

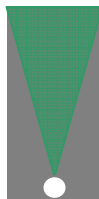
Who Pays What

An Analysis of Beverage Container Recovery and Costs in Canada
2004-2005



September 2006

Submitted by: CM Consulting



A Primer

Across Canada, beverage container recovery continues to emerge as a challenging and highly political issue for industry and governments. As the recycling sector has evolved so too has a range of recovery initiatives, each emphasizing their own strategic value. In assessing these initiatives it's remarkable how varied the data is despite the common aspects of these programs – factors such as recycling performance, net costs, collection infrastructure, operating agencies, and the breakdown of who ultimately bears the costs of recovery.

Who Pays What - An Analysis of Beverage Container Recovery and Costs in Canada aims to report, clarify and offer some essential insight into the field of beverage container recovery programs. By offering current data, discerning analysis and identifying a number of trends in beverage container recovery, the report provides a comprehensive examination of container reuse and recycling programs in Canada today.

Developed by CM Consulting, *Who Pays What* features the most recent recovery and cost data concerning beverage container recovery programs - information that is thoroughly researched and clearly organized. Already, this report is embraced as an essential resource for professionals in the beverage industry and recycling field. It is a valuable tool and dependable reference guide that can ease the decision-making process. Judging from the welcome demand for this sort of detailed information, this edition of *Who Pays What* represents the second of what should now be considered an annual publication.

Principal of CM Consulting, Clarissa Morawski, is a waste minimization policy professional dedicated to the varied issues that comprise beverage container recovery. Morawski's expert understanding of the industry is further evidenced by the 17 articles she has contributed to a variety of trade publications. She is also a noted speaker at environmental and recycling conferences throughout North America.

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Abbreviations and Acronyms

AB.....	Alberta
BC.....	British Columbia
CRF	Container Recycling Fee
EHC.....	Environmental Handling Charge
GJ.....	Gigajoules
HDPE	High Density Polyethylene
ICI	Industrial Commercial and Institutional
IWMC.....	Integrated Waste Management Corporation
LDB	Liquor Distribution Branch (BC)
MB	Manitoba
MTCO2E.....	Metric Tonnes of Carbon Dioxide Equivalent
NB.....	New Brunswick
NF.....	Newfoundland and Labrador
NS.....	Nova Scotia
ON	Ontario
PEI.....	Prince Edward Island
PET.....	Polyethylene Tetraphthalate
QB	Quebec
PS	Polystyrene
PVC	Polyvinyl Chloride
SD	Soft Drink
SK	Saskatchewan
US.....	United States

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Cross-Canada Beverage Container Recovery Agents

In Canada, while each provincial program is unique, generally there is an agency or agencies responsible for operating the program. These agencies facilitate operations, reporting, and financing of the collection service. These operating agencies can be:

- an industry group representing beverage brand owners and first importers;
- a provincial crown agency;
- the provincial government directly;
- a contracted third party organization; or
- municipalities.

For the most part, the Canadian beer industry collectively manages the recovery of all their refillable containers and in some provinces non-refillable domestic containers as well.

In British Columbia, New Brunswick, and Prince Edward Island, provincially owned and operated liquor commission/boards are responsible for administering the program for wine, spirit and imported beer containers. In British Columbia, the Liquor Distribution Branch (LDB) is in the process of transferring its existing beverage container product stewardship responsibilities to industry. This transfer will probably begin in 2007.

In British Columbia, Alberta, and New Brunswick, incorporated not-for-profit organizations were set-up to act on behalf of brand owners and first importers of non-alcohol to collectively administer the program for containers.

In Saskatchewan, SARCAN (a not-for-profit organization) is contracted by the provincial government to undertake the responsibility of fulfilling the collection requirements under the program for all containers, except refillable beer.

In Ontario and more recently Quebec, municipalities operate the Blue Box program as a requirement of provincial regulation. Brand owners and first importers of products with packaging, and published printed materials are responsible for financing 50% of the net blue box program costs annually. An incorporated not-for-profit organization representing affected industry act on their behalf to meet their regulatory obligation.

In Manitoba, an incorporated not-for-profit organization was established with industry representation to ensure that municipal authorities receive 80% funding of their curbside-recycling program for “designated materials”, which include all beverage containers, except beer. Currently, Manitoba is in the process of establishing a new residential recycling stewardship program, similar to Ontario. It will require levies to be paid by stewards to support municipal recycling programs.

In Quebec and Prince Edward Island, the soft drink and beer industries operate their own program for empty carbonated and beer containers. Wine, spirits, water, juice and new age containers are collected through a municipally-operated curbside recycling system.

In Nova Scotia and Newfoundland, provincial crown agents manage the program for all non-refillable containers.

Cross-Canada beverage container recovery operation agents

PROVINCE	British Columbia				Alberta			Saskatchewan		Manitoba	
Collection system	DEPOT & RETAIL	DEPOT & RETAIL	DEPOT & RETAIL	CURBSIDE	DEPOT	DEPOT	MUNICIPAL DROP-OFF	DEPOT & RETAIL	DEPOT	RETAIL & DESIGNATED LICENSEES	CURBSIDE
Beverage Container Type	Domestic Beer	Wine / Spirits / Imported Beer	Non-Alcohol	Milk ¹	Domestic & Imported Beer	Non-Alcohol / Wine / Spirits	Milk	Domestic Beer	Non-Alcohol / Wine / Spirits / (Milk voluntary)	Beer	Non-Alcohol / Wine / Spirits / Milk
RESPONSIBILITY											
Beverage Industry (incorporated not-for-profit)	<i>Brewers Distributors Ltd.</i>		Encorp Pacific (Canada)	<i>British Columbia Dairy Council</i>	<i>Alberta Beer Container Corporation</i>	<i>Alberta Beverage Container Recycling Corporation²</i>	Alberta Dairy Council	<i>Brewers Distributors Ltd.</i>		<i>Brewers Distributors Ltd.</i>	
Government (Crown agency)		Liquor Distribution Branch									
Municipal Government				<i>Municipalities</i>			<i>Municipalities</i>				<i>Municipalities</i>
Not-for-Profit (includes a multi-stakeholder organization)									SARCAN		Manitoba Product Stewardship Corporation

Note:

- Where municipalities are responsible for container collection, only residentially generated material is available to be collected. Away from home consumption and consumption in the commercial sector rely on voluntary recycling efforts by commercial generators and managers of public space waste generation.
- *Italics* indicate that cost data are not available.

¹ Effective October 2006, the BC dairy industry will offer a recovery program for its containers through the beverage depots

² ABCRC also manages import beer containers under contract to ABCC

Cross-Canada beverage container recovery operation agents

PROVINCE	Ontario		Quebec			Nova Scotia		
Collection system	RETAIL	CURBSIDE	RETAIL	RETAIL	CURBSIDE	DEPOT	DEPOT	CURBSIDE
Beverage Container Type	Beer (not including some imports)	Non-Alcohol / Wine / Spirits / Milk / some imported beer	Beer	Carbonated Beverages	New-Age / Water / Juice / Wine / Spirits / Milk	Refillable Beer	Non-Alcohol / Wine / Spirits / non-refillable beer	Milk
RESPONSIBILITY								
Beverage Industry (incorporated not-for-profit)	<i>The Beer Store</i>	Stewardship Ontario	<i>Beer Industry</i>	<i>Carbonated Beverage Industry</i>	Eco-Entreprises Quebec	<i>Beer Industry</i>		Atlantic Dairy Council
Provincial Government (Crown agency)								
Municipal Government		Municipalities			<i>Municipalities</i>			Municipalities
Not-for-Profit (includes a multi-stakeholder organization)		Waste Diversion Ontario					Resource Recovery Fund Board	

Note:

- Where municipalities are responsible for container collection, only residentially generated material is available to be collected. Away from home consumption and consumption in the commercial sector rely on voluntary recycling efforts by commercial generators and managers of public space waste generation.
- *Italics* indicate that cost data are not available.

Cross-Canada beverage container recovery agents

PROVINCE	New Brunswick			Newfoundland		Prince Edward Island			
Collection system	DEPOT	DEPOT	DEPOT	DEPOT	DEPOT	RETAIL & DEPOT	RETAIL & DEPOT	RETAIL & DEPOT	CURBSIDE
Beverage Container Type	Beer	Wine / Spirits	Non-Alcohol	Beer	Non-Alcohol & Wine & Spirits & imports and beer cans	Refillable Beer	Refillable Beer	Refillable Carbonated Beverages	Wine / Spirits and new age beverages
RESPONSIBILITY									
Beverage Industry (incorporated not-for-profit)	<i>Beer Industry</i>	<i>Rayan Industries</i>	<i>Encorp Atlantic</i>	<i>Beer Industry</i>		<i>Beer Industry</i>	<i>Carbonated Beverages Industry</i>		
Provincial Government (Crown agency)		NB Liquor						PEI Liquor Control Commission	Island Waste Management Corporation
Municipal Government									
Not-for-Profit (includes a multi-stakeholder organization)					Multi-Materials Stewardship Board				

Note:

- Where municipalities are responsible for container collection, only residentially generated material is available to be collected. Away from home consumption and consumption in the commercial sector rely on voluntary recycling efforts by commercial generators and managers of public space waste generation.
- *Italics* indicate that cost data are not available.

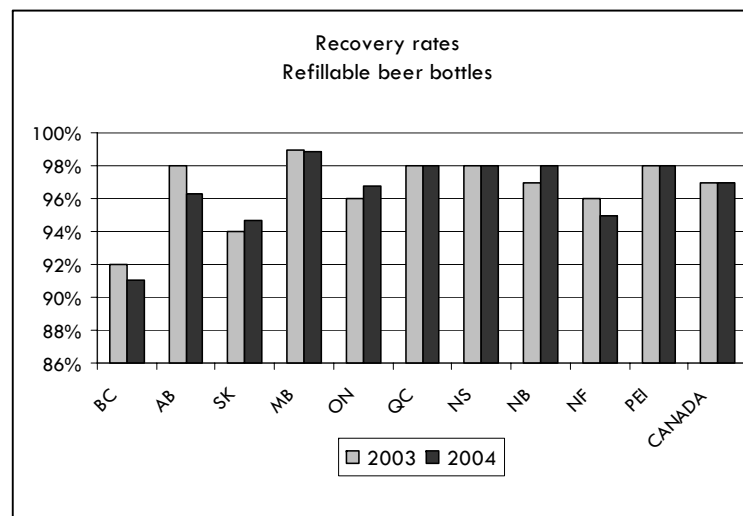
Recovery Rates Refillable Bottles

Monitoring the recovery rates of refillable beer bottles is centralized through the Brewers Association of Canada and reported annually.

Other forms of refillable bottles exist and are entirely managed by industry. These include: Large refillable water bottles; soft drink bottles in Prince Edward Island; and several small brands of alcohol and non-alcohol across the country. These recovery rates are not reported or available to the public.

The table below summarizes the recovery rates for refillable beer bottles collected through Brewer run provincial systems. The data presented is for operating year 2003 and 2004.

Container Type	British Columbia		Alberta		Saskatchewan		Manitoba		Ontario		Quebec		Nova Scotia		New Brunswick		Newfoundland		Prince Edward Island	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Refillable beer bottles	92%	91%	98%	96%	94%	95%	99%	99%	96%	97%	98%	98%	98%	98%	97%	98%	96%	95%	98%	98%



Recovery Rates Non-refillable containers

Monitoring the recovery or recycling rate for beverage containers in Canada is done annually on a province-by-province basis. In all deposit return jurisdictions recovery rates are based on units returned divided by the units sold in that year.

The table below summarizes the recovery rates for the various categories of non-refillable containers collected through the provincial systems. The data presented is for operating the year 2004-2005. (Operating years vary from January 1 – December 31; April 1 -- March 31; May 1 – April 30) – see page 54 for data sources.

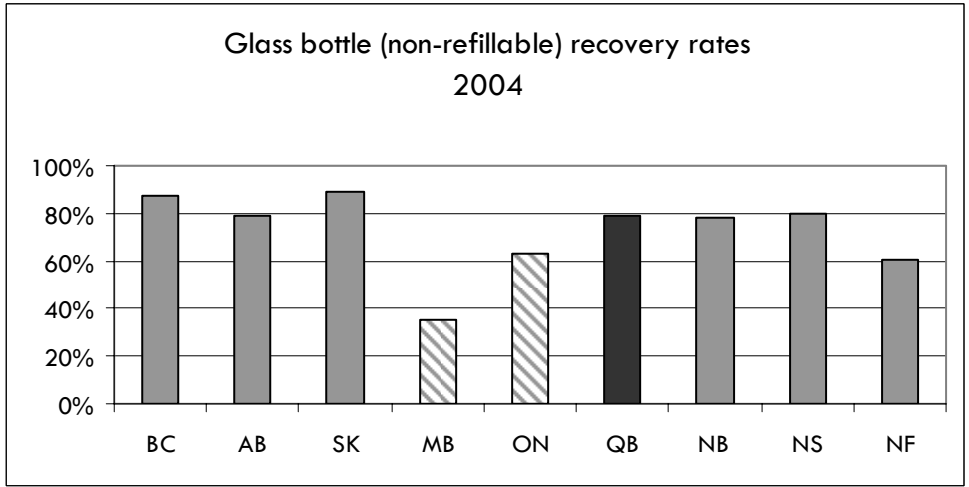
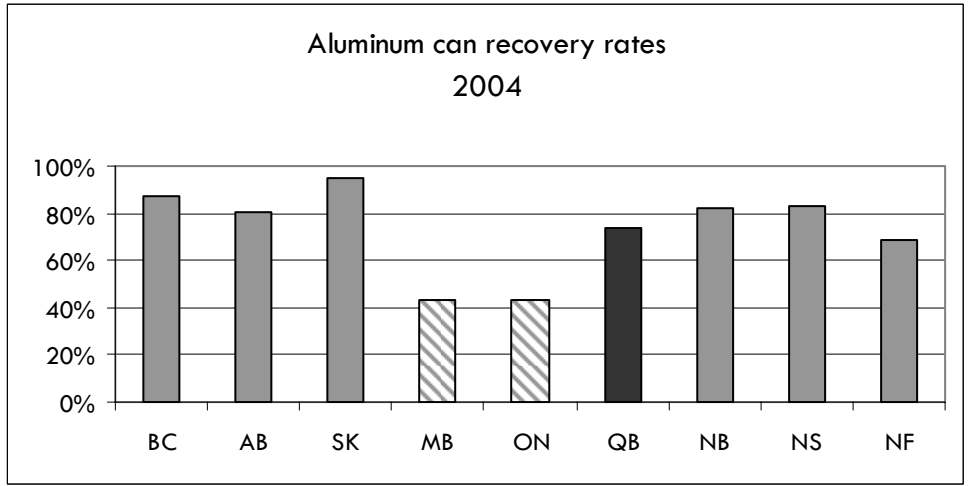
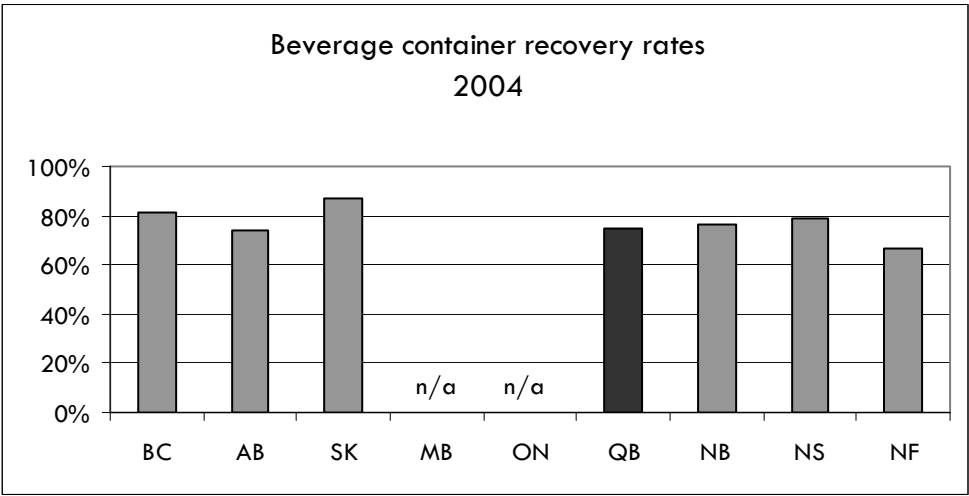
	British Columbia		Alberta		Saskatchewan		Manitoba ¹		Ontario ²		Quebec ³		New Brunswick ⁴		Nova Scotia		Newfoundland	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Aluminum	89%	87%	85%	85%	96%	95%	49%	54%	44%	46%	75%	74%	87%	83%	78%	83%	68%	69%
Glass	88%	87%	82%	79%	86%	89%	56%	44%	63%	67%	74%	79%	82%	78%	80%	80%	64%	61%
Bi-Metal	50%	52%	58%	56%	96%	95%	35%	39%	54%	54%	n/a	16%	61%	78%	113%	70%	50%	46%
Plastic	79%	72%	70%	70%	87%	86%	43%	58%	50%	54%	72%	74%	80%	78%	78%	77%	64%	69%
Gabletop /Aseptic	56%	56%	56%	57%	55%	56%	34%	45%	10%	13%	n/a	9%	n/a	89%	84%	61%	72%	57%
TOTAL	84%	81%	74%	74%	87%	87%	n/a	n/a	n/a	n/a	74%	75%	78%	76%	79%	79%	67%	66%

¹ In Manitoba, generation (sales) is based on municipal waste composition studies from 2000. Generation rates have been increased to represent population change and not the increase or decrease in sales. Therefore, materials that have experienced significant gains in market share (i.e.: Pet & Tetra Pak) will probably have inflated recovery rates. Conversely, a decline in the glass market share will result in an artificially lower recovery rate. It is beyond the scope of this study to re-calculate recovery rates so that they are more accurate.

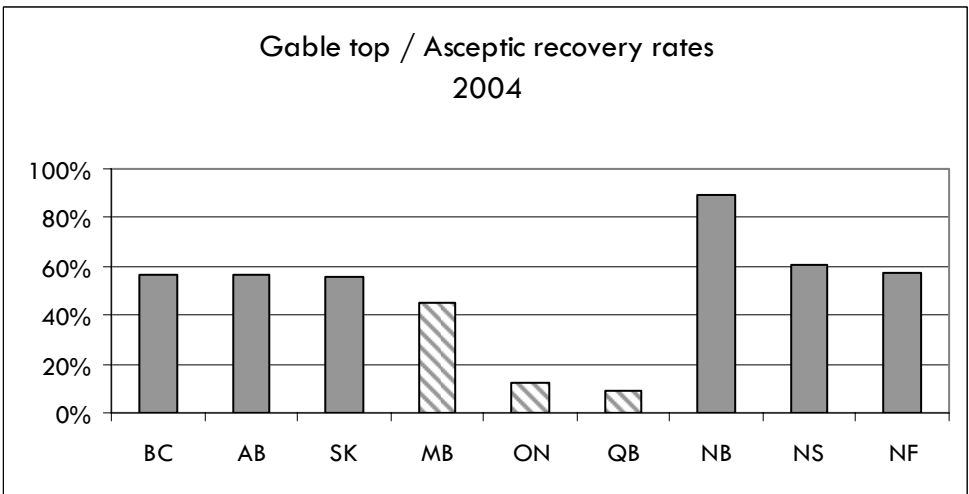
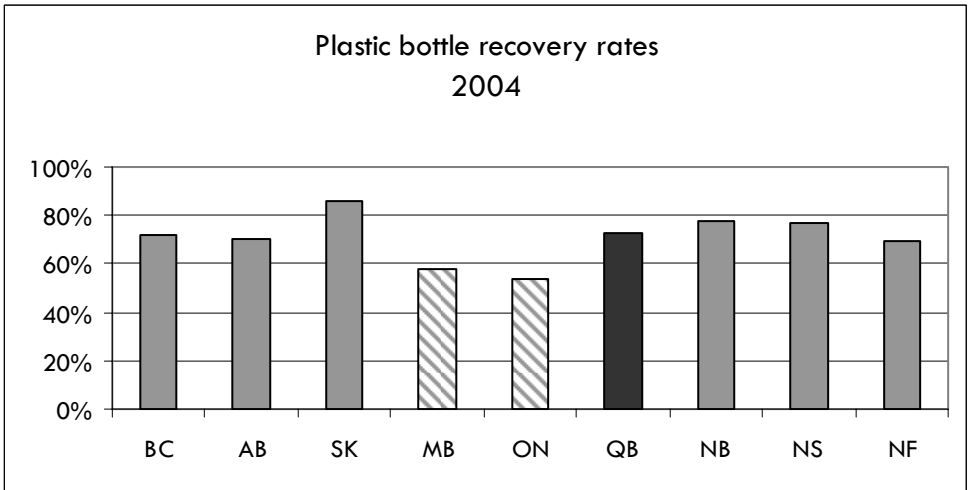
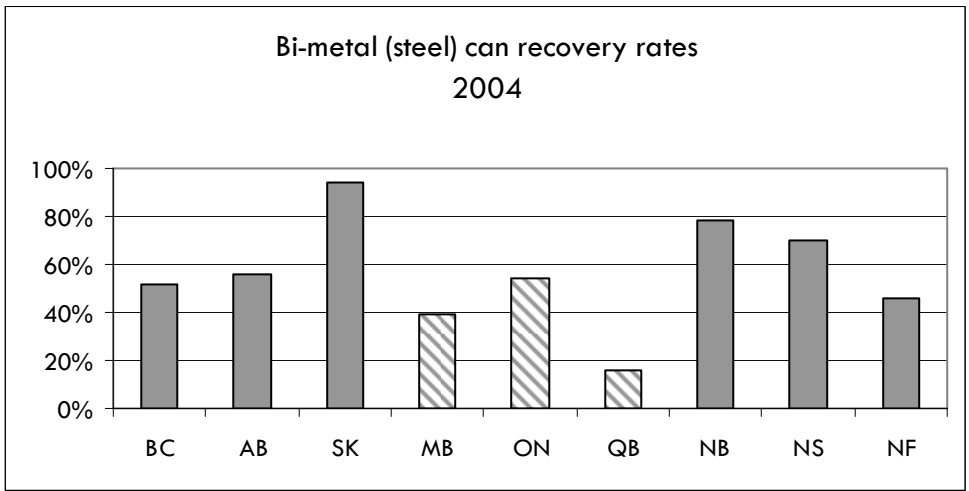
² In Manitoba and Ontario where beverage containers are collected together with non-beverage containers, recovery estimates are provided for the entire material category. Rates are based on weight versus per unit. In addition, recovery rates are for the residential sector. Beverage containers consumed and recovered away-from-home and the ICI sector are not available. Beer cans and non-refillable glass bottles are included in these recovery rates.



³ In Quebec the recovery rate is for non-refillable beer and soft drinks. There is very little available data for beverage containers collected through municipal curbside recycling programs. Rates for bi-metal and gabletop/aseptic containers are based on weight versus units, and estimates are provided for the entire material category. In addition, these recovery rates are for the residential sector. Beverage containers consumed and recovered away-from-home and the ICI sector are not available. These figures come from the most recent Bilan report (annual report) prepared by Recyc-Quebec.

⁴ New Brunswick data includes non-deposit imports from PEI.



Non-refillable soft drinks and beer only
 Residentially generated containers only



 Non-refillable soft drinks and beer
 Residentially generated containers only

Program Scope and Targets

British Columbia

Beverage Container Stewardship Program

The province-wide program began in 1970 and expanded to include all beverage containers, excluding milk and milk substitute products in 1997. All beverage containers are included under the regulation. This means any liquid that is a ready-to-serve drink but does not include milk, milk substitutes, rice milk, Soya milk, flavoured milk, infant formulas, meal replacements or dietary supplements.

This regulation was repealed in 2004, and most of its provisions are now in Schedule 1 of the Recycling Regulation, which requires that existing stewardship agencies submit revised stewardship plans consistent with the regulation within two years of its enactment (October 2006).

The regulation establishes a minimum goal of 75% recovery rate and requires that redeemed containers be either refilled or recycled.

Milk packaging is collected voluntarily through municipal curbside recycling programs and depots.

Alberta

Alberta Beverage Container Recycling Program

The province-wide program began in 1972 and expanded to include all beverages in 1989 and TetraPaks and gabletop containers in 1997. On May 1, 2001 the exemption for domestic beer containers was lifted from the Beverage Container Recycling Regulation. Domestic beer containers were added to the program on Nov 15, 2001.

There are no recovery targets set out in the regulation; however the government has encouraged a target of 85%.

Milk Container Recycling Program

The *Milk Container Recycling Program* was launched on July 1, 1999 for milk jugs and expanded to include milk cartons on Jan 1, 2002. The program includes milk jugs and milk cartons. The program is an industry stewardship initiative, through which Alberta's dairy industry supports the voluntary collection and recycling of milk jugs and cartons. A new memorandum of understanding was signed between the Ministry and the dairy industry in 2004 for three years, which includes targets of 62% and 55% for HDPE jugs and carton respectively, with an "ultimate" goal of 75%.

Saskatchewan

Beverage Container Collection and Recycling Program

The province-wide program was established in 1973 and expanded to include TetraPaks and gabletop containers in 1999. All beverage containers are included under the

regulation. This means any liquid that is a ready-to-serve drink but does not include milk, milk substitutes, rice milk, Soy milk, flavoured milk, infant formulas, meal replacements or dietary supplements.

There are no provincial targets for containers covered under the program.

Unified Dairy Recycling System

The Unified Dairy Recycling System (UDRS) is a program whereby the dairy industry in Saskatchewan contracts with SARCAN Recycling to provide a voluntary collection and recycling system for plastic milk jugs and paper milk cartons via beverage container depots. The original province-wide program was launched in 1999 and upgraded to the current program in Feb 2001. There are no official targets set out in the program.

Manitoba

Waste Reduction and Prevention Program

The province-wide program was established in 1995 to encourage and help finance the expansion of convenient and efficient residential recycling services across Manitoba. All beverage containers (except beer) are covered under this program. Collection of beverage containers generated away-from-home, and in the industrial, commercial and institutional (ICI) sector are not included in this program.

Refillable and non-refillable beer containers are collected through a separate deposit refund program administered and operated by the beer industry.

There are no provincial targets for containers covered under these programs.

Ontario

Municipal Blue Box Program

The province-wide residential curbside recycling program has been in place since 1994, with the first city program implemented in 1987. The program is designed for multi-materials, which include all beverage containers (except beer). Most beverage containers, like those made from glass, PET, aluminum and steel are mandated to be included in the program. Other containers like aseptic, gabletop and HDPE bottles may be voluntarily added to the program.

The *Blue Box Program Plan*, as approved by the Minister of Environment provides “recovery rate projections” by material. They are:

Gabletop: 15%; Aseptic: 20%; PET bottles: 45%; HDPE bottles: 40%; Steel (food and beverage): 60%; Aluminum cans: 50%; Food and beverage glass: 55%; Liquor Control Board of Ontario glass bottles: 75%

In 2004, the Minister of Environment announced a 60% province-wide residential waste diversion target, however, to date there are no mandated recovery targets.

Beverage containers generated away-from-home and in the ICI sector are not included in this program. There is an ICI regulation that mandates recycling for some sectors and some materials (which include beverage containers most of the time) that has been in place since 1994. The Ministry is currently working on a strategy to increase ICI recycling in the province.

Regulations also call for 40% of sales of soft-drinks to be refillables, dropping to 30% if a 60% recovery rate for non-refillables is being met. However, the refillable market share for soft-drinks is less than 2%, and the government is considering repealing the refillable quota. As such, the government has not enforced the requirements since its implementation.

Refillable and non-refillable beer containers are collected through a separate program administered and operated by the beer industry.

Plastic milk jugs with over 2 litres are required to carry a deposit and are redeemable by consumers. Few retailers maintain a deposit return program for these large milk jugs, as most milk in Ontario is sold through plastic pouches and gabletop cartons.

Quebec

Agreement Relating to the Deposits, Recovery and Recycling of Non-Refillable Soft drink Containers and Beer Containers

The province-wide program has been in place since 1984. All non-refillable soft drink and beer containers are managed through a deposit return program.

The target is 80% recovery of soft drink and beer containers.

Late in 2003, through an amendment to the Environment and Quality Act, the Province created a legal obligation for stewards of packaging and printed materials to fund municipalities up to 50% of the net cost for curbside recycling, which will include all beverage containers (except soft-drinks and beer on deposit) and their associated packaging materials (cases, etc.). Currently, non-deposit bearing materials can be collected through municipal curbside programs.

The 1998-2008 *Residual Materials Management Policy* sets a goal of 60% for metal, plastic and glass materials from municipalities; 95% for metal and glass, and 70% for plastics from the ICI sector. Before 2008, these policy goals are not mandated.

Nova Scotia

Nova Scotia Deposit Refund System

The province-wide program has been in place since 1996. All beverage containers are included under the regulation. This means any liquid that is a ready-to-serve drink but does not include milk, milk substitutes, rice milk, Soy milk, flavoured milk, infant formulas, meal replacements or dietary supplements.

There are no provincial targets for containers covered under the program; however there is a provincial target of 50% total diversion for the whole province.

Nova Scotia Milk Packaging Stewardship Agreement

The province-wide program was launched in February 2000. The program includes milk cartons but does not include milk bags. Through a voluntary agreement between the Atlantic Dairy Council, the Department of Environment and Labour and local municipalities, the dairy industry finances municipal authorities to collect milk packaging through their residential curbside recycling programs.

There are targets set out in the agreement. These are: 27% by 2000, 32% by 2001, 39% by 2002, 43% by 2003, 45% by 2004 and 47% by 2005.

New Brunswick

New Brunswick Beverage Container Recovery Program

The province-wide program was established in 1992. The regulation covers all ready-to-drink beverage containers up to a size of five litres. Milk and milk products, and un-pasteurized cider are exempted.

The regulation does not specify any targets, though the Department of Environment has an unofficial target of 80% recovery.

Newfoundland

Provincial Beverage Recycling Program

The province-wide program has been in place since 1997. The regulation covers all ready-to-drink beverage containers (excluding milk, infant formulas, refillable bottles and containers more than five litres).

The regulation does not specify targets. The Department of Environment has however set targets of: 50% after year one, 60% after year two, 70% after year three 80% after year four.

Prince Edward Island

Prince Edward Island Beverage Container Recycling Program

The province-wide program mandating that all carbonated-soft drink and beer are in refillable containers (effectively banning one-way containers for these beverages) has been in place since 1984. Since 1992, the program has also included wine, spirit and cooler containers by applying a half-back deposit on these non-refillable containers.

There are no official targets for these materials in the regulation.

Waste Watch Program

The Island Waste Management Corporation is a crown corporation that was set up to deliver the *Waste Watch Program*; 3-stream source separation based waste management system that is Island-wide. This multi-material program collects non-refillable beverage containers, among other packaging, from all residents on the island. IWMC has a goal of 65% diversion from waste.

Supporting Regulatory Framework

British Columbia

The province-wide program began in 1970 with the *Litter Act*, which made British Columbia the first jurisdiction in North America to establish a mandatory deposit-refund system for soft drink and beer containers as a litter control initiative. The province enacted the Beverage Container Stewardship Program Regulation (1997), which replaced the outdated Litter Act.

The program was further expanded to include all beverage containers, excluding milk and milk substitute products with the *Beverage Container Stewardship Program Regulation* in 1997.

A new regulation, *Recycling Regulation* has been written to consolidate all stewardship regulations including the Beverage Container Regulation, which was enacted in October of 2004.

Alberta

The program is regulated under the *Environmental Protection and Enhancement Act* and the *Beverage Container Recycling Regulation*. The Regulation, which was set to expire in October 2006, has been extended to October 2007. Alberta Environment is undertaking a review of the Regulation, the final report of which will go to the Legislature for approval prior to the Regulation being renewed in October 2007.

The Beverage Container Management Board (BCMB) took over regulatory authority for the program in 1997, supported by the *Beverage Container Management Board Administrative By-Law*, the *Beverage Container Management Board Fee By-Law*, and the *Beverage Container Management Board Administrative Compliance By-Law*.

Saskatchewan

The program is legislated under the *Litter Control Act*, 1978 and the *Designated Container Regulations*, 1990.

Manitoba

The program is legislated under the *Environment Act*, the *Waste Reduction and Prevention Act*, 1990, and the *Multi-Material Stewardship (Interim Measures) Regulation*, 1990.

Ontario

Beverage specific regulations are legislated under the *Environmental Protection Act*, 1990. These are: *Refillable Containers for Carbonated Soft Drink*, 1985; *Containers (Regulation 340)*, 1986; *Disposable Paper Containers for Milk (Regulation 345)* 1990; and, *Disposable Containers for Milk (Regulation 344)*, 1990

In addition, the municipal recycling regulations are legislated under the *Environmental Protection Act*, 1990. Specifically: *Recycling and Composting of Municipal Waste (Regulation 101/94)*, 1994, and *Industrial, Commercial and Institutional Source Separation Programs (Regulation 103/94)*, 1994.

The *Waste Diversion Act (Bill 90)*, 2002 is recent legislation under which the Blue Box and other stewardship programs are regulated. Specifically: *Blue Box Waste (Regulation 273)*, 2002. The *Blue Box Program Plan*, 2003 is not a regulation, but a Minister-approved program plan under the *Waste Diversion Act*.

Quebec

The programs are regulated under the *Environmental Quality Act*.

Recyc-Quebec took over regulatory authority for the program in 1990, supported by *An Act Respecting the Société Québécoise de Récupération et de Recyclage*.

In addition, beer and soft-drink industries are legislated under *An Act Respecting the Sale and Distribution of Beer and Soft Drinks in Non-Returnable Containers (R.S.Q., c. V-5.001)* 1996 and *Beer and Soft Drinks Distributors' Permits Regulation (v-5.001, r.1)*.

The program details are set-out in an industry-government agreement, which expires in December 2006. The agreement is called: *Non-legislative Agreement Relating to the Consignment, Recovery and Recycling of Non-Refillable Soft Drink Containers*.

In December 2002 an amendment to the *Environment and Quality Act* was made, which created a legal obligation for stewards to financially compensate municipalities.

In November 2004, the government of Québec adopted the *Regulation Respecting Compensation for Municipal Services Provided to Recover and Reclaim Residual Materials (Q-2, r. 2.3)*, which institutes a new municipal compensation regime of 50% of the net program costs as of March 1st. 2005. This obligates all beverage producers (including milk) to fund curbside recycling. Soft-drink and beer containers are exempt from this program.

Nova Scotia

The program is legislated under the *Environment Act*, 1995 and the *Solid Waste-Resource Management Regulations*, 1996.

The Resource Recovery Fund Board or RRFB took over regulatory authority for the program in 1996, also under the *Solid Waste-Resource Management Regulations*.

New Brunswick

The program is legislated under the *Beverage Containers Act*, 1991 and the *General Regulation - Beverage Containers Act*, 1992.

Newfoundland

The program is regulated under the *Environment Protection Act*, 2002 and the *Waste Management Regulation*, 2003.

Prince Edward Island

The program is regulated under the *Environmental Protection Act*, 1988 and the *Litter Control Regulations*, 1992.

Summary of Initiative

British Columbia

The *Beverage Container Recovery Program* was expanded on October 1, 1998 and targets persons or businesses that manufacture non-refillable beverages (excluding milk products), which are sold in the province of British Columbia. Prior to the expansion, only soft drink containers were regulated under a deposit return program. The expansion added bottled water, juice, and alcohol containers.

Affected manufacturers/brand owners or agents representing those manufacturers are referred to as "stewards".

With the enactment of the recycling Regulation in 2004, stewards were required to submit a stewardship plan, and no later than October 2006, are required to re-submit revised plans, which describe the development and operation of a beverage container stewardship program. The plan must also describe how the program provides consumers with an efficient and convenient system for collecting and recycling beverage containers.

All beverage containers carry a deposit based on their size.

Currently there are three "stewards" in British Columbia representing beverage manufacturers.

Encorp Pacific (Canada) represents brand owners of non-alcohol beverages. Encorp return centres include 170 independent depots and thousands of retail outlets. Encorp manages about 53% of recovered beverage containers province-wide.

The Liquor Distribution Branch is the steward for wine, spirit, some cider, coolers and beer manufacturers. The Liquor Distribution Branch container management system provides for retail returns at all Liquor Distribution Branch outlets and rural agency stores province-wide, as well as unlimited returns at 170 depots. The Liquor Distribution Branch contract Encorp Pacific to manage their share on containers, another 11% of recovered beverage containers province-wide.

Brewers Distributors Ltd. is the third steward representing brand owners of domestic coolers, beer and cider. Brewers Distributors Ltd. provides for retail returns at all Liquor Distribution Branch retail outlets, Cold Beer and Wine stores, agency stores and unlimited returns at 28 depots. Brewers Distributors Ltd. manages about 36% of recovered beverage containers province-wide.

Alberta

The province requires beverage producers/brand owners to operate a common collection system to recover containers from the bottle depots and retail locations for beer.

The Beverage Container Management Board administers the *Beverage Container Recycling Regulation*.

The Alberta Beverage Container Recycling Corporation (ABCRC) is the agent representing producers/brand owners of non-beer beverages sold in Alberta. It is responsible for ensuring that containers are collected, transported, processed and recycled as per the requirements of the regulation.

Alberta Gaming and Liquor Commission (AGLC) represent the producers of alcohol. AGLC uses ABCRC to manage its wine and spirit containers and Alberta Beer Container Corporation (ABCC) to manage its beer containers. ABCC is responsible for ensuring that all beer containers are collected, transported, processed and recycled as per the requirements of the regulation. ABCC subcontracts the imported beer portion of their containers -- one-way glass -- to ABCRC.

Saskatchewan

The Saskatchewan Association of Rehabilitation Centres' Recycling Division, known as SARCAN, administers the program.

SARCAN operates under contract to Saskatchewan Environment and Resource Management, the provincial environment ministry

This Ministry designates containers that can be collected for recycling and establishes the value of the deposit and Environmental Handling Charge that consumers pay when purchasing a beverage.

The retailer passes the collected revenue through to the distributor and then to the Department of Finance.

When returning the empty non-refillable container to one of SARCAN's 71 depots, the consumer is refunded the full deposit.

The Environmental Handling Charge is not refunded to the consumer, but used by the provincial government to offset SARCAN's contract cost and contribute to general revenues.

Manitoba

The Manitoba Product Stewardship Corporation (MPSC) is an independent, non-profit organization representing the interests of all sectors of Manitoba, including consumers, industry, municipalities and governments.

MPSC is a statutory corporation that operates at arm's length from the provincial government, and is currently funded by the 2-cent levy on all non-refillable beverage containers (excluding dairy) sold in Manitoba.

Under the Waste Reduction and Prevention Act, MPSC is mandated to establish and administer a waste reduction and prevention program for designated materials for Manitoba. Utilizing revenue from the 2-cent beverage levy, MPSC funds 80% of municipal curbside and depot programs for designated materials, which include all non-deposit beverage containers. MPSC also funds many school recycling programs.

The provincial government is working to create a new stewardship regulation, which will require that all printed paper and packaging stewards pay fees to support municipal curbside recycling (similar to Ontario's stewardship program).

Refillable and non-refillable beer containers are collected through a voluntary deposit return program administered by the beer industry.

Ontario

Municipal authorities operate the multi-material curbside program in place for recovering beverage containers and other packaging materials. Municipalities with over 5000 people are mandated to offer curbside collection services for at least aluminum, steel, PET and glass containers. Municipalities may also voluntarily offer recycling services for Aseptic, gabletop, HDPE and other container types. About 98% of the Ontario population have access to curbside or depot recycling services.

In February 2003, Ontario brand owners and first importers, known as "stewards" of Blue Box materials, were mandated to finance 50% of the program net costs.

The Waste Diversion Ontario (WDO) WDO was established in 2002 to develop, implement and operate waste diversion programs for a wide range of materials that include Blue Box Waste. WDO oversees the implementation of the new Blue Box financing program and collects annual cost and recovery data from municipal authorities.

Stewardship Ontario (SO) is the not-for-profit agent representing affected industry. SO collects fees from its members and pays out monies to municipalities.

Refillable and non-refillable beer containers are collected through a voluntary deposit return-to-retail program administered by The Beer Store. The Beer Store is Ontario's primary distribution and sales channel for beer products in Ontario. All brewers whose beer products are sold through The Beer Store fund the system.

More than 86% of the population live within 5 km of a beer container redemption point, comprising of 441 Beer Stores, 113 retail partner stores, 82 northern agency stores, and 239 empty bottle dealers.

Quebec

The program is overseen by Recyc-Quebec, a crown agency responsible for monitoring performance, increasing or decreasing the deposit levels and education and promotion. Recyc-Quebec also administers the program for non-refillable beer containers.

Boisson Gazeuses Environment (BGE) administers the program on behalf of the soft drink industry. Boissons Gazeuses Environment took over this role from Recyc-Quebec on December 1, 1999.

Refillable beer containers are collected voluntarily by the beer industry using the same collection infrastructure.

The program is based on a return-to-retail collection system, with over 40,000 licensed grocers, service stations, pharmacies etc. acting as redemption points for containers.

All other beverage containers, including those used for wine, spirits, water, new-age drinks, juices and milk are collected through municipal curbside collection programs available throughout most of Quebec. As of March 2005, the program costs will be shared between municipalities and brand-owners (stewards).

Nova Scotia

The Resource Recovery Fund Board (RRFB) was established in 1996 to administer solid waste management in Nova Scotia, which includes administration of the deposit return to depot program.

The program uses the half-back system to help offset the program costs and to subsidize other waste diversion initiatives in the province.

There are 83 province-wide depots that collect and redeem refunds from consumers.

New Brunswick

The Department of Environment oversees the program. Distributors are required to recover their containers. The Department of Environment registers distributors of containers sold in the province.

Encorp Atlantic is responsible for managing non-alcoholic container recovery on behalf of non-alcohol brand owners.

New Brunswick Liquor Commission is responsible for the recovery of liquor containers (wine, beer, spirits and coolers), and contracts transportation and processing of their containers to Rayan Investments.

Newfoundland

The program, which began in 1997, requires that deposits be paid on all regulated beverage containers.

Consumers pay either 8-cents on non-alcohol containers or 20-cents on alcohol containers and receive 5-cents or 10-cents back when they are returned to one of 38 Green Depots, satellite and mobile units.

The Multi-Materials Stewardship Board (MMSB) is a crown agency appointed by the Minister of the Department of Environment, and has overall responsibility of the program.

Prince Edward Island

All retailers that sell refillable soft-drink (non-refillable soft-drink are banned on the island) are required to accept containers and offer a full refund.

The Prince Edward Island Liquor Control Commission distributes all alcoholic beverages through its network of 19 stores. Prince Edward Island Liquor Control Commission accepts empty beer, wine and cooler containers at all retail outlets, and depots accept containers as well.

Consumers receive half of the deposit back at retail outlets, or 3-cents and 7-cents when returning wine and spirit containers to depots.

The Prince Edward Island Liquor Control Commission uses the half-back revenue to pay depot operators a 2-cent handling fee (and a 2.5-cent additional fee for clean containers), and to offset its own costs.

In addition, the Island Waste Management Corporation (IWMC) operates and maintains the Waste Watch Program; a 3-stream source separation based waste management system that is Island-wide. Through the Waste Watch program, all non-refillable, non-alcohol beverages used for milk, water, new-age drinks and juices are collected and recycled.

All island residents have access to the Waste Watch recycling program, which is funded through a per household charge.

Collection Mechanism

British Columbia

Beverage containers are redeemed at depots, retail outlets and Liquor Distribution Branch (LDB) stores. Independent transporters collect the containers and take them to about 12 processing sites across the province.

Processors accept bagged containers and prepare them through crushing and baling for the recycling market. Each commodity (glass, aluminum, plastic etc.) is sent to the appropriate recycling company.

In the case of all domestic beer, cider and coolers, the Brewers Distributors Limited collects these containers from LDB stores, licensees, cold beer and wine stores, agency stores and about 28 depots. In general, other bottle depots will also accept empty domestic beer containers, but will discount the refund as a handling fee. Empty containers are back-hauled to the various distribution centres where recyclables are baled and sent to market. Refillable bottles are sorted and sent back to the brewers for washing and refill.

Alberta

Consumers return empty containers to privately owned and operated registered bottle depots (214 province-wide) and collect their refund. There are also 78 liquor stores, known as "Class D Beer Depots" that accept beer containers and offer consumers a refund.

Bottle depots collect and sort the containers for the Alberta Beverage Container Recycling Corporation (ABCRC) (representing beverage producers/brand owners) and the Alberta Beer Container Corporation (ABCC) representing brewers.

ABCRC and Brewers' Distributor Ltd. (the contract agent of ABCC), transport and process containers to processing facilities in the province. Containers are prepared for the recycling end-markets.

Saskatchewan

Containers are returned to 71 province-wide depots in the 62 communities. Depots sort and bale the containers, which are picked up by SARCAN trucks, taken to processing facilities and sent to recycling facilities.

Beer containers are also returned to Saskatchewan Liquor and Gaming Commission (SLGC) stores, hotels, and four depots. Most depots and some SLGC stores will discount the refund as a handling fee. Brewers Distributors Ltd. collect these empty beer containers, back-haul them to various distribution centres where recyclables are baled and sent to market. Refillable bottles are sorted and sent back to the brewers for washing and refill.

Manitoba

Beverage containers from the residential sector are collected via curbside recycling or depot drop-off centres. Municipalities collect or contract out the collection of recycling services. Generally, containers are collected, transported to material recovery facilities,

sorted, baled and shipped to their respective end-markets for recycling. Not all beverage containers are collected through all municipal programs. For the most part, PET, glass, aluminum and steel containers are collected in most programs, whereas aseptic, gabletop, HDPE and other less common containers are collected in fewer programs.

Refillable and non-refillable beer containers are collected via beer vendors, Manitoba Liquor Commission and rural agency stores. Brewers Distributors Ltd. collect these empty beer containers, back-haul them to various distribution centres where recyclables are baled and sent to market. Refillable bottles are sorted and sent back to the brewers for washing and refill.

Ontario

Beverage containers from the residential sector are collected via curbside recycling or depot drop-off centres. Municipalities collect or contract out the collection of recycling services. Generally, containers are collected, transported to material recovery facilities, sorted, baled and shipped to their respective end-markets for recycling. PET, glass, aluminum and steel containers are regulated to be collected in all programs, whereas aseptic, gabletop, HDPE and other less common containers are not regulated and collected in fewer programs.

Refillable and non-refillable beer containers and associated packaging are collected through 441 Beer Stores, 113 retail partners (private retailers who act as agents of The Beer Store in smaller Ontario communities), 82 northern agency stores, and 239 empty bottle dealers. The Beer Store trucks collect these empty beer containers, back-haul them to various distribution centres where recyclables are sent to a processing facility for sorting, baling and sending to market. Refillable bottles are sent back to the brewers for washing and refill.

Quebec

Containers are returned to over 40,000 grocers, service stations, pharmacies, etc. Upon return, consumers are provided with a full refund.

Distributors are required to collect redeemed containers from the vendors. Usually, trucks that deliver new product also recover empty non-refillable containers. These containers are then consolidated at distribution warehouses for shipment to accredited recyclers. Distributors keep the revenue associated with the recycling exchange. Refillable beer bottles are sent back to the brewers for washing and refill.

Nova Scotia

There are approximately 83 individually owned and operated Enviro Depots in the province. All Enviro Depots must be registered with the Nova Scotia Department of Environment and Labour.

Consumers bring used beverage containers directly to Enviro Depots, where they sort them by type and colour. The Resource Recovery Fund Board organizes collection from the Enviro Depots, sends container material for processing, and markets them.

Note: Enviro Depots also accept cardboard, newsprint, paint and batteries.

Refillable beer bottles are sorted and sent back to the brewers for washing and refill.

New Brunswick

There are approximately 85 individually owned and operated depots in the province. All depots must be licensed with the New Brunswick Department of Environment. Consumers bring used beverage containers directly to these depots, where they are sorted.

Encorp Atlantic organizes the collection of all non-alcohol containers from the depots, sends materials for processing, and markets them. Rayan Investments organizes collection of all alcohol containers from the depots, sends materials for processing, and markets them.

Refillable beer bottles are sorted and sent back to the brewers for washing and refill.

Newfoundland

Consumers bring containers to 38 Green Depots within the province. The Multi-Materials Stewardship Board arranges for collection from the depots to one of three processing plants in Newfoundland and Labrador, where material is processed and shipped to end-markets.

Refillable beer bottles are sorted and sent back to the brewers for washing and refill.

Prince Edward Island

Refillable soft-drink containers are collected through any retail outlet from which they were sold.

Prince Edward Island Liquor Control Commission's (PEILCC) 19 stores collect all alcohol containers, including refillable beer containers. PEILCC contracts a local firm to collect, sort and ship liquor containers to recycling centres.

In addition to the retail network, there are about eight province-wide depots that also accept all containers on deposit.

Other beverage containers used for water, juice, milk and new-age beverages are collected through the Island's Waste Watch curbside recycling program available to all island residents.

Reuse/Recycling

Today, the market for used beverage containers is consistent, high-value and competitive. Empty containers are bought and sold like any other commodity. Markets vary depending on the consistency of quantities and the quality (the amount of contamination).

The following provides a brief description of the empty beverage container market today.



Aluminum cans

Cans are crushed, baled and transported to aluminum markets where they are melted down and reformed into rolled new aluminum cans.



Glass Bottles

Glass bottles are collected either by colour type or mixed. Glass is crushed into small pieces and used to make new bottles, utilized for road paint's reflective properties, ground back into sand for sand blasting materials, or made into fibreglass.

Most of the glass collected in western Canada is recycled into fibreglass at a facility in Alberta. In addition, an end-market also exists for paint beading in Saskatchewan. In Ontario the majority of non-beer glass collected through the curbside program is used for fibreglass insulation, sand blasting medium and drainage material. Atlantic Provinces send the majority of their glass to Owens Illinois for bottle-to-bottle recycling. Most clear beer glass collected in central and eastern Canada is sold to Owens Illinois for bottle-to-bottle recycling.



Refillable beer bottles

Refillable beer bottles are sent back to brewers for washing and refill.



PET plastic bottles

Clear plastic beverage containers are baled, shredded and flaked. Plastic flake may be turned into a fibre that can be used to make fleece clothing and carpet underlay. Some PET bottles are melted down and made into new bottles used for detergents, motor oil and other non-food related products.



Steel / bi-metal cans

Steel beverage containers are crushed, baled and transported to steel markets. There they are melted down to be turned into scrap metal, which can then be used as construction re-bar and other steel products.



Tetra Pak boxes

Tetra Pak cartons or drink boxes are made up of paper, an aluminum lining and a plastic coating. Tetra Pak cartons are hydro-pulped and separated into different material types. The resulting paper pulp is used to make tissue. The remaining aluminum and plastic mix can be used to manufacture durable products like pallets, and paper core plugs, but most end-markets currently do not use the aluminum/ plastic mix for value-added products. Most Tetra Pak material is sent to a facility in Michigan, U.S., and some is sent off-shore to China and Korea.



Gabletop cartons

Gabletop cartons are made up of paper and plastic. These containers go through a hydro-pulping process which separates the different material types. Paper pulp from the process is then used to manufacture a wide variety of industrial paper products. Most Gabletop material is sent to facilities in the U.S, and some is sent off-shore to China and Korea.



Poly Pouch containers

Poly Pouch containers are made up of composite layers of plastic including low density polyethylene with aluminum foil. The technical description is PET/ink/adhesive/aluminum foil adhesive with LLDPE sealant.

Traditional recycling methods via the aluminum or plastics recycling markets are not available, as this material is a contaminant in both processes. Several recycling agents – primarily in provinces that mandate that all beverage containers get recycled (versus landfill or incineration) – are currently sourcing a permanent market for recycling this material. Test batches are being sent to North America, Europe and Asia.

Program Financing

British Columbia

The *Beverage Container Recovery Program* in British Columbia is funded through revenues generated from the sale of material, revenues from unredeemed deposits, contract fees and a Container Recycling Fee (CRF) paid at the point of purchase by consumers.

Container Recycling Fees are charged based on the net cost of recovering specific container types. Fees are re-evaluated every year, and are rounded up to the nearest penny. For example, if the net system cost to recover an aluminum can is \$0.0095, the Container Recycling Fee will be \$0.01 per can.

The Container Recycling Fee varies depending on the value of the material and the recovery rate for a particular container. For example, high recovery rates generate less unredeemed deposit revenue, and therefore a higher Container Recycling Fee, while lower recovery rates generate greater unredeemed deposit revenue and lower Container Recycling Fees. In 2004, the fees range from no fee to \$0.05 per unit depending on the size and material used for the container. Some containers, like drink pouches, do not have a carry fee.

Since the implementation of the Container Recycling Fee, non-alcohol producers/brand owners do not bear any direct operating costs associated with the operation of the *Beverage Container Recycling Program*.

Encorp Pacific acts as the contractor for the BC Liquor Distribution Branch (LDB) to collect wine, spirits and imported beer bottles from depots and LDB stores. These contract fees contribute to operating revenue, which provides economies of scale to the system.

In the case of liquor containers, funding is generated through "service fees" charged to producers/manufacturers by the Liquor Distribution Branch. These fees range from \$0.01 to \$0.04 per unit depending on container type.

Brewers have internalized the financing of collection of beer cans and domestic beer bottles. Financing information is therefore proprietary.

Alberta

In 2004, the *Alberta Beverage Container Recycling Program* was funded through revenues generated from the sale of material, revenues from unredeemed deposits, and a Container Recycling Fee (CRF) paid at the point of purchase by consumers.

The CRF varies depending on the value of the material and the recovery rate for a particular container. For example, high recovery rates generate less unredeemed deposit revenue, and therefore a higher Container Recycling Fee, while lower recovery rates generate greater unredeemed deposit revenue and lower Container Recycling Fees. In 2004, the fees range from no fee to \$0.08 per unit depending on the size and material used for the container. Some containers, like drink pouches, do not have a fee.

Saskatchewan

The program is funded through revenue generated from the sale of empty beverage containers and a provincial grant awarded to SARCAN.

According to Saskatchewan Environment and Resource Management, in 2004-05 the contract was worth \$10,627,000.

The provincial government raises revenue through the Environmental Handling Charge, which ranges from \$0.03 to \$0.07-cents per unit sold. Excess funds generated by the provincial government are put into general revenues.

The financial responsibility is borne by the consumer through the Environmental Handling Charges. Also, consumers who choose not to return their containers contribute revenue through the unredeemed deposit.

Producers bear no financial responsibility for operating the program.

Manitoba

The multi-material municipal recycling program, which also collects beverage containers from the residential sector, is funded by consumers and municipalities. More specifically, consumers pay a 2-cent levy on all non-refillable, non-beer containers, which is used to finance 80% of municipal recycling programs. Municipalities pay the additional 20%.

The provincial government is working to create a new stewardship regulation, which will require that all printed paper and packaging stewards pay fees to support municipal curbside recycling (like Ontario and Quebec).

Ontario

The multi-material municipal recycling program, which also collects beverage containers, is funded by municipalities and stewards. Stewards of packaging, paper and printed paper are brand-owners or first importers and publishers.

In 2004, stewards contributed \$29.5 million to municipalities, plus an additional \$10 million for other required costs like: newspaper in-kind advertising contribution, program efficiency research, market development, program delivery, and administration.

Each year, Waste Diversion Ontario conducts a tonnage and financial data call with municipalities to determine the total net program costs. From this data, along with material generation estimates, Stewardship Ontario determines "fair" levies to charge stewards based on the type of material sold into the Ontario marketplace. New levy schedules are released annually. Stewards pay levies in quarterly increments.

Quebec

Return Incentives paid to retailers (2-cents per unit) funds the retail collection portion of the program.

Return Incentives, transportation, processing, marketing, administration, education and promotion is funded through the unredeemed deposits and the revenue generated from the sale of material.

The program is self-financing up to a return rate of about 74%... Beyond this threshold level, the system runs a deficit. Distributors cover the deficit. Currently the cost for soft drink recovery is about \$0.005 per unit sold, which is collected by Boissons Gazeuses Environment.

Distributors pay (through contracting) directly for transportation and processing, which are offset by material revenue (sale of cans, plastic and glass). This information is proprietary; therefore these system costs are unavailable.

Nova Scotia

Nova Scotia operates a half-back system where half the deposit is not refunded.

This half-back revenue, plus the revenue generated from the sale of containers, is used to pay for the program, which includes the handling fee per unit to Enviro Depots.

Not all of the half-back is required to offset system costs. Excess funds are used to finance curbside collection programs in the province.

New Brunswick

New Brunswick operates a half-back system where half the deposit is not refunded.

50% of this half-back revenue, plus the revenue generated from the unredeemed deposits and the sale of containers, is used to pay for the program, which includes the handling fee per unit to redemption centres.

The remaining 50% of the half-back revenue goes into the province's Environmental Trust Fund and is used for beautification, conservation, etc.

The Department of Environment and Local Government manages the fund.

Newfoundland

The program is funded through revenue generated from the sale of empty beverage containers and unredeemed deposits.

The program also uses part of the revenue generated from the non-refunded portion of the deposit to offset costs. In Newfoundland, the system is similar to a half-back program in principle, but it provides 5-cents for non-alcohol containers returned based on an 8-cent deposit, and 10-cents for alcohol containers returned based on a 20-cent deposit.


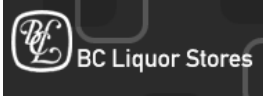






Excess revenue is placed in the province's "Waste Management Trust Fund".

Prince Edward Island


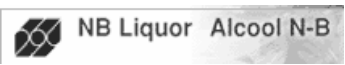


Prince Edward Island operates a half-back system on alcoholic beverages only, where half of the deposit is not refunded. This half-back revenue, plus the revenue generated from the sale of containers, is used to pay for the program, which includes the handling fee per unit to depots (2-cents per unit).


Excess funds go into provincial general revenues.

Provincial Contacts

Province	Recycling Affiliate	Phone /Fax	Web Site & Logo
British Columbia	Encorp Pacific (Canada) Neil Hastie, President and CEO 206–2250 Boundry Road. Burnaby, British Columbia V5M 3Z3	Phone: (604) 473-2400 Fax: (604) 473-2411	 www.encorpinc.com
British Columbia	Liquor Distribution Branch Gord Hall Director, Corporate Policy 2625 Rupert St. Vancouver British Columbia V5M 3T5	Phone: (604) 252-3035 Fax: (604) 252-3044	 www.bcliquorstores.com/en
British Columbia	Brewers Distributor Limited Beau Pyatt, Manager 109 Braid Street New Westminster, British Columbia V3L 5T3	Phone : (604) 664- 2302 Fax: (403) 664-2349	 www.bdl.ca
Alberta	Brewers Distributor Limited Garry Clermont, President 11500 – 29 th Street East. Calgary, Alberta T2Z 3W9	Phone : (403) 531-1000 Fax: (403) 531-1025	 www.bdl.ca
Alberta	Alberta Beverage Container Recycling Corporation Guy West, President and General Manager 3617 Ogden Road. S.E. Calgary, Alberta T2G 4N6	Phone: (403) 264-0170 Fax: (403) 264-0179	 www.abcrc.com
Alberta	Beverage Container Management Board Bob Saari, Managing Director Suite 100, 10707-100 Ave. Edmonton, Alberta T5J 3M1	Phone: (780) 424-3193 1-800-424-7671 Fax: (780) 428-4620	 BEVERAGE CONTAINER MANAGEMENT BOARD www.bcmb.ab.ca
Saskatchewan	Brewers Distributor Limited Jeff Ross, Manager of Operations 1400 Saskatchewan Ave. Winnipeg, Manitoba R3A 0L3	Phone: 204-958-7930 Fax: 204-786-5561	 www.bdl.ca
Saskatchewan	SARCAN Recycling Ken Homenick 111 Cardinal Crescent Saskatoon, Saskatchewan S7L 6H5	Phone: (306) 933-0616 Fax: (306) 653-3932	 www.sarcan.sk.ca/sarcan.htm

Province	Contact	Phone /Fax	Web Site and Logo
Manitoba	Brewers Distributor Limited Lil Schultz, Manager of Operations 380 Dewdney Ave. East P.O. 3057 Regina, Saskatchewan S4P 3G7	Phone: 306-924-9667 Fax: 306-352-3575	 www.bdl.ca
Manitoba	Manitoba Product Stewardship Corporation (MPSC) Jim Fogg, General Manager 280-530 Kenaston Blvd Winnipeg, Manitoba R3N 1Z4	Phone: (204) 989-6222 Fax: (204) 989-6229	 www.mpsc.com
Ontario	The Beer Store Ted Clarke, President 5900 Explorer Drive Mississauga, Ontario L4W 5L2	Phone: (905) 361-1005 Fax: (905) 361-4289	 www.thebeerstore.ca
Ontario	Stewardship Ontario Damian Bassett, CEO 26 Wellington Street East, Suite 601 Toronto, Ontario M5E 1S2	Phone: 416 594-3456 1-888-277-2762 Fax: 416 594-3463	 www.stewardshipontario.ca
Ontario	Waste Diversion Ontario Glenda Gies, Executive Director 45 Sheppard Avenue East, Suite 920, North York, Ontario, M2N 5W9	Phone: (416) 226-5113 Fax: (416) 226-1368	 www.wdo.ca
Quebec	Boissons Gazeuses Environnement Édouard Darche 100, rue Alexis-Nihon St., Suite 406 St. Laurent, Québec H4M 2N9	Phone: 514-747-7737 1-877-226-3883 Fax: 514-747-3606	 www.bge-quebec.com
Quebec	Association des Brasseurs du Québec Yvon Millette, President and Director General 1981 McGill College Montréal, Québec H3A 2Y1	Phone: (514) 284-9199 Fax: (514) 284-0817	
Quebec	Recyc-Quebec Yves Boivert 7171 Jean-Talon East Suite 200 Anjou, Québec H1M 3N2	Phone: (514) 352-5002 Fax: (514) 873-6542	 www.recyc-quebec.gouv.qc.ca

Province	Contact	Phone /Fax	Web Site and Logo
Quebec	Éco Entreprises Québec Charles Tremblay Président Place du Parc 300 Léo-Pariseau Street Suite 251 6 Montréal, Québec H2X 4B3	Phone: (514) 987-1491 Toll free: 1-877-987-1491 Fax: (514) 987-1598	 Éco Entreprises Québec www.ecoentreprises.qc.ca
New Brunswick	Encorp Atlantic Inc. Bryan Howell, General Manager Box 65 Moncton, New Brunswick E1C 8R9	Phone: (506) 532-7320 Fax: (506) 533-7006	ENCORP
New Brunswick	NB Liquor Rick Smith, Controller and Director of Information Systems 170 Wilsey Rd. P.O. Box 20787 Fredericton, New Brunswick E3B 5B8	Phone: (506) 452-6826 Fax: (506) 462-2024	 www.alcoolnb.com
New Brunswick	Rayan Investments Murry Cruikshank, President 1635 Berry Mills Road, Moncton, New Brunswick E1E 4R7	Phone: (506) 858-1600 Fax: (506) 852-9102	
Newfoundland	Multi-Material Stewardship Board P.O. Box 8131 Station A St. John's, Newfoundland A1B 3M9	Phone: (709) 753-0955 Fax: (709) 753-0974	 www.greenroutine.com
Nova Scotia	Resource Recovery Fund Board William Ring Chief Executive Officer 14 Court Street Suite 305 Truro, Nova Scotia B2N 3H7	Phone: (902) 895-7732 Fax: (902) 897-3256	 NOVA SCOTIA www.rrfb.com

Province	Contact	Phone /Fax	Web Site and Logo
Prince Edward Island	Ministry of Environment, Energy and Forestry Don Jardine, Director of Pollution Prevention Jones Building, 4th and 5th Floors 11 Kent Street P.O. Box 2000 Charlottetown, PE C1A 7N8	(902) 368-5035 (902) 368-5830	
Prince Edward Island	Island Waste Management Corporation Gerry Moore, CEO 110 Watts Ave. Charlottetown, PE C1E 2C1	Phone: 902-894-0330 Fax: 902-894-0331 Toll free 1-888-280-8111	

Consumer Fees

In many deposit return programs, the beverage industry pays for the bulk of the system costs. In Canada, however, programs have evolved in a way to minimize or eliminate the industry's financial obligation, and pass it on to their customers in the form of a front-end fee or a back-end fee.

Currently in Canada, there are four different examples of consumer-based fees that are charged to beverage consumers and used to finance the collection systems.

Container Recycling Fee (CRF)

Currently being charged in British Columbia and Alberta, the CRF represents the net cost per unit. The Container Recycling Fee varies depending on the value of the material and the recovery rate for a particular container. For example, high recovery rates generate less unredeemed deposit revenue, and therefore a higher Container Recycling Fee, while lower recovery rates generate greater unredeemed deposit revenue and lower Container Recycling Fees. The fees range from no fee to \$0.08 per unit depending on the size and material used for the container. Some containers, like drink pouches and aluminum cans, do not carry a fee.

Environmental Handling Charge (EHC)

Currently being charged in Saskatchewan, the EHC is charged on every non-refillable beverage sold. The funds are collected by the provincial government and used to pay for the operation of the program. The EHCs range from \$.03 - \$.07 per unit sold depending on the size and material used for the container. The EHC usually generates far more revenue needed to fund the system. Excess funds generated by the provincial government are put into general revenues.

Beverage Container Levy

Currently being charged on all non-refillable beverages sold in Manitoba, the 2-cent levy is used to finance 80% of the province's multi-material municipal curbside collection system. Excess revenues are kept in a surplus fund and accessed in years where shortfalls may occur. This model will be replaced by a steward-funded levy program on a wider range of packaging and printed material (like Ontario and Quebec); however the draft regulation for this new program has not yet been released. The existing program will cease only when a new program is set-up and funds are flowing.

Half-Back

Currently in place in Nova Scotia, New Brunswick, Newfoundland and PEI, a Half-Back represents half of the deposit paid on a non-refillable beverage container. Funds are used to pay for the operation of the program. Half-Backs always generate far more revenue than needed to fund the system. Excess funds are used to subsidize the municipal curbside recycling program and/or other provincial environmental initiatives.

Consumer Fees
in cents per unit sold
(as of Aug 1, 2006)

Province	BC	AB	SK*	MB	NS	NB	NF
Type of Fee	CRF	CRF	EHC	Levy	Half-Back	Half-Back	Half-Back
Aluminum Cans	0	0	5	2	5	5	5
Aerosol 0 – 1L		8	5	2	5	5	5
PET 0 – 1L	1	1	6	2	5	5	5
PET over 1L	4	2	6	2	5	5	5
PVC or HDPE 0 – 1L	1	3	6	2	5	5	5
PVC or HDPE over 1L	4	1	6	2	5	5	5
Plastic up to 500ml			6	2	5	5	5
Plastic 501ml-1L			6	2	5	5	5
Plastic over 1L			6	2	5	5	5
Polystyrene Cups (with sealed foil lid)	1	3	6	2	5	5	5
Polystyrene 0 – 1L		2	6	2	5	5	5
Polystyrene over 1L		2	6	2	5	5	5
Glass up to 500ml	4	5	7	2	5	5	5
Glass 501ml-1L	4	5	7	2	5	5	5
Glass over 1L	5	7	7	2	5	5	5
Drink box up to 500ml	0	1	3	2	5	5	5
Drink box 501ml-1L	4	1	3	2	5	5	5
Drink box over 1L	0	1	3	2	5	5	5
Gabletop up to 500ml	0	1	3	2	5	5	5
Gabletop 501ml-1L	0	1	3	2	5	5	5
Gabletop over 1L	0	0	3	2	5	5	5
Bi-metal less than 1L	0	4	5	2	5	5	5
Bi-metal less over 1L	0	0	5	2	5	5	5
Bag-in-the-Box over 1L	0	0	3	2	5	5	5
Wine and Spirits under 500ml			7	2	5	5	10
Wine and Spirits equal to or greater than 500ml			7	2	10	10	10

Container Recycling Fee (CRF) - Represents the net system cost of recovering the container.

Environmental Handling Charge (EHC) - A fee charged by the provincial government to cover the deposit return program costs and generate general revenues.

Levy - Manitoba charges a 2-cent levy on all non-refillable, non-milk beverages - This revenue is used to subsidize 80% of the curbside program.

Half-Back represents half of the deposit on each container. Half-Back revenue covers the deposit return program costs and funds other residential recycling initiatives or provincial environmental programs.

There are **no consumer fees** charged on beverages sold in Quebec and Prince Edward Island.

*The 6-cent handling fee charged on refillable beer in Saskatchewan is charged at the back-end, and taken off the refund by depot operators. This is not a regulated fee. It is imposed voluntarily by depot operators.

Deposit Levels

In provinces where deposit return systems exist, deposits are paid on beverage containers at the point of purchase. Generally they are indicated separately on the sales receipt.

Consumers receive the full deposit back (a refund) if they return the container to the appropriate collection centre (retail store and/or depot).

In some jurisdictions for certain containers depots keep part of the refund as their handling fee, thus reducing the refund for consumers.

In the Atlantic Provinces (New Brunswick, Newfoundland, Nova Scotia and PEI), only half the deposit is refunded when a non-refillable container is returned. The remaining half deposit is used to pay for the system and subsidize other provincial environmental initiatives. (Note: In NF, 5-cents are refunded on an 8-cent deposit.)

Province	BC	AB	SK	MB	ON	QC	NS	NB	NF	PEI
Container Type										
Containers up to 1 Litre	5	5		n/a	n/a	n/a				
Containers greater than 1 Litre	20	20		n/a	n/a	n/a				
Carbonated beverage containers				n/a	n/a	5				
Non-alcohol				n/a	n/a	n/a	10	10	8	
Metal cans less than 1 Litre			10	n/a	n/a	n/a				
Metal cans greater than or equal to 1 Litre			20	n/a	n/a	n/a				
Refillable soft-drink and beer under 500ml				n/a	n/a	n/a				10
Refillable soft-drink and beer greater than 500ml				n/a	n/a	n/a				20
Glass Bottles less than or equal to 300ml			10	n/a	n/a	n/a				
Glass Bottles 301ml-999ml			20	n/a	n/a	n/a				
Glass Bottles greater than or equal to 1 Litre			40	n/a	n/a	n/a				
Plastic bottles less than 1 Litre			10	n/a	n/a	n/a				
Plastic bottles greater than or equal to 1 Litre			20	n/a	n/a	n/a				
Juice box and Gabletop			5	n/a	n/a	n/a				
Wine and Spirit Containers up to and including 500ml	10	5		n/a	n/a	n/a	10	10	20	10
Wine and Spirit Containers 501 ml-1 Litre	10	5		n/a	n/a	n/a	20	20	20	20
Wine and Spirit Containers greater than 1 Litre	20	20		n/a	n/a	n/a	20	20	20	20
Beer can	10	10		10	10		10	10	10	
Beer Bottles up to 1 litre	10	10		10	10		10	10	10	
Beer Bottles greater than 1 Litre	20	20		20	20		20	20	20	
Beer cans under 450ml						5				
Beer bottles (glass) under 450ml						10				
Beer containers greater than 450ml						20				
Refillable beer bottles	10	10	10	10	10	10	10	10	10	10

Container Handling Fees and Trends

A handling fee is one of the system costs associated with deposit return programs. The handling fee is the cost incurred by the retailer or depot for handling (collecting, sorting and packaging empty containers for processing), plus a profit margin, for each beverage container unit. Handling fees should not be confused with consumer fees. Handling fees are an expense of the system.

Handling fees are the most costly part of any collection system, and therefore warrant close monitoring. Traditionally handling fees were 2-cents per unit. More recently however, depots (who are paid the fee) have been lobbying for greater fees, arguing that fees have not kept pace with the cost of living and inflation. As a result, fees have increased in most provinces in the last five years.

Generally, one fee is charged on all units in order to keep things fairly simple. However, with the onset of “activity based costing” more complex fee schedules have been devised to reflect the extra work, time or space required for some containers. For example, a large glass container is more costly to handle than an aluminum can.

Determining “fair” fees is naturally a contentious issue. In Alberta, a significant amount of work has been undertaken to establish what these handling fees or rates should be. In June 2004, a consulting firm was hired by the Beverage Container Management Board (the organization that oversees the program) to collect financial and related information from depots in Alberta to assist in determining the 2005 handling fees. The process is ongoing, but the work to date serves as a useful guide for other programs to follow when faced with similar issues.

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

Handling Fees
In cents per unit recovered
(as of June 2006)

Province	BC	AB	SK	QC	NS ¹	NB ²	NF
Aluminum Cans	3	2.8	n/a	2	3.4/3.1	3.5	3.25
PET 0 – 1L	4	5.54	n/a	2	3.4/3.1	3.5	3.25
PET over 1L	7	7.5	n/a	2	3.4/3.1	3.5	3.25
PVC or HDPE 0 – 1L	4	8	n/a		3.4/3.1	3.5	3.25
HDPE over 1L	7	8	n/a		3.4/3.1	3.5	3.25
PVC over 1L	4	7.5	n/a		3.4/3.1	3.5	3.25
Polystyrene Cups (with sealed foil lid)	4	8	n/a		3.4/3.1	3.5	3.25
Polystyrene 0 – 1L	4	8	n/a		3.4/3.1	3.5	3.25
Polystyrene over 1L	7	8	n/a		3.4/3.1	3.5	3.25
Plastic up to 500ml	4		n/a		3.4/3.1	3.5	3.25
Plastic 501ml-1L	4		n/a		3.4/3.1	3.5	3.25
Plastic over 1L	7		n/a		3.4/3.1	3.5	3.25
Glass 0 – 500ml	5	7.18	n/a	2	3.4/3.1	3.5	3.25
Glass 501ml – 1L	5	8	n/a	2	3.4/3.1	3.5	3.25
Glass over 1L	5	8	n/a	2	3.4/3.1	3.5	3.25
Drink box up to 500ml	3	5.3	n/a		3.4/3.1	3.5	3.25
Drink box 501ml-1L	5	5.3	n/a		3.4/3.1	3.5	3.25
Gabletop up to 1L	5	8	n/a		3.4/3.1	3.5	3.25
Gabletop over 1L	5	8	n/a		3.4/3.1	3.5	3.25
Bi-metal up to 1L	3	8	n/a		3.4/3.1	3.5	3.25
Bi-metal over 1L	5	8	n/a		3.4/3.1	3.5	3.25
Beer Cans @ Class “D” depots		1.67	n/a				
Non-refillable beer @ Class “D” depots		2.08	n/a				
Refillable Beer	2.42 ³	2.83 ⁴	6 ⁵	0	2.4	2.5	1

¹ In Nova Scotia, handling fees are 3.4-cents per unit under 2 million and 3.1-cents per unit for all recovered container over 2 million.

² In New Brunswick, fees will increase to 3.577/unit and 2.555/unit on Nov 30, 2006, and 3.656/unit and 2.611/unit on Nov 30, 2007 for non-refillable containers and refillable beer containers respectively.

³ In BC bottle depots independently negotiate handling fees directly with the beer industry. The average rate is about 29-cents/doz or 2.42 -cents/bottle

⁴ Interim rate.

⁵ Saskatchewan does not charge handling fees. SARCAN depots are paid a contracted rate per year, which is generated through the Environmental Handling Charge (EHC).

A 6-cent handling fee charged on refillable beer in Saskatchewan is charged at the back-end from the refund.

System Costs

In order to determine the costs of deposit return programs in Canada, income statements from the various operating agencies must be reviewed. In general, the income includes sales from empty containers sold to the recycler. In some cases, operators use the unredeemed deposit revenue to help offset their costs. Therefore, in determining the net cost of a provincial program, it is reasonable to identify a net cost without unredeemed deposit revenue and a net cost with unredeemed deposit revenue.

Net system costs without unredeemed deposit revenue =

$$\frac{\text{gross costs} - \text{material revenues}}{\text{containers sold}}$$

Net system costs with unredeemed deposit revenue =

$$\frac{\text{gross costs} - \text{material revenues} - \text{unredeemed deposits}}{\text{containers sold}}$$

See Appendix – B for individual program revenue/expenses, calculations and methodologies.

	Net system costs						
	in cents / per unit sold (CAN\$)						
	BC	AB	SK¹	QB	NB	NS	NF²
excludes:	Domestic beer	Domestic beer	Refillable beer	Refillable beer		Refillable beer	Refillable beer
Without un-redeemed deposits	3.3	3.0	3.4	1.6	n/a	3.8	3.0
With un-redeemed deposits	2.0	1.6	2.1	0.2	n/a	1.6	0.3

¹ Unredeemed deposit revenue is not made available for SK. A conservative estimate was used in order to calculate a system cost with unredeemed deposit revenue. See Appendix B for details.

² Unredeemed deposit revenue is not made available for NF. A conservative estimate was used in order to calculate a system cost with unredeemed deposit revenue. See Appendix B for details.

Who Pays What

In order to provide a clearer picture of the associated program costs, a new approach called *Who Pays What* has been developed by CM Consulting. This new approach provides a transparent picture of the associated program cost/unit sold as they relate to the various “funders” or stakeholders of the system. The following identifies and defines these costs.

Beverage Industry Cost: Direct system related cost/unit sold or surplus/unit sold to the beverage industry – brand owners or distributors.

Operating Agent Cost: Direct cost or surplus/unit sold to the operating agent that year. It should be noted that in order to achieve smooth financial operations, agents require a reserve fund. Generally, surplus funds are accrued under the reserve fund. Similarly, if an agent were in a deficit situation for that year, reserve funds can be used to balance the budget.

Provincial Government Cost: Direct system related cost incurred by the provincial government/taxpayers.

Municipal Government Cost: Direct system related cost incurred by municipal authorities/taxpayers. Note: container disposal costs are always a cost to municipalities/taxpayers. These costs are not part of the *Who Pays What* analysis.

Consumer Recycling Cost: Direct system cost/unit purchased to the beverage consumer. Revenue generated from these consumers is used directly to offset the system costs. These costs can be part of an up-front non-refundable eco-fee, container recycling fee (CRF) or the half-back portion of the refund.

Consumer Wasting Cost: Additional system cost/unit purchased to beverage consumers that choose not to return their container. These costs are generally quite high because they are equal to the value of the deposit. While these costs vary from container to container depending on the level of the deposit, the cost/unit shown is an average.

Non-System Related Consumer Cost: Several programs in Canada use Environment Handling Charges (EHCs) or Half-Back schemes to generate additional revenue. While this revenue may be generated from the beverage container consumer, it does not necessarily mean that it is being used to offset the system costs associated with operating the program that year. These non-system related costs subsidize other provincial programs or contribute to provincial general revenues. In the case of excess Container Recycling Fees (CRFs), surplus funds are used to offset the following year’s costs. CRFs do not subsidize other programs.

Who Pays What
in cents / per unit sold (CAN\$)

Stakeholders	BC	AB	SK	MB*	ON	QC	NB	NS	NF
	non-alcohol / wine /spirits / imported beer	all (excluding domestic beer)	all (excluding refillable beer)	all (excluding refillable beer)	all (excluding beer)	Non-refillable soft-drinks and beer	all (excluding refillable beer)	all (excluding refillable beer)	all (excluding refillable beer)
Beverage Industry	0	0	0	0	See Ontario Schedule pages 47-48	See Quebec Schedule pages 47-48 0.5 (soft- drinks)	n/a	0	0
Operating Agent	(0.5)	0.9	(0.5)	0	-	-	n/a	(2.7)	(1.5)
Provincial Government	n/a	n/a	0	0	2**	0	-	0	0
Municipal Government	0	0	0	n/a	n/a	0	0	0	0
Recycling Consumer	1.2	1.5	n/a	2	0	0	n/a	5.2	2.8
Wasting Consumer	6.1	5.8	>10	0	0	5.2	n/a	10.2	>8
Non-System related consumer cost	0.6	0.9	n/a	0	0	0	n/a	2.7	1.5

*In Manitoba, part of the revenue generated from the 2-cent levy on beverage containers subsidizes recovery of other materials in the municipal waste stream. The portion of revenue dedicated to beverage container recovery is unavailable. While it is the beverage industry that remits the 2-cent levy on units sold, this cost is a pass-through to the consumer, as such is represented that way in the table.

** In Ontario there is an average cost of 2-cents per LCBO unit sold. This is based on the LCBO's \$5 million contribution in 2004, for 250,635,761 containers reported by LCBO sold to home consumers.

Who Pays What Summary of Analysis

The *Who Pays What* analysis confirms that in British Columbia, Alberta, Saskatchewan, Manitoba, Nova Scotia, Newfoundland and New Brunswick (for liquor), the beverage industry bears no costs to run the provincial beverage recovery program.

The bulk of system costs are borne by the consumer that chooses not to return their container – the “wasting consumer”.

There may be a small portion of a front-end or back-end consumer fee (EHC and Half-back) which is used directly to offset the system costs. In half-back provinces most or all of the half-back is used to fund non-related environmental programs.

Beverage producers or first importers (including milk) in Ontario and Quebec (excluding soft-drink and beer brandowners) are required to pay levies on all their packaging sold into the residential stream.

Ontario & Quebec Beverage Container Packaging Fees

Both Ontario and Quebec have legislation in place that mandates 50% funding support from industry for municipal recycling. The Ontario program began funding municipalities in February 2003 and the Quebec program as of March 2005.

The targeted industry is brand owners or first importers of packaging and paper, and publishers of printed paper. In Ontario target materials are “packaging” and “printed papers”, and in Quebec they are “containers and packaging”, “printed matter” and “written media”.

In Ontario, through a municipal data call, both cost and tonnage information is collected. From that data call, Stewardship Ontario (the Industry Funding Organization representing affected stewards) determines who pays how much. The formula used to determine the fees utilizes a combination of factors which include the recovery rates, net cost and a penalization factor for lower performing materials.

Each year, as the costs and tonnages change, Stewardship Ontario submits a new fee schedule which requires approval from the Minister of Environment. In 2004, \$29 M was distributed to municipalities, plus an additional \$10 M, which was used for program delivery, research, market development and administration.

In Quebec, because a data call process is not yet in place, negotiated net costs were determined by both association of municipalities and Eco-Entreprises Quebec (EEQ) for fiscal 2005 (10 months) and 2006 (based on 2004 and 2005). In 2005, the net cost was determined to be: \$60.8 M and in 2006, the net cost was determined to be \$74.2 M. The total industry contribution for 2005 (10 months) is: \$24.3 M and for 2006 is: \$29.7 M.

The following are the fee schedules (to be approved in Quebec) for 2005 and 2006. These fees are in \$CAN.

Package Type	2005		2006	
	Ontario cents per kg sold (\$CAN)	Quebec cents per kg sold (\$CAN)	Ontario cents per kg sold (\$CAN)	Quebec cents per kg sold (\$CAN)
Aluminum	-1.09	1.12	-0.47	1.15
PET	13.9	8.6	13.56	8.75
HDPE	13.9	6.9	13.56	7.04
Other plastics	13.9	11.9	13.56	12.1
Glass - clear	3.8	2.56	3.31	2.6
Glass - coloured	4.4	2.68	3.6	2.73
Steel / bi-metal	4.7	3.53	4.6	3.59
Tetra Pak	7.9	7.02	7.67	7.14
Gabletop	7.9	7.02	7.67	7.14

Because levies are based on different material types, per container fees can be calculated when the weight of each unit is measured. The following represents an expression of the 2006 fee schedule by container type for specific volume units.

All containers will carry a levy with exception of aluminum in Ontario, which will accrue a credit against other levies charged to a brand owner. If the credit exceeds a brand owner's total stewardship fees, funds will not be paid to that brand owner. In addition, a credit cannot be carried over to the next fiscal year.

In Quebec, most aluminum cans are part of the deposit return program and therefore exempt from the municipal funding program.

Expression of Ontario and proposed Quebec levies by beverage container type in Canadian CENTS per unit sold		
	Ontario	Quebec
2-litre gabletop	0.48	0.44
1-litre gabletop	.031	.029
250ml Tetra pak	0.08	0.07
1.36 litre steel can	0.70	0.55
473ml clear glass bottle	0.75	0.59
750ml clear glass bottle	1.11	0.87
2-litre PET bottle	0.79	0.70
600ml PET bottle	.041	0.26
4-litre HDPE water bottle	0.88	0.45
outer milk bag - LDPE film	0.11	0.1
355ml aluminum can	-0.007	0.017

Source of weights: Blue Box Program Plan - Feb 2003

Environmental Benefits from reusing and recycling beverage containers

Traditionally, waste and recycling has been measured based on the weight of material disposed of or diverted. More recently however, recycling measurements are being expanded to comprise of factors which include the amount of energy saved and the reduction in greenhouse gas emissions from recycling. These new measurements provide a much more comprehensive understanding of the environmental and economic impacts of beverage container reuse and recycling.

Both Environment Canada and the US Environmental Protection Agency have undertaken extensive life-cycle analyses which measure the inputs and outputs from cradle-to-grave of various materials. The results can be applied to beverage container diversion in order to quantify the environmental benefits associated with those programs. The following tables summarize the results. Note: Some tonnage information is not available, and not represented in this report. Therefore, provincial totals should not be compared with each other.

	Avoided emissions (MTCO ₂ E)	Equivalent number of cars taken off the road.	Avoided energy	Avoided crude oil extraction in barrels	Value of crude oil saved (\$)
British Columbia	120,848	26,158	2,008,994	318,888	\$ 24,873,255
Alberta	115,186	24,932	1,908,508	302,938	\$ 23,629,151
Saskatchewan	33,976	7,354	597,514	94,843	\$ 7,397,790
Manitoba	28,611	6,193	484,940	76,975	\$ 6,004,016
Ontario	291,445	63,083	4,942,822	784,575	\$ 61,196,843
Quebec	225,505	48,811	3,676,075	583,504	\$ 45,513,307
New Brunswick	29,765	6,443	494,648	78,516	\$ 6,124,218
Nova Scotia	32,802	7,100	594,590	94,379	\$ 7,361,596
Newfoundland	20,684	4,477	362,879	57,600	\$ 4,492,782
TOTAL	898,822	194,550	15,070,970	2,392,217	\$ 186,592,958

Notes and sources on multipliers used:

- Source for avoided energy and emission multipliers: *Determination of the Impact of Waste Management Activities on Greenhouse Gas Emissions: 2005 Update Final Report*, Environment Canada & Natural Resources Canada, October 2005
- One barrel of crude oil is equal to about 6.3 GJ of energy. Source: US Department of energy – Energy Efficiency and Renewable Energy – Industrial Technologies Program
- The value of a barrel of crude oil on Wednesday, Aug 2nd, 2006 was \$78. Source: www.msnbc.msn.com
- EPA (2003). *U.S. Inventory of Greenhouse Gas Emissions and Sinks 1990-2001*. Office of Atmospheric Programs, U.S. Environmental Protection Agency, Washington, DC. EPA 430-R-03-004.
- Air Emissions are a sum total of avoided PM, NO_x, HC, SO_x, CO, CO₂, CO₂ Fossil, Ammonia, Methane, and Hydrochloric Acid. Source: RTI International

**Avoided Greenhouse Gas Emissions
from beverage container reuse and recycling**

	Aluminum	Steel	PET	HDPE	Glass Reuse	Glass Recycling	Total	Equivalent number of cars taken off the road.
MTCO2/tonne	6.51	1.20	3.64	2.29	0.38	0.12		
British Columbia	69,833	233	32,964	1,257	16,562	n/a	120,848	26,158
Alberta	67,216	304	31,637	710	15,319	n/a	115,186	24,932
Saskatchewan	12,389	109	10,571	822	10,086	n/a	33,976	7,354
Manitoba	10,266	n/a	6,221	806	11,318	n/a	28,611	6,193
Ontario	81,772	n/a	62,320	4,722	142,631	n/a	291,445	63,083
Quebec	67,743	n/a	36,094	n/a	121,668	n/a	225,505	48,811
New Brunswick	12,714	n/a	7,167	n/a	9,884	n/a	29,765	6,443
Nova Scotia	10,807	362	11,626	n/a	9,976	31	32,802	7,100
Newfoundland	5,195	65	5,533	n/a	9,863	28	20,684	4,477
TOTAL	337,934	1,073	204,133	8,317	347,306	59	898,822	194,550

**Energy Savings
from beverage container reuse and recycling**

	Aluminum	Steel	PET	HDPE	Glass Reuse	Glass Recycling	Total	Avoided crude oil extraction (in barrels)	Value of crude oil saved
GJ /tonne	87.36	12.61	85.31	64.42	6.00	1.68			
British Columbia	937,111	2,446	772,567	35,367	261,503	n/a	2,008,994	318,888	\$ 24,873,255
Alberta	901,992	3,190	741,480	19,964	241,882	n/a	1,908,508	302,938	\$ 23,629,151
Saskatchewan	166,246	1,148	247,740	23,127	159,253	n/a	597,514	94,843	\$ 7,397,790
Manitoba	137,767	n/a	145,795	22,676	178,702	n/a	484,940	76,975	\$ 6,004,016
Ontario	1,097,329	n/a	1,460,593	132,834	2,252,066	n/a	4,942,822	784,575	\$ 61,196,843
Quebec	909,068	n/a	845,934	n/a	1,921,073	n/a	3,676,075	583,504	\$ 45,513,307
New Brunswick	170,614	n/a	167,975	n/a	156,059	n/a	494,648	78,516	\$ 6,124,218
Nova Scotia	145,018	3,808	272,480	n/a	157,513	15,772	594,590	94,379	\$ 7,361,596
Newfoundland	69,713	681	129,671	n/a	155,729	7,085	362,879	57,600	\$ 4,492,782
TOTAL	4,534,858	11,273	4,784,236	233,967	5,483,779	22,856	15,070,970	2,392,217	\$ 186,592,958

Beverage Container Recycling in Canada
Estimates in tonnes

	ALUMINUM	STEEL	PET	HDPE	OTHER PLASTICS	TOTAL PLASTICS	GLASS	GLASS REUSE	POLYCOAT
British Columbia	10,727	194	9,056	549	230	9,835	60,570	43,584	2,192
Alberta	10,325	253	8,692	310	n/a	7,126	32,608	40,314	1,755
Saskatchewan	1,903	91	2,904	359	55	3,318	8,271	26,542	575
Manitoba	1,577	n/a	1,709	352	n/a	n/a	6,667	29,784	993
Ontario	12,561	n/a	17,121	2,062	n/a	n/a	128,435	375,344	356
Quebec	10,406	n/a	9,916	n/a	n/a	n/a	19,965	320,179	n/a
New Brunswick	1,953	n/a	1,969	n/a	n/a	88	1,244	26,010	200
Nova Scotia	1,660	302	3,194	n/a	n/a	82	9,388	26,252	255
Newfoundland	798	54	1,520	n/a	n/a	76	4,217	25,955	236
TOTAL	51,910	894	56,081	3,632	285	20,525	271,365	913,963	6,562

Notes on Estimates:

- Tonnage includes non-alcohol and alcohol beverage container estimates.
- Weight to container ratios were sourced from: MPSC Annual Report 2004-2005; Encorp Atlantic; MMSB and The Beer Store.
- The tonnage data used for Ontario was calculated from the municipal datacall totals. Manitoba recovery data is from MPSC.
- The tonnage data used for Ontario and Manitoba includes beer cans and non-refillable glass bottles.
- Quebec data includes soft drink and beer containers only.
- 85% of PET and 17% of HDPE totals are assumed to represent beverage containers. These percentage estimates are based on waste audit data measuring the recycling stream for the cities of London, Essex-Windsor, Toronto, Durham, Ottawa and Sudbury in 2005. Source: Stewardship Ontario – Single Family Waste Audit Program.
- Aluminum and glass beverage containers were calculated using percentages share of 97% for aluminum and 66% for non-alcohol glass. These estimates represent the beverage share of the materials collected. Source: *Understanding Beverage Container Recycling*, Jan 2002., R.W. Beck, Franklin and Associates, Boisson and Associates, Sound Resource Management, Telus Institute.
- Manitoba beverage glass was calculated by assuming that 50% of the total tonnage collected is liquor glass. This assumption is based on the liquor/non-liquor collected glass ratio in Ontario. Source: Stewardship Ontario
- New Brunswick data includes non-deposit container imports from PEI. Source: Encorp Atlantic. New Brunswick excludes liquor glass.

Appendix A – Information and data sources

British Columbia	Sales & Recovery Data non-alcohol & alcohol Financials non-alcohol, wine, spirits and import beer and cider	Beverage Container Stewardship Program Regulation - Annual Report by the Director – 2004-05 reporting period Encorp Pacific
Alberta	Sales & Recovery Data domestic beer Financials, Sales & Recovery Data - non-alcohol, wine & spirits and imported beer Sales & Recovery Data - refillable beer	BCMB Annual Report – 2004 Alberta Beverage Container Recycling Corporation BCMB Annual Report – 2004
Saskatchewan	Financials, Sales & Recovery Data - non-refillables Recovery Data - refillable beer	SARCAN Brewers Association of Canada - 2004 Statistical bulletin
Manitoba	Recovery Rates Sales & Recovery Data - Beer	Manitoba Product Stewardship Corporation Brewers Association of Canada - 2004 Statistical bulletin
Ontario	Municipal recycling costs and fee information Sales & Recovery Data - Beer (not including non-TBS listed imports)	Stewardship Ontario The Beer Store – Responsible Stewardship 2004-2005
Quebec	Municipal recycling costs and fee information Sales & Recovery Data - soft-drinks & non-refillable beer; recovery data bi-metal & gabletop curbside. Sales & Recovery Data - refillable beer	Eco-Entreprises Quebec Recyc-Quebec ; Recyc-Quebec Bilan Brewers Association of Canada - 2004 Statistical bulletin
Nova Scotia	Financials, Sales & Recovery Data - non-refillables Sales & Recovery Data - refillable beer	Resource Recovery Fund Board Brewers Association of Canada - 2004 Statistical bulletin
New Brunswick	Sales & Recovery Data - non-alcohol Sales & Recovery Data - Liquor Sales & Recovery Data - refillable beer	Encorp Atlantic Provincial Government Brewers Association of Canada - 2004 Statistical bulletin
Newfoundland	Financials, Sales & Recovery Data - non-refillables Sales & Recovery Data - refillable beer	Multi-Materials Stewardship Board Brewers Association of Canada - 2004 Statistical bulletin

Appendix B – Cost and Who Pays What analysis by Province

British Columbia		
<i>(Does not include domestic beer)</i>		
REVENUE		Notes
Container Recycling Fees (CRF)	\$ 17,875,808	CRFs are charged directly to consumers at the point of purchase
Unredeemed deposits	\$ 14,898,139	Unredeemed deposits for non-alcohol containers only. LDB retains all unredeemed deposits on wine, liquor, cider, spirits and imported beer. Unredeemed deposits retained by LDB in 2004 were: \$2,046,356.
Sale of recyclables	\$ 13,433,600	
Other income	\$ 290,519	
Contract fees	\$ 11,579,608	Contract fees represent the contract between Encorp Pacific and LDB for collection, transport, processing and marketing LDB containers.
TOTAL	\$ 58,077,674	
EXPENSES		
Handling fees	\$ 32,936,371	
Depot operations	\$ 412,648	
Processing & Transportation	\$ 14,780,558	
Consumer Awareness	\$ 1,649,368	
Administration	\$ 2,401,321	
Loss on foreign exchange	\$ 234,416	
Amortization	\$ 76,838	
TOTAL	\$ 52,491,520	
Surplus / (deficit)	\$ 5,586,154	
Containers sold (not including domestic beer)	1,181,727,603	non-alcohol: 1,012,302,292; LDB managed container sales: 169,425,311
Containers recovered	905,980,857	non-alcohol: 745,182,592; LDB managed container sales: 151,798,265
Un-recovered containers	275,746,746	
COST ANALYSIS		
Net Cost per unit sold (without unredeemed deposit revenue)	\$ 0.033	Represents the system costs net of material revenues divided by the units sold.
Net Cost per unit sold (with unredeemed deposit revenue)	\$ 0.02	Represents the system costs net of material revenues and unredeemed deposit revenue, divided by the units sold. Excluded are LDB unredeemed revenues and handling costs, as they are internalized and not available to the public.
WPW ANALYSIS		
Beverage industry cost	\$ -	
Operating agency cost/surplus	\$ 0.005	
Provincial liquor commission cost/surplus	n/a	

Municipal government cost	-	Costs associated with the management of beverage containers ending up in the waste stream are not available or accounted for in this report.
Recycling consumer cost	\$ 0.012	
Wasting consumer cost	0.061	Total unredeemed deposits including LDB are: \$16,944,495.
Consumer "non-system" related cost	\$ 0.006	Represents what consumers paid in CRF revenue that was not required for operating the system in 2004.

Alberta		
<i>(Does not include domestic beer and all beer cans)</i>		
REVENUE		Notes
Container Recycling Fees (CRF)	\$ 26,645,753	CRFs are charged directly to consumers at the point of purchase
Unredeemed deposits	\$ 16,723,518	
Sale of recyclables	\$ 14,367,707	
Other income	\$ 1,251,281	
(Loss) / Gain on foreign exchange	\$ (153,739)	
TOTAL	\$ 58,834,520	
EXPENSES		
Handling fees	\$ 37,626,194	
BCMB management fees	\$ 362,998	
Processing & Transportation	\$ 7,659,319	
Marketing Technology	\$ 1,258,899	
Administration	\$ 1,513,707	
Amortization	\$ 402,746	
TOTAL	\$ 48,823,863	
Surplus / (deficit)	\$ 10,010,657	
Containers sold (not including domestic beer)	1,135,438,227	
Containers recovered	847,001,810	
Un-recovered containers	288,436,417	
COST ANALYSIS		
Net Cost per unit sold (without unredeemed deposit revenue)	\$ 0.03	Represents the system costs net of material revenues divided by the units sold.
Net Cost per unit sold (with unredeemed deposit revenue)	\$ 0.016	Represents the system costs net of material revenues and unredeemed deposit revenue, divided by the unit sold.
WPW ANALYSIS		
Beverage industry cost	\$ -	
Operating agency cost/surplus	\$ 0.009	
Provincial liquor commission cost/surplus	n/a	
Municipal government cost	-	Costs associated with the management of beverage containers ending up in the waste stream are not available or accounted for in this report.
Recycling consumer cost	\$ 0.015	
Wasting consumer cost	0.058	
Consumer "non-system" related cost	\$ 0.009	Represents what consumers paid in CRF revenue, which was not required for operating the system in 2004.

Saskatchewan		
<i>(Does not include refillable beer)</i>		
REVENUE		Notes
Contract fee	\$ 10,627,000	Saskatchewan Environment contracts the service of collection (via depots), processing and marketing to SARCAN for a fixed rate which changes each year.
Unredeemed deposits	\$ 3,694,390	Saskatchewan Environment will not disclose the amount of unredeemed deposit revenue retained. A conservative estimate was calculated by multiplying the number of un-recovered containers by 10-cents, representing the lowest refund level, and most likely the bulk of un-recovered containers. This is a conservative estimate.
Sale of recyclables	\$ 4,941,943	
Other income	\$ 113,706	
TOTAL	\$ 19,377,039	
EXPENSES		
Collection costs	\$ 10,798,758	
Processing costs	\$ 2,049,171	
Administration	\$ 1,091,963	
Amortization / depreciation	\$ 456,478	
(Loss) / Gain on foreign exchange	\$ 21,532	
TOTAL	\$ 14,417,902	
Surplus / (deficit)	\$ 4,959,137	This surplus revenue is not held by SARCAN; rather it is retained by the Province with EHC revenue, which is excluded from this analysis, as the total amount is not available.
Surplus / (deficit) to SARCAN	\$ 1,307,029	This represents the surplus amount reported by SARCAN at year end.
Containers sold (not including refillable beer)	279,784,524	
Containers recovered	242,840,625	
Un-recovered containers	36,943,899	
COST ANALYSIS		
Net Cost per unit sold (without unredeemed deposit revenue)	\$ 0.034	Represents the system costs net of material revenues divided by the units sold.
Net Cost per unit sold (with unredeemed deposit revenue)	\$ 0.021	Represents the system costs net of material revenues and unredeemed deposit revenue, divided by the units sold.
WPW ANALYSIS		
Beverage industry cost	\$ -	
Operating agency cost/surplus	\$ 0.005	
Provincial liquor commission cost/surplus	n/a	

Municipal government cost	-	Costs associated with the management of beverage containers ending up in the waste stream are not available or accounted for in this report.
Recycling consumer cost	n/a	
Wasting consumer cost	>0.10	This represents the minimum cost per wasting consumer.
Consumer "non-system" related cost	n/a	

Quebec		
<i>Non-refillable beer and soft-drinks</i>		
REVENUE		Notes
Unredeemed deposits	\$ 19,300,000	
Sale of recyclables	\$ 19,200,000	
Direct revenue from bottlers	\$ 2,200,000	
TOTAL	\$ 40,700,000	
EXPENSES		
Handling fees	\$ 20,000,000	
Contribution for L'ISE	\$ 1,500,000	
Penalty payments	\$ 2,300,000	Penalty payments are made by the bottlers to Recyc-Quebec when targets are not met.
Transportation / processing	\$ 14,000,000	Estimate calculated by Recyc-Quebec
Administration cost from BGE to Recyc-Quebec	\$ 800,000	
Contamination costs from non-deposit containers	\$ 2,100,000	These costs are incurred when non-deposit bearing containers are treated as a deposit container. The associated costs are from the handling fee and the refund for a contamination unit cost of 7-cents/unit.
TOTAL	\$ 40,700,000	
Surplus / (deficit)	\$ -	
Containers sold (not including refillable beer)	1,359,000,000	
Containers recovered	990,000,000	
Un-recovered containers	369,000,000	
COST ANALYSIS		
Net Cost per unit sold (without unredeemed deposit revenue)	\$ 0.016	Represents the system costs net of material revenues divided by the units sold.
Net Cost per unit sold (with unredeemed deposit revenue)	\$ 0.002	Represents the system costs net of material revenues and unredeemed deposit revenue, divided by the units sold.
WPW ANALYSIS		
Beverage industry cost	\$ 0.005	As per estimate from BGE the organization that collects funds from the SD industry.
Operating agency cost/surplus	-	
Provincial liquor commission cost/surplus	n/a	
Municipal government cost	-	Costs associated with the management of beverage containers ending up in the waste stream are not available or accounted for in this report.
Recycling consumer cost	\$ -	There are no upfront or backend fees on containers in Quebec
Wasting consumer cost	0.052	
Consumer "non-system" related cost	-	

Nova Scotia		
(does not include refillable beer)		
REVENUE		Notes
Unredeemed deposits	\$ 6,710,744	Unredeemed deposits were calculated by multiplying all unrecovered containers (by type and deposit level) with their deposit amount.
Half-back revenue	\$ 12,800,996	Half-Back revenue was calculated by multiplying all recovered containers (by type and deposit level) with their half-back amount.
Sale of recyclables	\$ 3,755,167	
Other income	\$ 495,302	
TOTAL	\$ 23,762,209	
EXPENSES		
Handling fees	\$ 8,000,000	Estimate provided by RRFB
Cartage/Regional processing, and other operational costs	\$ 5,944,517	Estimated by subtracting handling fees and refunds from total operating costs
Regional processing		
Education and Awareness	\$ 502,458	Represents 35% of RRFB's total E&A costs.
Administration	\$ 1,022,010	Represents 65% of RRFB's total administration costs.
TOTAL	\$ 15,468,985	
Surplus / (deficit)	\$ 8,293,224	
Containers sold (not including domestic beer)	311,822,822	
Containers recovered	246,054,837	
Un-recovered containers	583,164,336	
COST ANALYSIS		
Net Cost per unit sold (without unredeemed deposit revenue)	\$ 0.038	Represents the system costs net of material revenues divided by the units sold.
Net Cost per unit sold (with unredeemed deposit revenue)	\$ 0.016	Represents the system costs net of material revenues and unredeemed deposit revenue, divided by the unit sold.
WPW ANALYSIS		
Beverage industry cost	\$ -	
Operating agency cost/surplus	\$ (0.027)	
Provincial liquor commission cost/surplus	\$ -	
Municipal government cost	-	Costs associated with the management of beverage containers ending up in the waste stream are not available or accounted for in this report.
Recycling consumer cost	\$ 0.052	
Wasting consumer cost	0.012	
Consumer "non-system" related cost	\$ 0.027	

Determining unredeemed deposit revenue and half-back revenue for Nova Scotia

Deposit level	Refund level	Container Type	Sales	Recovery	Un-recovered	Unredeemed revenue	Half-Back revenue
\$ 0.10	\$ 0.05	al	139,845,459	116,550,207	23,295,252	\$ 2,329,525	\$ 5,827,510
\$ 0.10	\$ 0.05	gl	21,151,480	15,938,995	5,212,485	\$ 521,249	\$ 796,950
\$ 0.20	\$ 0.10	gl	10,140,672	9,047,591	1,093,081	\$ 218,616	\$ 904,759
\$ 0.10	\$ 0.05	pet	102,577,065	79,622,642	22,954,423	\$ 2,295,442	\$ 3,981,132
\$ 0.20	\$ 0.10	pet	1,163,862	917,487	246,375	\$ 49,275	\$ 91,749
\$ 0.10	\$ 0.05	hdpe	11,192,584	8,007,265	3,185,319	\$ 318,532	\$ 400,363
\$ 0.10	\$ 0.05	steel	3,829,580	2,672,637	1,156,943	\$ 115,694	\$ 133,632
\$ 0.10	\$ 0.05	gable/tetra	21,922,120	13,298,013	8,624,107	\$ 862,411	\$ 664,901
TOTAL			311,822,822	246,054,837	65,767,985	\$ 6,710,744	\$ 12,800,996

Newfoundland and Labrador		
<i>(Does not include refillable beer)</i>		
REVENUE	Notes	
Unredeemed deposits estimate	\$ 5,041,718	Unredeemed deposits are not available through MMSB income statements. An estimate was calculated by multiplying all un-recovered containers (by type and deposit level) with a deposit amount of 8-cents. While there are some refunds worth 20-cents, this is a conservative estimate.
Half-back revenue estimate	\$ 3,472,762	Retained half-back revenue is not available through MMSB income statements. An estimate was calculated by multiplying all recovered containers (by type and deposit level) with a half-back amount of 3-cents. While there are some refunds worth 10-cents, this is a conservative estimate. The income statement does however provide the combined value for unredeemed and half-back revenues. This figure was lower by \$249,301. This amount was deducted from the retained half-back revenue estimate. While both the unredeemed value and half-back values are estimates in this table, added together they represent the accurate value as reflected in the 2004-05 income statement.
Sale of recyclables	\$ 1,943,612	
TOTAL	\$ 10,458,092	
EXPENSES		
Handling fees	\$ 3,770,899	
Regional processing	\$ 703,821	
Freight & transportation	\$ 1,198,709	
Depot fees	\$ 196,920	
Quality assurance and storage	\$ 80,384	
Administration	\$ 1,651,427	
TOTAL	\$ 7,602,160	
Surplus / (deficit)	\$ 2,855,932	
Containers sold (not including domestic beer)	187,090,235	
Containers recovered	124,069,631	
Un-recovered containers	63,020,604	
COST ANALYSIS		
Net Cost per unit sold (without unredeemed deposit revenue)	\$ 0.030	Represents the system costs net of material revenues divided by the units sold.
Net Cost per unit sold (with unredeemed deposit revenue)	\$ 0.003	Represents the system costs net of material revenues and unredeemed deposit revenue, divided by the units sold.
WPW ANALYSIS		
Beverage industry cost	\$ -	

Operating agency cost/surplus	\$ (0.015)	
Provincial liquor commission cost/surplus	\$ -	
Municipal government cost	-	Costs associated with the management of beverage containers ending up in the waste stream are not available or accounted for in this report.
Recycling consumer cost	\$ 0.028	
Wasting consumer cost	\$ 0.08	
Consumer "non-system" related cost	\$ 0.015	

Determining unredeemed deposit revenue and half-back revenue for Newfoundland and Labrador

Deposit level	Half-back	Container Type	Sales	Recovery	Un-recovered	Unredeemed revenue	Half-Back revenue
\$ 0.08	\$ 0.03	al	81,464,989	56,231,656	25,233,333	\$ 2,018,667	\$ 1,686,950
\$ 0.08	\$ 0.03	pet	57,565,810	40,003,557	17,562,253	\$ 1,404,980	\$ 1,200,107
\$ 0.08	\$ 0.03	steel	1,048,543	478,539	570,004	\$ 45,600	\$ 14,356
\$ 0.08	\$ 0.03	gable	3,792,234	1,366,778	2,425,456	\$ 194,036	\$ 41,003
\$ 0.08	\$ 0.03	other	7,092,376	3,856,841	3,235,535	\$ 258,843	\$ 115,705
\$ 0.08	\$ 0.03	tetra	17,710,991	10,916,471	6,794,520	\$ 543,562	\$ 327,494
\$ 0.08	\$ 0.03	glass (li)	18,415,292	11,215,789	7,199,503	\$ 575,960	\$ 336,474
			187,090,235	124,069,631	63,021,480	\$ 5,041,718	\$ 3,722,063