

Regional District of Central Okanagan

Curbside Glass Collection – Preliminary Analysis and Recommendation

2021





Engineering Services

1450 K.L.O. Road
Kelowna, B.C. V1W 3Z4
Telephone: (250) 469-6250
Fax: (250) 762-7011
rdco.com

Preliminary Analysis and Recommendation

DATE: April 8, 2021
SUBJECT: Curbside Glass Collection

Purpose:

To explore options for curbside glass collection within the Central Okanagan, providing specific financial and environmental considerations.

Objectives:

1. Summarize other comparable communities within British Columbia that collect glass at curbside.
2. Complete preliminary costing analysis for curbside glass collection within the Central Okanagan.
3. Complete a brief environmental analysis for curbside glass collection within the Central Okanagan.
4. Provide a recommendation, through the Solid Waste Technical Advisory Committee (SWTAC)

RECOMMENDATION:

THAT the RDCO fully explore curbside glass collection as part of the consideration of regional participation in the Recycle BC curbside collection program prior to the 2024 Solid Waste Management Plan effectiveness review.

1. Community Comparison

Table 1 - Summary of other community Curbside Glass Collection Programs Annual Fees

Community	Population	Est. Serviced Dwellings	Curbside Glass Annual Fee \$/SFU/Year	Glass Start-up \$	Glass \$ / year
Chilliwack	83,790	22,500	\$23.80	\$163,000	\$550,000
Mission	38,833	10,000	\$9.00	N/A	\$90,000
Port Moody	33,551	3913 / 9,062*	\$12.00 / \$7.00*	N/A	\$110,000
Hope	6,181	2887	\$39.00	\$15,000**	\$115,000
RDNO	84,354	24,000***	\$0 (EPR Funded)	\$0 (EPR Funded)	\$0 (EPR Funded)
CRD	383,360	71,000	\$0 (EPR Funded)	\$0 (EPR Funded)	\$0 (EPR Funded)
RDCO	222,749	61,360	-	-	-

*Port Moody includes multi-family in its glass collection program

**Estimated expense for curbside glass bins

***Estimated using 2016 population and 2006 dwelling unit data

All communities with curbside recycling collection that collect curbside glass collection advise residents that only glass packaging is acceptable in their curbside glass bin. No dishware, drinking glasses, mirrors, aquariums, windows, light bulbs, deposit containers, vases, or other non-packaging glass items. This service is limited to glass packaging like pickle jars and sauce bottles.

In Chilliwack, curbside glass collection was removed as a service in 2017 when Chilliwack joined the updated Recycle BC program. The year of removal, Chilliwack observed that glass made up approximately 1.5% of curbside garbage, similar to the 1% that we observed in the Central Okanagan. To support the program, Chilliwack Council approved a \$23.80 fee per dwelling, per year in 2018 to support curbside glass collection. Public opinion was mixed, with residents opposing the additional fees and also supporting the convenience of not hauling glass containers to recycling depots.

"It's absolutely ridiculous, I'd rather not pay an extra charge to recycle 4 pasta jars per month."

-Opposed Chilliwack Resident

"...having to make a special trip to the depot for glass was wasteful. People wanted it bad so they brought it back."

-Supporting Chilliwack Resident

For all communities that have initiated curbside glass collection, it followed as a desired convenience after already initiating or fully exploring many curbside programs to reduce landfill bound waste.

All communities, for example, that offered co-mingled curbside recycling collection and initiated curbside glass collection already had a kitchen food scrap program in place. All comparison communities have also reduced curbside garbage collection to bi-weekly. The following table was prepared to aid comparison, RDNO and CRD were not included, as all of their curbside recycling is undertaken by Recycle BC:

Table 2 - Summary of other community Curbside Glass Collection Programs by frequency

Community	Waste Collection Frequency	Glass Collection Frequency	Recyclable Collection Frequency	Food Scrap Collection	Yard Waste Collection Frequency
Chilliwack	Bi-Weekly	Weekly	Weekly	Weekly	Weekly
Mission	Bi-Weekly	Weekly	Weekly	Weekly	Weekly
Port Moody	Bi-Weekly	Monthly	Bi-Weekly	Weekly	Weekly
Hope	Bi-Weekly	Bi-Weekly	Bi-Weekly	Weekly	Weekly
RDCO	Weekly	Not Applicable	Bi-Weekly	Not Applicable	Bi-Weekly

Community Comparison Summary:

- The RDCO and member Municipalities provide, through weekly waste collection, twice as much landfill disposal as comparable communities that have initiated glass collection at curbside.
- Kitchen and food scrap collection is not provided in the RDCO and is provided in all comparable communities with co-mingled recycling that have initiated glass collection at curbside.
- Communities with recycling services provided by Recycle BC have no expense when participating in curbside glass programs, all expenses are fully funded through Extended Producer Responsibility programs.
- Residents in the comparable communities still have to go to a depot to recycle plastic bags, foam packaging, and other flexible plastic packaging.

2. Cost Estimates

Curbside glass collection varies from community to community, and can be broken down to the following ranges:

- **Startup expenses, including bin and bin delivery:** \$5 - \$10 per curbside dwelling
 - RDCO Range: \$310k - \$615k
- **Ongoing Program Expenses:** \$7 - \$39 per curbside dwelling, per year
 - RDCO Range: \$430k - \$2.4M
- **Program Revenue:** \$80/MT for collected glass
 - RDCO Estimate (2020 values): \$24,000 maximum

Community	Population	Curbside Dwellings	Curbside Glass Annual Expense	Glass Start-up \$	Glass Revenue	Annual Net Expense
RDCO	222,749	61,360	\$430k - \$2.4M	\$310k- \$615k	Maximum: \$24k	\$406k - \$2.4M

Table 3 – Summary of estimated Probable Cost

RDCO Estimated Probable Cost - Curbside Glass Collection					
#	Item	Unit Rate Estimate	Units	Cost	Comments
1	Collection Bins and Delivery	\$7.00	61,360 SFU	\$429,520	One bin per SFU
2	Collection Contract (monthly)	\$24.00	61,360 SFU	\$1,472,640	\$2 per SFU, per month
3	Education / Promotion (Year 1)	5% of expense	\$1.9M	\$95,000	Best Practice
4	Education / Promotion (Ongoing)	5% of expense	\$1,47M	\$73,500	Best Practice
4	RDCO Overhead (Year 1)	14.01% of program	\$2.0M	\$279,600	RDCO policy
5	RDCO Overhead (Ongoing)	14.01% of program	\$1.55M	\$216,600	RDCO policy
	Net Expense (Year 1)			\$2.3M	
	Net Expense (Ongoing)			\$1.8M	

6	Program Revenue	\$80	300 tonnes	(\$24,000)	High Estimate
7	Landfill Savings	\$75 / airspace	182 m ³	(\$13,600)	High Estimate
	Net Revenue (Ongoing)			(\$37,000)	
	Project Cost (Year 1)			\$2.3M	
	Project Cost(Ongoing)			\$1.7M	
8	Cost per Dwelling (Ongoing)	\$1.7M	61,360 SFU	\$28.12	\$2.34 per month
9	Cost per glass container	300 MT @ \$1.7M	225g/container	\$1.28	per recycled glass container

Summary:

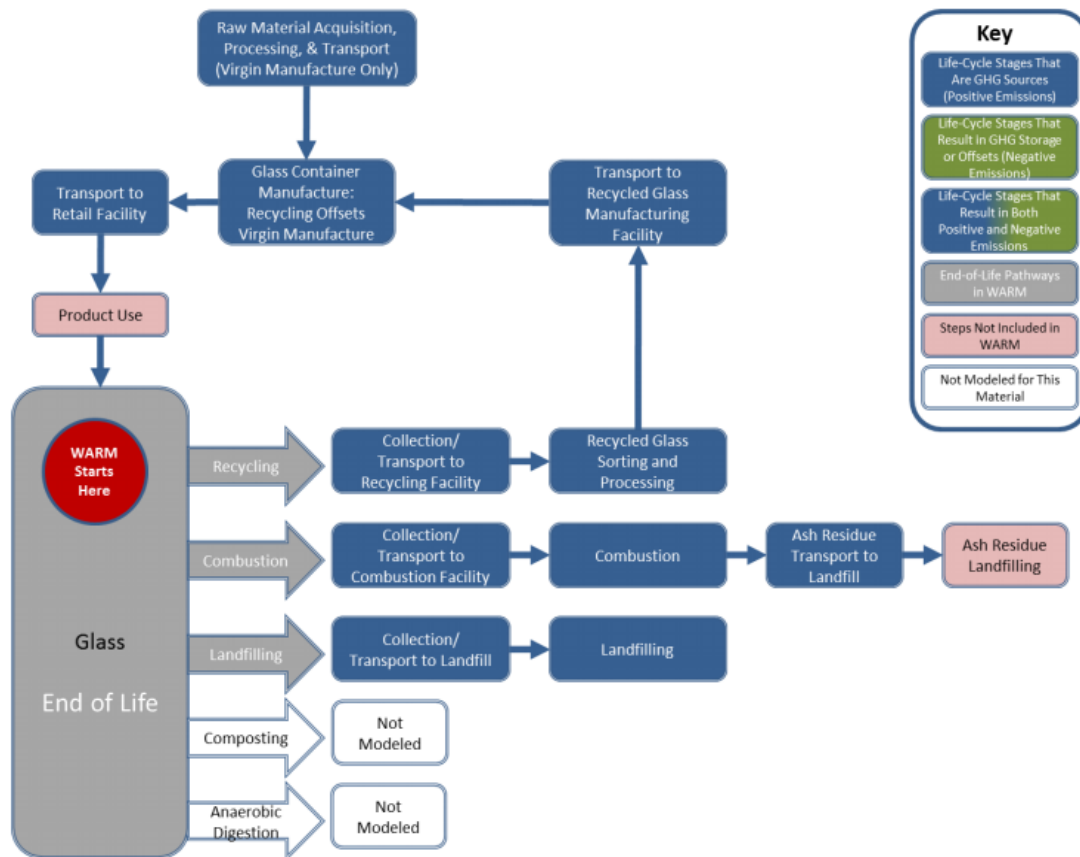
- Providing curbside glass collection in the RDCO is expected to reduce landfill bound waste by approximately 185 m³ per year (300 MT), enough to fill 4 school buses.
- The average weight of a glass container is 8oz, the RDCO and member municipalities could potentially remove 1.3 million glass containers from the landfill each year, at a cost of \$0.30 to \$1.80 per container.
- The sale of glass to Recycle BC is not substantial when compared to the costs of the program.
- RDCO relationship with Recycle BC as a 'Collector' generates approximately \$2.4M for the RDCO and member municipalities that is used to offset waste reduction and collection expenses.
- If a change to the regional relationship with Recycle BC from a 'Collector' to a 'Customer' is desired to fund glass collection through the EPR program, it would require at least 18 months' notice to Recycle BC.
- As estimated, a curbside glass collection program represents a cost of approximately \$6000 per tonne to collect and recycle glass.

3. Environmental Analysis

The movement of the public to and from recycling depots is complex, and beyond the scope of this study. A general analysis using the Net Recycling Emissions data calculated by the US Environmental Protection Agency within the Waste Reduction Model (WARM) was used to estimate the magnitude of net GHG reduction potential.

The USEPA published a CO₂ equivalent value of -0.30 MTCO₂E/Ton of glass, when recycling glass instead of landfilling. The latest waste composition study suggested that curbside recyclable glass represented about 1% of total curbside waste, or 330 tons.

Figure 1 - Life-Cycle Stages of Glass, WARM



The USEPA WARM model assumes that all glass recycling is considered to be a closed-loop process, in that glass bottles and jars are recycling into the same packaging material (glass bottles and jars). This model represents an ideal, best case scenario for the recycling of glass.

Using the values within the USEPA WARM model, the recycling of glass within the RDCO could generate a net reduction of approximately 99 MTCO₂E/year. That's roughly equivalent to the CO₂ emissions used to power 10 homes for 1 year.

Conclusion:

The RDCO Solid Waste Management Plan (SWMP) was developed through feedback from businesses, experts, residents, and elected officials. It is a regulatory document that the RDCO and member municipalities are tasked with implementing. Initiatives included within the SWMP include impactful items such as assessing the feasibility of weekly recyclable collection, reduced waste collection, curbside kitchen scrap collection, the inclusion of curbside glass, and lobbying of EPR programs for better service.

It is the recommendation of the Solid Waste Technical Advisory Committee, that the RDCO and member municipalities continue to undertake initiatives and feasibility studies included within the SWMP, and prioritize implementation to align with the Strategic Priorities of the Regional District.

The environmental benefits of curbside glass collection as estimated are low. The estimated expense of \$0.30 to \$1.80 per recycled glass container may surpass the expense of the container and the product within it. Efficient funding models are available through existing EPR programming, and require a relationship change with Recycle BC.

Environmental Benefit: Low

Less than 100 MTCO₂E/year.

SWMP Goal Alignment: Moderate

Alignment with 1 of 3 goals: Making it easy

Cost-Benefit Analysis: Low

Relatively high cost per container or MTCO₂E suggests low relative benefit. More economical methods are available to collect glass and reduce GHGs.

Recommendation:

It is recommended that curbside glass collection be continually considered and explored as the RDCO delivers the 2020-2030 SWMP. This will enable the RDCO to continue to explore and implement initiatives within the SWMP in order of priority and effectiveness, and allow for consideration of Recycle BC curbside service, which may include curbside glass collection. This approach avoids approximately \$500,000 in start-up expenses that may not be required, should the relationship with Recycle BC change within the next 10 years. Likewise, at that time participation costs could be funded through the EPR program, eliminating the \$1.7M in annual expense for curbside glass collection paid for by Central Okanagan residents.