retailers, who in turn pass it on to consumers. The decisions by producers to pass on the CRF to retailers and by retailers to pass on the CRF to consumers are discretionary. Some retailers may choose not to pass on the CRF or to show it separately so that the consumer can see the charge on their receipt.

### **Environmental Handling Charge (EHC)**

In addition to paying a refundable deposit, consumers who purchase non-refillable, ready-to-serve beverages in Saskatchewan must pay a non-refundable Environmental Handling Charge (EHC), which varies by container type and size. As of October 2020, EHCs range from 5- to 9-cents per unit (no change from the last report). These fees are collected by the retailer at the point of purchase and remitted to the provincial government to fund SARCAN Recycling. The province retains surplus EHCs within the General Revenue Fund.

### **Container Recycling Fee (CRF) as an Industry Imposed Levy**

In Manitoba, consumers are charged a CRF on non-alcohol beverage containers. Effective February 1, 2019, the CRF charged varies by both material type and container size (prior to this, there was a flat rate of 2-cents/unit). Aluminum has the lowest fee (1-cent), followed by PET 0-500ml (2-cents). All other containers are subject to a 3-cent CRF.

This fee, which is different from the CRF charged in B.C. and Alberta, is collected, monitored, and overseen by CBCRA, and is used to pay for up to 80% of the net costs of municipalities for operating residential recycling programs. It is also used to finance AfH recycling initiatives, including the recycling bins and associated signage and P&E material that Recycle Everywhere provides free of charge to municipal, IC&I, and other public space recycling partners across Manitoba. Like other consumer fees, it is common for this fee to be passed on from producers to retailers to consumers.

### **The Half-Back System**

Nova Scotia, New Brunswick, and PEI employ a half-back system. In these provinces, only half of the initial deposit paid on the purchase of a non-refillable beverage is refunded to the consumer when the container is returned for recycling. Fifty-percent of the non-refunded portion of the deposit—plus revenues generated from commodity sales—is used to pay for program costs, while the remaining 50% typically goes towards provincial waste reduction and recycling initiatives.

Newfoundland and Labrador's DRS operates in a similar way to the other the Atlantic provinces, although it is not a true half-back system. While for alcohol containers the refund on a 20-cent deposit is 10-cents, for non-alcohol containers (as well as beer cans, importer beer bottles, and alcoholic miniatures), the refund on an 8-cent deposit is only 5-cents.

## Recycling Fund Fee (RFF) and Container Handling Fee (CHF)

The recycling fund fee (RFF) and container handling fee (CHF), which are charged in Yukon and the Northwest Territories, respectively, are modeled after the half-back system in that they refund only a portion of the initial deposit. In Yukon, 5-cents is refunded on a 10-cent deposit (true half-back) and 25-cents on a 35-cent deposit. In the Northwest Territories, 10-cents is refunded on a 15-, 18-, 20-, or 23-cent deposit, and 25-cents is refunded on a 35- or 38-cent deposit.

Both the RFF and CHF are remitted to the respective provincial governments who use the funds to pay for program operation (handling, processing and transportation) and to develop and implement promotional and educational initiatives related to the programs. In general, these schemes generate far more revenue than is needed to pay for the system. Surplus revenues are placed into a special fund that is kept separate from general revenues. These funds are used to subsidize municipal curbside recycling programs and other provincial environmental initiatives.

## How Have Consumer Fees Changed Over Time?

Only in B.C., Alberta, and Saskatchewan has the fee charged to consumers changed in the last decade-plus that this report has been published. The 2-cent deposit hike in Saskatchewan's program that took effect in April 2018 was the first increase to deposit levels that province saw since 1992. Unlike in other provinces and territories, the fees in B.C. and Alberta change because they are based on the net cost of collection and recycling and therefore vary with the recycling rate and value of collected material, among other things.

**Table 8 Historical Consumer Fees Across Canada (2003-2020)**

Container Type/Size	Province/Territory									
	BC	AB	SK	MB	NS	NB	NL	PE	YT	NT
<b>Aluminum cans</b>										
2003	0	0	5	2	5	5	3	-	n/a	n/a
2006	0	0	5	2	5	5	3	-	n/a	n/a
2008	0	0	5	2	5	5	3	-	n/a	n/a
2010	2	0	5	2	5	5	3	5	5	5
2012	1	0	5	2	5	5	3	5	5	5
2014	1	0	5	2	5	5	3	5	5	5
2016	1	0	5	2	5	5	3	5	5	8
2018	0	0	7	1	5	5	3	5	5	8
2020	0	0	7	1	5	5	3	5	5	8
<b>PET over 1 litre</b>	<b>BC</b>	<b>AB</b>	<b>SK</b>	<b>MB</b>	<b>NS</b>	<b>NB</b>	<b>NL</b>	<b>PE</b>	<b>YT*</b>	<b>NT</b>
2003	4	7	6	2	5	5	3	-	n/a	n/a
2006	4	2	6	2	5	5	3	-	n/a	n/a
2008	3	3	6	2	5	5	3	-	n/a	n/a
2010	5	6	6	2	5	5	3	5	10	10
2012	6	5	6	2	5	5	3	5	10	10
2014	6	7	6	2	5	5	3	5	10	10
2016	4	10	6	2	5	5	3	5	10	10
2018	5	11	8	3	5	5	3	5	10	10
2020	5	11	8	3	5	5	3	5	10	10
<b>PET under 1 litre</b>	<b>BC</b>	<b>AB</b>	<b>SK</b>	<b>MB</b>	<b>NS</b>	<b>NB</b>	<b>NL</b>	<b>PE</b>	<b>YT*</b>	<b>NT</b>
2003	1	3	6	2	5	5	3	-	n/a	n/a
2006	1	1	6	2	5	5	3	-	n/a	n/a
2008	3	2	6	2	5	5	3	-	n/a	n/a
2010	4	2	6	2	5	5	3	5	5	5
2012	3	0	6	2	5	5	3	5	5	5
2014	3	3	6	2	5	5	3	5	5	5
2016	3	2	6	2	5	5	3	5	5	8
2018	3	3	8	2 or 3	5	5	3	5	5	8
2020	3	3	8	2 or 3	5	5	3	5	5	8
<b>Glass 0-500 ml</b>	<b>BC</b>	<b>AB</b>	<b>SK</b>	<b>MB</b>	<b>NS</b>	<b>NB</b>	<b>NL</b>	<b>PE</b>	<b>YT*</b>	<b>NT</b>
2003	3	5	7	2	5	5	3	-	n/a	n/a
2006	4	5	7	2	5	5	3	-	n/a	n/a
2008	5	3	7	2	5	5	3	-	n/a	n/a
2010	10	6	7	2	5	5	3	5	5	10
2012	12	6	7	2	5	5	3	5	5	10
2014	12	8	7	2	5	5	3	5	10	10
2016	9	9	7	2	5	5	3	5	5	13
2018	7	10	9	3	5	5	3	5	5	13
2020	7	10	9	3	5	5	3	5	5	13
<b>Glass over 1 litre</b>	<b>BC</b>	<b>AB</b>	<b>SK</b>	<b>MB</b>	<b>NS</b>	<b>NB</b>	<b>NL</b>	<b>PE</b>	<b>YT*</b>	<b>NT</b>
2003	5	8	7	2	5	5	3	-	n/a	n/a
2006	5	7	7	2	5	5	3	-	n/a	n/a

2008	5	4	7	2	5	5	3	-	n/a	n/a
2010	10	9	7	2	5	5	3	5	10	10
2012	20	10	7	2	5	5	3	5	10	10
2014	25	11	7	2	5	5	3	5	10	10
2016	40	10	7	2	5	5	3	5	10	13
2018	18	11	9	3	5	5	3	5	10	13
2020	18	11	9	3	5	5	3	5	10	13

\*In Yukon in 2016, the size threshold changed to 750 ml. All containers of 750 or more, regardless of contents or material, are charged 10 cents RFF.

As shown in Figures 30 and 31, consumer fee fluctuations are not uniform across all container types, nor within groups of container types even if they were the same material. Consider B.C., for example; for glass containers over 1-litre, fees increased from 5-cents to 40-cents per container from 2003 to 2016, but then fall back down to 16 cents in 2018. At the same time, per unit fees for glass containers 0-500ml in size increased from 3-cents to 12-cents per from 2003 to 2012, and back down to 9-cents in 2016, where it remains as of October 2020.

Figure 30 British Columbia Consumer Fees by Material (2003-2020)

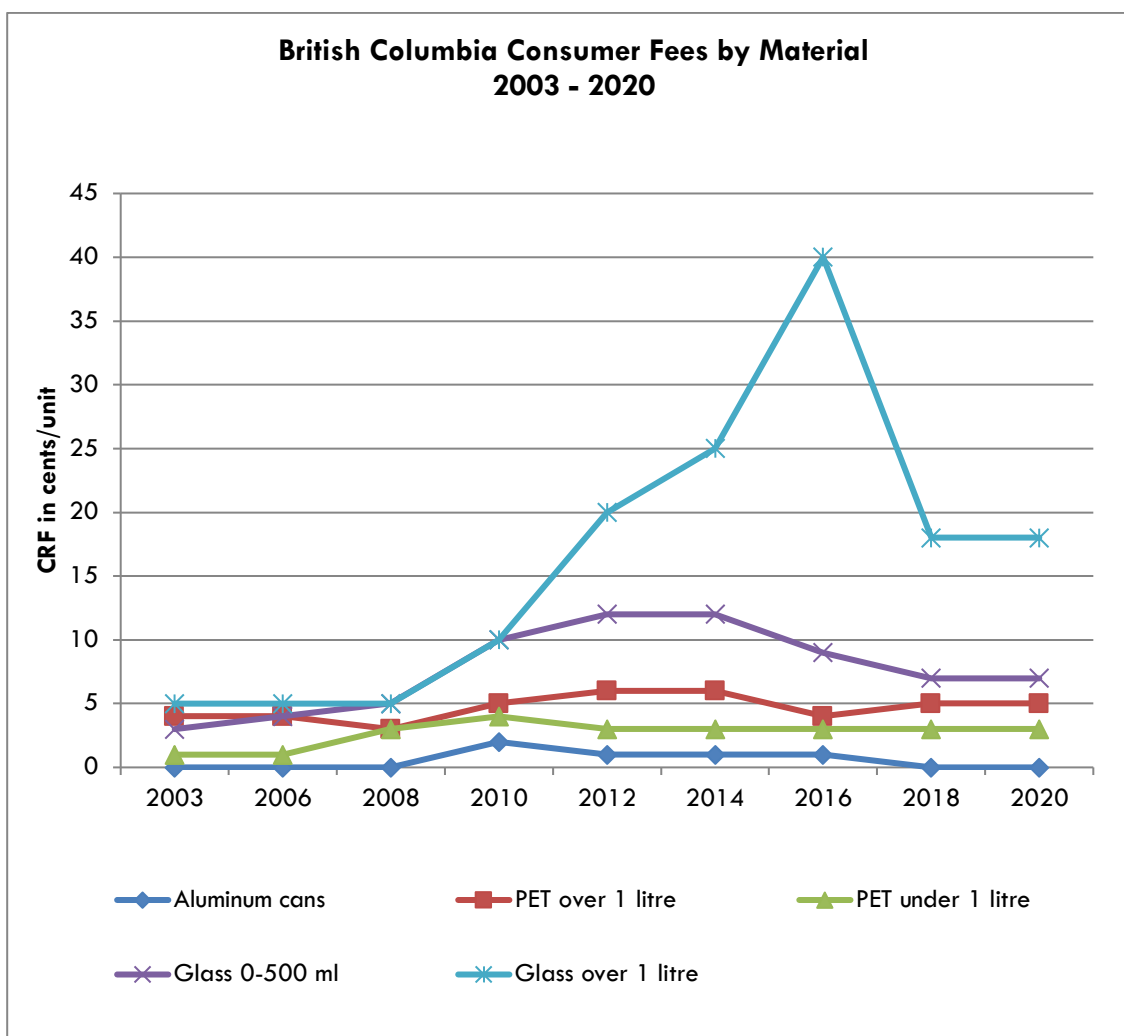
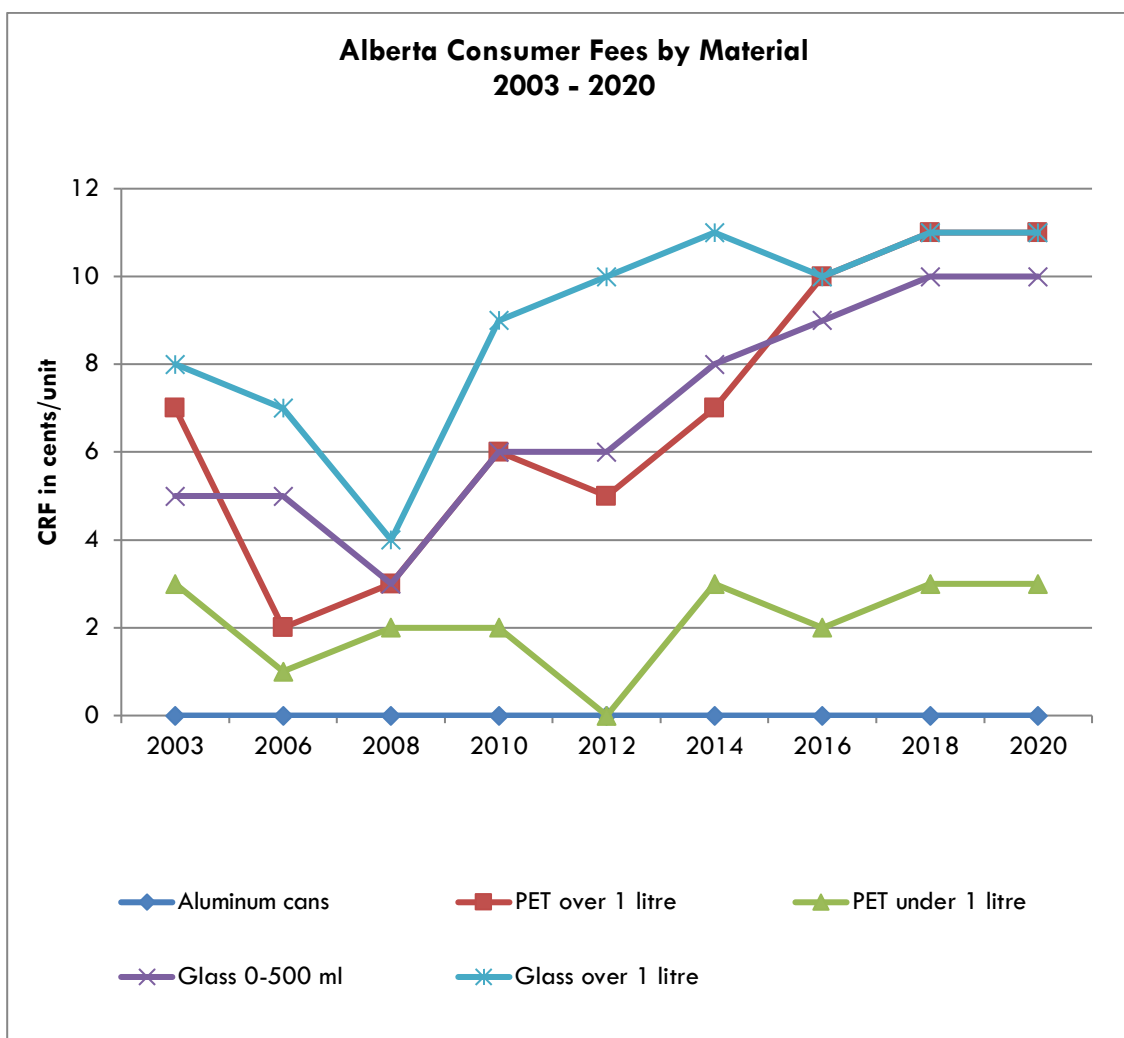


Figure 31 Alberta Consumer Fees by Material (2003-2020)



## Deposits

In DRS provinces, retailers are required to collect and remit a deposit from consumers on all applicable beverage containers. Intended to act as an incentive to recycle, a deposit is a monetary fee that is added to the price of a beverage container at the point of purchase, which is refunded to the consumer when the empty container is returned to an authorized redemption centre or retailer for reuse or recycling.

In the North and in the Atlantic Provinces, only a portion of the deposit is refunded when a non-refillable container is returned (see section on 'The Half-Back System' above). The portion of the deposit that is not returned, in addition to any unredeemed deposits, is used to help fund the system and subsidize other provincial environmental initiatives. Typically, these deposits are indicated separately on the sales receipt. They are not a government tax and no funds from the fees are paid to government.

Deposits range from a low of 5-cents to a high of 40-cents per container. In Quebec, where the deposit on carbonated beverages is only 5-cents, the government announced in January 2020 that as part of its plan to expand the DRS to other beverage containers starting in Fall 2022, that it would increase the deposit to 10-cents. Table 9 shows the deposits charged on various types of beverage containers in each program as of October 2020, as well as the refund that is provided to consumers.

**Table 9 Deposit and Refund Values by Province/Territory and Container Type (as of October 2020)**

Province/Territory	BC	AB	SK	MB	ON	QC	NS	NB	NL	PEI	YT	NT
Containers ≤ 1L	10/10	10/10										10/10
Containers > 1L	10/10	25/25										25/25
Containers ≤ 750ml											10/5	
Containers > 750ml											35/25	
Carbonated beverage containers						5/5						
Non-alcohol container							10/5	10/5	8/5	10/5		
Metal cans < 1L			10/10								10/5	
Metal cans ≥ 1L			25/25								35/25	
Glass bottles ≤ 300ml			10/10								10/5	
Glass bottles 301ml-999ml			20/20								10/5	
Glass bottles ≥ 1L			40/40								35/25	
Plastic bottles < 1L			10/10								10/5	
Plastic bottles ≥ 1L			25/25								35/25	
Tetra Pak & Gabletop < 1L											10/5	
Tetra Pak & Gable Top ≥ 1L											35/25	
Wine & spirit containers ≤ 500ml	10/10	10/10					10/5	10/5	20/10	10/5		
Wine & spirit containers 501ml-1L	10/10	10/10					20/10	20/10	20/10	20/10		
Wine & spirit containers > 1L	10/10	25/25					20/10	20/10	20/10	20/10		
Wine & spirit containers ≤ 630ml					10/10							
Wine & spirit containers > 630ml					20/20							
Non-refillable beer ≤ 1L	10/10	10/10		10/10	10/10			10/5	10/5	10/5		
Non-refillable beer > 1L	10/10	25/25		20/20*	20/20			20/10	20/10	20/10		

Non-refillable beer ≤ 500ml (in NS)							10/5						
Non-refillable beer > 500ml (in NS)							20/10						
Non-refillable beer ≤ 450ml (QC)							5/5						
Non-refillable beer > 450ml (QC)							20/20						
Refillable beer bottles	10/10	10/10	10/5*	10/10	10/10	10/10	10/10	10/10	10/10	10/5*	10/10	10/10	10/10

\* In SK and NL, 5-cents is retained by bottle depots in lieu of an official handling fee.

\*In MB, the 20-cent deposit/refund only applies to containers 2L or larger. All containers less than 2L carry a 10-cent deposit/refund.

## The Effect of Deposit Values as an Incentive to Return Containers

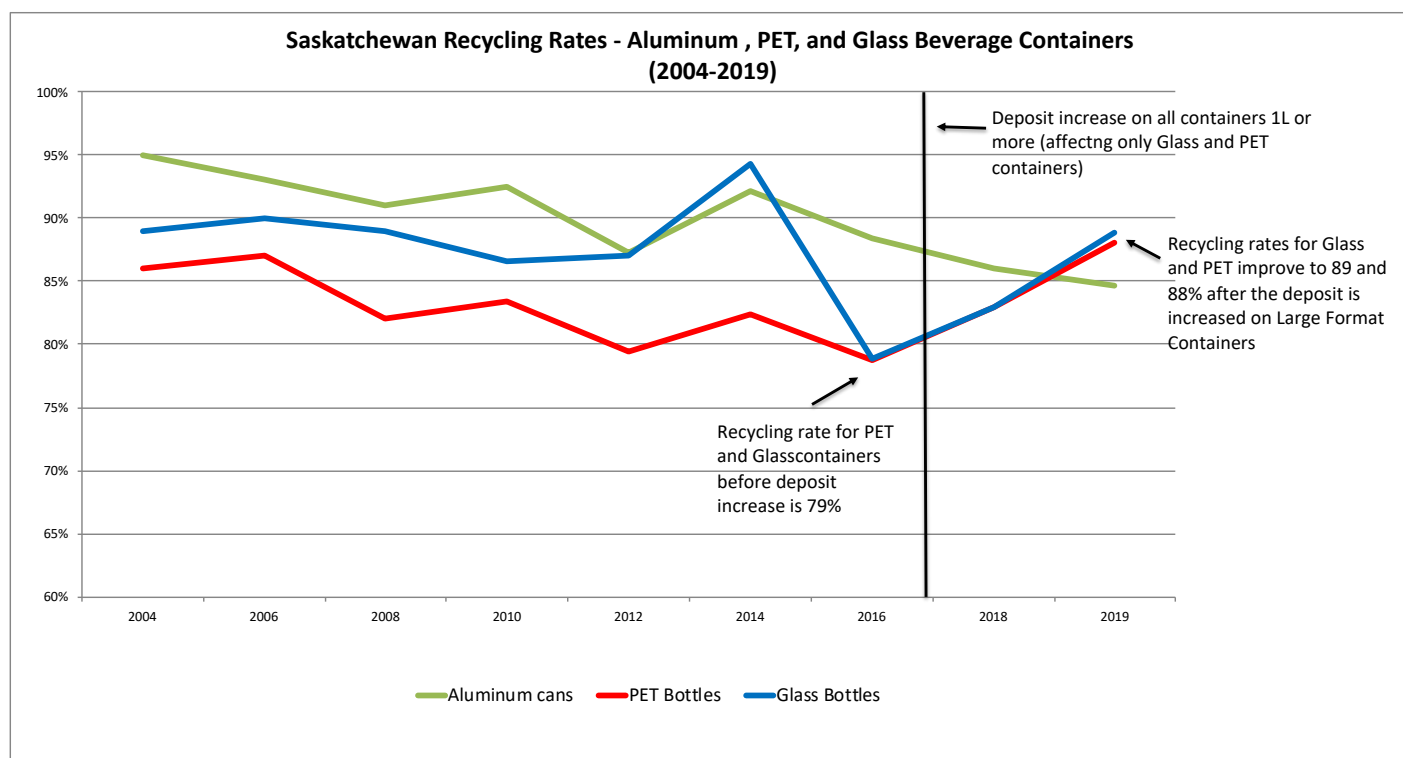
In order to maintain the financial incentive to return containers, deposit amounts should be increased periodically, in line with inflation; otherwise, the value of the refund relative to the purchase price of a beverage will eventually decrease to a point where is little to no incentive to recycle. Adjusting for inflation is also important for program operators who rely on unredeemed deposits to finance some of the costs of managing, processing, and transporting recyclables, which have increased significantly over the years. Some provinces have recognized these issues and have subsequently made amendments to their DRS laws to raise deposit levels.

For example, in 2008, Alberta raised the deposits on all beverage containers, including milk, to 10-cents (from 5-cents) for containers 1L and under and 25-cents (up from 20-cents) for container greater than 1L. The impact this had on recycling rates was evident shortly after; within just three years, the recycling rate for the primary container types increased by approximately 13%.

Another province that has increased deposits on certain containers is Saskatchewan. In April 2018, Saskatchewan increased the refundable deposit for certain sizes of metal, plastic, paper-based cartons and aseptic containers from 5- to 10-cents and 20- to 25-cents. This was the first change to deposit amounts since 1992. The deposit on glass containers and refillable beer bottles remained unchanged. The recycling rate data received from Saskatchewan does not split out container materials by size, so it is not possible to say with any certainty that the deposit increase caused higher return rates for those larger size containers. However, it is notable that the overall rates for plastic and glass containers—those which are most likely to be come in a 1-litre or more format—both increased from 2016 to 2019.



**Figure 32 Impact of Deposit Level Change on Saskatchewan Recycling Rates – Aluminum, PET, and Glass Beverage Containers (2004-2019)**

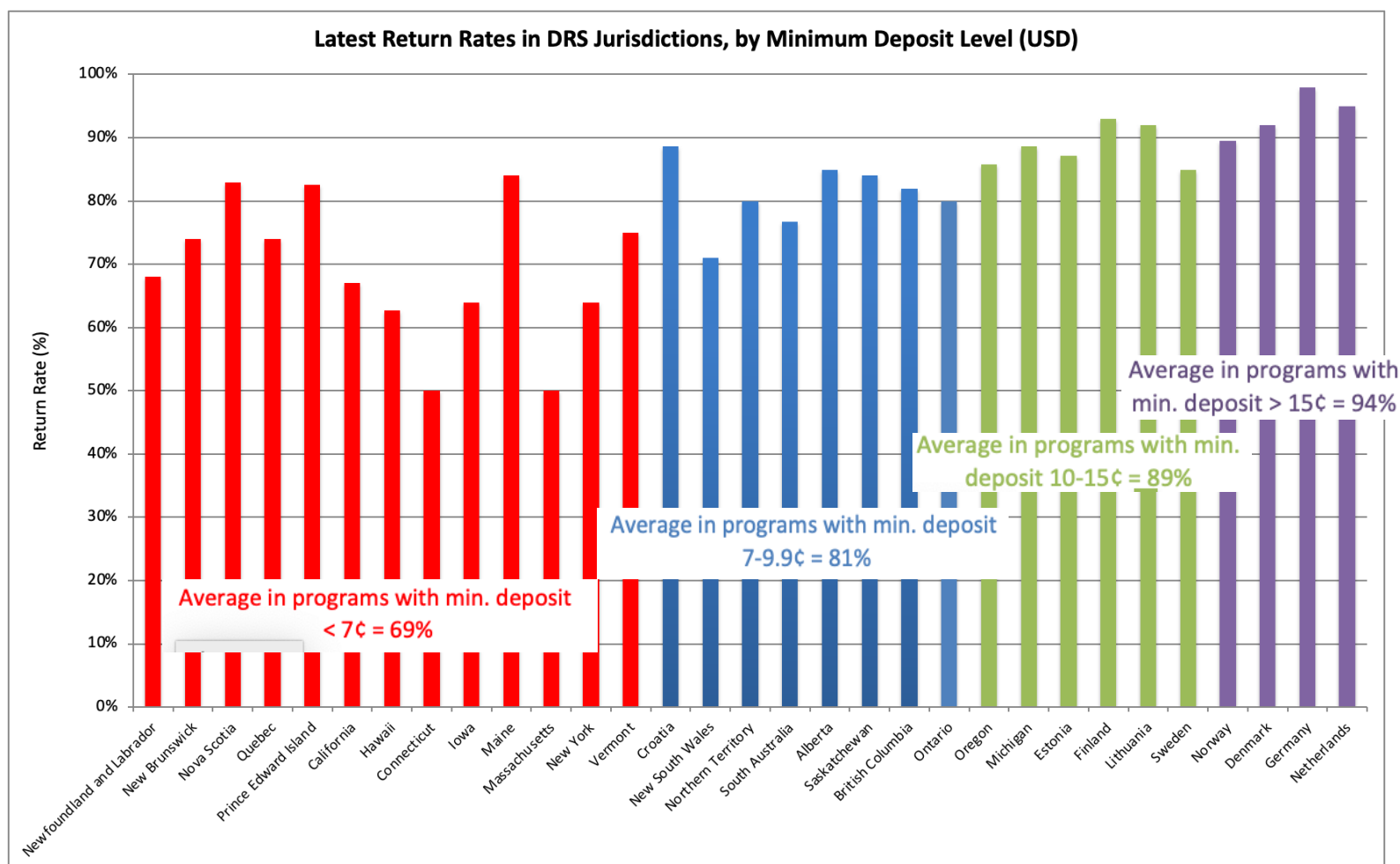


More recently, in November 2019, Encorp Pacific (in B.C.) increased the deposit for all non-alcoholic ready-to-drink beverage containers up to and including 1L in size from 5-cents to 10-cents. Since 2020 data is not yet available, it remains unknown what effect this has had on return rates, however, it is expected that there will have been an increase from previous years. Another change to deposit levels in B.C. took place in 2020. As of October 1, containers that previously carried a 20-cent deposit—such as plastic, glass, and gable top containers over 1L in size, will switch to the new unified 10-cent deposit. The rates for these larger containers might actually drop as a consequence.

In the US, Oregon's recycling rate was stagnant at 65% in 2016 until the state doubled its deposit value for all beverage containers from 5 to 10-cents. This deposit increase, along with enhanced return options such as drop-and-go bags, resulted in an overall recycling rate of 86% in 2019. Oregon is only one of two States (Michigan being the other) with a 10 cent minimum deposit value. These two states show the highest return rates in the country.

Across the globe, systems that provide a higher incentive to return with a higher deposit-refund value consistently show higher rates of return. Figure 33 shows how DRS jurisdictions with a minimum deposit refund value below 7-cents USD (mostly in Canada and the US) have an average 69% return rate, while programs that have minimum deposit-refund value between 7 and 9.9-cents USD (Including BC, AB, and SK) average 82% return rates. As the minimum deposit-refund value increases, jurisdictions with 10-15-cent (USD) minimum deposit-refund values (Including Oregon and Michigan) over 15-cents (USD) recover an amazing 95% of containers.

Figure 33 Return Rates in Deposit Jurisdictions, Organized by Minimum Deposit-return Amount



## Handling Fees

In order to compensate redemption locations (i.e. depots or retailers) for the costs associated with collecting, sorting, and preparing empty beverage containers for shipment to recyclers, DRSs offer handling fees (HFs), which are paid by bottlers and distributors. On a long-term basis, HFs also cover expenses related to investments in reverse vending machines (RVMs), electricity costs, space requirements, and additional personnel required to handle the containers.

Like deposits, HFs can vary by container type. They can also vary based on the type of facility that receives the containers (i.e. a depot or retailer), whether containers are commingled or compacted, and whether collection is done manually or through RVMs.

Table 10 presents HFs by province and container type. Shaded areas of the table represent container categories that are not applicable to that particular province. It is important to note that in B.C., HFs

paid to grocers are privately negotiated and proprietary, and so are not publicly available. The fees shown for B.C. are from 2016 and are those awarded to depots only. It is not possible to isolate a handling fee for Ontario because The Beer Store charges the LCBO a service fee, which is inclusive of handling, processing, logistics, and education & awareness programs

Table 10 Handling Fees by Province and Container Type (as of March 2020)

Handling fees in cents per unit recovered (2020 except for BC)											
Province	BC (2018)	AB	SK[3]	MB	QC	NS	NB	NL	PEI	YT	NT
Aluminum Cans	3,37	3,64			2,00	4,27	4,37	4,35	4,21	2,50	2,20
PET up to 1L	5,07	4,82			2,00	4,27	4,37	4,35	4,21	4,00	2,20
PET over 1L	7,89	13,14			2,00	4,27	4,37	4,35	4,21	7,50	4,50
PVC up to 1L	5,07	5,53				4,27	4,37	4,35	4,21	4,00	2,20
PVC over 1L	7,89	15,47				4,27	4,37	4,35	4,21	7,50	4,50
HDPE up to 1L	5,07	5,53				4,27	4,37	4,35	4,21	4,00	2,20
HDPE over 1L	7,89	15,92				4,27	4,37	4,35	4,21	7,50	4,50
Polypropylene up to 1 L	5,07	5,53				4,27	4,37	4,35	4,21	4,00	2,20
Polypropylene over 1 L	7,89	15,47				4,27	4,37	4,35	4,21	7,50	4,50
Sealed Polystyrene Cups											
Polystyrene up to 1L	5,07	5,53				4,27	4,37	4,35	4,21	4,00	2,20
Polystyrene over 1L	7,89	15,47				4,27	4,37	4,35	4,21	7,50	4,50
Pouch (Up to 1L in AL)	4,49	7,11				4,27	4,37	4,35	4,21	4,00	2,20
Plastic up to 500ml	5,07					4,27	4,37	4,35	4,21	4,00	2,20
Plastic 501ml to 1L	5,07					4,27	4,37	4,35	4,21	4,00	2,20
Plastic over 1L	7,89					4,27	4,37	4,35	4,21	7,50	4,50
Glass bottles up to 1L	6,77	8,02			2,00	4,27	4,37	4,35	4,21	4,00	3,50
Glass bottles over 1L	7,89	15,88			2,00	4,27	4,37	4,35	4,21	7,50	3,50
Drink box up to 500ml	5,08	5,49				4,27	4,37	4,35	4,21	4,00	2,20
Drink box 501ml to 1L	5,98	5,49				4,27	4,37	4,35	4,21	4,00	2,20
Drink box over 1L		14,31				4,27	4,37	4,35	4,21	7,50	4,50
Gabletop up to 1L	6,77	7,13				4,27	4,37	4,35	4,21		2,20
Gabletop over 1L	11,03	13,75				4,27	4,37	4,35	4,21		4,50
Bag in the Box over 1L	11,27	39,79				4,27	4,37	4,35	4,21		3,50
Bi-metal up to 1L	5,08	7,90				4,27	4,37	4,35	4,21	4,00	2,20
Bi-metal over 1L	11,27	17,95				4,27	4,37	4,35	4,21	7,50	4,50
Imported beer bottles	5,08	8,02				4,27	4,37	4,35	4,21	4,00	3,50
Liquor and wine ceramic		126,18				4,27	4,37	4,35	4,21		
Sleeman bottles		7,09				4,27	4,37	4,35	4,21		
Moosehead Green Bottle		8,91				2,57					
Refillable Beer (ISB)	[1]	6,61	2,6 [4]	2,67	0,50	2,74	3,12	5 [4]	2,81	2,50	
Beer Cans		3,64		2,04							
Milk up to 1 litre											2,00
Milk over 1 litre											3,50
Milk jugs	[2]~2.7		\$420/t[5]			\$407					
Milk cartons	[2]~4.09		\$150/t			tonne					
Container included in another category											
Category not applicable											
[1] In BC bottle depots independently negotiate handling fees directly with the beer industry.											
[2] About 166 Depots in BC are paid a handling fee for collecting milk jugs and carton. The fee shown in the table is based on 60 units per bag.											
[3] Saskatchewan does not charge handling fees. SARCAN depots are paid a contracted rate per year, which is generated through the Environmental Handling Charge (EHC).											
[4] In Saskatchewan and Newfoundland a handling fee charged on refillable beer is charged at the back-end from the refund. In SK it is 5 cents at Sarcen depots and 2 cents at SLGA stores who also receive an additional subsidy of 2.6 cents per ISB bottle from BDL. In NL it is 5 cents											
[5] In SK, a variable rate paid to recyclers for milk jugs is based on 80% of the salvage value for that month .											

## How Have Handling Fees Changed Over Time?

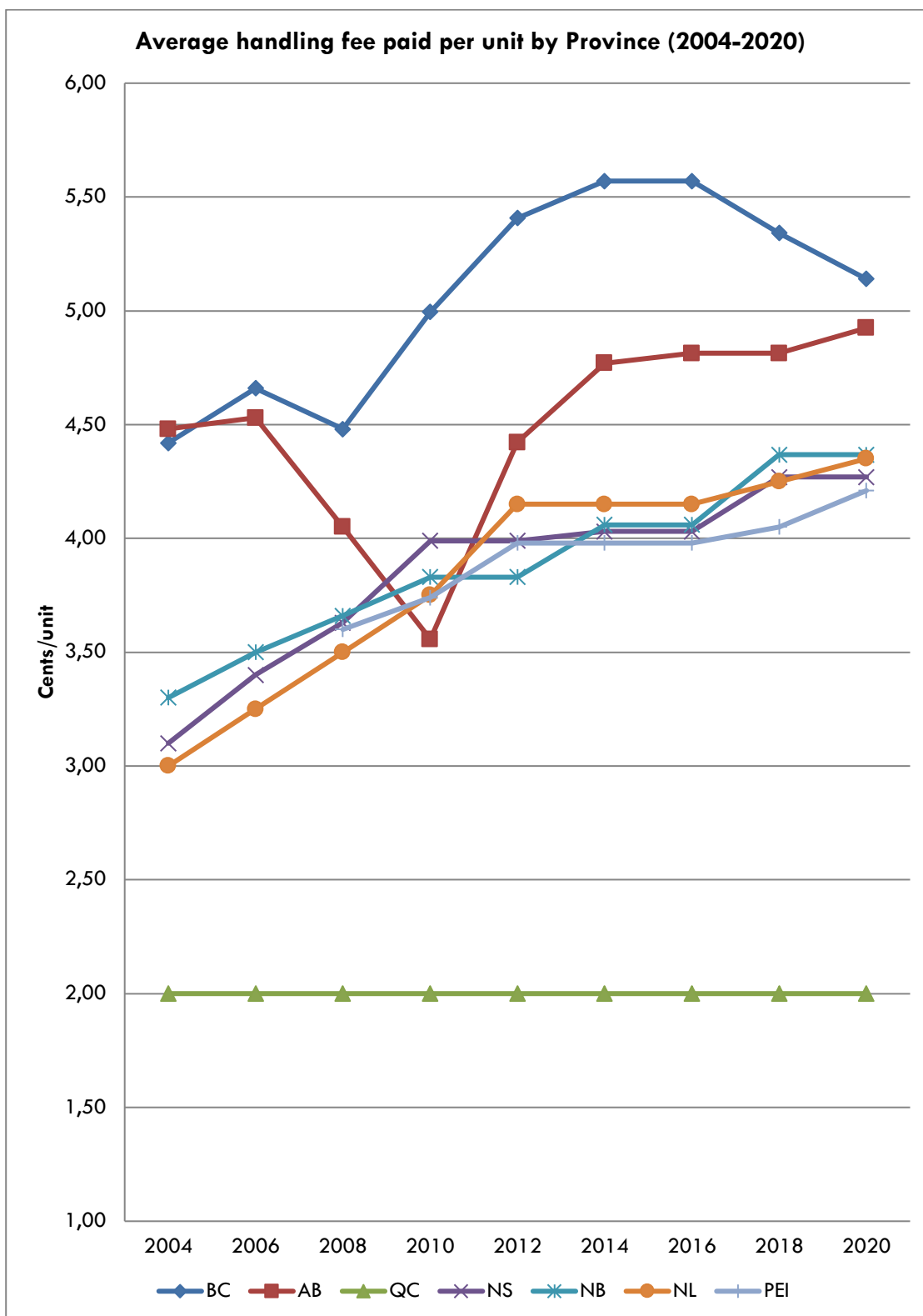
In the western provinces, where HF's are pegged to the actual cost to recycle the material, fees have fluctuated up or down depending on the material and size of the container. The average HF paid to depots has increased in both Alberta and B.C. from 2004 to 2020, from 4.42-cents to a high of 5.57 cents and back down to 5.14-cents in B.C., and from 4.48 cents to 4.92 cents in Alberta.

In Québec, HF's have remained constant at 2-cents for all legislated containers since the program began. The Yukon and Northwest Territories have also kept the same HF's since the start of their programs.

In the Atlantic provinces, HF's increased slightly every year or every other year. Specifically, in the years 2004-2020 fees in Nova Scotia increased from 3.1-cents to 4.27-cents, while New Brunswick's fees have gone from 3.3-cents to 4.37-cents. In Newfoundland and Labrador and Prince Edward Island, HF's increased from 3-cents and 3.6-cents, to 4.35-cents and 4.21-cents, respectively, over that period.

Figure 34 below shows fluctuations in the average HF paid per unit by province from 2004-2020.

Figure 34 Average Handling Fee by Province (Per Unit) (2004-2020)



## Beverage Container Packaging Fees

Currently, there are five provinces—B.C., Saskatchewan, Manitoba, Ontario, and Quebec—that have implemented mandatory EPR legislation for printed paper and packaging (PPP). This legislation shifts the operational and/or financial responsibility for packaging reuse and recycling programs to the packaging industry and away from municipalities. Table 11 presents the percentage of funding of net costs that producers pay into each program. The EPR laws in B.C. and Saskatchewan do not cover beverage containers, therefore the numbers for those provinces are not included here.

**Table 11 Percentage of Net Costs Paid by Industry in Canada's PPP Programs**

	Manitoba	Ontario	Quebec
<b>Industry Share of Net Costs (%)</b>	80%	50%*	100%
*Note: On August 14, 2017, Ontario's Minister of Environment and Climate Change issued a letter directing Stewardship Ontario and the RPPA to prepare an amended Blue Box Program Plan (BBPP) by February 15, 2018. The amended plan will increase the obligation for brand owners and importers from 50% to 100%. The transition to full EPR is expected to begin in 2023.			

In each province with a legislated EPR program, the responsible agency (i.e. MMSM, Stewardship Ontario, and ÉEQ) collects fees from stewards based on the amount of packaging they contribute to the province's waste and recycling stream. These stewardship fees vary from one program to another, and also by material type. Lower performing materials tend to have a proportionally higher share of the costs. As Table 12 shows, the fees can vary widely even within the same material category.

**Table 12 Packaging and Printed Paper Stewardship Fees (cents/kilogram) (2020)**

Package Type	Manitoba <sup>92</sup>	Ontario <sup>93</sup>	Quebec <sup>94</sup>
Aluminum	-7.32	5.16	20.515
PET	43.62	17.39	30.040
HDPE	52.25	13.92	16.266
Other plastics	51.30	36.67	35.948
Glass (clear)	5.00	4.07	20.819
Glass (coloured)	5.00	7.95	20.935
Steel / Bi-metal	17.85	6.97	17.597
Aseptic cartons	71.39	28.33	27.880
Gable top	71.39	28.33	22.557

The Québec government requires 100% of eligible net costs to be paid by producers. This program began with 50% industry contributions in 2009, and increased to 80% in 2011, 90% in 2012, and finally 100% in 2013. In 2019, industry stewards provided nearly \$146.2 million to finance the program.<sup>95</sup> Éco-Entreprises Québec's (ÉEQ) fee rates are developed using an Activity-Based Costing model and are based on the quantity and type of materials generated.<sup>96</sup> The fee structure also takes into account environmental criteria.

In Ontario, the funding model to date, under the now repealed *Waste Diversion Act, 2002*, resulted in a 50/50 split of the total municipal program net costs. Under the new legislative framework, the

implementation of which is still a provincial work in progress as the Ministry of Environment and Climate Change (MOECC) develops the enabling regulations, a greater (up to 100%) allocation of costs will be borne by producers.

In Manitoba, the net cost of municipal recycling programs is funded 80% by industry. Manitoba's funding model is different to other PPP programs in that it collects a CRF from most non-alcoholic beverage distributors, in addition to and separate from regular PPP fees. These fees are used to help finance 80% of MMSM's beverage related obligation, in addition to buying recycling bins and promoting the AfH recycling program.

In most Canadian PPP programs, packaging fees are levied on almost all types of containers. One exception is aluminum beverage cans in Québec, most of which are subject to deposits and therefore exempt from the municipal funding program. Only the aluminum used in non-beverage packaging such as tins of cat food, canned fish, foil, and pie plates, is subject to packaging fees. Consequently, aluminum in Québec carries a higher fee than it does in Ontario and Manitoba. Because steward fees depend on material type and weight, per container fees can be calculated when the weight of each unit is known. Table 13 shows 2020 fee rates for various types and sizes of containers that are more commonly found on store shelves.

**Table 13 Expression of Fees by Beverage Container Type for Select Containers (cents/unit sold) (2020)**

Package Type		Weight (g)	MB	ON	QC
<i>Gable top</i>	2-L	63	4.50	1.78	1.42
<i>Gable top</i>	1-L	41	2.93	1.16	0.92
<i>Gable top</i>	Small	14	1.00	0.40	0.32
<i>Aseptic cartons</i>	Small	10.6	0.76	0.30	0.30
<i>Bi-metal</i>	Small	46.7	0.83	0.33	0.82
<i>Glass</i>	473ml clear bottle	228	1.14	0.93	4.75
<i>Glass</i>	>1-L clear liquor	737.2	3.69	3.00	15.35
<i>Plastic</i>	2-L PET bottle	58	2.53	1.01	1.74
<i>Plastic</i>	Outer milk bag – LDPE film	8	0.41	0.29	0.29
<i>Aluminum</i>	355ml can	14	-0.10	0.07	0.29
<i>Italicized materials are based on Stewardship Ontario Blue Box Program Plan 2003.</i>					
Non-italicized materials are based on Encorp data.					

## Overview of System Costs and Revenues

To determine the costs of beverage container recycling programs across Canada, CM Consulting relies on data found in financial reports prepared by the organizations that manage those programs. Typical expenses include collection, transportation, and processing costs, as well as costs relating to administration and promotion and education. Revenues generally come from a combination of sources, including material sales, unredeemed deposits, and consumer fees.



## Factors Impacting Program Costs

Many factors can affect system costs, including a program's scope, collection rate, convenience level (i.e. collection frequency, number of depots, etc.), and population density. No program operates within the same parameters, which is why the costs of different provincial programs should not be directly compared.

To illustrate this point, consider the provinces of Manitoba, Ontario, and Quebec, where most beverage containers are recovered via curbside recycling programs. While these programs may be less expensive to operate than DRSs, they are also less effective and collect fewer containers per capita. Ontario and Quebec are also two of the most populated provinces, which means they can benefit from economies of scale. What is unknown in all three of these provinces is the cost of the away-from-home (AfH) collection programs, which are likely significant. These costs need to be considered in any comparison of financial performance, as well as the incremental costs that would be incurred to achieve higher collection and recycling rates.

Another factor that can impact the financial performance of a program is the amount of revenue generated from material sales. Material sales revenue, which plays an important role in helping to offset the gross costs of the program, will vary depending on the current market value of the materials collected, as well as on the types of containers collected and their respective collection rates. This, in turn, is influenced by the deposit level and the types of containers that are subject to deposit.

In Alberta, where the DRS covers all material container types (excluding those for domestic beer), sales revenues covered 27% of total program costs in 2019. In Ontario, where only wine, spirits, and beer containers are included in the DRS, the amount of revenue generated from material sales as a percentage of total system costs is lower. This is attributable to the fact that over 95% of material collected is glass bottles, which are worth significantly less than the materials that typical DRSs manage. Conversely, Québec's DRS for non-refillable containers manages mostly PET and aluminum cans (which have a higher re-sale value), with only a small amount of non-refillable glass bottles.

## The Role of Surplus

As discussed in the financing section of this report, some programs charge consumer fees on beverage containers as a means of generating additional revenue. Although part of this revenue may be used to offset program costs, it is sometimes used to subsidize other provincial diversion programs or contribute to a province's general revenues. Table 14 shows how excess funds are used in each province where information is available.

Table 14 Allocation of Surplus Funds by Program

Province / Territory	How Surplus Funds Are Used
BC	Surplus revenues generated from the CRFs are used to offset the following year's recycling costs. Surplus funds do not subsidize other programs and are adjusted regularly to reflect actual program shortfalls.
AB	Surplus revenues generated from the CRFs are used to offset the following year's recycling costs. Surplus funds do not subsidize other programs and are adjusted regularly to reflect actual program shortfalls.
SK	Surplus is placed in provincial general revenues and helps fund extended recycling programs
NB	Some of the half-back revenue is placed in the Environmental Trust Fund, which is used to promote recycling activities and other initiatives aimed at improving the state of the environment
NS	Some of the half-back revenue is distributed to municipalities to help offset the cost of their waste diversion initiatives
PEI	All excess funds accrue to the provincial treasury
NL	Surplus funds are invested in the Waste Management Trust Fund, which is used to advance sustainable waste management in the province.
NT	Funds generated by the program are placed in the Environment Fund, a special purpose fund that can only be used for waste reduction and recovery purposes. Any surplus revenue in the fund is used to help create new waste reduction and recovery programs. This fund is separate from the government's general account.
YT	Funds generated by the recycling fund fee (RFF) are placed into the Recycling Fund, an account separate from general government revenues that is used to support all recycling activities in Yukon, including community recycling depots, the Recycling Club, transportation of recyclables, etc.

## Who Bears the Share?

In early editions of *Who Pays What*™, we presented data on the costs associated with beverage container recycling in a way that enabled comparisons to be made on a program-to-program basis. However, as explained earlier, this approach is not the most suitable for comparing the efficiency and effectiveness of different programs since system costs (and revenues) can be affected by a myriad of program-specific factors, which makes meaningful comparison impossible.

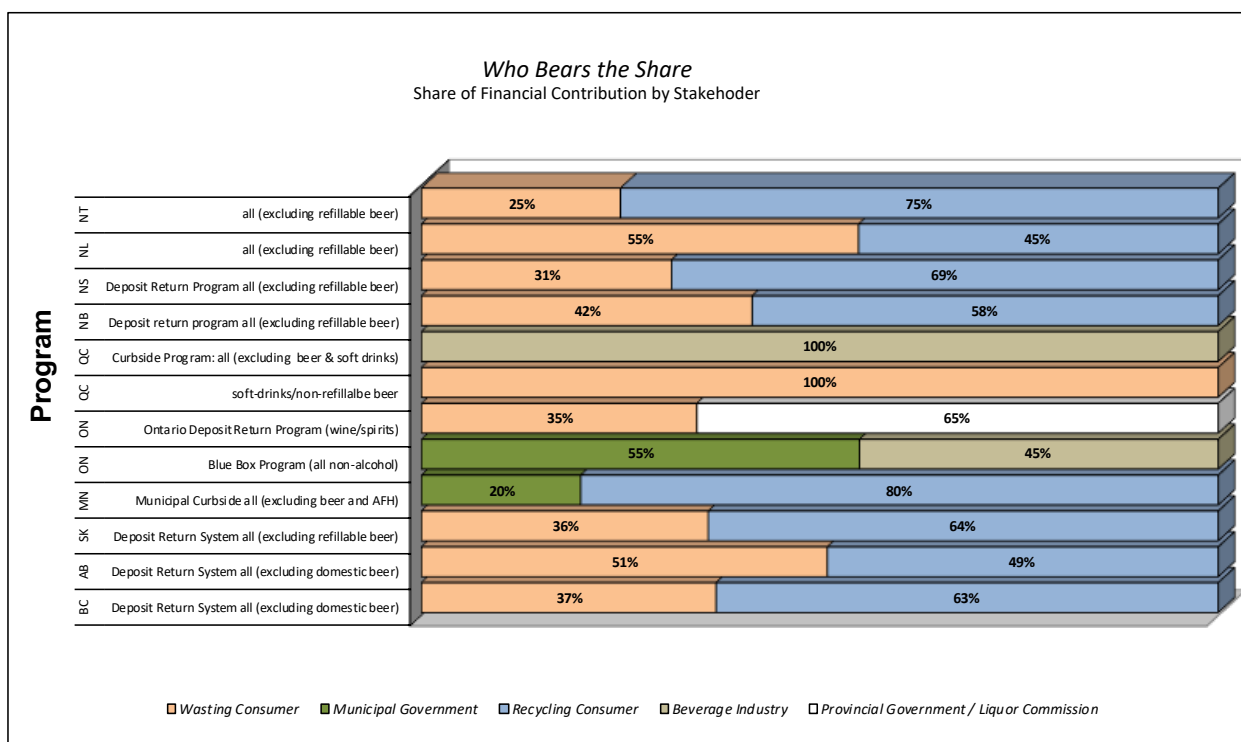
In recognition of this issue, in 2010 CM Consulting developed a new approach called “Who Bears the Share,” that allows for a better understanding of how system costs are shared among the different players in each province. By identifying the percentage of program costs that each stakeholder group is responsible for, this approach is intended to offer insight into the equity or fairness of the various funding models.

The “share” is calculated by taking the stakeholder's contribution and dividing that by the total amount of program funding (excluding material revenues). The formula is as follows:

$$\text{Stakeholder Contribution (\$)} / \text{Total Program Funding (\$)} \text{ (excluding material revenues)}$$

Figure 35 shows the results of the *Who Bears the Share* analysis for 2019 (figures represent 2018-2019 in some programs).

Figure 35 Share of Financial Contribution by Stakeholder by Province



## Summary of Analysis

The *Who Bears the Share* analysis confirms that only in Québec, Manitoba's AfH program, and Ontario's Blue Box program does industry pay for some portion of the costs of collecting and recycling beverage containers:

- In Québec, beverage producers (except those for non-refillable soft-drinks and beer) are legally obligated to finance 100% of the net costs to collect, transport, and process the materials, plus 8.55% of that amount to cover administrative costs (e.g. overhead, P&E, etc.).
- In Manitoba, 80% of program costs are covered by industry through the 1- to 3-cent per unit levy applied to beverage purchases.
- In Ontario, industry currently reimburses municipalities 50% of the net costs of the curbside recycling program; this is likely to increase to 100% under the new legislation.

In B.C. and Saskatchewan, the requirement for industry to pay for some of the costs of collecting and recycling beverage containers only applies to producers or first importers of milk beverages.

In most other provinces, it is the consumer that is stuck paying for some or all of the system costs. Consumers can be divided into two groups: the "wasting consumer" and the "recycling consumer." Wasting consumers are those who choose not to redeem their containers; this group pays through unredeemed deposits and consumer fees. Recycling consumers are those who return the container

for recycling; this group pays through non-refundable consumer fees and halfback deposits in provinces where they are charged.

The analysis shows that only in three provinces (Alberta, Québec, Newfoundland) do wasting consumers pay more than recycling consumers. Since 2013, Québec consumers who choose not to return their empty beverage containers bear 100% of the costs of the DRS. In Alberta, wasting consumers bear approximately 51% of net program costs, leaving recycling consumers with the remaining 52% (see Figure 36). This is because of Alberta's relatively high deposit levels, which translate into more revenue from unredeemed deposits. In Newfoundland and Labrador, the lower recycling rate combined with the relatively high refund (in relation to the non-refundable portion) means there is a greater pool of unredeemed funds.

**Figure 36 Percentage of Program Costs Paid by Wasting vs. Recycling Consumer, Alberta (2019)**

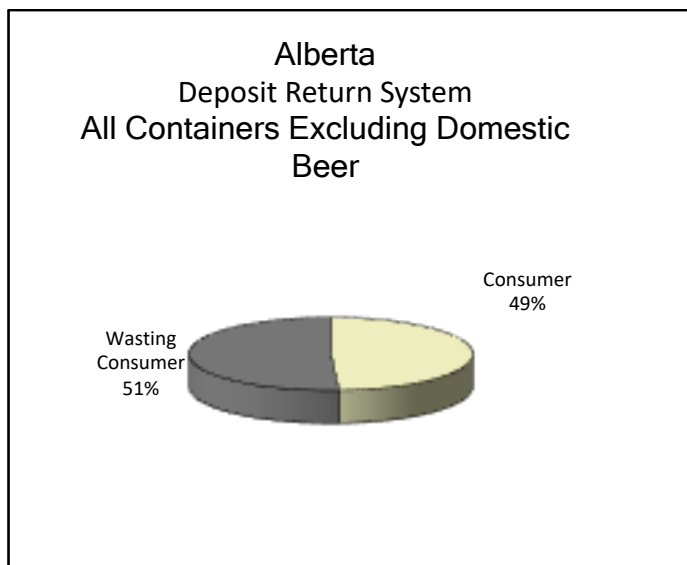
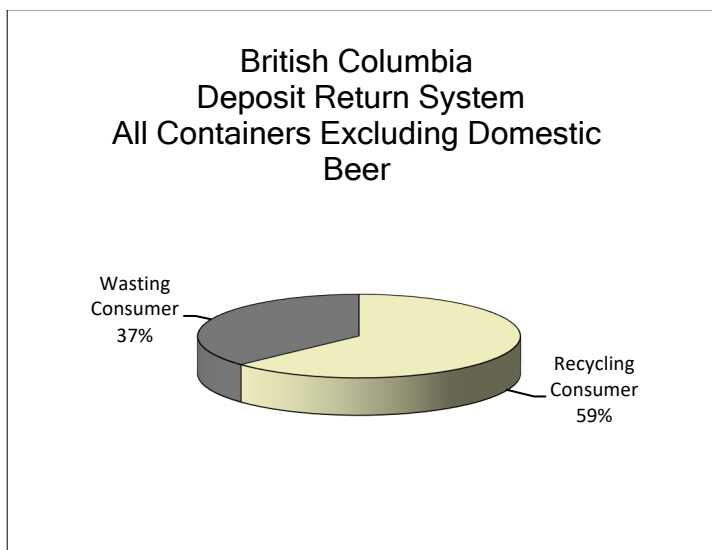


Figure 37 Percentage of Program Costs Paid by Wasting vs. Recycling Consumer, British Columbia (2019)



In Ontario's DRS for alcohol containers, the recycling consumer pays nothing because the deposit is 100% refundable. In contrast, the wasting consumer pays 35% of program costs. The Liquor Control Board of Ontario (LCBO) covers the rest.

## Who Pays What?

### Stakeholders

There are five major stakeholder groups that fund beverage container recycling in Canada. Understanding the role each one plays, from the point at which a container is sold to the point at which it is reused or recycled, is critical to informing effective policy development. To this end, this section provides an analysis of the various stakeholders involved and what their roles and responsibilities are when it comes to program financing. Also discussed are some of the key factors that impact each group's relative contribution to total program costs, as well as observations on the fairness of the funding scheme.

### The Recycling Consumer and the Wasting Consumer

As mentioned earlier, the recycling consumer is the consumer who returns empty containers to an authorized redemption location or places them in a designated recycling bin (at home or AfH). Regardless of whether containers are recycled via a DRS or curbside program, the recycling consumer has to pay a per unit consumer fee (i.e. CRFs, EHCs, half-back deposit) on the purchase of all applicable beverage containers. These fees, which are passed down by the beverage industry, are non-refundable and are used to offset system costs.

### Total Consumer Fees Paid Out (\$) / Total Number of Containers Sold

The wasting consumer is the consumer who chooses not to recycle their containers. By forfeiting their deposits, the wasting consumer bears the direct costs of his actions. The “cost of wasting” is determined by the following calculation:

$$\frac{\text{Total Unredeemed Deposits (\$) + Non-Returnable Fee on Unredeemed Units /}}{\text{Total Number of Unredeemed Containers}}$$

The percentage of program costs borne by the wasting consumer varies by province and depends on a number of factors, including the deposit value and whether beverage containers are subject to any upfront, non-refundable container fees. The higher the deposit, the more expensive it is for the wasting consumer, and therefore the higher share they will pay of total program costs. Wasting consumers will also pay more in provinces where there is an up-front fee, like in B.C., Alberta, and Saskatchewan.

Table 15 shows the average cost per container borne by the recycling and wasting consumer by province/territory.

**Table 15 Expression of Fees Paid by Wasting and Recycling Consumers, for Select Containers (Cents/Unit Sold) (2019)**

Province / Territory	Program	Recycling Consumer (Cents/Unit Sold)	Wasting Consumer (Cents/Unit Sold)
<b>BC</b>	wine /spirits / non-alcohol	3.3	7.6
<b>AB</b>	all (excluding domestic beer)	2.2	13.2
<b>SK</b>	all (excluding refillable beer)	5.3	15.3
<b>MB</b>	all (excluding beer)	2	2
<b>ON</b>	all non-alcohol	0	0
<b>ON</b>	wine/spirits (mostly glass)	0	13.6
<b>QC</b>	soft-drinks/non-refillable beer	0	5.2
<b>QC</b>	all (excluding beer & soft drinks)	0	0
<b>NB</b>	all (excluding refillable beer)	6.5	10.6
<b>NS</b>	all (excluding refillable beer)	4.9	10.6
<b>NL</b>	all (excluding refillable beer)	3.0	8.0
<b>NT</b>	all (excluding refillable beer)	5.3	10.3

### **Municipal Government**

In Canada, the responsibility for collecting, diverting, and disposing waste falls on municipal governments, as does the responsibility for litter collection. Unless the municipality adopts a user-pay system or an EPR program is in place, much of the costs of providing these services (including collecting beverage containers for reuse or recycling) are borne directly by local taxpayers. Besides removing a powerful incentive to reduce waste, this approach gives consumers the impression that diversion programs are free, which distorts costs and devalues the service. It is also unfair in that it forces households generating small amounts of waste or recyclables to subsidize higher-waste producing households.

In recognition of these issues, a number of provinces have passed EPR legislation to shift some (or all) of the costs for residential waste management away from municipalities and towards producers. In Saskatchewan, stewards are obligated to compensate qualified municipalities for up to 75% of the net costs of municipal recycling programs, leaving them to cover the remaining 25%. In Manitoba, the portion of costs borne by municipalities is 20%, and in Ontario it is 50% (to be reduced to zero under the new *Waste-Free Ontario Act*). Currently, B.C. and Quebec are the only two provinces where municipalities have zero financial responsibility for recycling and waste management. New Brunswick is currently working on developing EPR legislation for PPP, but it is not clear at this time what level of industry funding this program will require.

### **Provincial Governments or Liquor Commissions**

Across most of Canada, the provincial/territorial governments bear no responsibility for the costs of beverage container recycling. Ontario is the exception; in this province, the costs of operating the DRS for wine and spirit containers are split between the province's liquor commission (i.e. the LCBO) and the wasting consumer. Specifically, the LCBO pays 5.4-cents (net) (in 2019) on every unit sold. This amount represents the net cost of recycling after unredeemed deposits are used to offset gross costs.

### **The Beverage Industry**

As previously mentioned, industry is slowly being forced to take on an increasing share of financial responsibility for the end-of-life management of its products and packaging, including beverage containers. The idea behind this is sensible: those who have the greatest ability to influence the lifecycle impacts of the product should have the greatest responsibility for recovering and recycling those same products at end-of-life. In the case of beverage containers, these are the beverage companies.

Currently, there are five provinces in Canada where industry is directly responsible for paying a certain percentage of PPP recycling costs: B.C. (100%), Saskatchewan (75%), Manitoba (80%), Ontario (50%, to be increased to 100%), and Québec (100%). In these provinces, beverage producers or first importers of all non-deposit beverages are required to pay material-specific levies on all their packaging sold into the residential stream (In B.C. and Saskatchewan, this requirement applies only to milk). In Québec, if the DRS is running a deficit, soft drink producers are required to pay a fee for every container sold into the province.

When it comes to DRSs, the only jurisdiction that requires industry to bear a share (albeit a very small share) of beverage container recovery costs is Quebec. It should be noted, however, that in the last few years the percentage of costs borne by industry has been reduced to zero because revenues from material sales and unredeemed deposits have been sufficient. Unlike other DRS provinces where the bulk of system costs are paid by consumers through fees and unredeemed/non-refundable deposits, in Quebec there is no CRF or half-back DRS which means that recycling consumers pay nothing.

**The Domestic Beer Industry (Refillable Containers)**

Canada's domestic beer industry is unique in North America. Set up as a voluntary initiative, the DRS for refillable beer containers is managed collectively by brewers and is based on a return-to-retail collection model. The program, which relies on the existence of ISBs, allows brewers to share standard bottles and self-finance their distribution and reverse distribution. Although the brewers receive some of the unredeemed deposits to offset system costs, this revenue is minimal because the return rates are so high.



## Part 5: Recycling End-Markets & Recycled Content

### End Markets for Selected Beverage Packaging

It's no secret that China is a leader in international world trade. For years, the country has been a major importer of many types of foreign goods, including timber, dairy products, and petrochemicals. Up until recently, it was also the world's largest importer of waste and recyclables. But as of January 1, 2018, China will no longer import much of the waste we have been shipping there for decades. In July 2017, China notified the World Trade Organization that it would ban imports of 24 categories of solid waste by the end of the year. The ban applies to several plastic resins (including PET, PE, PVC, PS, and "other" plastics), textiles, unsorted mixed paper, and other materials.

In the wake of China's decision, recyclables (specifically, plastic and paper) have been piling up in developed countries as they try to figure out what to do with the material they used to send to China. Several municipalities, particularly in the U.S., have cut back on their list of accepted materials, which has had impact on recycling access. Because most beverage containers in Canada are collected via DRSs, China's ban has had little impact (relative to other countries) on Canada's end markets for beverage packaging, as the materials collected tend to stay within the North American marketplace and command a higher price to due excellent quality. The fact that the material is high quality also means that provinces are still able to meet the new quality standards and have it accepted by China, if need be.

#### Aluminum Cans



Aluminum continues to be the most valuable material in the recycling stream and is considered a very desirable commodity for recyclers. In 2019, the average yearly value for aluminum cans collected in Ontario's Blue Box program was \$1,354 per tonne, down from \$1,733 in 2018.<sup>97</sup> As of September 2020, the monthly average value was \$1,266/tonne.<sup>98</sup>

Aluminum cans have a higher market share than all competing non-refillable package types. This is true in all provinces. In 2016 alone, over 7 billion beverage cans were sold in Canada. The recycling rate for aluminum cans varies by province, but is usually higher in provinces where these are covered by deposit.

Unlike other containers, aluminum cans are most often recycled in a “closed loop” cycle. Following collection, sorting, and cleaning, the used cans are crushed, compacted into biscuits, and transported to aluminum markets (mostly in the U.S.) where they are melted down and reformed into rolled stock. New cans are punched out from these sheets at a production plant and the off-cuts or in-house scraps are all recycled. The entire process could take as little as 60 days.<sup>99</sup>

## Glass Bottles



In Canada, glass is collected in one of two ways: color-separated collection and multi-material collection. As the name implies, the first method sorts the material at the point of collection by color type (flint, green, brown, or mixed color) and provides the recycler with a color-specific load that is free of contamination. Given the high quality of the material, it may not require further processing. The second method collects glass together with other material types, like paper and plastic. The additional handling and truck compaction that come along with this method results in a significant amount of breakage, which means lower quality and lower value recycled glass. About 20% to 40% of the glass collected in this way ends up in landfill as cover material. Another 20% is marketed as glass fines, which are used for low-end applications like road aggregate or as a sandblasting base. The remaining 40% to 60% is crushed into cullet and is used to manufacture new bottles or fibreglass.

The market value of recycled glass depends on the method by which it was collected. In 2019, the average market value for a tonne of mixed glass in Ontario in 2019 was -\$38 per tonne, up from -\$41 per tonne in 2018.<sup>100</sup> As of September 2020, the yearly average value for mixed glass in Ontario was -\$34 per tonne.<sup>101</sup>

In Ontario, the majority of wine, spirit, and beer container glass that is collected via the DRS is sold to Owens-Illinois for bottle-to-bottle manufacturing at a plant in Brampton, Ontario. Most of the glass collected via the province’s Blue Box program becomes a raw material for products like fibreglass insulation, glass bottles, high traction road surfaces and reflective signs, construction aggregate, sandblasting material, or as drainage material. Due to circumstances of geography and low population density, most glass collected in northern Ontario ends up in landfill.

Up until April 2013, about 70% of Quebec’s glass was processed at a facility in Longueuil, Quebec. Since the plant shut its doors, much of the glass collected through curbside recycling programs has ended up in landfills as roadbed or is used as an aggregate. In an attempt to address this issue, Eco Entreprises Quebec (EEQ) announced its *Innovative Glass Works* plan in January 2016, with the objective of finding a solution to recycling 100% of the glass recovered in Quebec. As part of the implementation of its plan, EEQ selected five sorting centres to take part in 15-month pilot projects to test cutting-edge cleaning and sorting equipment for glass collected through curbside recycling in Quebec. The sorting centres enrolled in the experimental projects now process close to 25% of all the glass that Quebecers place in their recycling bins.<sup>102</sup> The glass produced from these centres will facilitate the material’s transformation into a range of products, including abrasives, mineral wool,

cement and concrete additives, ornamental mulch, water filtration agents, fillers, green paving stone, and cellular glass for use in infrastructure and sports fields.<sup>103</sup>

In Alberta, glass containers are crushed and the glass is formed into tiny glass beads. From there, the recycled glass is spun into thin strings and used to produce fibreglass insulation.<sup>104</sup>

Glass containers collected in B.C. are processed and sent to various end markets in Alberta and Washington State where the material is recycled into fibreglass insulation or new glass bottles. Some of the glass collected is also sent to a facility that manufacturers sandblasting material in B.C., and municipal sites that use crushed glass as construction aggregates.<sup>105</sup>

Glass containers collected in Saskatchewan are shipped to different end-markets depending on color; clear glass is sent to a processing facility in Moose Jaw, Saskatchewan, while the colored glass is sent to a facility in Alberta where it is manufactured primarily into new glass bottles and jars. Some colored glass is also made into fibreglass insulation. Any recycled glass that does not meet the manufacturers' standards to be manufactured into new glass bottles or fibreglass insulation (due to contamination) can be used for various other applications, such as countertops and floors, landscaping, tile, etc.<sup>106</sup>

In Manitoba, glass is usually crushed and used locally as fill in roadways and sidewalks.

Most of the glass collected in the Maritimes is shipped to OI in Montreal for bottle-to-bottle recycling.

In Northern Canada (Yukon and the Northwest Territories), glass is crushed and used as an alternative daily cover at landfills or as a gravel substitute. Some also ends up as sandblasting material.

### Refillable Beer Bottles



With a national collection rate of 95-100%, the refillable beer bottle is Canada's most recovered beverage container. No province has a collection rate lower than 95%.

Following collection and sorting, ISBs are returned to brewers for their labels to be scraped off. They are then are washed, refilled, capped, and crated. On average, the ISB can be reused 15 times (the "trippage rate") before it is taken out of circulation.<sup>107</sup>

Other than being recycled by a bottler, a bottle may be taken out of circulation because of breakage (e.g. by a consumer) or scuffing.

Scuff marks on a refillable bottle – rings that develop on the bottle as a result of contact with the guide rails of the washing, filling, and bottle-handling equipment – become more noticeable with each reuse and can have a significant effect on bottle aesthetics, which in turn, can render them less marketable over time.

## PET (Polyethylene terephthalate) Plastic Bottles

Making up over nearly a third of the total beverage market in Canada in 2019, PET plastic is the second most common non-refillable package type in Canada (on a unit-sold basis). It is challenging to estimate sales and collection rates for PET because many provinces report it within the plastic category as a whole.



The yearly average value for mixed PET from Ontario's Blue Box program in 2019 was \$377 per tonne, down from \$431 per tonne in 2018. As of September 2020, the average yearly market price was \$233 per tonne.<sup>108</sup> This is well below the peak of \$652 per tonne in 2011.<sup>109</sup>

Clear PET bottles are baled, shredded, and flaked. Plastic flake may be turned into a fibre that can be used to make fleece clothing and carpet underlay or new bottles for detergent, motor oil, and other non-food products. Increasing numbers of PET bottles from DRSs are melted down and made into new beverage containers. According to NAPCOR's (National Association of PET Container Resources) 2018 PET Recycling Report, approximately 21% of recycled PET is turned into food and beverage containers, 47% into fibre, 8% into strapping, 19% into sheet and film, and 4% is used for non-food containers. A very small percentage (1%) becomes engineered resin or other materials.<sup>110</sup>

In B.C., collected plastic is sold to Merlin Plastics, and shipped to their facilities in B.C. and Alberta. PET from Saskatchewan and Manitoba is shipped to U.S. and Canadian processors that flake the material. PET from Québec and Ontario is brokered into the market with multiple end destinations. In the Atlantic Provinces, most plastic goes to Novapet Inc., a facility located in Nova Scotia. PET from the Northwest Territories and Yukon is sent to markets in B.C. and Alberta.

## HDPE (High-density polyethylene) Plastic Bottles



In Ontario, the market price for mixed HDPE has been on a steady decline since 2014, when it was worth around \$659 per tonne.<sup>111</sup> For 2019, the average yearly price was reported to be \$444 per tonne, and as of September 2020, it has declined to \$232 per tonne.

Like PET, HDPE is generally reported as part of the plastics category as a whole (which may or may not include non-beverage plastic). For this reason, it is difficult if not impossible to report specific recycling rates for HDPE.

HDPE markets are very similar to PET markets and follow similar geographical flow patterns (see paragraph on PET Plastic Bottles). HDPE milk jugs and juice containers are baled, chipped, and washed. The clean chipped plastic is melted at high temperatures and formed into pellets, which are used as resin feedstock for the manufacture of non-food containers, plastic formed products, furniture, and toys.

## Steel and Bi-Metal Cans

Steel and bi-metal cans make up a very small share of Canada's beverage container market (approximately 2%). The national recycling rate for these containers in 2019 was 70%.



In 2019, steel cans collected in Ontario's Blue Box program were worth an average of \$253 per tonne. The market price for recycled steel cans peaked in 2011 at \$335 per tonne, decreasing every year until 2016, when it started rising again. As of September 2020, the yearly average market price is \$204 per tonne.<sup>112</sup>

Steel cans are crushed, baled, and shipped to steel brokers in the U.S. and Canada where they are melted down with other scrap metal to be used as construction rebar or in the manufacture of other steel products.

## Aseptic Containers



Aseptic cartons or drink boxes are made up of paper, an aluminum lining, and a plastic coating, and are often reported as part of a wider "polycoat" or "aseptic and gable top packaging" category. For this reason, it is impossible to quantify sales, returns, and collection rates for aseptic containers alone. If considering the larger category as a whole, however, recycling rates are 40% or higher in each of the DRS provinces and 35% in Ontario's Blue Box program.

In 2019, polycoat containers collected in Ontario's Blue Box program were worth an average of \$40 per tonne, down from \$63 per tonne in 2018, and significantly lower than the peak in 2011, when they were worth \$127/tonne. As of September 2020, the yearly average market price was \$26 per tonne.<sup>113</sup>

Aseptic containers are hydro-pulped and separated into different material types. The resulting paper pulp (about 65% of the recycled material) is sent to paper mills in the U.S., China, and Korea where it is made into tissue. The remaining aluminum and plastic mix (about 35% of the recycled material) can be used to manufacture durable products like pallets and paper core plugs, but most end markets currently do not use the aluminum and plastic mix for value-added products.

## Gable Top Cartons



Gable top cartons (used for juice and milk) are made up of "polycoat", a lightweight, high-grade paperboard sandwiched between two thin layers of polyethylene film (and sometimes a foil laminate). It is impossible to calculate a specific recycling rate for gable top containers as they are generally reported with Tetra Paks, as part of a larger category of collected material.

In 2019, polycoat containers collected in Ontario's Blue Box program were worth an average of \$40 per tonne, a drop from the 2018 average price of \$63 per tonne. As of September 2020, the yearly

average market price was \$26 per tonne. The value of recycled polycoat material peaked in 2011 at \$127 per tonne.<sup>114</sup>

Polycoat is converted into new material by hydro-pulping, which uses a combination of heat, water, and agitation to break down the material to produce pulp or raw fiber. This pulp can be used as feedstock to make new paper products, such as corrugated medium (the inner layer of corrugated cardboard), linerboard, household tissue products, and fine paper. The small amount of residual polyethylene can be screened off for use in other plastic and composite materials. Most polycoated packaging is sent to facilities in the US, South Korea, Thailand, and Japan for tissue production.

### Poly Pouch Containers



More and more beverage manufacturers are choosing poly pouch drink containers—a form of flexible packaging—over traditional glass, paper, and metal packaging. A typical poly pouch container is made up of several layers of plastic (different types), aluminum, and other materials. Compared to other beverage packages, poly pouches are lighter, less bulky, and take up less volume. They also have a higher product-to-package ratio than other packaging types (35:1, compared to 1:1 for glass and metal containers, 10:1 for plastic PET bottles, and 21:1 for aluminum cans<sup>115</sup>), and require about half of the energy required to produce, reducing CO<sub>2</sub> emissions (by up to 93%<sup>116</sup>) released during production and transport, and taking up less space in landfill.

Notwithstanding their environmental benefits, poly pouches are, only recently recyclable through the current waste management infrastructure. In BC they are collecting these for recycling, but in most of the country, when separated at the sorting facility, these containers typically end up in residuals that go to landfill or EfW facilities. Also, because of their flat shape and light weight, this material acts like paper in an MRF, flowing through with the paper stream, and can therefore contaminate the paper stream.<sup>117</sup>

In December 2019, a pilot program to recycle difficult-to-recycle plastics, including flexible packaging like juice pouches, was launched in London, Ontario. As part of the “Hefty Energy Bag pilot project”, 13,000 households across nine neighbourhoods were asked to place items like juice pouches and other single-use, hard-to-recycle plastics inside an orange plastic bag and place it next to their Blue Box on recycling day, where it’s collected, baled, and sent to end-markets. The goal of the pilot program is to find new markets for material that is otherwise would go in the garbage.<sup>118</sup> Potential market opportunities for poly pouch containers include engineered fuel, lumber core, fuel substitution in cement kilns, and other industrial uses.<sup>119</sup>

## Cups



Polystyrene or paper-based, plastic lined beverage cups—the kind you find in your local coffee shop—are consumed almost exclusively away-from-home. It is estimated that Canadians consume an estimated 1.5 billion of these coffee cups every year,<sup>120</sup> and unfortunately, most of them end up in landfill or as litter in the environment. None of Canada’s provinces or territories include these containers under deposit return legislation, and only a few municipal recycling programs accept them for recycling (some municipalities accept them for composting). There is no way to determine a recycling rate for these containers since their sales and returns are not tracked.

Made from paper fiber and coated with an additional plastic layer for waterproofing, recycling these cups is complex and challenging, as each layer must be separated from each other. The plastic lids make it even more challenging, because if they aren’t removed by the user, they don’t always come off in the recycling process and can end up contaminating the paper stream. In addition, the associated cost of shipping, given their large volume to weight ratio, is very prohibitive.

Although it remains expensive to do so, new technologies have allowed paper pulp processors to be able to turn cups into valuable pulp. After being sorted as mixed paper at a recycling facility, the cups and other polycoated papers are sent to a processor where they are shredded. They then enter a 'hydropulper', which agitates the material in a water bath to separate and then filter the layers. The extracted paper fibres are then used to make new paper products such as cereal boxes, egg cartons and more.<sup>121</sup>

## The Use of Recycled Content in Beverage Containers



Although the focus of this report is on beverage container collection, *Who Pays What* would be incomplete without a discussion on recycled content. ISO 14021 defines recycled content as “*the proportion, by mass, of recycled material in a product or packaging.*”

Using recycled material in the production of new beverage containers results in significant savings in energy and greenhouse gas emissions because it avoids all of the activities associated with extracting and processing virgin materials. While the material recovered from beverage containers can be used to produce a variety of new products, closed-loop recycling (e.g. where beverage cans are turned into new beverage cans) has been acknowledged as the most beneficial end-of-life scenario for most types of packaging. DRSs are especially suitable for closed-loop recycling because they collect containers separate from other materials, which avoids contamination and increases material quality.



## Recycled Content by Material Type

### Aluminum

Aluminum cans continue to have the highest recycled content rate of all packaging types. This is not surprising given their high recycling rate and the fact that the high value of the material itself means that, unlike glass or plastic bottles, the aluminum can is most often recycled back into a new aluminum can. Aluminum cans can also be recycled indefinitely without any loss in material or quality, and recycling the cans uses only 8% of the energy needed to tract the same amount of aluminum from virgin material.<sup>122</sup>

According to the Aluminum Association, aluminum cans contain an average of 73% recycled content, by weight.<sup>123</sup> Of this, 59% of the recycled content comes from used beverage can (UBC) scrap, 9% from non-UBC post-consumer scrap, and 31% from post-industrial scrap. These figures are based on the results of a 2016/2017 survey of the five main producers of aluminum can sheet in the U.S. – Alcoa, Constellium, Logan, Novelis, and Tri-Arrows. Determining the exact amount of recycled content in aluminum cans is difficult because unlike glass and plastic, the percentage of recycled material in a can is not determined by the company, but by the aluminum supplier. Adding to this ambiguity is the fact that different manufacturers use different standards to define the amount of recycled content in their products (for example, what constitutes post- or pre-consumer material).

### PET Plastic

Though the savings aren't as high as with aluminum, making PET bottles out of recycled resin uses roughly 2/3 less energy than creating virgin plastic bottles.<sup>124</sup> For every tonne of plastic produced, this is equivalent to the energy contained in about 11 barrels of oil.<sup>125</sup>

In the absence of recycled-content mandates, many companies have made voluntary commitments to use a certain percentage of recycled material within their products and packaging. A recent example of this can be seen in the U.S. Plastics Pact, a new initiative launched in August 2020 to redesign the way the U.S. uses plastics. Together, the members of the Plastics Pact – which comprises more than 60 brands, retailers, NGOs, and government agencies across the plastics value chain – aim to achieve a number of specific targets, one of which is to ensure the average proportion of recycledcontent or bio-based content in plastic packaging reaches 30% by 2025.<sup>126</sup>

However, for the most part, large manufacturers are not meeting their own self-proclaimed goals to increase use of rPET. A recent report from Greenpeace found that combined, five of the six largest global soft drink companies (Coca Cola did not participate) use an average of 6.6% recycled plastic in their bottles. Unfortunately, the key variable that determines the amount of recycled PET (rPET) used in production—besides quality, of course—is price. When energy costs are moderate to high, rPET is attractive to producers since it allows them to benefit from a slightly lower price. However, when the price of energy or virgin PET is low, the attractiveness of rPET diminishes, and companies will undoubtedly choose virgin plastic over recycled when procuring their raw materials.



According to a report published in July 2020 by More Recycling<sup>127</sup>, a minimum of 306.6 million kilograms of Canadian post-consumer (including commercial) plastic material was collected for recycling in 2018. Of this, PET bottles accounted for 37.8%. There are currently five PET reclaimers operational in Canada. In its 2018 PET Recycling Report, the National Association for PET Container Resources (NAPCOR) reported that fiber remains the dominant North American end use for recycled PET bottles at 47%, followed by sheet and film plastic (19%). The report states that the use of rPET in food and beverage bottles was only 21% in 2018. The remaining rPET was used in strapping (8%) and non-food bottles (4%).<sup>128</sup>

## Glass

Aside from being 100% recyclable, glass is one of the very few materials that can operate forever in a closed-loop system with essentially no loss of quality or purity. Using recycled cullet in the production of new glass has been acknowledged as the most beneficial end-of-life scenario for glass packaging, and for good reason. According to the Glass Packaging Institute (GPI), for every 10% recycled cullet used in the manufacturing process, energy savings of 2% to 3% are achieved.<sup>129</sup> The GHG emissions savings are also significant: for every 6 tons of recycled container glass used in the manufacturing process, one ton of CO<sub>2</sub> is avoided.<sup>130</sup>

In 2008, the GPI set a goal to use a minimum of 50% recycled material in glass bottles by 2013 (increasing to 60% by 2017). Neither of these goals have been met. Although different bottle manufacturers have varying recycled-content levels, the GPI estimates that the average glass container sold in North America in 2014 (most recent year for which data is available) has a recycled content of 33.89%.<sup>131</sup> The Aluminum Association estimates that the rate is even lower, at 23%.<sup>132</sup> It's worth noting that both of these estimates are significantly lower than the Canadian brewery industry's refillable ISB, which is estimated to contain an average of 70% recycled content.<sup>133</sup>

At the global scale, the average percentage of recycled content is lower than it is in Canada, largely because there is a lack of high-quality cullet available to meet manufacturer demands for new glass containers.

## Measures for Increasing Recycled Content in Beverage Packaging

### Minimum Recycled Content Laws

One of the most effective ways to increase the demand for secondary materials is through recycled content legislation. Recycled content laws require that a minimum percentage of recycled material be included in certain new products and packaging.

In Canada, while there are no such laws yet in place, the federal government recently announced (in October 2020) details of its proposed approach to the regulation of plastics, which includes, among other things, establishing recycled-content requirements for plastic products and packaging.<sup>134</sup> The proposed regulatory measures, outlined in the government's *Discussion Paper: A Proposed Integrated Management Approach to Plastic Products to Prevent Waste and Pollution*, will establish a minimum percentage of recycled content as an outcome-based requirement that producers would need to meet; measuring and reporting rules aimed at evaluating a product's conformity with any recycled-content claims; and technical guidelines and related tools to help producers meet their requirements, such as standards and specifications. As noted in the Discussion Paper, Canada's approach for requiring recycled content, including the approach for measuring and reporting on it, are both under development. Further details regarding the minimum percentage of recycled content that would be required, which products and/or sectors will have to meet these requirements, and possible methods to verify compliance remain unknown.

In Europe, the European Union's new Single-Use Plastics Directive includes a binding target of at least 25% recycled content in PET beverage bottles by 2025 and a target of 30% recycled content by 2030 for all plastic bottles.

In the U.S., one of the oldest and best-known examples of a recycled content mandate is California's Rigid Plastic Packaging Container Law. The law, enacted in 1991, mandates that product manufacturers use 25% post-consumer recycled content in rigid plastic containers unless the containers are reused or refilled at least five times, or if they are light weighted by 10%. Penalties for non-compliance range up to \$50,000 per violation for a maximum of \$100,000 per product manufacturer. The state of Oregon has a similar law in place since 1995; Oregon's Rigid Container Recycling Law requires use of 25% postconsumer recycled content in rigid plastic containers (e.g., soda bottles, various tubs and pails, jars, etc.) unless the recycling rate for plastic containers in the state is at least 25% (certain food and medical packaging, source-reduced containers, and some others are exempt).

With respect to beverage containers specifically, in September 2020, California lawmakers approved legislation (Assembly Bill 793) that will require all plastic beverage containers under the state's DRS to contain a specified amount of post-consumer resin, beginning with a minimum of 15% by 2022, and increasing to 25% in 2025 and 50% in 2030.<sup>135</sup> The new law, which is the most ambitious recycled-content mandate in the world (exceeding the EU's 30% recycled content requirement by 2030), comes after prior attempts were vetoed in California as well as in Washington, and includes penalties for manufacturers who fail to achieve the targets—20-cents for each pound of PCR they fall short by.<sup>136</sup>

Momentum around minimum recycled content in beverage containers is also picking up in New Jersey, where new legislation is being introduced to establish a 15% standard for plastic beverage bottles; starting one year after the bill's effective date, this minimum would increase by 5% every 3 years until a minimum recycled content rate of 50% is achieved.<sup>137</sup>

## Economic Incentives

Another way to encourage the use of more recycled content is through the use of levies or taxes. In the U.K., for example, a new plastic packaging tax will see companies paying £200 per tonne of packaging made from less than 30% recycled plastic from April 2022.<sup>138</sup> The U.K. government has stated that “the tax will provide a clear economic incentive for businesses to use recycled material in the production of plastic packaging, which will create greater demand for this material and in turn stimulate increased levels of recycling and collection of plastic waste...”<sup>139</sup>

Another form of tax is one that could be specifically applied to plastic that is not recycled, such as the one recently agreed to by EU leaders. From January 1, 2021, each European Union member state will be required to pay a levy of 80-euro cents per kilogram of non-recycled plastic packaging waste to the European Commission. The Commission has presented the tax as a contribution to the EU budget designed to encourage member states to increase recycling from plastic scrap. Further details regarding the tax still need to be worked out in a specific law and approved by the European Parliament and Council.<sup>140</sup>

## Other Measures

Other measures that can be used to promote markets for secondary material include:

- labeling laws that require products to be labeled with their recycled-content percentage;
- low-interest loan programs offered to businesses that produce recycled-content materials and products, to site new facilities or expand existing operations;
- individual producer responsibility, whereby producers are made 100% financially and physically responsible for the end-of-life management of their products;
- mandated minimum recycling rates;
- government procurement policies to purchase certain recycled-content products; and,
- in the case of glass, mandatory color-separation at source.

## Part 6: Economic and Environmental Benefits

### Socio-Economic Benefits

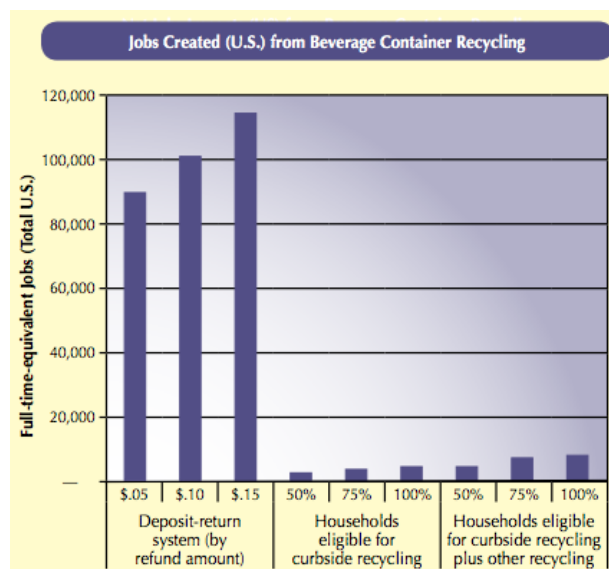
Although they are sometimes difficult to quantify, the socio-economic benefits associated with beverage container recycling programs must be considered if we are to understand the “full picture” of beverage container recovery in Canada. This section provides a brief overview of some of the social and economic impacts of DRS.

#### Job Creation

In 2010, the Container Recycling Institute (CRI) commissioned CM Consulting and Dr. Jeffrey Morris of Sound Resource Management to research the impacts of beverage container recycling on domestic jobs. The study entitled “Returning to Work: Understanding the Jobs Impacts From Different Methods of Recycling Beverage Containers,” measured the net gains in full-time equivalent (FTE) domestic jobs when beverage containers made of glass, aluminum, and PET are recovered through DRS programs, curbside recycling, and enhanced curbside recycling, versus landfill disposal.<sup>141</sup>

The study found that, depending on system parameters and system performance, **DRSs create 11 to 38 times more jobs than a curbside recycling system for beverage containers** (see Figure 37).

Another key finding was that DRS creates at least five times more jobs in container collection, sorting, and transport than in garbage collecting, hauling and landfilling.



**Figure 37 Jobs Created (U.S.) from Beverage Container Recycling**

The principal reason why DRSs create the most jobs among leading systems for beverage container recycling is that they recover more of the target material. Because of the economic incentive to recycle, DRSs recover approximately 3 times more beverage container material than the closest competitor, curbside recycling (if we look at Canada specifically, the average recycling rate for beverage containers in DRS programs is 82% in 2019, compared to 46% for Ontario’s curbside program). Maximizing recovery rates ensures the greatest volume of containers moves through each stage of the recovery process (collection, transportation, processing, etc.) and gains the associated jobs. As evidence of this, the *Returning to Work* study found that DRSs require 1.5 to 4.0 times as many employees for these tasks as do curbside systems. Specifically, it found that approximately 7.34 FTEs

are required per 1,000 tons of material collected in a DRS, compared to 4.46 FTEs in a manual curbside system and 1.66 FTEs in an automated curbside system. In addition, because the material collected via DRS is of a much higher quality than that collected via curbside systems, there is a lower amount of yield loss (contamination) to disposal, where there are fewer jobs, tonne for tonne.

Of course, the number of jobs created by a DRS depends on a number of factors, including the types of beverages and containers included in the system, the number and convenience level of redemption points, and the deposit value. High-performing DRSs operated by non-profit entities that implement best practices, such as employing a return-to-retail model and ensuring the deposit value is set at an effective level, will collect higher quantities of materials for bottle-to-bottle recycling than industry-operated schemes, whose best interest is to keep return rates low in order to maximize profits. The number of jobs created by a DRS will also vary depending on the degree of automation introduced. Automation (through the use of reverse vending machines (RVMs)) can serve to introduce or develop high tech jobs in design, manufacture and servicing of these various machines.

It’s important to note that the *Returning to Work* study summarizes only a portion of the benefits related to job creation. Not included in this analysis are all of the job increases that arise from businesses that supply goods and services to the recycling business (“indirect jobs”), or businesses that provide goods and services to the individuals with the direct jobs (“induced jobs”). Both indirect and induced effects have a multiplier effect on the direct jobs from recycling, which further emphasize the job creation benefits of DRS.

The findings of the *Returning to Work* study are consistent with a number of more recent studies that also looked at the impact of increased recycling on jobs. Appendix C presents a summary of the key findings of 13 studies and reports (including five in Canada) that examined the job impacts of implementing (or expanding) a DRS for beverage containers. Despite differences in scope and

methodology, every study shows that DRSs not only have a positive impact on the environment, but on jobs as well.

## Contribution to GDP

The economic impact of DRSs extends beyond job creation; these programs also play a key role in contributing to the wider economy. Gross Domestic Product (GDP) is the most common indicator used to measure economic activity. An economic impact study of Nova Scotia's DRS found that the program contributed over \$32.7 million to the provincial economy in 2016, and over \$496 million since the program began. It also generated \$7.2 million in provincial revenue (in 2016).<sup>142</sup>

Another way to measure the wider economic impact of a DRS on overall GDP of a region is using the Gross Value Added (GVA) approach. The June 2019 report *Better Together: How a Deposit Return System Will Complement Ontario's Blue Box Program and Enhance the Circular Economy* estimates that the GVA to the Ontario economy of the current system, where non-alcoholic beverage containers are recovered as part of the curbside Blue Box program, is approximately \$709.7 million, with the government recovering \$58.8 million in tax revenue. Under a new system where non-alcoholic containers would be recovered via a DRS, the estimated GVA would be \$798.5 million, with a total tax potential of \$66.4 million.<sup>143</sup>

Another study, released in June 2017, estimated the broader economic impact associated with Massachusetts' Bottle Bill. The study found that Massachusetts' DRS contributes anywhere from USD\$85 million to USD\$151 million to the state's economy, including direct, indirect, and induced effects.<sup>144</sup> A similar study published by Eunomia Research and Consulting in 2019 titled *Employment and Economic Impact of Container Deposits – New York* stated that in New York's current DRS, the GVA – including indirect and induced impacts – is approximately \$272 million, and that about \$15 million in taxes is generated for the government through the jobs associated with the system. The study estimated that expanding the scope of the program to include other drinks and increasing the deposit to 10-cents would increase the GVA to about \$374 million, a 38% increase. As a result, the tax revenue for the government would also increase to about \$31 million.<sup>145</sup>

## Cost Savings for Municipalities

One of the main arguments used by opponents of DRS is that these systems harm municipalities by taking high-value recyclables like aluminum away from the municipal recycling streams. What opponents often fail to show are the cost savings that accrue to municipalities as a result of DRS, which can be significant. This includes savings resulting from the reduced or avoided costs of collection, treatment, and disposal by the municipal waste management system.

The primary driver of municipal waste management costs is the volume of collected waste and recyclables. This is due to the fact that the most expensive component of the municipal waste management system has to do with collection frequency, which is determined by the time it takes for garbage/recycling bins to fill up. Given their high volume to weight ratio, beverage containers cause bins to fill up quickly, and therefore demand more frequent collection. When beverage containers are collected via a DRS, there is less material entering the municipal system, which means collection

trucks fill up less quickly and do not need to leave collection rounds as frequently to go and unload their contents. The result is that collection trucks can serve more households in the same amount of time, which can translate into a reduction in the amount of vehicle and staff resources required to undertake collection work.

In addition to the impacts on collection costs, a DRS leads to savings on the costs of treatment/disposal of residual waste. Fewer beverage containers in residual waste means less material is sent to landfill, incineration, or other treatment. Less collected recyclables can also lead to a reduction in costs associated with sorting of collected materials, especially if municipalities collect recyclables in a mixed stream. Sorting material at a material recovery facility (MRF) is often a cost to municipalities (or their contractors), and if a DRS reduces the amount of recyclables collected, this reduces the tonnage on which such costs are incurred.

Cost savings from reduced litter clean-up are another benefit to municipalities that is often overlooked. It is important to note that estimating savings from litter reduction requires knowledge of the contribution of beverage packaging to total litter. This, in turn, depends on which metric is used. By piece count, beverage containers are only a small proportion of the entire litter stream, but when measured by volume, they are a significant contributor. Other factors to consider when estimating the cost savings on litter-clean up services are: estimated return rates (influenced by deposit level), ease of return (convenience), and whether litter is picked up by local authority contractors or is being left as uncollected litter.<sup>146</sup> There are also non-quantifiable benefits associated with litter reduction that should be monetized and included in the overall analysis of cost savings. This includes, for example, the value that people place on a litter-free environment, which can be measured by the amount people are “willing to pay” for reductions in litter.

Appendix B presents a compilation of over 30 studies that examined the quantifiable costs and benefits to municipalities of implementing (or expanding) a DRS for beverage containers. It is noteworthy that although different in scope, location, author, and year, each study reports significant net savings to municipalities, even after lost material revenues are taken into account.

### **Charities and Community Organizations**

In several DRSs across Canada, consumers who return their empty beverage containers for recycling have a choice of what to do with their refunded deposits; they can either keep it for themselves or they can choose to donate it to charity. The latter could be done through an option on reverse vending machines (RVMs) to donate to one or a selection of registered charities, or by donating empty containers directly to a charitable organisation, who would then return the containers to a collection point to collect the deposits. In Alberta, a recent (2018) survey carried out by the Beverage Container Management Board (BCMB) found that among the small percentage of Albertans that say they never return beverage containers to a depot, 24% indicated they donate the containers to charity instead.

Since the near-total shut down of businesses, schools, and other institutions around the world in mid-March 2020, many charities and other social purpose organisations have reported a drastic rise in



service demand for their services from vulnerable communities due to COVID-19 (e.g., food banks, women's shelters, organizations supporting isolated seniors, mental health crisis lines, etc.), while at the same time they're seeing a decrease in their revenues and a drop in the number of volunteers they can rely on. In Canada alone, it's been estimated that donations will decline between CAD\$4.2 billion and \$6.3 billion.<sup>147</sup>

There is no doubt that charities and other non-profits can benefit from the additional revenues that could be derived from a DRS, particularly during a time when more disadvantaged-people will rely on those organisations. Below are some examples of how DRSs in Canada play a role in this sector:

- In Alberta, the Alberta Bottle Depot Association (ABDA) has implemented the 'Alberta Cans for Kids' program to raise funds for foundations dedicated to providing medical needs for children (i.e. Ronald McDonald House, Stollery Children's Hospital Foundation, and Alberta Children's Hospital Foundation). Since 2009, customers have raised over \$1,000,000 for the program by donating their empty beverage containers and deposit refunds.<sup>148</sup>
- In 2018-19, SARCAN collaborated with Telemiracle to host Saskatchewan's Biggest Bottle Drive.<sup>149</sup> The campaign encouraged residents to donate their empty beverage containers and deposit refunds to Telemiracle's Drop & Go account in the month of February to help support the charity, which helps to provide residents with medical travel assistance and specialized mobility and medical equipment.<sup>150</sup>
- In Ontario, The Beer Store (TBS)'s annual *Returns for Leukemia Bottle Drive* has raised over \$18 million over the last 14 years to support Canadians affected by blood cancers.<sup>151</sup> Over \$1.6 million was raised in 2019 alone. The fundraiser, which is a combined effort of TBS and United Food and Commercial Workers Local 12R24, invites customers to donate all or a portion of their empty bottles (or cash), with 100% of the refunds going directly to the Leukemia and Lymphoma Society of Canada (LLSC). The LLSC uses the money to fund important research, develop new treatments, or to directly provide support for patients and their families. TBS is involved in a number of other community fundraising initiatives as well, including the Roger's House Bottle Drive (which provides support, care and refuge for children undergoing treatment at the Children's Hospital of Eastern Ontario), and annual bottle drives for Habitat for Humanity, the Terry Fox Foundation, and the Juravinski Cancer Centre.

### Supplemental Income for Low/No Income Individuals

In provinces that have them, many people rely on beverage container deposits as a means to earn or supplement their income. Sometimes referred to as "binners", many of these people are economically disadvantaged and, in many cases, disengaged from the workforce. Without revenue from the deposits, many would have difficulty meeting their basic needs.

In B.C., the Vancouver-based Bidders' Project has reported huge success in improving the quality of life of its members and providing income to bidders through initiatives such as its waste sorting program. According to a recent survey that was carried out to understand the circumstances of bidders<sup>152</sup>, more than half of bidders were homeless and about 90% reported being either



occasionally employed (43.6%) or fully unemployed (48.7%), and therefore reliant on waste recovery either as their primary means of income or to supplement the government social assistance. In one online article published in 2018, one Vancouver binner stated that he made, on average, anywhere between \$20 to \$60 per day, by collecting empty deposit containers.<sup>153</sup>

In Quebec, it is estimated that close to 2,000 binners in Montreal go through waste and recycling bins in order to salvage discarded beer and soda containers. According to a study by Groupe interuniversitaire et interdisciplinaire de recherche sur l'emploi, la pauvreté et la protection sociale (GIREPS), University of Montreal, for 44% of these people the money collected through this activity is used exclusively to cover their basic needs, including rent, food, transportation, etc.<sup>154</sup> To make the process easier for them, the Coop Les Valoristes has developed a 'Binnors Hook' that can be installed outside residence and businesses next to dumpsters. The hook is meant to hold a bag of refundable beverage containers that binners would otherwise have to root around for, and provides them with quicker and easier access to bottles and cans. The idea for the hook originally comes from Vancouver where, as of December 2018, 154 hooks had been installed across the city. The city of Calgary is also piloting the program.<sup>155</sup>

## Environmental Benefits

Traditionally, the performance of beverage container recycling programs has been measured using operational and financial indicators, such as the number of containers collected for recycling. Today, more and more system operators are beginning to measure and report on the environmental impacts of their programs. This includes, for example, the amount of energy saved through the recycling of beverage containers or the amount of GHG emissions avoided. These indicators provide a more comprehensive picture of the overall impacts of beverage container recovery in Canada.

A recent study that assessed the benefits associated with Nova Scotia's DRS found that the landfill space saved by recycling beverage containers in 2016 was 7,660m<sup>3</sup>. The 20-year cumulative total was estimated at 129,632m<sup>3</sup>, which is equivalent to 52 Olympic-sized swimming pools. With landfill space at a premium these days, this is a particularly relevant indicator for measuring the environmental benefits of DRSs. The study also found that recycling beverage containers in Nova Scotia saves 38,709 tonnes of GHG emissions each year, which is equivalent to removing more than 3,800 cars from the road. The amount of electricity saved by not having to produce new containers was estimated at 208 million kW in 2016, enough electricity to power 18,842 Nova Scotia homes.<sup>156</sup>

In B.C., Encorp reported that its activities in 2019 contributed to the reduction of approximately 104,759 tonnes of CO<sub>2</sub> equivalent being released into the atmosphere. Not surprisingly, about half of these reductions (55,914 tonnes of CO<sub>2</sub>) were achieved through the recovery and recycling of aluminum beverage containers, which were turned back into sheet stock for new cans. The recycling of glass containers resulted in 26,138 tonnes of CO<sub>2</sub> reduced (25% of total reductions), while the recycling of plastic containers reduced CO<sub>2</sub> emissions by 12,511 tonnes (12% of total reductions). In terms of energy savings, the recycling of aluminum cans offered the greatest savings at 93%, followed by plastic (86%) and bi-metal (82%).<sup>157</sup>

The environmental benefits of Ontario's DRS are also well documented. According to TBS, more than 200,000 metric tonnes of CO<sub>2</sub>e was avoided through the reuse and recycling of wine, spirit, and beer containers in 2019. Again, the majority (63%) of these emission reductions are the result of recycling aluminum cans. The program also resulted in 2.5 million GJ of avoided energy consumption. Almost half of these savings are the result of reusing and recycling glass bottles.<sup>158</sup>

According to the Government of the Northwest Territories, 2,427 tonnes of CO<sub>2</sub>e were avoided as a result of their beverage container program in 2018-2019. Again, the recycling of aluminum cans accounted for most 68%) of these emissions savings, followed by the recycling of Tetra Pak and Gable Top containers (17% of GHG emission savings).<sup>159</sup>

In addition to the above, Environment Canada and the U.S. Environmental Protection Agency (EPA) have undertaken extensive life-cycle analyses to measure the inputs and outputs, from cradle to grave, of recycling various materials. The results of these studies can be applied to beverage container diversion to quantify the environmental benefits associated with container recycling in each province. Results are summarized in Table 16. Note that in Quebec, the tonnes recycled are based on real 2019 numbers from Quebec's DRS, and estimated numbers based on previous results for the curbside collection program. In New Brunswick, the numbers are based only on results from the DRS program for non-alcohol beverages, as ANBL data was not available for this report.

**Table 16 Environmental Benefits Realized from Recycling Beverage Containers in Canada (2019)**

Province	Avoided emissions (MTCO <sub>2</sub> e)	Equivalent number of cars taken off the road.	Total GJs saved	Avoided crude oil extraction (in barrels)	Value of crude oil saved (based on \$64.36/barrel) (avg price in 2019, Statista)
<b>British Columbia</b>	183.917	39.982	2,728,500	446,563	28,740,793
<b>Alberta</b>	179.070	38.928	2,925,441	478,796	30,815,280
<b>Saskatchewan</b>	40.505	8.805	680,442	111,365	7,167,469
<b>Manitoba</b>	16.034	3.486	763,649	124,983	8,043,935
<b>Ontario</b>	390.515	84.894	6,160,232	1,008,221	64,889,126
<b>Quebec</b>	204.380	44.430	2,844,807	465,598	29,965,918
<b>New Brunswick</b>	9.761	2.122	166,162	27,195	1,750,274
<b>Nova Scotia</b>	38.521	8.374	671,412	109,887	7,072,351
<b>Newfoundland</b>	21.484	4.670	390,351	63,887	4,111,778

<b>Prince Edward Island</b>	4.481	974	119.817	19.610	1.262.099
<b>Yukon</b>	-	-	-	-	-
<b>Northwest Territories</b>	2.120	461	34.290	5.612	361.194
<b>TOTAL</b>	<b>1.090.787</b>	<b>237.128</b>	<b>17.485.101</b>	<b>2.861.719</b>	<b>184.180.217</b>

CM Consulting calculated the total avoided emissions (and equivalent cars off the road) by multiplying the tonnage recovered by container type with an emissions reduction factor for each material type. CM Consulting also calculated the total avoided energy used (and equivalent barrels of oil avoided) by multiplying the tonnage recovered by container type with an energy savings factor for each material type. See Table 17 for the results.

**Table 17 Provincial and National Avoied Energy Used, by Material, 2019**

Province	Aluminum	Steel	PET	HDPE	Glass Recycling	Glass Reuse	Total GJs saved	Avoided crude oil extraction (in barrels)	Value of crude oil saved
<b>Energy Factor</b>	<b>152,76</b>	<b>19,97</b>	<b>31,87</b>	<b>50,20</b>	<b>2,13</b>	<b>6,90</b>			
British Columbia	2.144.292	4.433	337.631	-	160.116	82.027	<b>2.728.500</b>	446.563	\$ 28.740.793
Alberta	2.043.318	3.576	623.434	-	114.147	140.966	<b>2.925.441</b>	478.796	\$ 30.815.280
Saskatchewan	493.808	535	129.971	-	19.089	37.038	<b>680.442</b>	111.365	\$ 7.167.469
Manitoba	577.423	-	132.291	709	1.154	52.071	<b>763.649</b>	124.983	\$ 8.043.935
Ontario	3.838.101	-	892.038	78.367	349.370	1.002.356	<b>6.160.232</b>	1.008.221	\$ 64.889.126
Quebec	1.654.047	-	561.521	-	286.805	342.434	<b>2.844.807</b>	465.598	\$ 29.965.918
New Brunswick	130.390	424	725	-	2.393	32.231	<b>166.162</b>	27.195	\$ 1.750.274
Nova Scotia	413.492	1.476	178.821	4.168	20.019	53.435	<b>671.412</b>	109.887	\$ 7.072.351
Newfoundland	168.205	309	75.810	-	13.163	132.864	<b>390.351</b>	63.887	\$ 4.111.778
Prince Edward Island	89.428	-	15.962	-	4.016	10.411	<b>119.817</b>	19.610	\$ 1.262.099
Yukon	-	-	-	-	-	-	-	-	\$ -
Northwest Territories	26.580	220	4.175	-	1.086	2.229	<b>34.290</b>	5.612	\$ 361.194
<b>TOTAL</b>	<b>11.579.084</b>	<b>10.974</b>	<b>2.952.380</b>	<b>83.244</b>	<b>971.358</b>	<b>1.888.062</b>	<b>17.485.101</b>	<b>2.861.719</b>	<b>\$ 184.180.217</b>
Avoided crude oil extraction (in barrels)	1.895.104	1.796	483.205	13.624	158.978	309.012	2.861.719		
Value of crude oil saved	\$ 121.968.875	\$ 115.595	\$ 31.099.043	\$ 876.860	\$ 10.231.849	\$ 19.887.996	\$ 184.180.217		

**Notes:**

- All tonnage data are based on reported tonnes by program and container types or by returns data multiplied by unit weights.
- Refillable bottles tonnage is calculated as follows: average container weight of 263 grams multiplied by the number of units recovered. This number is then multiplied by 14/15, which represents an average of 15 individual trips per refillable bottle. For the remaining 15<sup>th</sup> trip (the last trip), it is assumed that the glass is being recycled.
- Energy saving factors were taken from the following report: Determination of the Impact of Waste Management Activities on Greenhouse Gas Emissions: 2005 Update—Final Report, Environment Canada & Natural Resources Canada, October 2005.

- Emissions reduction factors from <https://www.epa.gov/warm/versions-waste-reductionmodel-warm#WARM%20Tool%20V14> accessed July 6, 2016.
- A typical passenger vehicle emits about 4.67 metric tons of CO<sub>2</sub>e per year <Source: [www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references](http://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references) (accessed October 12, 2017).>
- One barrel of crude oil is equal to about 6.1 GJ of energy (1 barrel of crude = 5.848 Mbtu = 6.17 GJ). <Source: [www.oregon.gov/energy/cons/pages/industry/ecf.aspx](http://www.oregon.gov/energy/cons/pages/industry/ecf.aspx)>
- The price of Brent crude oil averaged USD\$64.36/barrel in 2019.  
<https://www.statista.com/statistics/262860/uk-brent-crude-oil-price-changes-since-1976/>

The calculations used to produce Table 16 and Table 17 are available in Appendix D of this report. To receive a copy of Appendix D and of all the associated supporting data for this section, please contact us at [jason@cmconsultinginc.com](mailto:jason@cmconsultinginc.com).

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## Appendix A

### Methodology for Calculating Recycling Rates in Ontario

The beverage container recycling rates are derived from Stewardship Ontario (SO) tonnage and collection rates. Then, a loss rate from contamination is applied. The loss rate for aluminum is assumed to be 2%, for PET plastic 22%, and for glass 40% (note that this only applies to curbside collected non-alcohol beverage glass).

The collection rate for aseptic and gable top non-alcoholic beverage containers is based on the rate reported by SO for 2019. The AfH sales and recovery rates are not included in this summary.

## Appendix B

### Studies on the Impact of DRS on Municipal Budgets

Table 18 Summary of Studies on Impact of DRS on Municipal Budgets

	Study Title, Author and Year	Summary of Findings
1	<b>Better Together: How a Deposit Return System Will Complement Ontario's Blue Box Program and Enhance the Circular Economy</b> Eunomia Research and Consulting in association with Reloop Platform, 2019 <sup>[i]</sup>	This study looked at the financial impact on all stakeholders, from a combination of a DRS for non-alcoholic beverages and optimized household recycling. Collectively, it found that municipalities across Ontario will save approximately \$12.87M. This represents the difference between the current system cost and the cost of the system in the future: <ul style="list-style-type: none"> <li>• Cost of current system (curbside collection only): \$312.94M</li> <li>• Cost of future service (with a DRS for non-alcoholic beverages and a move to every other week curbside collection): \$300.07M</li> </ul>
2	<b>A Deposit Return Scheme for Scotland: Full Business and Regulatory Impact Assessment</b> Scottish Government, 2019 <sup>[ii]</sup>	<ul style="list-style-type: none"> <li>• Reduced revenue from sale of materials and increased sorting costs as a consequence of valuable materials being removed: £46.3M</li> <li>• Savings from handling reduced tonnage, lower disposal costs and waste and litter collection efficiencies: £237.5M</li> <li>• Overall net benefit to local authorities: £191.1M</li> </ul>
3	<b>Bottle Bill Expansion: The Numbers Behind Governor Cuomo's Bottle Bill Proposal</b> Eunomia Research and Consulting, 2019 <sup>[iii]</sup>	<ul style="list-style-type: none"> <li>• \$6.1M loss in curbside revenue</li> <li>• \$4.3M savings in avoided disposal costs to municipalities</li> <li>• \$7.2M additional value of material captured from disposal as a result of the DRS</li> <li>• Net annual savings: \$5.4M (does not include potential collection cost benefits from reduced tonnage or reduced MRF operating and processing costs)</li> </ul>
4	<b>A Deposit Refund System for the Czech Republic</b> Eunomia Research and Consulting, 2019 <sup>[iv]</sup>	<ul style="list-style-type: none"> <li>• Municipalities will save at least €113,000 (if only PET is included in the DRS) or €250,000 (if the DRS includes PET and metal) in disposal costs. These savings could increase to €345,000 (PET DRS) or</li> </ul>

Study Title, Author and Year	Summary of Findings
	<p>€768,000 (PET &amp; metal DRS) if the landfill tax increases, or a landfill ban is introduced.</p> <ul style="list-style-type: none"> <li>• Municipalities are very likely to share some of the €6,949,000 (PET only) or €7,009,000 (PET and metal) collection cost savings.</li> <li>• Likely but undermined savings from reduced litter clean-up costs</li> </ul>
<p><b>5 Real Price of Deposit: Analysis of the Introduction of the Deposit-Refund System for Single-Use Beverage Packaging in the Slovak Republic</b> Institute for Environmental Policy, 2018<sup>[vi]</sup></p>	<ul style="list-style-type: none"> <li>• Avoided costs of litter removal: €628,895/year to €2,710,086/year</li> <li>• Avoided costs of landfilling mixed municipal waste: €53,739/year to €689,655/year</li> <li>• Avoided costs of separate collection of waste: €6,566,099</li> <li>• Lost revenues from the sale of PET material in separate collection: €5,720,893</li> <li>• Lost revenues from the sale of aluminum cans in separate collection: €1,825,354</li> </ul>
<p><b>6 Container Deposit Scheme – Consultation Regulation Impact Statement</b> ACT Government, Transport Canberra and City Services Directorate, 2017<sup>[vii]</sup></p>	<ul style="list-style-type: none"> <li>• The benefits transferred from the ACT Government in its capacity as a provider of municipal services to customers of those services are estimated to be \$9.7M over the 20-year period.</li> </ul>
<p><b>7 Consultation Regulation Impact Statement – New South Wales Container Deposit Scheme (NSW CDS)</b> NSW Environment Protection Authority, 2017<sup>[viii]</sup></p>	<ul style="list-style-type: none"> <li>• Avoided waste collection and transport costs: The benefits transferred from local government to customers are estimated to be \$272M over a 20-year period.</li> </ul>
<p><b>8 Costs and Impacts of a Deposit on Cans and Small Bottles in the Netherlands – Extended Summary</b> CE Delft, 2017<sup>[ix]</sup></p>	<ul style="list-style-type: none"> <li>• Cost savings on current collection systems: €5.5 to €8.0 million</li> <li>• Maximum reduction in costs of litter clean-up: Approx. €80M (up to 3 eurocent per packaging)</li> <li>• Cost savings on emptying public litter bins: €3 to €10 million (0.10 to 0.37 eurocent per packaging)</li> </ul>
<p><b>9 Deposit Return Evidence Summary</b> Zero Waste Scotland, 2017<sup>[x]</sup></p>	<ul style="list-style-type: none"> <li>• Residual disposal savings: £2.6M to £6.2M</li> <li>• Recyclate savings costs: £2.8M to £3M (assuming no change in gate fees or material revenue)</li> <li>• Aggregated treatment and management costs savings: £5.3M to £9.2M</li> </ul>
<p><b>10 Cost-Benefit Analysis of a Container Deposit Scheme</b> Sapere Research Group (prepared for the Auckland Council), 2017<sup>[xi]</sup></p>	<ul style="list-style-type: none"> <li>• Councils could expect to save \$12.5M-\$20.9M/year in collection costs (\$2,645 to \$4,424 per 1,000 pop.)<sup>[xii]</sup></li> <li>• Reduced litter collection and public space maintenance costs: \$2.9M-\$4.4M (\$614 to \$931 per 1,000 pop.)</li> <li>• Reduced landfill disposal costs: \$1.3M-\$3.7M (\$275 to \$866 per 1,000 pop.)</li> </ul>

	Study Title, Author and Year	Summary of Findings
11	<b>Impacts of a Deposit Refund System for One-way Beverage Packaging on Local Authority Waste Services</b> Eunomia Research and Consulting Ltd. (Report Commissioned by Keep Britain Tidy, Campaign to Protect Rural England, Marine Conservation Society, Surfers Against Sewage, ReLoop Platform, Melissa and Stephen Murdoch), 2017 <sup>[xii]</sup>	<ul style="list-style-type: none"> <li>Estimated net annual savings: £35M/year (£1.47/household)</li> <li>Impact on collection costs: Savings of up to £152,000/year (£1.65/household)</li> <li>Impact on sorting costs: Savings of £800 to £220,000/year (£0.01 to £3.14/household)</li> <li>Lost materials revenue: £58,000 to £160,000/year (£0.67 to £1.63/household)</li> <li>Impact on residual waste treatment/disposal costs: estimated savings of £31,000 to £555,000/year (£0.54 to £4.55/household)</li> <li>Savings on street cleaning costs: for more urban authorities, £25,000 to £50,000/year (£0.22 to £0.45/household). Rural authorities may see smaller savings.</li> </ul>
12	<b>Massachusetts Container Deposit Return System – 2016 Employment and Economic Impacts in the Commonwealth</b> Container Recycling Institute, 2016 <sup>[xiii]</sup>	<ul style="list-style-type: none"> <li>Absent the current bottle bill, cities and towns across the state would face an additional cost on the order of \$20 million in collection, sorting, and disposal of containers currently managed under the system.</li> </ul>
13	<b>Summary Review of the Impacts of Container Deposit Schemes on Kerbside Recycling and Local Government in Australia</b> <sup>[xiv]</sup> MRA Consulting Group (prepared for Container Deposit System Operators (CDSO)), 2016	<ul style="list-style-type: none"> <li>Reduced landfill gate fees: \$10.1M/year (\$5,465 per 1,000 pop.)<sup>[xv]</sup></li> <li>Increased material value: \$23M/year to \$62M/year (NSW only)</li> <li>Reduced collection costs: undetermined</li> <li>Reduced litter collection costs: \$59M/year (\$31,922 per 1,000 pop.)</li> </ul>
14	<b>The Incentive to Recycle: The Case for a Container Deposit System in New Zealand</b> <sup>[xvi]</sup> Envision New Zealand Ltd., 2015	<ul style="list-style-type: none"> <li>Refuse transport/ disposal savings: significant but undetermined</li> <li>Refuse collection savings: \$26.7M/year to \$40.1M/year (\$5,918 to \$8,887 per 1,000 pop.)<sup>[xvii]</sup></li> <li>Reduced litter control costs: undetermined</li> <li>Reduced kerbside collection costs: up to \$19.26/household/year</li> </ul>
15	<b>A Scottish Deposit Refund System</b> <sup>[xviii]</sup> Eunomia Research & Consulting (prepared for Zero Waste Scotland), 2015	Net annual savings (from reduced collection and disposal costs) of: <ul style="list-style-type: none"> <li>£5M for local authority kerbside services (£931 per 1,000 pop.)<sup>[xix]</sup></li> <li>£7M for reduced litter (£1,303 per 1,000 pop.)</li> </ul>
16	<b>Cost Benefit Study of a Tasmanian Container Deposit System</b> <sup>[xx]</sup> Marsden Jacob Associates (prepared for the Department	From 2014/15 to 2034/35, a CDS would benefit local government by \$28M NPV (Net Present Value) (\$54,139 per 1,000 pop.) <sup>[xxi]</sup> through the receipt of refunds on collected material & avoidance of some costs associated with existing kerbside recycling (undetermined).

	Study Title, Author and Year	Summary of Findings
	of Primary Industries, Parks, Water and the Environment (DPIPWE)), 2014	
17	<b>Cost-Benefit Analysis of a Recycling Refund System in Minnesota</b> <sup>[xxii]</sup> Reclay StewardEdge (prepared for Minnesota Pollution Control Agency (MPCA)), 2014	Estimated net annual savings for local governments: <ul style="list-style-type: none"> <li>• \$5.6M (\$0.27/household/month) (\$1,027 per 1,000 pop.)<sup>[xxiii]</sup></li> <li>• Undetermined savings from reduced litter clean-up costs</li> </ul>
18	<b>Executive Summary: Implementing a Deposit and Return Scheme in Catalonia – Economic Opportunities for Municipalities</b> <sup>[xxiv]</sup> Retorna, 2014	<ul style="list-style-type: none"> <li>• Reduced treatment costs: final treatment (€6,029,686, or €803 per 1,000 pop.)<sup>[xxv]</sup>; Waste Disposal Tax (€607,170, or €81 per 1,000 pop.); OFMSW (€565,042, €75 per 1,000 pop.)</li> <li>• Return of the waste disposal tax/collection fee: €1,105,523 (€147 per 1,000 pop.)</li> <li>• Reduced street cleaning costs: €13,175,737/year (€1,755 per 1,000 pop.)</li> <li>• Reduced beach cleaning costs: €580,481/year (€77 per 1,000 pop.)</li> </ul>
19	<b>An Assessment of the Potential Financial Impacts of a Container Deposit System on Local Government in Tasmania</b> <sup>[xxvi]</sup> Equilibrium (prepared for the Local Government Association of Tasmania), 2013	<ul style="list-style-type: none"> <li>• Reduced collection costs: \$257,000/year (\$1.31/service/year) (\$497 per 1,000 pop.)<sup>[xxvii]</sup></li> <li>• Reduced processing costs: \$340,000/year (\$1.73/service/year or \$8.70/tonne) (\$657 per 1,000 pop.),</li> <li>• Improved material value: \$750,000/year (\$1,450 per 1,000 pop.)</li> <li>• Net savings: \$1.3M/year (\$2,514 per 1,000 pop.), up to \$26.8M (\$51,819 per 1,000 pop.) over 20 years</li> <li>• Reduced litter management costs: \$160,000/year</li> </ul>
20	<b>Executive Summary: Report on the Temporary Implementation of a Deposit and Refund Scheme in Cadaques</b> <sup>[xxviii]</sup> Retorna, 2013	<ul style="list-style-type: none"> <li>• Reduced collection costs: €24,242/year (€8,536 per 1,000 pop.)<sup>[xxix]</sup> to €35,372/year (€12,455 per 1,000 pop.)</li> <li>• Reduction in compensation by Ecoembes: €1,240/year (€437 per 1,000 pop.) to €1,766/year (€622 per 1,000 pop.) (This would be offset by the reduction in collection costs).</li> <li>• Reduced maintenance costs: €1,742/year (€613 per 1,000 pop.) to €2,420/year (€852 per 1,000 pop.)</li> <li>• Net savings: €23,000/year to €33,605/year (€8,099 to €11,833 per 1,000 pop.)</li> </ul>
21	<b>Comparison of System Costs and Materials Recovery Rates: Implementation of Universal Single Stream Recycling With and Without Beverage Container Deposits – Draft Report</b> <sup>[xxx]</sup>	<ul style="list-style-type: none"> <li>• Estimated value of litter reduction: \$815,000 to \$1.2M (\$1,301 to \$1,917 per 1,000 pop.)<sup>[xxxi]</sup></li> <li>• Avoided disposal savings: \$11.1M to \$11.3M (\$17,730 to \$18,050 per 1,000 pop.)</li> </ul>

	Study Title, Author and Year	Summary of Findings
	DSM Environmental (prepared for Vermont Agency of Natural Resources), 2013	
22	<b>The Impacts (Cost/Benefits) of the Introduction of a Container Deposit/Refund System (CDS) on recycling and councils</b> <sup>[xxxii]</sup> Mike Ritchie & Associates (prepared for Local Government Association of NSW), 2012	<ul style="list-style-type: none"> <li>Recycling savings: \$9 to \$24/household</li> <li>Potential savings for local governments: \$23M/year to \$62M/year (\$3,010 to \$8,115 per 1,000 pop.)<sup>[xxxiii]</sup></li> </ul>
23	<b>Understanding the Impacts of Expanding Vermont's Beverage Container Program</b> <sup>[xxxiv]</sup> CM Consulting (prepared for Vermont Public Research Interest Group (VPIRG)), 2012	<ul style="list-style-type: none"> <li>Increased material revenues: \$2.3M (\$3,674 per 1,000 pop.)<sup>[xxxv]</sup></li> <li>Reduced garbage, recycling, and litter management costs: beyond the scope of this study, however, materials management in Vermont is estimated to cost \$90/ton to \$108/ton for disposal and \$1,200/ton to \$2,300/ton for litter collection.</li> </ul>
24	<b>Examining the Cost of Introducing a Deposit Refund System in Spain</b> <sup>[xxxvi]</sup> Eunomia Research & Consulting (prepared for Retorna), 2012	<ul style="list-style-type: none"> <li>Total savings to municipality: €57M/year to €93M/year (€1,237 to €2,019 per 1,000 pop.)<sup>[xxxvii]</sup>. 76% to 81% of these savings are derived from the reduction in costs associated with residual waste collection; ~20% come from reduced litter collection costs; and &lt;1% come from reduced costs of collecting from household waste collection points where residents can take their recycling waste (<i>puntos limpios</i>).</li> </ul>
25	<b>Packaging Impacts Consultation Regulation Impact Statement</b> <sup>[xxxviii]</sup> Standing Council on Environment and Water 2011	<p>Over 20 years, a CDS is estimated to result in:</p> <ul style="list-style-type: none"> <li>Avoided collection, transport and recycling costs: \$2.72 billion (\$112,933 per 1,000 pop.)<sup>[xxxix]</sup></li> </ul> <p>Other avoided costs (landfill and litter clean up): \$247M (\$10,255 per 1,000 pop.)</p>
26	<b>Turning Rubbish into Community Money: The Benefits of a 10 cent Deposit on Drink Containers in Victoria</b> <sup>[xli]</sup> Office of Colleen Hartland MLC, 2011	<ul style="list-style-type: none"> <li>Reduced recycling/MRF processing costs: \$6,577,919 (\$1,102 per 1,000 pop.)<sup>[xlii]</sup></li> <li>Reduced waste costs (landfill gate fee and levy): \$5,070,851 (\$850 per 1,000 pop.)</li> <li>Reduced litter collection costs: \$8.8M (\$1,475 per 1,000 pop.)</li> <li>Net savings: \$32,625,183/year ((\$5,468 per 1,000 pop.)</li> </ul>
	<b>Have We Got the Bottle? Implementing a Deposit Refund Scheme in the UK</b> <sup>[xliii]</sup>	<p>'Complementary' DRS scenario:</p> <ul style="list-style-type: none"> <li>Reduced recycling collection costs: £129M/year (£1,982 per 1,000 pop.)<sup>[xliv]</sup></li> <li>Reduced bringsite costs: £3M/year (£46 per 1,000 pop.)</li> </ul>

Study Title, Author and Year	Summary of Findings
<b>27</b> Eunomia Research & Consulting (prepared for the Campaign to Protect Rural England), 2010	<ul style="list-style-type: none"> <li>Reduced Household Waste Recycling Centers (HWRC) costs: £1M/year (£15 per 1,000 pop.)</li> <li>Reduced litter collection costs: £27M/year (£415 per 1,000 pop.)</li> <li>Net savings: £159M/year (£2,443 per 1,000 pop.) (£7/household/year)</li> </ul> <p>‘Parallel’ DRS scenario:</p> <ul style="list-style-type: none"> <li>Reduced collection, treatment and disposal costs: £143M/year (£2,198 per 1,000 pop.)</li> </ul>
<b>28</b> <b>Analysis of the Impact of an Expanded Bottle Bill on Municipal Refuse and Recycling Costs and Revenues</b> <sup>[xliiv]</sup> DSM Environmental (prepared for Massachusetts Department of Environmental Protection (MassDEP)), 2009	<ul style="list-style-type: none"> <li>Avoided collection costs: \$4,214,071/year to \$5,033,112/year (\$620 to \$741 per 1,000 pop.)<sup>[xlii]</sup></li> <li>Avoided disposal costs: \$482,372/year to \$2,334,863/year (\$71 to \$344 per 1,000 pop.)</li> <li>Reduced litter clean-up costs: \$536,772 (\$79 per 1,000 pop.) (distributed between state and local litter collection efforts; no data available on what this distribution is)</li> <li>Net savings: \$3,797,011/year to \$6,468,544/year (\$559 to \$952 per 1,000 pop.)</li> </ul>
<b>29</b> <b>Analysis of Beverage Container Redemption System Options to Increase Municipal Recycling in Rhode Island</b> <sup>[xlii]</sup> DSM Environmental (prepared for Rhode Island Resource Recovery Corporation), 2009	<ul style="list-style-type: none"> <li>Reduction in municipal material revenues: \$1.4M/year (\$1,325 per 1,000 pop.)<sup>[xlii]</sup> state-wide</li> <li>Reduced litter collection costs: \$267,500/year (\$253 per 1,000 pop.)</li> <li>Reduced disposal costs: \$870,000/year (\$824 per 1,000 pop.)</li> <li>Reduced collection costs: \$1.3M/year (\$1,231 per 1,000 pop.)</li> <li>Net savings: \$1,037,500/year (\$982 per 1,000 pop.)</li> </ul>
<b>30</b> <b>Beverage Container Investigation</b> <sup>[xliii]</sup> BDA Group (prepared for the EPHC Beverage Container Working Group), 2009	<ul style="list-style-type: none"> <li>Deposits collected by local government: \$78M/year to \$147M/year (\$3,239 to \$6,103 per 1,000 pop.)<sup>[xliii]</sup></li> <li>Kerbside savings: \$24M/year to \$25M/year (\$996 to \$1038 per 1,000 pop.)</li> <li>Landfill cost savings: \$13M/year to \$17M/year (\$540 to \$706 per 1,000 pop.)</li> <li>Landfill levy savings: \$7M/year to \$9M/year (\$291 to \$374 per 1,000 pop.)</li> <li>Material values lost by local government: \$47M/year to \$48M/year (\$1,951 to \$1,993 per 1,000 pop.)</li> <li>Net savings: \$75M/year (\$3,114 per 1,000 pop.) to \$150M/year (\$6,228 per 1,000 pop.), depending on level of deposit (\$0.10 or \$0.20/container)</li> </ul>
<b>City of Toronto Staff Report: Amendments to</b>	The implementation of a DRS resulted in:



	Study Title, Author and Year	Summary of Findings
31	<b>Processing Fees Due to LCBO Deposit Return Program<sup>[ii]</sup></b> City of Toronto General Manager, Solid Waste Management Services (prepared for Public Works and Infrastructure Committee), 2008	<ul style="list-style-type: none"> <li>• Reduced processing costs: \$657,700 (\$236 per 1,000 pop.<sup>[iii]</sup>) in 2007 and \$869,975 (\$312 per 1,000 pop.) in 2008</li> <li>• Reduced glass disposal costs: \$490,000 (\$176 per 1,000 pop.) in 2007 and \$393,250 (\$141 per 1,000 pop.) in 2008</li> <li>• Net savings: \$447,989 (\$161 per 1,000 pop.) in 2007 and \$381,126 (\$137 per 1,000 pop.) in 2008</li> </ul>
32	<b>Economic &amp; Environmental Benefits of a Deposit System for Beverage Containers in the State of Washington<sup>[iii]</sup></b> Jeffrey Morris (Sound Resource Management Group), Bill Smith (City of Tacoma), and Rick Hlavka (Green Solutions) (prepared for City of Tacoma Solid Waste Management), 2005	<ul style="list-style-type: none"> <li>• Reduced garbage collection costs: \$78,150 (\$381 per 1,000 pop.<sup>[iii]</sup>)</li> <li>• Reduced disposal costs: \$150,500 (\$734 per 1,000 pop.)</li> <li>• Reduced recycling collection costs: \$69,400 (\$338 per 1,000 pop.)</li> <li>• Reduced litter costs: \$34,300 (\$167 per 1,000 pop.)</li> <li>• Loss of market revenues for recycling programs: \$68,300 (333 per 1,000 pop.)</li> <li>• Net savings: \$264,050 (\$1,287 per 1,000 pop.)</li> </ul>

## Appendix C

### Studies Summarizing Job Impacts of DRS for Beverage Containers

Table 19 summarizes the key findings of 13 studies and reports that examined the job impacts of implementing (or expanding) a DRS for beverage containers. Despite differences in scope and methodology, every study shows that DRSs not only have a positive impact on the environment, but on jobs as well.

Table 19 Studies Summarizing Job Impacts of DRS for Beverage Containers

	Study	Summary of Findings
1	From waste to work: the potential for a deposit refund system to create jobs in the UK, Eunomia Research & Consulting Ltd., prepared for the Campaign to Protect Rural England 2011 <sup>clx</sup>	<ul style="list-style-type: none"> <li>Change in number of FTEs from introduction of DRS: <ul style="list-style-type: none"> <li>Household kerbside: -1,460 to -1,183 jobs</li> <li>Bring site/HWRCs: -74 to -90 jobs</li> <li>Commercial collections: -210 to -258 jobs</li> <li>Litter/street sweeping: -688 to -724 jobs</li> <li>Retailer: +1,546 to 1,672 jobs</li> <li>Central system: +120 jobs</li> <li>Collection/transport: +2,230 jobs</li> <li>Counting centres: +1,562 to 1,726 jobs</li> <li>Reprocessors: 0 to +1,186 jobs</li> <li>Waste treatment/disposal: -148 to -154 jobs</li> </ul> </li> <li><b>Net impact:</b> The overall effect of the introduction of a DRS in the UK is projected to lead to an increase in the number of jobs available by between 3,062 and 4,292 FTEs. The difference depends on whether or not reprocessing jobs are included, and whether an 80% or 90% return rate is assumed.</li> <li>There would also be an overall increase in the number of higher-skilled jobs.</li> </ul>

	Study	Summary of Findings
2	Employment and Economic Impact of Container Deposits – New York, Eunomia Research & Consulting Ltd., 2019 <sup>clxi</sup>	<p>Current DRS jobs benefits:</p> <ul style="list-style-type: none"> <li>• Direct jobs: 3,275 FTE <ul style="list-style-type: none"> <li>○ Central system administration jobs: 44</li> <li>○ Redemption center jobs: 1,366</li> <li>○ Third-party collection jobs: 133</li> <li>○ Retailer jobs: 890</li> <li>○ RVM supply &amp; maintenance job: 65</li> <li>○ Sorting, counting and processing deposit material jobs: 461</li> <li>○ Manufacturing jobs: 315</li> </ul> </li> <li>• Direct, indirect, and induced jobs: 5,726 FTE</li> <li>• Informal jobs (canners): 4,000-8,000 FTE (New York City only)</li> </ul> <p>Impact on jobs from expanding the DRS to include a wider scope of beverage containers and increasing the return rate:</p> <ul style="list-style-type: none"> <li>• Direct jobs: +4,415 FTE</li> <li>• Total direct, indirect, and induced jobs: +7,964 FTE</li> <li>• Impact on curbside jobs: -161 FTE jobs</li> </ul> <p><b>Net impact:</b> There would be a net of 7,803 jobs (taking into account the loss of curbside jobs) created by the DRS, if it were to be modernized, an increase of 2,077 FTE jobs, or 36% over the current system.</p>
3	Recycling Refund System Cost Benefit Analysis, Reclay StewardEdge Inc., prepared for the Minnesota Pollution Control Agency, 2014 <sup>clxii</sup>	<p>The introduction of a DRS in Minnesota is estimated to have the following jobs impacts:</p> <ul style="list-style-type: none"> <li>• +1,438 DRS jobs</li> <li>• +14 glass beneficiation jobs</li> <li>• +4 state law enforcement and regulatory agency jobs</li> <li>• + undetermined potential for in-state recycling manufacturing jobs</li> <li>• -214 supermarket and grocery jobs</li> <li>• -39 beverage industry production and distribution jobs (note, jobs will be shifted to other states but are not forecasted to be actually lost)</li> <li>• -136 residential recycling collection jobs</li> <li>• -6 waste collection and landfilling jobs</li> </ul> <p><b>Net impact:</b> The total job impact is forecasted to be a net gain of 1,064 jobs.</p>
4	Better Together: How a Deposit Return System Will Complement	Number of jobs created by Ontario's current recycling program:

	Study	Summary of Findings
	Ontario's Blue Box Program and Enhance the Circular Economy, Eunomia Research & Consulting Ltd, prepared for Reloop, 2019 <sup>clxiii</sup>	<ul style="list-style-type: none"> <li>• Curbside recycling: <ul style="list-style-type: none"> <li>○ Blue Box Collection: 2,121</li> <li>○ Residual waste collection: 2,729</li> <li>○ Sorting, processing, disposal: 2,255</li> <li>○ Subtotal curbside: 7,105</li> </ul> </li> <li>• DRS: n/a</li> <li>• Total direct: 7,105</li> <li>• Total indirect and induced: 5,471</li> <li>• Total direct, indirect, and induced: 12,576</li> </ul> <p>Number of jobs created by proposed program (existing Blue Box program + introduction of a DRS for non-alcoholic beverage containers in Ontario):</p> <ul style="list-style-type: none"> <li>• Curbside recycling: <ul style="list-style-type: none"> <li>○ Blue Box Collection: 1,733</li> <li>○ Residual waste collection: 2,301</li> <li>○ Sorting, processing, disposal: 2,816</li> <li>○ Subtotal curbside: 6,851</li> </ul> </li> <li>• DRS: 1,095</li> <li>• Total direct: 7,946</li> <li>• Total indirect and induced: 6,118</li> <li>• Total direct, indirect, and induced: 14,064</li> </ul> <p>Net impact: The total jobs impact is estimated to be a net gain of 1,488 jobs, or an increase of 12%.</p>
5	Assessment of Economic and Environmental Impacts of Extended Producer Responsibility Programs in BC in 2014, Morrison Hershfield, 2016 <sup>clxiv</sup>	<p>Jobs impacts resulting from the EPR program for beverage containers:</p> <ul style="list-style-type: none"> <li>• Provincial (in BC): +16 to 36 jobs</li> <li>• Out of province: +55 to 131 jobs</li> <li>• North America (US or Canada): +293 to 757 jobs</li> <li>• Outside North America: +11 to 30 jobs</li> <li>• Unknown: +26 to 128 jobs</li> <li>• Total number of jobs created: 401 to 1,083</li> <li>• Job loss due to reduced landfilling: -55 to -146 jobs</li> </ul> <p>Net impact: The total jobs impact is estimated to be a net gain of between 346 and 937 jobs.</p>

	Study	Summary of Findings
6	Massachusetts Container Deposit Return System – 2016 Employment and Economic Impacts in the Commonwealth, Industrial Economics, Inc., prepared for Container Recycling Institute, 2017 <sup>clxv, clxvi</sup>	<p>Number of direct jobs created by DRS: 1,260</p> <ul style="list-style-type: none"> <li>Collection, transportation and maintenance jobs: 840</li> <li>Sorting jobs at redemption centers: 340</li> <li>Processing jobs: (cleaning, baling, machine operation): 80</li> </ul> <p>Total number of direct, indirect, and induced jobs created by DRS: 1,607 to 1,809</p> <p>Jobs impacts of a ‘no bottle bill scenario’ (i.e. recovering containers through curbside recycling instead of existing DRS):</p> <ul style="list-style-type: none"> <li>Cities and towns across the state would require 149 to 291 additional recycling and collection jobs, but these jobs are equivalent to &lt;25% of the 1,260 direct jobs that are currently associated with the DRS</li> </ul>
7	Genie in a bottle: Unlocking the full potential of California’s bottle bill, Changing Markets Foundation and National Stewardship Action Council, 2020 <sup>clxvii, clxviii</sup>	<p>Number of FTE jobs created by California’s current redemption program: 7,780</p> <ul style="list-style-type: none"> <li>Program management jobs: 260</li> <li>Collection (recycling centers) jobs: 4,100</li> <li>Accounting/admin jobs: 520</li> <li>Processing jobs: 2,900</li> </ul> <p>Estimated number of FTE jobs created by California’s DRS if it was expanded to include wine and liquor containers, and if the state’s redemption rate was increased 96%: 13,450</p> <ul style="list-style-type: none"> <li>Program management jobs: 450</li> <li>Collection (recycling centers) jobs: 7,100</li> <li>Accounting/admin jobs: 900</li> <li>Processing jobs: 5,000</li> </ul> <p>Net impact: The total jobs impact is estimated to be a net gain of 5,670 jobs.</p>
8	Employment and Economic Impact of Container Deposits – Iowa, Eunomia Research & Consulting Ltd., 2019	<p>Number of FTE jobs created by Iowa’s current DRS:</p> <ul style="list-style-type: none"> <li>Direct jobs: 917 <ul style="list-style-type: none"> <li>Central system admin jobs: 10</li> <li>Redemption center jobs: 500</li> <li>Retailer jobs – manual takeback: 200</li> <li>Retailer jobs – with RVMs: 42</li> <li>Third-party collection jobs: 34</li> <li>RVM supply &amp; maintenance jobs: 6</li> </ul> </li> </ul>

	Study	Summary of Findings
		<ul style="list-style-type: none"> <li>○ Sorting, counting, and processing deposit material jobs: 125</li> <li>● Direct, indirect, and induced jobs: 1,621</li> </ul> <p>Estimated number of FTE jobs created by Iowa's DRS if it was expanded to include other beverages and if the state's redemption rate were increased to 80% from current levels as a result of the expanded scope and increasing the deposit level from 5- to 10-cents:</p> <ul style="list-style-type: none"> <li>● Direct jobs: +1,393</li> <li>● Direct, indirect, and induced jobs: +2,490</li> <li>● Impact on curbside jobs: -28 jobs</li> </ul> <p>Net impact: The total jobs impact is estimated to be a net gain of 2,462 jobs (increase of 52% over current system), taking account of loss of curbside jobs.</p>
9	Real Price of Deposit: Analysis of the introduction of the deposit-refund system for single-use beverage packaging in the Slovak Republic, Institute for Environmental Policy, 2018 <sup>clxix</sup>	Number of jobs that would be created by introducing a DRS for single-use beverage PET bottles and cans in the Slovak Republic: Approximately 250-360
10	Economic Impact Analysis of the Beverage Container Deposit-Refund System, Gardner Pinfold, 2013 <sup>clxx</sup>	Number of FTE jobs created by Nova Scotia's DRS: <ul style="list-style-type: none"> <li>● Direct jobs: 436</li> <li>● Spin-off jobs: 150</li> <li>● Total jobs: 586</li> </ul>
11	Economic and Environmental Impact of RRFB Nova Scotia's Programs, Gardner Pinfold Consultants Inc., 2016 <sup>clxxi</sup>	Number of jobs created each year related to beverage container recycling in Nova Scotia: <ul style="list-style-type: none"> <li>● 711 jobs (person-years) (the equivalent of 11,188 full-time jobs created over 20 years)</li> </ul>
12	Quantifying the Economic Value of Alberta's Recycling Programs: Now and Towards the Future, Eunomia & Kelleher Environmental, 2019 <sup>clxxii</sup>	Number of FTE jobs created by Alberta's existing DRS: <ul style="list-style-type: none"> <li>● Direct jobs: 1,621</li> <li>● Indirect jobs: 307</li> <li>● Induced jobs: 348</li> <li>● Total: 2,276</li> </ul>
13	A Scottish Deposit Refund System, Eunomia Research and Consulting, 2015 <sup>clxxiii</sup>	Number of additional FTE jobs created if a DRS were introduced in Scotland: <ul style="list-style-type: none"> <li>● 250-360</li> </ul>

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## WHO PAYS WHAT?

AN ANALYSIS OF BEVERAGE  
CONTAINER COLLECTION  
AND COSTS IN CANADA



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