

# Regional District of Central Okanagan

## Curbside Organics Collection – Preliminary Analysis and Recommendation

2021



## **Preliminary Analysis and Recommendation**

**DATE:** April 8, 2021

**SUBJECT:** Curbside Organics Collection

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### **Purpose:**

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

### **Objectives:**

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

### **RECOMMENDATION:**

**THAT** the RDCO fully explore expanded curbside organics collection, including food scraps and other compostable materials, in alignment with the Solid Waste Management Plan.

## 1. Community Comparison

*Table 1 - Summary of other community Curbside Organics Collection Programs*

Community	Population	Est. Serviced Dwellings***	Curbside Food Waste \$/SFU/Year	Start-up \$	Service \$ / year
Chilliwack	95,178	22,500	\$100**	\$1.7M*	\$2.4M
Victoria	94,415	9,945**	\$120**	\$500,000**	\$1.2M
Salmon Arm	19,296	4,840	\$60	\$150,000**	\$290,400
Grand Forks	3,892	1,400	\$60**	\$60,000	\$84,000
Kamloops	101,198	19,100	\$94*	\$4.7M	\$1.8M
RDNO****	84,354	24,000**	Not Available	\$1,000,000	Not Available
Abbotsford	161,581	26,361	\$110**	Not Available	\$2.9M
Coquitlam	152,752	19,785	\$80	Not Available	\$1.6M
RDCO	222,749	61,360	Not Applicable	Not Applicable	Not Applicable

\*Estimated using published expenses and census data

\*\*Individual kitchen scraps expenses not broken out, estimated using available data

\*\*\*Obtained from 2016 Census data, or other published information

\*\*\*\*Based on a 2017 report estimating cost to undertake curbside organics collection, not a current service

*Table 2 – Summary of other community Curbside Collection by frequency*

Community	Waste Collection Frequency	Recyclable Collection Frequency	Food Scrap Collection	Yard Waste Collection Frequency	Organics Processing Technology
Chilliwack	Bi-Weekly	Weekly	Combined Weekly		Gore Cover System (Abbotsford)
Victoria	Bi-Weekly	Bi-Weekly	Bi-Weekly	Annual	In-Vessel (Fisher Road)
Salmon Arm	Bi-Weekly	Bi-Weekly	Weekly	Bi-annual	Aerated Bunker (Spa Hills)

Community	Waste Collection Frequency	Recyclable Collection Frequency	Food Scrap Collection	Yard Waste Collection Frequency	Organics Processing Technology
Grand Forks	Weekly	Bi-Weekly	Weekly	Monthly	Gore Cover System (Grand Forks Landfill)
Kamloops	Weekly	Weekly	Not Applicable	Not Applicable	Undecided*
Abbotsford	Bi-Weekly	Weekly	Combined Weekly		Gore Cover System (Net Zero Waste)
Coquitlam	Bi-Weekly	Weekly	Combined Weekly		Anaerobic Digestion (Fraser Richmond S&F)
RDCO	Weekly	Bi-Weekly	Not Applicable	Bi-Weekly	Not Applicable

\*Planned, not yet implemented. Awaiting OMRR regulation update

#### Community Comparison Summary:

- There appears to be a larger number of communities that offer curbside kitchen scrap collection between \$80 and \$100 per year, per serviced dwelling. Many of these communities operate their own compost facilities, transfer stations, and collection fleets.
- Technology used to undertake organics processing in communities varies.
- Kitchen and food scrap collection is not provided in the RDCO and is provided or planned in many comparable communities.
- Nearly all communities that offer curbside kitchen and food scrap collection have reduced garbage pick-up to bi-weekly, and provide organics pickup weekly.

## 2. Cost Estimates

Curbside organics collection, not including yard waste, varies from community to community, and can be broken down to the following ranges:

- **Startup expenses, including bin and bin delivery:** \$31 - \$178 per curbside dwelling
  - RDCO minimum: \$85 per curbside dwelling
- **Ongoing Program Expenses:** \$60 - \$120 per curbside dwelling, per year
  - Varies significantly based on processing technology and location
- **Landfilling Expense:** \$100/tonne
  - RDCO Estimate (2020 values): \$920,000 per year

Table 3 – RDCO Estimated Probable Cost

RDCO Estimated Probable Cost - Expanded Curbside Organics Collection					
#	Item	Unit Rate Estimate	Units	Cost	Comments
1	Collection Bins and Delivery	\$54	61,360 SFU	\$3.3M	One bin per SFU
2	Transfer Station	-	1 Station	\$1.5M	Not yet confirmed if required
3	Collection Contract (weekly)	\$36	61,360 SFU	\$2.2M	\$3 per SFU, per month
4	Composting and Hauling	\$115/MT	4,600 MT	\$529k	Estimate, 50% uptake
5	Education / Promotion (Year 1)	5% of expense		\$376k	Best Practice
6	Education / Promotion (Ongoing)	5% of expense		\$136k	Best Practice
7	RDCO Overhead (Year 1)	14.01% of program		\$1.11M	RDCO policy
8	RDCO Overhead (Ongoing)	14.01% of program		\$401k	RDCO policy
9	<b>Pilot Year</b>		<b>300 units</b>	<b>\$51.5k</b>	Inclusive of OH/Contingency
	<b>Net Expense (Year 1)</b>			<b>\$9.0M</b>	
	<b>Net Expense (Ongoing)</b>			<b>\$3.3M</b>	\$5.70 per SFU, per month
10	<b>Contingency (Conceptual)</b>	<b>40%</b>	<b>Year 1 Ongoing</b>	<b>\$3.6M \$1.3M</b>	
11	<b>Landfill Cost Savings (ongoing)</b>	\$100 / MT	4,600 MT	<b>(\$460k)</b>	50% of potential
12	<b>Project Net Cost (Year 1)</b>			<b>\$12.1M</b>	
13	<b>Project Net Cost (Ongoing)</b>			<b>\$4.1M</b>	
14	<b>Incremental Cost per Dwelling</b>		61,360 SFU	<b>\$66.82</b>	\$5.57 per month

Table 4 – RDCO Expanded Curbside Organics Collection

Cost Range Analysis - RDCO Expanded Curbside Organics Collection					
#	Item	Lowest Comparable Cost	Probable Cost Estimate	Highest Comparable Cost	Comments
1	Project Cost (Year 1)	\$6.2M	\$12.6M	\$14.3M	
2	Project Cost (Ongoing)	\$4.0M	\$4.6M	\$7.36M	
3	Cost Reduction (Landfill Diversion)	(\$920,000)	(\$460,000)	\$0	
4	<b>Net Cost (Ongoing)</b>	<b>\$3.1M</b>	<b>\$4.1M</b>	<b>\$7.36M</b>	
5	Cost per meal	\$0.02	\$0.03	\$0.05	per meal
6	Incremental Cost per Dwelling	\$4.39	\$5.57*	\$10.00**	per month

\*Reflects cost for out of region traditional windrow composting.

\*\*More indicative of in-region, in-vessel composting.

#### Summary:

- Providing expanded curbside organics collection in the RDCO could divert up to an additional 10,200 m<sup>3</sup> per year of landfill bound waste (~9200 MT), enough to fill over 220 school buses.
- Costs include the addition of a 4<sup>th</sup> curbside bin, scheduled for weekly collection, specifically for Kitchen Scraps and other compostables.
- Probable costs assume non-yard waste organics are collected, consolidated, and transported to an out of region composting operation. Incremental costs will increase beyond these estimates to develop and operate in-region, in-vessel processing.
- Yard Waste collection is proposed to remain as currently delivered.
- As estimated expanded organics collection would cost those receiving the service about 3 cents per meal, \$5.57 per month, or about \$67 per year.
- There may be potential to align a Wildlife Safe curbside cart with an expanded curbside organics program, synergizing the benefits of both programs.
- As estimated, an expanded organics program represents a cost of approximately \$890 per tonne to collect, transport and process non-yard waste organic material.

### 3. Environmental Analysis

A general analysis using the Net Emissions data calculated by the US Environmental Protection Agency within the Waste Reduction Model (WARM) was used to estimate the net GHG reduction potential.

The USEPA published a CO<sub>2</sub> equivalent value of -0.12 MTCO<sub>2</sub>E/Ton for traditional windrow composted food waste, and a CO<sub>2</sub> equivalent value of 0.42 MTCO<sub>2</sub>E/Ton for landfilling waste with LFG recovery and use of gas. The latest waste composition study suggested that curbside compostable organics represented about 10,131 ton of organics (equivalent to 9190 MT) within the Waste Stream.

This model represents an ideal, best case scenario for the composting. It also represents a similar best case scenario for landfill gas capture and use.

Using the values within the USEPA WARM model, the composting of curbside food waste within the RDCO could generate a net reduction of approximately 5,470 MTCO<sub>2</sub>E/year.

Curbside collection of organics within the RDCO will contribute 285 MTCO<sub>2</sub>E/year, while transporting curbside organics to an out-of-district composting facility would generate approximately 200 MTCO<sub>2</sub>E/year in emissions.

This results in a net GHG reduction of approximately 4985 MTCO<sub>2</sub>E/year, equivalent to the CO<sub>2</sub> emissions used to power 541 homes for 1 year, from the estimated expanded curbside organics program.

## **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 expanded curbside organics collection as estimated appear significant, diversion potential seems high, and further analysis is required to verify assumptions and further investigate costs.

**Environmental Benefit:** **High - Moderate**  
Approximately 5000 MTCO<sub>2</sub>E/year.

**SWMP Goal Alignment:** **High**  
Alignment with all three goals, and the regulatory requirement to re-evaluate organic diversion opportunities before 2030.

**Cost-Benefit Analysis: Moderate**

Relatively low cost per meal or MTCO<sub>2</sub>E. More economical methods may be available for GHG reduction, but this appears to be the most effective and economical method for diverting organic wastes from landfill.

**Recommendation:**

It is recommended that expanded curbside organic collection be considered and explored as the RDCO and SWTAC deliver the 2020-2030 SWMP. This will enable the RDCO and SWTAC to explore and implement initiatives within the SWMP in order of priority and effectiveness. For 2021, this includes further curbside organic analysis, consideration of impact to landfill gas generation, and the initiation of a regional biomass inventory.