



Canadian Beverage Association
Association canadienne des boissons

BC Refrigeration Units Stewardship Plan

Annual Report to the Director

2022

Submitted to: Director, Extended Producer Responsibility Programs
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Executive Summary

	Vending Machines, Refrigeration Coolers, Beverage Dispensing Systems operated for commercial purposes only by Canadian Beverage Association (CBA) members.
	http://www.canadianbeverage.ca/environment/stewardship/

Recycling Regulation Reference	Topic	Summary
Part 2, section 8(2)(a)	Public Education Materials and Strategies	<ul style="list-style-type: none"> Stewardship Plan and annual reports continue to be posted on CBA's website CBA to continue to provide any third-party instructions on where refrigeration units can be properly disposed for end-of-life management
Part 2, section 8(2)(b)	Collection System and Facilities	<ul style="list-style-type: none"> Refrigeration units are collected by CBA members at locations in BC Once collected, units destined for end-of-life management are transported to one of two processing facilities
Part 2, section 8(2)(c)	Product Environmental Impact Reduction, Reusability and Recyclability	<ul style="list-style-type: none"> CBA members continue to retrofit or refurbish refrigeration units throughout their lifecycle to extend their useful life in-trade. Further efforts are being undertaken to reduce environmental impacts, including: the recycling and reuse of old parts removed from units during refurbishment/repairs, as well as phasing out the use of hydrofluorocarbons in refrigeration equipment
Part 2, section 8(2)(d)	Pollution Prevention Hierarchy and Product / Component Management	<ul style="list-style-type: none"> Refrigeration units that are collected are either refurbished/re-used or sent for recycling to metal processor in British Columbia (See table 4) Approximately 82% of the components in each beverage vending machine are recycled (See table 4) Approximately 84% of the components in each beverage cooler are recycled (See table 4) Approximately 75% of the components in each beverage dispensing unit are recycled (See table 4)
Part 2, section 8(2)(e)	Product Sold and Collected and Recovery Rate	<ul style="list-style-type: none"> 4,706 refrigeration units were introduced into trade in 2022 (See table 6) 3,792 refrigeration units were collected in 2022 for end-of-life management, collected for refurbishment and sold third parties (See table 7) Collection rate for 2022 was 86.91% (See table 7)
Part 2, section 8(2)(e.1)		<ul style="list-style-type: none"> All products collected in British Columbia are collected in two locations in the Metro Vancouver Regional District
Comparison of Key Performance Targets		
Part 2 section 8(2)(g); See full list of targets in Plan Performance		

Recycling Regulation Reference	Topic	Summary
Priority Stewardship Plan Targets (as agreed with ministry file lead)	Performance	Strategies for Improvement
Annual Collection Target: 80%	Collection Rate: 86.91%	One member has a fully revised tracking system, which has provided additional insight into machinery and provided opportunity for even better management.

Program Outline

The four members participating in the Plan, include:

- Coca-Cola Canada Bottling Limited
- Coca Cola North America
- PepsiCo Beverages Canada
- Red Bull Canada

In the 2022 report, the same four members participated.

All beverage refrigeration units covered under this Plan are used for commercial purposes and are managed by internal process by CBA member companies and/or their distributors throughout the units' lifecycle. The products covered under the Plan include the following CBA member-owned and branded refrigeration units:

Table 1: Products covered under Stewardship Plan

Product Type	Further Description
Beverage Coolers	Countertop, 1 door units, 2 door units, 3 door units
Beverage Vending Machines	72" and 79" high machines that distribute cans and/or PET bottles
Beverage Dispensing Systems	Counter units, Drop-in units, Combo units

General Disclosure:

This is the first self-assessed report conducted by the Canadian Beverage Association on behalf of its members. The same process was followed as in previous years. The results continue to show strong stewardship of refrigeration equipment.

Public Education Materials and Strategies

The Stewardship Plan only includes commercial products managed and processed internally by CBA members and distributors. To ensure public awareness of our industry's efforts to properly manage our refrigeration units, the CBA will continue to post the Plan and annual reports on our website. The link to the website is the following: <http://www.canadianbeverage.ca/environment/stewardship/>.

CBA members will continue to place a notification sticker on all refrigeration units if sold to a third-party to direct the third-party to contact the CBA for instructions on where the unit can be properly disposed of at its end-of-life.

Collection System and Facilities

CBA members continue to operate a closed-collection network and any maintenance or refurbishments (parts replacements, etc.) are undertaken by the beverage company or its local distributor. Therefore, when a unit requires retrofitting or refurbishment, it is collected and transported by the member or distributor to their facility for further triage and maintenance.

Units are collected for end-of-life (EOL) management and refurbishment at five collection locations depending on the steward of the unit. The collection locations are located in the Metro Vancouver Regional District.

When it has been determined that a piece of refrigeration equipment can no longer be used by the CBA member, a decision is made to remove the equipment as an asset from the company's list of assets and to have the machine recycled and processed by a contracted BC third party (referred to as a processor).

Five processing facilities were used by stewards for EOL management, which are located in the Metro Vancouver Regional District. These facilities include the following locations:

ABC Recycling
8081 Meadow Avenue
Burnaby, BC V3N 2V9

Jim Galbraith Trucking LTD
23617 16 Avenue
Langley, BC V2Z 1K8

RYPAC
11849 Tannery Rd
Surrey BC V3V 3W8

Carrier Enterprises
Suite 101 26868 56 Avenue
Langley, BC V4W 1N9

Joss Brothers Recycling Limited
12195 Industrial Rd.
Surrey, BC V3V 3S1

Product Environmental Impact Reduction, Reusability and Recyclability

Most CBA members' refrigeration units undergo more than one retrofit or refurbishment throughout their lifecycle to extend their useful life in-trade. Furthermore, CBA members increasingly use units that depreciate much slower, delaying the need for disposal. Additional efforts undertaken to reduce environmental impact include the recycling and reuse of old parts removed from units during refurbishment/repairs.

An area of continuous improvement relates to the manufacturers and beverage companies as a whole. Efforts in the industry to increase the useful life of all refrigeration equipment through enhanced durability and modular systems that can be more easily replaced and repaired will reduce the number of units managed for EOL over time.

Leadership on Halocarbon Management

CBA members actively take steps to manage halocarbons, as well as play leadership role to reduce the use of hydrofluorocarbons (HFCs) in refrigeration equipment. HFCs are powerful greenhouse gases (GHGs) with global warming potentials (GWP) thousands of times greater than carbon dioxide. These chemicals were introduced for use as refrigerants and blowing agents to replace ozone-depleting substances (ODS).

As part of the CBA's efforts to address climate change, CBA member companies with facilities in BC are phasing out the use of HFCs in refrigeration units. These efforts include transitioning to natural refrigerants or refrigerants with a low GWP, and installing HFC-free insulating foam in new beverage machines.

For existing machines that still contain ODSs and HFCs, CBA members track and manage these chemicals in accordance with BC Regulation 387/99. Member companies either have their own trained, licensed technician remove refrigerants from the compressors of beverage machines or have a licensed service

provider do so for them. The refrigerant is safely recovered into a container that is then returned to the supplier for reclamation or destruction.

Pollution Prevention Hierarchy and Product / Component Management

Beverage coolers, beverage vending machines and beverage dispensing system units are owned by beverage companies and placed in commercial facilities for use. Therefore, CBA members are individually responsible for the maintenance and end-of-life management. All CBA members in the Plan have internal processes, which ensure the collected product is managed appropriately as per the pollution prevention hierarchy.

Generally, if a unit breaks down in use, the machine will either be repaired on-site, or removed to a member's off-site triage facility to be repaired. When the equipment is removed, it is replaced with either a used machine or a new machine.

The average lifespan of these types of machines tends to be extensive, although maintenance and servicing is required to ensure longevity and developments in technology have increased the lifespan of machines. The following table shows the average lifespan of the different types of refrigeration equipment.

Table 2: Average lifespan of different types of refrigeration equipment

Product Type	Average Product Lifespan
Beverage Coolers – Small (countertop)	3-6 years
Beverage Coolers – Larger	13 -15 years
Beverage Vending Machines	9 - 12 years
Beverage Dispensing Systems	7 – 9 years

Before a beverage machine is recycled, the refrigerant is removed from the compressor by a licensed technician for reclamation or destruction in accordance with provincial regulations. Additionally, the oil and fluorescent lightbulbs, as well as any other useful parts, are removed to be reused or recycled. Once refrigeration units are ready for EOL management, they are shipped to intermediary scrap metal processors. Refrigeration equipment from CBA members is a very small percentage of the overall metal managed by intermediary processors. As a result, beverage refrigeration equipment is mixed with other scrap metal, including major appliances (such as washers, dryers, and freezers), car bodies and other light mixed metals (e.g., bicycle frames, barbecues, metal sheets and siding, metal doors, and shelving) from various residential and commercial sources.

The intermediary processors based within BC then sell the baled metal to downstream scrap metal processors where the equipment is shredded to recover the various ferrous and non-ferrous metals. These scrap metal processors use large electric-powered hammer mill shredders that pulverize bales of mixed metals, which are composed of automobile bodies, appliances, and other light mixed scrap metal. Once the scrap metal is pulverized into small pieces, they are then sorted by different “downstream”

metal separation processes including magnets, trommels, screens, optical scanners, eddy currents, and other types of proprietary process equipment. Shredder output, which is known as “aggregate” in the industry, is an intermediate process material that contains significant amounts of valuable ferrous and nonferrous metal that is separated and sold as commodities. In total, ferrous and non-ferrous metals recovered through these operations account for approximately 75% of the inbound material.

The remaining estimated 25% of the material from the shredded equipment cannot be recovered and is commonly referred to as shredder fluff. Shredder fluff is a mixture of largely non-metallic materials resulting from the shredding of auto bodies, appliances, and other scrap metal materials. It consists primarily of foam, fabric, plastics, rubber, tires, glass, wood, and debris materials, along with minute amounts of remaining metallic material that is too small to be economically separated and removed from the aggregate.

This shredded fluff also consists of approximately 1% of non-recoverable ferrous and non-ferrous metals such as strips of copper or aluminum that are wrapped around parts of the equipment or metals imbedded in the insulation or plastic materials. This material cannot be recovered and is therefore sent for disposal.

Table 3: Acceptable Product End Fate Matrix

If possible, units are retrofitted or refurbished; if reuse is not possible the unit is destined for end-of-life management. This table only considers units sent for EOL management.

Unit	Reused	Recycle	Energy Recovery	Land Fill
Vending Machines	N/A	1st Preference	N/A	X
Cooler Units	N/A	1st Preference	N/A	X
Beverage Dispensing Systems	N/A	1st Preference	N/A	X

Table 4: Estimated Product End Fate Data for year ended December 31, 2022¹

Unit	Reused	Recycle	Energy Recovery	Land Fill	Unknown
Vending Machines	0%	82%	0%	18%	N/A
Cooler Units	0%	84%	0%	16%	N/A
Beverage Dispensing Systems	0%	75%	0%	25%	N/A

¹ Units sent for EOL Management

Table 5: Processing Pathways for EOL Management

The table below demonstrates the general nature of the processing pathway which occurs once a unit can no longer be used by the CBA member company (i.e., can't be refurbished/re-used) and is sent to a third-party processor for recycling and processing. The first phase of processing consists of the unit being sent to intermediary processor in British Columbia, where the unit is baled and sold to a downstream processor located in province or elsewhere in North America. At the second phase of processing the bale is shredded to separate recyclable mixed metal components from non-recyclable mixed materials. Depending on the unit type, at least 75% of the unit's components are recycled while the remaining 16-25% of components are sent for landfill disposal.²

Unit	Nature of Processing	
	Phase#1 - Transfer to Intermediary Processor in British Columbia	Phase#2 - Transfer to direct processor in British Columbia or elsewhere in North America
<i>Vending Machines</i>	100% of unit components	~82% of unit components recycled (mixed metal)
<i>Cooler Units</i>	100% of unit components	~84% of unit components recycled (mixed metal)
<i>Beverage Dispensing Systems</i>	100% of unit components	~75% of unit components recycled (mixed metal)

Product Sold and Collected and Recovery Rate

The tables and information below show highlights of the Stewardship Plan for the year of 2022. In 2022, the total number of products collected was 3,792. The total number of units introduced and distributed into the province was 4,706.

Table 6, located on the next page, shows the total number of refrigeration units at the start of Quarter 1 2022 compared to the end of Quarter 4 2022 in-trade.

² In response to a Ministry request to review the baseline study for the stewardship Plan, the CBA engaged Reclay StewardEdge (RSE). RSE had prepared the research for our association's original 2013 Baseline Study Report by conducting interviews with local scrap metal processors. After reassessing the baseline study and conducting additional research to ensure its accuracy, RSE confirmed in December 2017 that it "is confident the original recovery assumptions from the 2013 Baseline Study for CBA member refrigeration units remain valid and accurate."

Table 6: Number of units in-trade at start of Q1 2022 and at the end of Q4 2022

	Number in-trade: start of Q1 2022	Introduced into trade: Q1-Q4 2022 ³	Removed from trade: Q1-Q4 2022 ⁴	Number in-trade: end of Q4 2022	Net Change: 2022 Year End⁵
Beverage Vending Machines	4,568	234	582	4,285	-348
Beverage Coolers	22,446	3,852	3,348	23,408	504
Beverage Dispenser Systems	3,937	620	433	3,728	-187
Total	30,951	4,706	4,363	31,421	343

The Recycling Regulation defines the recovery rate as the “amount of product collected divided by the amount of product produced, expressed as a percentage.” However, given that refrigeration units are a commercial product with a longer useful life than many other products under the Electronic and Electrical Product Category, a more appropriate performance measure is the “collection rate.” Each CBA member has its own internal processes to manage the collection of refrigeration units, which corresponds to the pollution hierarchy to reduce, reuse, recycle and recover. The goal is to extend the useful life of refrigeration units for as long as possible before they must be sent for EOL management.

Due to the closed-loop, commercial nature of the beverage sector’s operations, refrigeration units are tracked by CBA members throughout their lifecycle until they are sent for EOL management to contracted recyclers. A small number of refrigeration units are sold to customers for continued use and exit the plan’s tracking system while a certain number are transferred out of BC for continued use in a different 10 province, where they would be recycled at the EOL. It is only when units are lost-in-trade (that is, either stolen or misplaced by a customer) that they would not be collected for EOL management. Therefore, the plan’s collection rate is calculated in the following way:

<p>Units Collected (Units sold to 3rd parties, units collected for refurbishment, units sent for EOL management and units transferred to other provinces)</p> <hr/> <p>Units Removed from Tracking System: (denominator plus # of units lost in trade and other adjustments with a net removed from trade position)</p>
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³ Includes both new and refurbished units as well as other adjustments with a net in-trade position.

⁴ Includes units sold to third parties, collected for refurbishment, collected for EOL management or lost in trade and other adjustments with a net removed from trade position.

⁵ Net change equals Q1 number in-trade plus, new in trade plus other adjustments with a net in-trade position, less units lost in trade, units sold to 3rd party, units collected for EOL management, units in refurbishment/retrofitting, and less other adjustments.

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Table 7: Collection Rate for the Year of 2022

	(a) # of Units Collected for EOL Management	(b) # of Units Sold to 3 rd Party	(c) # of Units in Refurbishment	(d) # of Units Transferred to Other Provinces ⁹	(e) # of Units Collected	(f) # of Units Lost in Trade (2022)	(g) Other Adjustments	(h) Units Removed from Tracking System	Collection Rate (%)
Beverage Vending Machines	212	0	272	76	560	22	0	582	96.22%
Beverage Coolers	690	7	1,568	563	2,828	520	0	3,348	84.47%
Beverage Dispenser Systems	163	0	51	190	404	29	0	433	93.30%
Total	1,065	7	1,891	829	3,792	571	0	4,363	86.91%
<i>Notes:</i>					<i>(a)+(b)+(c)+(d)</i>			<i>(e)+(f)+(g)</i>	<i>(e)/(h)</i>

Table 8: Geographic Breakdown of Units Collected Based on Collection Facilities

	Beverage Vending Machines	Beverage Coolers	Beverage Dispenser Systems	Total
Metro Vancouver Regional District	484	2,258	214	2,956 ⁶
Other BC Regional Districts	N/A	N/A	N/A	N/A
Other (Out-of-Province)	N/A	N/A	N/A	N/A

⁶ This number does not include units sold to third parties, transferred to other provinces, or lost in trade.

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Plan Performance

Summary of Program Performance Measures:

Measures	Targets/Goal									
	2012	2013	2014	2015	2016	2017	2019	2020	2021	2022
Collection	75% target committed to in Plan.	Collection Target is 80%	Collection Target is 80%	Collection Target is 80%	Collection Target is 80%	Collection Target is 80%	Collection Target is 80%	Collection Target is 80%	Collection Target is 80%	Collection Target is 80%
	Gather baseline collection data to confirm future year recovery rates.	Collection Rate: 81%	Collection Rate: 95.39%	Collection Rate: 94.01%	Collection Rate: 90.52%	Collection Rate: 87.06%	Collection Rate: 71.89%	Collection Rate: 86.46%	Collection Rate: 85.75%	Collection Rate: 86.91%
Collection System	<p>No specific target was committed for 2022. CBA members to continue to maintain complete reverse logistics for products retained which remain in operation or “in-trade” until end of life.</p> <p>For products sold to third parties for continued use (~2% of products available at end of life), the CBA is committed to providing education and collection options.</p>									
Consumer Awareness	<p>No specific target was committed for 2022. CBA members to maintain current processes. Given product longevity and specificity of the market, CBA commits to continue to make third-parties aware of the stewardship program through notification on product itself and details included in purchase agreements.</p>									

		2012	2013	2014	2015	2016	2017	2019	2020	2021	2022
Product Life Cycle	Depends on product type (see <i>Pollution Prevention Hierarchy and Product / Component Management Section above</i>)	No specific target was committed for 2013-2022. Depends on product type (see <i>Pollution Prevention Hierarchy and Product / Component Management Section above</i>)									
Pollution Prevention Hierarchy	Target all products for collection and management according to the PPH.	No specific target was committed for 2013-2022.									
		Target all products for collection and management according to the PPH.									