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## **Regional District of Central Kootenay**

# **Regional Organic Waste Diversion Strategy**



**Draft for Discussion**

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## 1 Introduction

Diverting organic waste from landfill disposal is a significant solid waste management issue in BC. This is because organic waste, comprised primarily of yard waste, food waste and food-soiled paper from businesses and households, not only represents the largest component of landfilled waste by weight (35-40%), but also generates methane, a potent greenhouse gas, during decomposition in a landfill. Organic waste also includes wood waste, which can vary in volume significantly from year to year based on the amount of local construction and demolition activity.

Accordingly, the BC Ministry of Environment has established new solid waste management goals as part of its Service Plan: to lower the provincial municipal solid waste (MSW) disposal rate to 350 kilograms per person annually and to have 75% of the BC's population covered by organic waste disposal bans by 2020. To meet these goals the MOE is proposing that regional districts, as part of their solid waste management planning process, adopt as a guiding principle, preventing organic waste, including food waste, from going into the garbage wherever practical.

The RDCK's 2010 Resource Recovery Plan (RRP) stated the following disposal reduction targets:

*'While Zero Waste remains a long-term goal, within the Plan period the RDCK intends to achieve a minimum of 20% reduction of per capita waste being generated for landfill disposal that will be measured against 2009 baseline data'.*

To date, the RDCK has not been successful in meeting this 20% target. Measured from the 2009 baseline year to 2016, the per capita disposal rate was reduced by 13% and the current per capita is 483 kg per capita. The RDCK has put in place systems to manage the yard waste and wood waste, which contributed to the reduction in waste disposed. However, because food waste represents the largest component of landfilled waste, an organic waste diversion strategy targeting food waste is a priority of the 2018 RRP Update.

In recognition of the need to increase the diversion of food wastes, the RDCK engaged Maura Walker & Associates, in collaboration with Carey McIver & Associates (the Project Team), to develop a Regional Organic Waste Diversion Strategy focused on the diversion of food waste and food-soiled paper.

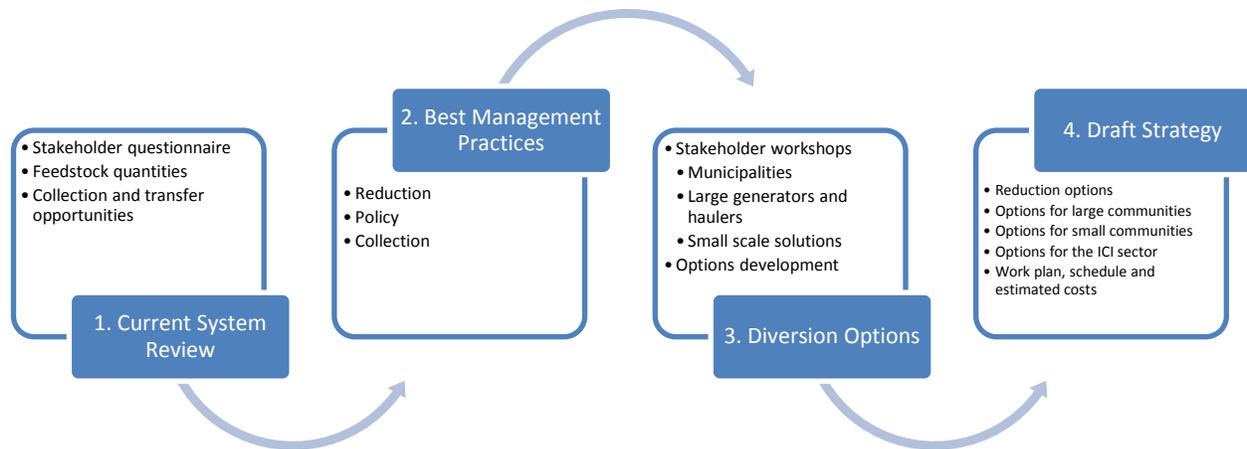
Building on the initiatives identified in the 2010 RRP, the objective of this strategy is to provide a financially sustainable road map that will lead to a robust organic waste diversion program that will reduce the RDCK disposal rate, save landfill space and reduce GHG emissions.

### 1.1 Methodology

The process to develop RDCK's organic waste diversion strategy is organized into four key stages as shown in Figure 1-1: a review of the current system for managing organic wastes in the RDCK; a scan of best practices in organic waste diversion; the development of realistic and practical diversion options for the RDCK and the development of a regional organic waste diversion strategy.



**Figure 1-1: Project Methodology**



Upon completion, the draft organic waste diversion strategy will be subject to further stakeholder and community consultation, with the finalized version of the strategy ultimately incorporated into an updated version of RDCK's Resource Recovery Plan.

## 1.2 Overview and Structure of the Report

The report is structured as follows:

- Section 2 outlines the current system for managing organic waste in the RDCK;
- Section 3 provides examples of best practices in organic waste management;
- Section 4 provides an estimate of potentially divertible organic waste, by municipality and electoral area;
- Section 5 summarizes the input received from the stakeholder engagement process designed to inform the development of organic waste diversion strategy, including a long list of organic waste diversion options identified as part of this process;
- Section 6 outlines considerations for strategy development; and,
- Section 7 provides the outline of a recommended organic waste diversion strategy.
- Section 8 provides performance measures to evaluate strategy implementation.

Based upon feedback from RDCK staff and the Joint Resource Recovery Committee, the components of the strategy will be refined and a more detailed work plan, schedule and estimated cost implications will be prepared.



## 2 Current System Review - Organic Waste Management in the RDCK

This section summarizes the current system for managing organic waste in the RDCK including an overview of the RDCK resource recovery system, organic diversion initiatives in the 2010 Resource Recovery Plan, and organic waste collection systems operated by member municipalities.

### 2.1 RDCK Resource Recovery Services Overview

Incorporated in 1965, the Regional District of Central Kootenay (RDCK) is a local government that serves an estimated population of 59,405 residents (2016 Census of Canada), and covers 23,000 km<sup>2</sup>. The region consists of 11 electoral areas and nine member municipalities: Castlegar, Creston, Kaslo, Nakusp, Nelson, New Denver, Salmo, Silverton and Slocan.

Resource Recovery services are delivered through three established sub-regional service areas as indicated in Table 2-1.

**Table 2-1: Sub-Regional Service Areas in the RDCK**

West Sub-region	RDCK Electoral Areas H, I, J & K and City of Castlegar, Village of New Denver, Village of Silverton, Village of Nakusp and Village of Slocan (population 22,603)
Central Sub-region	RDCK Electoral Areas D, E, F & G and City of Nelson, Village of Salmo, and Village of Kaslo (population 23,382)
East Sub-region	RDCK Electoral Areas A, B & C, Lower Kootenay Indian Band and Town of Creston (population 13,420)

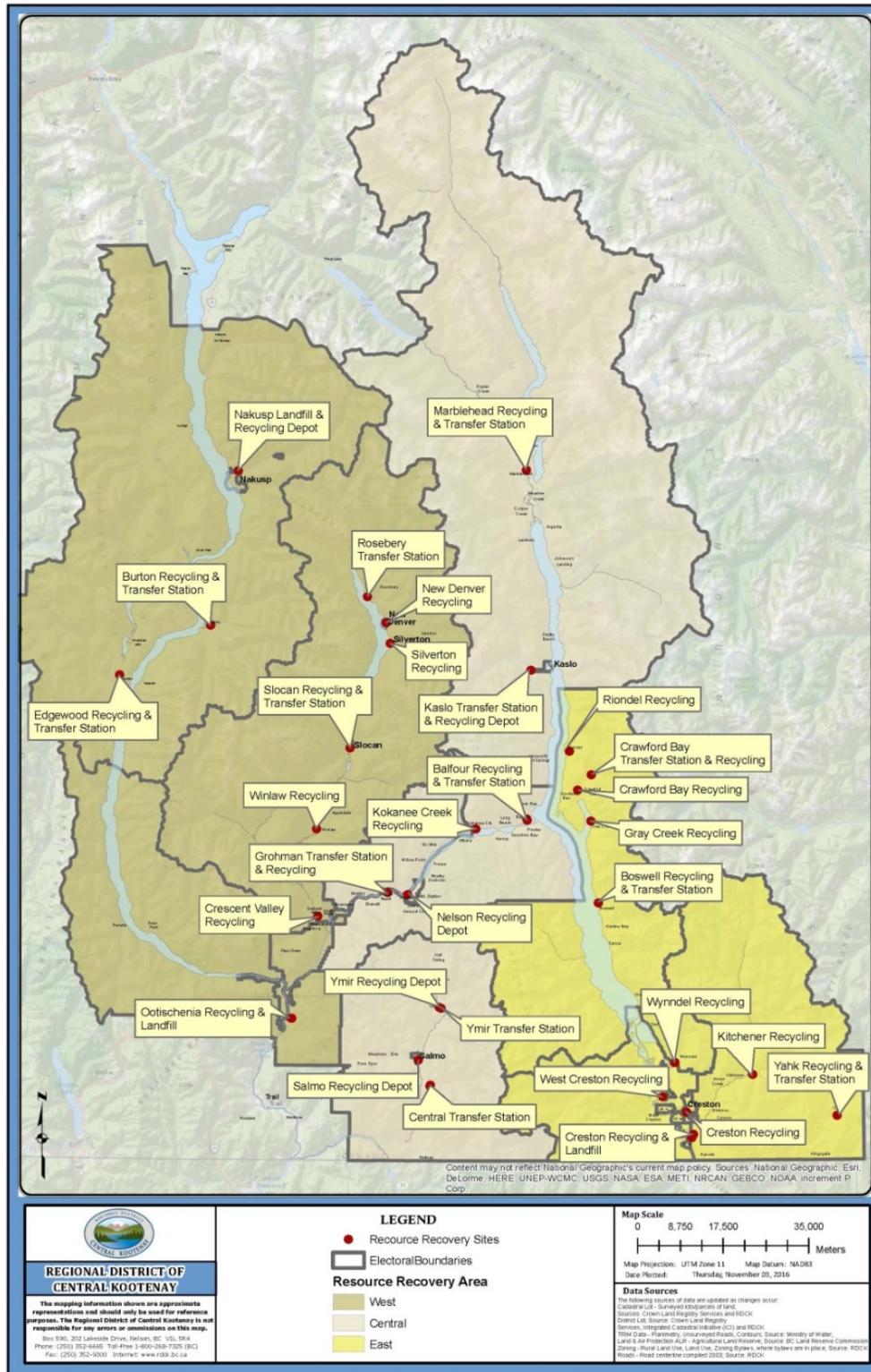
Each sub-region is operated as a completely independent service with separate waste transfer and disposal facilities, recycling programs, and a mix of contracted and in-house service provisions. Annual budgets and tax requisitions are entirely separate for each sub-region and governance is provided by three sub-regional Resource Recovery Committees which are Committees of the RDCK Board of Directors.

The primary purpose for RDCK Resource Recovery services is to ensure that RDCK residents and businesses have access to safe, efficient and comprehensive facilities for recycling and waste disposal. This is accomplished through the operation of a facility network of three active landfills, thirteen waste transfer stations, and twenty-nine recycling depots.

Figure 2-1 illustrates the location of facilities within the three sub-regions.



Figure 2-1: Resource Recovery Sub-Regions and Facilities





## 2.2 2010 RDCK Resource Recovery Plan – Organic Waste Management

An organic waste management strategy was developed as part of the 2010 RDCK Resource Recovery Plan, and it included the following objectives:

1. Develop higher value end uses for recycled organic waste;
2. Upgrade organic waste management infrastructure at RDCK facilities; and
3. Reduce transportation costs by developing on site management options for yard & garden waste and wood waste where feasible.

The above strategy, focused primarily on yard waste and wood waste, was largely implemented. Consequently, the target of this organic waste diversion strategy is to reduce the quantity of food waste being landfilled. The following section provides further detail on the current system for managing organic waste in the RDCK.

## 2.3 Current Management System for Organic Waste in the RDCK

The current system for managing organic waste in the RDCK consists of outreach initiatives promoting reduction delivered by the RDCK, seasonal curbside yard waste collection services delivered by member municipalities as well as the acceptance of source separated yard and garden waste and wood waste at most RDCK transfer stations and landfills.

### *RDCK Outreach Initiatives*

- RDCK provides information on why it's good to compost on their website, along with links to resources on how to compost.
- RDCK partnered with the non-profit organization Earth Matters to provide compost education at farmers markets in the Central Sub-region (2014)
- RDCK partnered with the Central Kootenay Invasive Species Society to identify invasive plant species in the Resource Recovery disposal bylaw, with an aim to keep these species out of the yard and garden waste recovery stream (2011)

### *RDCK Transfer Sites*

- Yard and garden waste is either chipped on site and composted, or transported to larger sites for chipping and composting
- Source-separated wood waste is accepted at all landfills and transfer stations and processed in the same manner as yard and garden waste. Wood waste is accepted with contaminants such as: nails, paint and stains, and glues, in order to maximize the diversion of wood waste.
- Chipped wood waste is blended with municipal biosolids and sludge from septage disposal cells and then composted, with the finished compost used to fabricate topsoil for landfill revegetation.



### Municipal Collection Programs

There are currently no regular (e.g. weekly, bi-weekly or monthly) curbside collection of yard and/or food waste in the RDCK sub-regions. However, most municipal partners in each sub-region provide seasonal (1-2 times per year) collection of yard waste and/or municipal drop-off facilities. Tables 2-2, 2-3 and 2-4 provide details with respect to regular curbside collection services in each sub-region. After each table, additional details are provided regarding the current municipal yard waste management activities.

**Table 2-2: Regular Curbside Collection Services in the West Sub-Region**

West Sub-Region	Census Population	Census Households	Curbside Households	Regular Curbside Collection Services		
				Garbage	Recycling	Organic waste
City of Castlegar	8,039	3,499	3,000	Yes	Yes	Seasonal
Village of New Denver	473	243	305	Yes	No	Seasonal
Village of Silverton	195	107	152	Yes	No	No
Village of Nakusp	1,605	761	750	Yes	Yes	Seasonal
Village of Slocan	272	140	200	Yes	No	Seasonal
EA H	4,667	2,128	-	No	Yes	No
EA I	2,534	1,107	-	No	Yes	No
EA J	3,137	1,345	-	No	Yes	No
EA K	1,681	831	-	No	No	No
<b>TOTAL</b>	<b>22,603</b>	<b>10,161</b>	<b>4,407</b>			

Census Population and Census Households from Statistics Canada Census Profile, 2016 Census of Population  
Curbside Households provided by member municipalities

### Municipal Yard Waste Management in the West Sub-Region

- The City of Castlegar provides curbside yard waste collection 2 times per year (spring and fall) and operates a yard waste composting site. The City also holds an annual giveaway event of 2 bags of compost per household.
- The Village of New Denver provides curbside yard waste collection 2 times per year (spring and fall) and composts the material on municipal property.
- The Village of Nakusp provides collection of yard waste once per year and composts or burns the collected materials in their Public Works Yard.
- The Village of Slocan provides curbside yard waste collection 2 times per year (spring and fall) and composts the collected material on municipal property.

**Table 2-3: Regular Curbside Collection Services in the Central Sub-Region**

Central Sub-Region	Census Population	Census Households	Curbside Households	Regular Curbside Collection Services		
				Garbage	Recycling	Organic waste
City of Nelson	10,572	4,822	3,857	Yes	Yes	No
Village of Salmo	1,141	547	474	Yes	No	Seasonal
Village of Kaslo	968	469	520	Yes	Yes	Seasonal
EA D	1,343	653	-	No	No	No
EA E	3,772	1,736	-	No	No	No
EA F	3,963	1,707	-	No	No	No
EA G	1,623	747	-	No	No	No
<b>TOTAL</b>	<b>23,382</b>	<b>10,681</b>	<b>4,851</b>			

#### Municipal Yard Waste Management in the Central Sub-Region

- The Village of Salmo provides curbside yard waste collection 2 times per year (spring and fall). Additionally, people can drop off tree trimmings year-round at the Civic Works Yard. Collected materials are burned at the Yard.
- The Village of Kaslo provides curbside yard waste collection 2 times per year (spring and fall) and composts the material on municipal property.

**Table 2-4: Regular Curbside Collection Services in the East Sub-Region**

East Sub-Region	Census Population	Census Households	Curbside Households	Curbside Collection Services		
				Garbage	Recycling	Organic waste
Town of Creston	5,351	2,590	2,000	Yes	No	Seasonal
EA A	1,930	967	-	No	No	No
EA B	4,657	1,922	-	No	No	No
EA C	1,482	654	-	No	No	No
<b>TOTAL</b>	<b>13,420</b>	<b>6,133</b>	<b>2,000</b>			

#### Municipal Yard Waste Management in the East Sub-Region

- The Town of Creston provides curbside yard waste collection 2 times per year (spring and fall) and a yard waste drop off site is available from April to November. The branches & leaves are chipped and used as mulch in municipal operations; while leaves & grass composted and then mixed with topsoil for municipal operations.



### 3 Best Practices Review

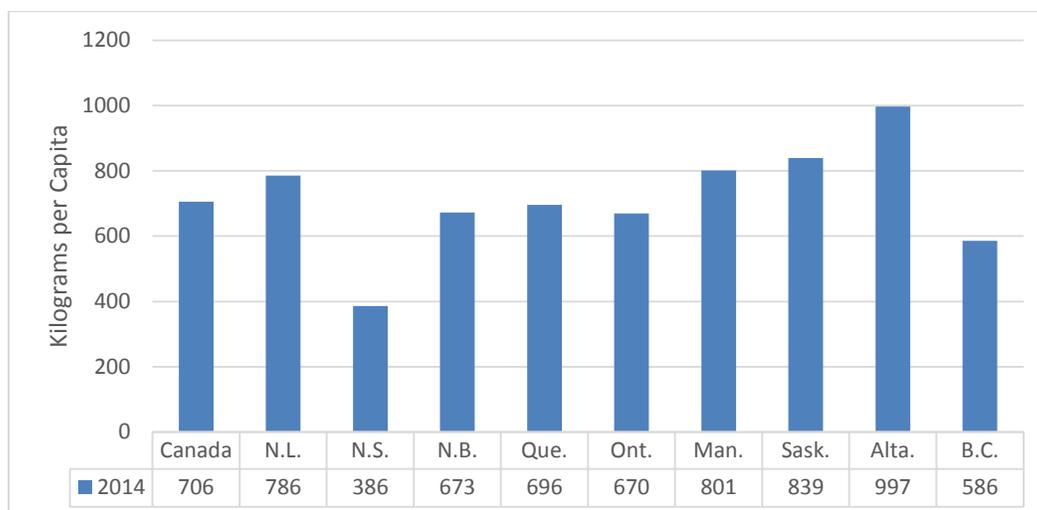
The RDCK does not need to look beyond BC to find examples of best practices in organic waste management. Municipal solid waste management (MSW) is an important environmental issue in BC. Over the last twenty-five years a dynamic system has evolved that provides efficient and effective MSW management services in the province. The following sections provide data on how the MSW management system in BC outperforms systems in similar jurisdictions as well as examples of organic waste management best practices implemented by local governments in BC that could be applicable to the RDCK.

#### 3.1 MSW Management System Performance in BC

This MSW management system in BC is guided by goals established by the Ministry of Environment (MOE) that aim to maximize waste reduction and diversion in the province. These ambitious goals, initially to reduce MSW disposal by 50% by the year 2000, and currently to reduce the provincial disposal rate to 350 kilograms per capita by 2020, have resulted in a MSW disposal rate that is significantly lower than systems in other provinces.

According to the Statistics Canada Waste Management Industry Survey for 2014, BC has the second lowest per capita MSW disposal rate in Canada. As indicated in Figure 3-1, the only province with a lower disposal rate was Nova Scotia, where organic wastes have been banned from landfill disposal for two decades.

**Figure 3-1: Per Capita Disposal Rates for Canada and Selected Provinces 2014**



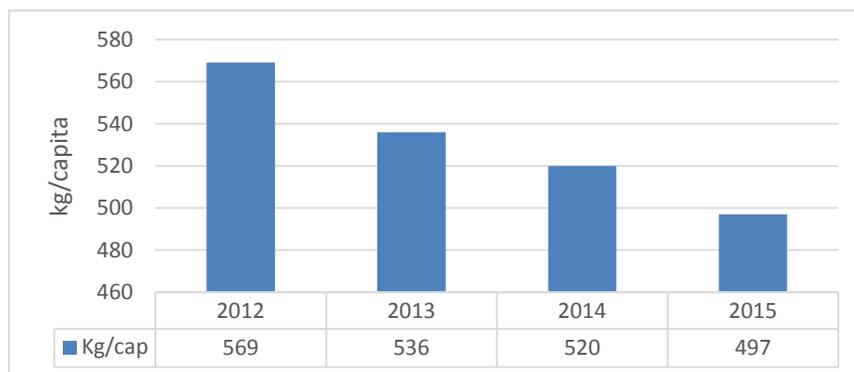
Source(s): Statistics Canada Disposal and Diversion of waste, by province and territory (Waste Disposal Per Capita) CANSIM tables 051-0001 and 153-0041 (accessed May 2017)

Statistics Canada collects the BC disposal data from regional districts every two years and aggregates the results to the provincial level. Individual regional district data is not provided in the bi-annual reports. To provide more reliable and consistent annual data on MSW disposal by regional district, in 2012 the MOE developed the BC Waste Disposal Calculator. The reporting methodology in the BC Calculator is identical to that used by Statistics Canada to ensure comparability between systems.



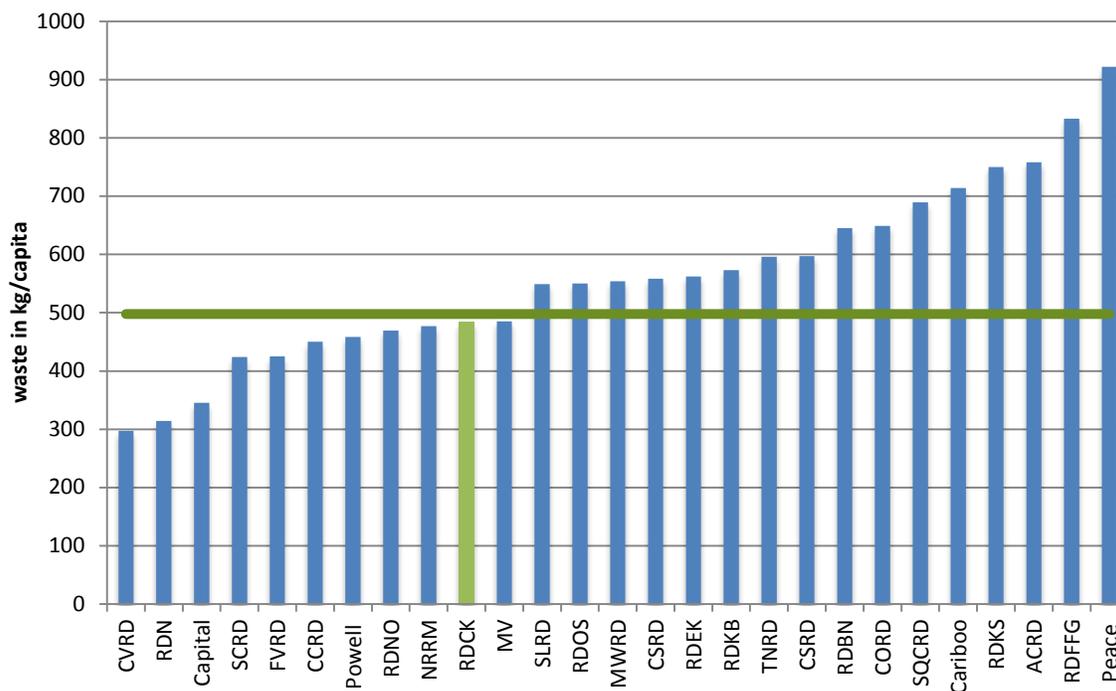
The BC Waste Disposal Calculator is an on-line reporting tool that has so far collected MSW disposal data for 2012, 2013, 2014 and 2015. The results of each year's data call are posted on Environmental Reporting BC<sup>1</sup>. Figure 3-2 illustrates the results reported to date.

**Figure 3-2: Per Capital Disposal Rate for BC 2012-2015**



Individual regional district data for 2015 is presented in Figure 3-3 and indicates that at a reported 483 kilograms per capita, the 2015 disposal rate in the RDCK was less than the provincial average of 498.

**Figure 3-3: Regional District Disposal Rates 2015**

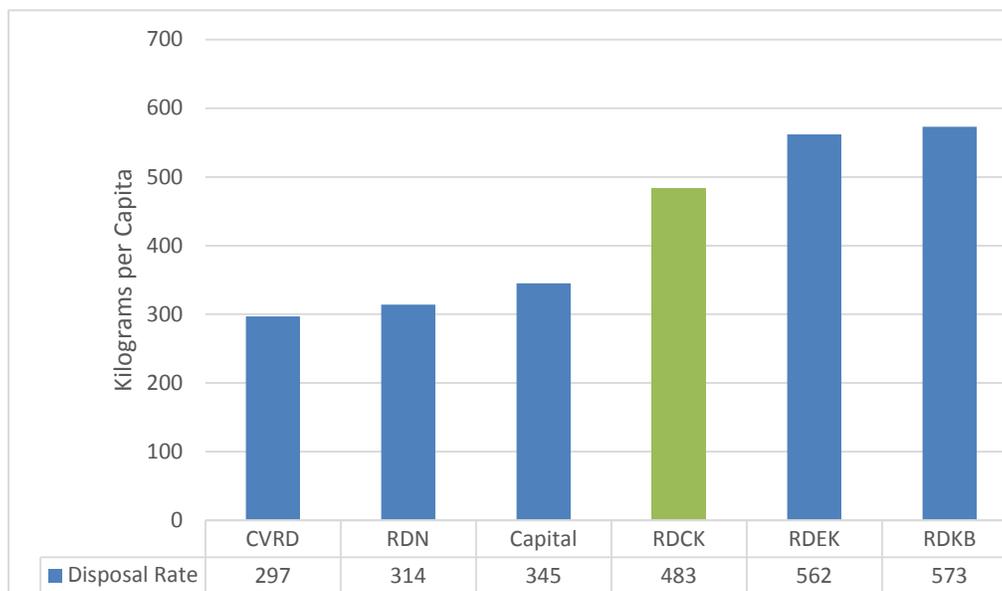


<sup>1</sup> <http://www.env.gov.bc.ca/soe/indicators/sustainability/municipal-solid-waste.html>



Figure 3-4 benchmarks the RDCK disposal rate against the three regional districts with the lowest disposal rates as well as the neighbouring regional districts. As indicated in Figure 3-4, the Cowichan Valley Regional District (CVRD), the Regional District of Nanaimo (RDN), and the Capital Regional District (CRD), all have significantly lower per capita disposal rates than the RDCK. The Regional District of East Kootenay (RDEK) and the Regional District of Kootenay Boundary (RDKB) all have disposal rates above the provincial average of 498 kilograms per capita.

**Figure 3-4: Benchmark Disposal Rates for RDCK**



The lower disposal rates in the CVRD, RDN and CRD can be attributed, in large part, to the implementation of organic (food) waste diversion strategies in these three Vancouver Island regional districts. (Note: In these jurisdictions, yard waste diversion programs and policies were implemented in advance of their food waste diversion strategies.) In 2006, both the CVRD and RDN introduced bans on the disposal of commercial organic wastes to reduce GHG emissions, preserve landfill capacity and reduce waste export disposal costs. Residential collection programs followed roughly 5-7 years later in both those regional districts. (Note: A case study on the Regional District of Nanaimo's organic waste diversion strategy is provided in Section 3.2.4.) In 2015, the CRD introduced a ban on the disposal of both residential and commercial organic waste.

In 2015, Metro Vancouver also implemented a ban on the disposal of organic wastes from both the commercial and residential sector. As a result, in 2015 roughly 66% of the population of BC was covered by an organic waste disposal ban. There are also numerous municipal collection programs in regional districts that have not implemented disposal bans (e.g. Grand Forks, Abbotsford, and Comox). Consequently, with respect to best practices in organic waste management, many BC local governments can provide practical and effective examples to other regional districts.



### 3.2 Best Management Practices in BC

This section describes many of the proven methods to reducing the quantity of organic waste landfilled used by local governments in BC. In addition, this section presents one case study, the Regional District of Kootenay-Boundary's food waste diversion program in Grand Forks.

The best practices for organic waste management are organized into the following categories:

- Organic waste REDUCTION: Methods that can reduce the generation of organic waste and methods that reduce the amount of organic waste that needs to be managed through local government waste management services;
- POLICIES that drive organic waste reduction and diversion; and
- Approaches to organic waste COLLECTION.

#### 3.2.1 Reduction

One of the most cost-effective methods of organic waste management is to encourage home owners and businesses to adopt practices that prevent the production of organic waste that subsequently needs to be “managed”, i.e. collected for composting or disposal. Reduction methods seek to either minimize the production of organic waste, or to encourage the generator of the organic waste to manage it themselves.

##### Yard Waste Reduction Campaigns

To reduce the quantity of yard and garden waste generated by residents, many local governments promote residents to adopt xeriscaping and grasscycling practices. Xeriscaping is landscaping with drought-resistant species – which also produce less yard waste. Grasscycling is the practice of frequent lawn cutting and leaving of chopped grass clippings on a mowed lawn to act as a fertilizer and mulch, rather than gathering it up for composting or disposal. These practices are generally promoted through printed and on-line information, but may also be promoted through paid advertisements in print and radio media, as well as demonstration gardens (for xeriscaping).

##### Food Waste Reduction Campaigns

Based on research in Europe and North America, residents may be wasting about 25 percent of all the food and drinks that they purchase. Metro Vancouver's recently launched their *Love Food, Hate Waste* Program which aims to change this behavior through educating consumers about on why food is thrown away at different stages: planning, buying, storage, preparation meal planning, so that consumers can enjoy eating the food that they currently end up throwing away. Metro Vancouver is willing to share their program materials with other regional districts. The BC Ministry of Environment also provides the US EPA-developed “Food Too Good to Waste” toolkit to regional districts at no charge.





## Food Redistribution

Many non-profit organizations are involved in getting quality, edible food that is destined for disposal to people that need it. Gleaning programs are a well-established practice in the RDCK, as is the practice of restaurants and grocers providing unsalable food to local food banks and service organizations that provide meals to those in need. One of the most significant barriers to this practice is the misunderstanding by many businesses that it's against health rules for businesses to give their unsalable (but still very much edible) food away for redistribution. Although this issue may be best tackled at a senior government level, local governments can collaborate with organizations like the local Health Authority to assist in correcting this misunderstanding so that waste of edible food is minimized.

## Food Reuse

Another practice found in the RDCK is food waste generators like grocers, restaurants and breweries keeping specific food wastes separate for pick up by local farmers so that it can be used for animal feed. In some instances, small businesses offer up their food waste, such as coffee grounds, to customers to take home for composting. One of the challenges with this approach is for generators (stores, restaurants, food processors) to find a reliable user for their food waste. Another is the lack of a mechanism for food waste generators and potential users to find each other. Although not commonly done, local governments could play a role in assisting generators and users to find each other, like a dating service. This could potentially be done through the use of an app.

## Home-Based Management

One of the most popular methods for reducing organic waste is encouraging backyard composting. Local governments encourage backyard composting through many means, including:

- Bulk purchasing backyard composters, worm bins and digesters for resale to residents, often at a slightly subsidized rate. A commonly used estimate suggests that a typical backyard composter can divert 250 kg per household per year. In a scenario where landfill space costs the local government \$50/t, over a ten year period, one composter could save over \$125 in landfill space, while costing the local government less than \$20-30 (to purchase and distribute a subsidized composter)
- Providing training workshops. For instance, the Powell River Community Compost Centre gives free workshops on how to turn an old chest freezer into a composter, and also on using Bokashi as a means of turning food scraps (including meat and grains) into a soil fertilizer.
- Establishing a demonstration site where residents can see different types of community composters in action. These sites may be staffed or unstaffed. The Regional District of North Okanagan operates a public garden space that demonstrates composting and xeriscaping through self-guided tours. The site is also used as a location to host free workshops on different types of composting.
- Provide “how to” information on backyard composting, building a composter, or trouble-shooting composting issues. Information can be provided on-line (websites and





social media sites), and in hard copy in public spaces such as libraries and recreation centres, or through staffed booths at farmers markets, home shows and other appropriate venues. It's important that the promotion of on-site management of organic waste be done in coordination with WildSafe BC education initiatives.

- At-home composting training is a Community-Based Social Marketing approach to achieve long-term behaviour changes and increase participation in backyard composting. The North Shore Recycling Program developed a "Compost Coaching" program where a trained expert in composting worked with local residents at their homes to improve their composting through hands on coaching. Intended to be fun, informal and based on the residents' needs, the coach would base the conversation on participants' questions, level of knowledge and condition of their compost bin. The 30-45 minute session would cover basic composting as well as tips for coexisting with bears. This coaching resulted in an additional 36 kg of organic material composted on site per capita for households that were already composting, and 190 kg per capita for households that had not composted before.

### 3.2.2 Policy

#### Variable Tipping Fees

Applying tipping fees to incoming waste is how RDCK recovers part of the costs of building and operating their solid waste facilities. In addition, through the application of variable rates to the different waste streams, the RDCK can influence the behaviour of their customers. For instance, lower rates on recyclable and compostable waste streams than the garbage rate encourages customers to source separate these materials so that their costs are lowered. This is already the case in all the sub-regions for yard & garden waste and wood waste, where the tipping fee of \$50/tonne for these materials is 40-50% less than the garbage tipping fee.

#### Disposal Bans

To encourage even more source-separation and diversion than variable tipping fees, many regional districts and municipalities implement disposal bans on recyclable and compostable materials. This is a low-cost policy tool used to signal to waste generators and waste collection companies that they are expected to separate and recycle/compost specific materials for which alternatives are readily available (e.g. cardboard, metal, yard waste). Disposal bans are enforced at the point of disposal (i.e. at transfer stations and landfills) through the application of significant surcharges on garbage found to contain banned materials. Currently, RDCK uses a similar approach by including in their tipping fee schedule the ability to double the tipping fees for loads that contain more than 10% recyclable material.

To ensure sustained success, disposal bans require the local government to work closely with industrial, commercial and institutional (ICI) waste generators and particularly commercial waste haulers in the design, start up and on-going maintenance of this policy. The Regional District of Nanaimo, whose disposal ban on cardboard was implemented in 1992, has a consistent approach whenever they introduce a new disposal ban:



- I. **Regulate** (decide to ban a waste stream, such as food waste, that has a readily available alternative to landfilling)
- II. **Collaborate** (work with affected stakeholders to determine the timing of implementation and the ramp up of enforcement measures)
- III. **Educate** (make sure all haulers and waste generators are aware of the upcoming new disposal ban, and plan to communicate regularly)
- IV. **Enforce** (enforce the disposal ban at the point of disposal).

The approach to enforcing disposal bans has evolved over the last decade as regional districts have gained more experience with this policy tool. Enforcement is only one component of an integrated approach to implementing a disposal ban.

Many regional districts have discovered that the need to enforce a disposal ban is short-term and minimal if adequate collaboration with waste haulers, supported by effective education of waste generators, results in diversion becoming “business-as-usual”. In effect, waste haulers become the enforcers of the disposal ban since its implementation provides them with an opportunity to increase their market share if they can provide more cost-effective collection options to their customers.

Nevertheless, local governments do need to provide some level of enforcement in order for the ban to be effective and fair. It is important to note that the goal of the surcharge is not to make money for the regional district but to provide an opportunity to educate. In most cases the first infraction results in a warning while the second infraction results in a tipping fee surcharge. However based on experience, most infractions occur within the first six to twelve months of ban implementation, after which fines are minimal as waste diversion becomes business as usual.

Metro Vancouver refined this approach with the introduction of their food scraps disposal ban in January 2015. From 2012-2013 Metro planned their organic waste diversion strategy in collaboration with stakeholders and then released their implementation strategy 2014. The strategy was based on a phased implementation approach as illustrated in Figure 3-5. Although the ban became effective January 2015, the first six months was considered as an education period with no surcharge on tipping fees. However from July to December 2015, if a hauler arrived with a load at a transfer station or disposal facility containing more than 25% food scraps, a 50% surcharge was applied to their tipping fee. This 20% threshold was reduced to 10% in 2016 down to 5% in 2017.



**Figure 3-5: Metro Vancouver Organic Waste Disposal Ban Phased Implementation**



Metro Vancouver’s phased approach was extremely successful and has been adopted by other regional districts as they introduce their own disposal bans. Most recently, in April 2017 the Regional District of Fraser-Fort George approved a commercial cardboard diversion program that will apply phased surcharges and thresholds to loads containing cardboard. This program will be implemented by regional staff.

### Mandatory Organic Waste Collection

In addition to regional district disposal bans enforced at the point of disposal, municipal bylaws can also require all businesses to have organic waste collection. The Resort Municipality of Whistler requires all businesses and multi-family buildings to have on-site collection of recyclables and food scraps.

### Curbside Collection Bans

Many curbside programs restrict what types of waste can be deposited in a container for curbside garbage collection. This is often done for safety reasons (e.g. bans on smoldering waste and sharps in the garbage can), but it is also done to drive waste diversion behaviours. For example, the City of Nanaimo and the Regional District of Nanaimo ban yard waste from their curbside garbage collection services to encourage residents to backyard compost or utilize local yard waste drop-off locations. The District of Squamish provides collection of food waste and yard waste in carts; their solid waste bylaw states that “Residual Waste Containers must not contain 5% or more by weight or by volume of Recyclable Materials or Organic Materials.”

### 3.2.3 Collection

#### Residential Collection

Over the past ten years, two common approaches have emerged for collecting food waste from residents:



1. Curbside collection of food waste only
2. Curbside collection of food waste and yard waste together.

Under the first approach – food waste only – the most common curbside collection schedule is:

- Collection of food waste weekly
- Collection of recycling bi-weekly, alternating with garbage bi-weekly.



Garbage can be collected every-other-week under this model because the smelly stuff (the food waste), has largely been removed. This approach also removes potential wildlife attractants on a weekly basis.

Most food waste-only programs give residents a “green bin” a small (23-46 litre), wheeled cart, as pictured left.

The second approach, blending food waste and yard waste in the same collection container, tends to be more popular in areas with automated cart-based collection and areas that have weekly or bi-weekly yard waste collection in place prior to adding food waste.

This approach provides maximum convenience to the resident and because there is often substantially more yard waste than food waste, the issues often associated with food waste (odour, pests) are mitigated when food waste is blended with large amounts of yard waste. The disadvantage of this model is that the volume of yard waste varies greatly throughout the year, so that routing trucks is more challenging. Additionally, once food waste is mixed with yard waste, all of the volume collected must be treated the same as if the load waste all food waste. Food waste, because of its potential of containing pathogens, as well as because of its potential to create odour when unloaded from vehicles, requires a much higher level of management than loads of yard waste only.

Table 3-1 lists some examples of curbside programs in BC, including annual cost per household served.

There are very few effective programs for food waste drop off in BC, particularly in areas where there is curbside collection of garbage. Data collected in Powell River Regional District as part of a pilot project indicates that an organic waste drop off program in an area with curbside garbage collection will collect approximately 10 kg per person per year. In contrast, a curbside organic waste collection program typically gets in the order of 52 kg per person per year.

However, the Resort Municipality of Whistler does not have curbside garbage collection and all waste, including organic waste, must be dropped off at their depots. They report that the system is well used but data from this area, due to the high visitor and seasonal population, cannot be extrapolated for use in other communities.



Table 3-1: Sample of BC Curbside Organic Waste Collection Programs

	Organic waste streams collected	Frequency of collection	Collection Container	Annual Cost for Curbside Service Per Household
<b>District of Squamish</b> 6,500 homes	Commingled food and yard waste	Biweekly (Weekly in summer)	246L cart for single-family homes; 120L cart available to townhouses only	\$190/\$263/\$405 Based on 132L, 246L or 356L garbage tote, and includes recycling and organic waste services (receives Recycle BC financial incentives)
<b>City of Nanaimo</b> 27,000 homes	Food waste only	Weekly	34L green bin (switching to 120L automated carts )	\$101.75, including garbage and recycling (receives Recycle BC financial incentives) Cost will increase to \$170 with cart-based collection
<b>Township of Langley</b> 22,000 homes	Commingled food and yard waste	Weekly	240L semi-automated cart + yard waste in kraft bags or garbage cans labelled "green can"	\$290 for garbage and organic waste; recycling is paid through taxes (with Recycle BC incentives)
<b>City of Terrace</b> 3,500 homes	Commingled food and yard waste; plus yard waste only (April to Nov)	Weekly	120L fully automated carts	Unknown
<b>Town of Comox</b> 4,450 homes	Commingled food and yard waste	Weekly	Residents supply their own cans (max 77L) with a sticker supplied by the Town	\$210 (of which \$61.44 is for organic waste collection and processing)
<b>District of North Cowichan</b> 12,000 homes	Food waste only	Weekly	34L green bin	Unknown
<b>Regional District of Nanaimo</b> 28,000 homes	Food waste only	Weekly	34L green bin	\$130 for garbage, organic waste and recycling (with Recycle BC incentives)



## ICI Collection

In most urban areas, ICI waste collection services are provided by commercial waste haulers. Because haulers are the direct link to ICI food waste generators, best practices dictate that local governments work closely with haulers to ensure successful diversion of ICI organic waste. This includes:

- Ensuring that haulers are informed well in advance of any opportunities or bylaw requirements associated with ICI organic waste diversion so that they prepare their collection services and inform their customers accordingly
- Asking for hauler input on the implementation schedule for any proposed bylaw changes associated with ICI organic waste diversion
- Informing the ICI sector of the same through direct mail outs and speaking to business groups such as the Chambers of Commerce
- Establishing and maintaining a database of ICI food waste generators, so as to be able to more effectively communicate with affected stakeholders and respond to questions and issues raised by haulers and generators.



Commercial collection services can be expensive for small businesses. In municipalities where residential curbside collection of organic waste is established, the same service can be offered to small ICI locations such as coffee shops, offices and churches. By allowing ICI locations to participate in a municipal collection services, the costs to have organic waste collection are likely to be more affordable and therefore encourage more small businesses to participate.

### 3.2.4 Case Study: Grand Forks

In 2012, the Regional District of Kootenay Boundary implemented a Green Bin Food Scraps curbside collection service in Grand Forks, which was the first such program outside of Lower Mainland / Vancouver Island. The weekly curbside collection service is provided to 1,830 Grand Forks households and the collected food waste is processed in open windrows at the Grand Forks Landfill.

Prior to implementing the green bin program, Grand Forks collected an average of 264 kg of garbage per household per year. After implementation of the program, garbage collected at the curb decreased to 119 kg per household per year. This equates to a 55% reduction in waste sent to disposal. With the collection of 123 kg of food waste per household annually, the overall residential diversion rate increased from 18% with recycling to 62% with recycling plus food waste collection.





## Collection

Weekly food scraps collection is by a semi-automatic, split-body vehicle, which collects garbage and recycling at the same time on alternating weeks. No compostable plastic bags are allowed in the collection program – only kraft paper liners.

Every household was provided with an 80 litre green wheeled bin (pictured right) and a small beige plastic lidded bucket for use in the kitchen. Prior to launching the program, RDCK piloted two sizes of collection containers: 23 and 46-litre green bins. The smaller bins are handled manually while larger bins can be placed onto a semi-automatic arm by the hauler and then lifted into the truck hydraulically. Staff decided to go with the larger size, as the cost was not significantly higher and potential Worksafe issues could be avoided with the semi-automated version.



## Processing

For years the municipality of Grand Forks composted yard and garden waste in windrows at the Regional landfill, now they also include food waste from the green bin in the mix. The aerobic composting procedure is considered 'low-tech', with turning done by a front-end loader in 10' high windrows. Finished material is used as final cover at the landfill and the composting operation is considered part of RDCK landfill operations.

## Promotion / Education

The RDCK have developed a great Facebook site to engage residents as well as a brand: "kNOw Waste". All residents are provided with information explaining what can be placed in the green bins as well as tips to avoid wildlife issues. Information about the Green Bin program is included in the annual Recycling Collection calendar and on-line at the RDCK's website ([www.rdkb.com](http://www.rdkb.com)).



## Supporting Policies and Regulations

**Variable tipping fee:** Source-separated organic waste is charged a tipping fee of \$40 per tonne, while the tipping fee for garbage is \$110 per tonne, creating a significant financial incentive for businesses to source-separate their organic waste.

**Disposal ban:** As of September 1, 2001, RDCK banned yard and garden debris from disposal as garbage. Loads of garbage found to contain excessive yard waste can be levied tipping fee charge that is five times the tipping fee for garbage, as per RDCK Bylaw 1605.

**Can limit:** Each home is limited to one can of garbage per week as part of their regular waste management utility fee. Extra bags of garbage must be accompanied by the \$3 tag that can be purchased from local retail locations.



## Financial Data

### Capital Costs

The RDCK purchased 2,000 curbside food scrap collection containers at approximately \$30 each (\$60,000). Their contractor purchased a split body truck to accommodate the new service and was hired under a 5-year contract.

### Operating Costs

The City of Grand Forks operates the garbage and food scrap collection service as a utility. The service costs \$12/month/home and covers weekly collection of food scraps and alternating bi-weekly collection of either garbage or recycling. Residents still get yard and garden waste collection 9 times per year as well. The RDCK operates the recycling collection service. The service is funded through a tax requisition, however the RDCK receives a financial incentive from Recycle BC to offset the cost of this service.



### Cost Recovery

Utility billing covers food scrap collection program costs. Processing costs are included in the landfill operations budget. The finished material is currently used in landfill operations, offsetting the costs of final cover, which would otherwise need to be purchased elsewhere.



#### 4 RDCK Food Waste Diversion Potential

Using data from the Regional District of Nanaimo, Cowichan Valley Regional District and Powell River Regional District, the following assumptions have been used to estimate the diversion of food waste (including food soiled paper) that could be achieved through the implementation of an organic waste diversion strategy:

- Each household receiving curbside collection would divert 117 kg of food waste per year
- Each person without access to curbside food waste collection would divert 10 kg of food waste per year by bringing their food scraps to a food scraps collection site or through the use of on-site food waste management options
- Measures to encourage diversion of food waste by the ICI sector would divert 30 kg per capita per year in municipal areas and 7.5 kg per capita in electoral areas.

Tables 4-1, 4-2 and 4-3 provide an estimate of food waste diversion by sub-region. These estimates include the following additional assumptions:

- Curbside collection of organics would be established in areas with curbside collection of garbage. Currently, that is in each municipality and not in the electoral areas.
- ICI organic waste diversion would primarily be from within municipal boundaries.
- Organic waste diversion in the electoral areas would be residential only.

**Table 4-1: Food Waste Diversion Estimate for West Sub-Region**

West Sub-Region	Census Population	Census Households	Curbside Households	Residential Food Waste	Commercial Food Waste	Total Food Waste
				tonnes	tonnes	tonnes
City of Castlegar	8,039	3,499	3,000	351	241	592
Village of New Denver	473	243	305	36	14	50
Village of Silverton	195	107	152	18	6	24
Village of Nakusp	1,605	761	750	88	48	136
Village of Slocan	272	140	200	23	8	32
EA H	4,667	2,128	-	47	35	66
EA I	2,534	1,107	-	25	19	49
EA J	3,137	1,345	-	31	24	44
EA K	1,681	831	-	17	13	29
<b>TOTAL</b>	<b>22,603</b>	<b>10,161</b>	<b>4,407</b>	<b>636</b>	<b>408</b>	<b>1,043</b>

**Table 4-2: Food Waste Diversion Estimate for the Central Sub-Region**

Central Sub-Region	Census Population	Census Households	Curbside Households	Residential Food Waste	Commercial Food Waste	Total Food Waste
				tonnes	tonnes	tonnes
City of Nelson	10,572	4,822	3,857	451	317	768
Village of Salmo	1,141	547	474	55	34	90
Village of Kaslo	968	469	520	61	29	90
EA D	1,343	653	-	13	10	24
EA E	3,772	1,736	-	38	28	66
EA F	3,963	1,707	-	40	30	69
EA G	1,623	747	-	16	12	28
<b>TOTAL</b>	<b>23,382</b>	<b>10,681</b>	<b>4,851</b>	<b>675</b>	<b>461</b>	<b>1,135</b>

**Table 4-3: Food Waste Diversion Estimate for the East Sub-Region**

East Sub-Region	Census Population	Census Households	Curbside Households	Residential Food Waste	Commercial Food Waste	Total Food Waste
				tonnes	tonnes	tonnes
Town of Creston	5,351	2,590	2,000	234	161	395
EA A	1,930	967	-	19	14	34
EA B	4,657	1,922	-	47	35	81
EA C	1,482	654	-	15	11	26
<b>TOTAL</b>	<b>13,420</b>	<b>6,133</b>	<b>2,000</b>	<b>315</b>	<b>221</b>	<b>536</b>

Table 4-5 provides an estimate of food waste diversion for the entire RDCK. As shown, the majority of food waste is generated in the West and Central Sub-Regions.

**Table 4-4: Total Food Waste Diversion Estimate for RDCK**

Sub-Region	Residential Tonnes	Commercial Tonnes	Total Tonnes	Percentage
<b>West Sub-Region</b>	636	408	1,043	38%
<b>Central Sub-Region</b>	675	461	1,135	42%
<b>East Sub-Region</b>	315	221	536	20%
<b>Total</b>	<b>1,626</b>	<b>1,090</b>	<b>2,714</b>	



## 5 Stakeholder and Community Engagement

A successful regional organic waste diversion strategy requires input from all stakeholders including processors, haulers, local governments, and waste generators in the area. As part of developing this strategy, stakeholder input was sought through:

- A questionnaire emailed to all municipalities in the RDCK;
- A questionnaire emailed to all private waste haulers providing services in the RDCK; and
- A series of 4 stakeholder workshops held in June 2017
  - One focused on small-scale solutions
  - One focused on private waste haulers and ICI organic waste generators
  - One focused on municipalities
  - One focused on stakeholders in the Creston area.

### 5.1 Summary of Stakeholder Input

Through these venues, several ideas were generated on how RDCK could reduce the amount of organic waste landfilled. These options are listed in Table 5-1 and are organized into the following categories:

- Source reduction – options for homes and ICI locations that could reduce the amount of organic waste generated or that needs to be collected and subsequently processed
- Collection – approaches to collecting organic waste from homes and ICI locations
- Processing – options for processing the organic waste collected, including centralized and decentralized options
- Policies – policy options that would drive or support organic waste diversion
- Support mechanisms – other tools that could support organic waste diversion

**Table 5-1: Options to Reduce Organic Waste Disposal**

Source Reduction - Residential	Source Reduction - ICI
<ul style="list-style-type: none"> <li>• encourage more on-site management of organic waste (bin distribution, compost coaching, workshops)</li> <li>• food waste awareness/education</li> </ul>	<ul style="list-style-type: none"> <li>• on-site management of organic waste (in-vessel composting)</li> <li>• food waste redistribution (e.g. food banks, meal programs)</li> <li>• food waste reuse (e.g. as animal feed)</li> </ul>
Residential Collection	ICI Collection
<ul style="list-style-type: none"> <li>• Curbside - food waste only</li> <li>• Curbside - food waste and yard waste separately</li> <li>• Curbside - food waste and yard waste together</li> <li>• Yard waste drop off</li> <li>• Food waste drop off</li> <li>• Food waste bucket exchange (pick up service or drop off only)</li> </ul>	<ul style="list-style-type: none"> <li>• Private collectors</li> <li>• Part of municipally-provided service (small municipalities)</li> <li>• Municipal collection offered to small businesses on curbside routes</li> </ul>



Processing	Policies
<ul style="list-style-type: none"> <li>• municipal yard waste processing (low tech)</li> <li>• municipal food waste processing (mid to hi tech)</li> <li>• regional district centralized food waste composting (Salmo, Creston)</li> <li>• regional district decentralized food waste composting where space available</li> </ul>	<ul style="list-style-type: none"> <li>• disposal bans (regional)</li> <li>• mandatory collection for ICI food waste generators</li> <li>• variable tipping fee (lower tip fee than garbage)</li> </ul>
Support Mechanisms - Residential	Support Mechanisms - ICI
<ul style="list-style-type: none"> <li>• garbage can limits</li> <li>• curbside collection ban on yard waste / food waste</li> <li>• promotion/ education</li> </ul>	<ul style="list-style-type: none"> <li>• educating generators about food donations</li> <li>• provide technical support to ICI sector</li> <li>• create or support a system of linking organic waste generators to end users</li> <li>• recognition programs</li> <li>• education/awareness of available options</li> </ul>
Support Mechanisms - Haulers	Support Mechanisms - Municipalities
<ul style="list-style-type: none"> <li>• help promote available services to ICI sector</li> <li>• develop and supply effective education materials</li> <li>• disposal ban and enforcement</li> </ul>	<ul style="list-style-type: none"> <li>• provide technical support to municipalities that want to establish local composting initiatives (collection &amp; processing)</li> <li>• coordinate partnerships (with other municipalities, with private sector)</li> <li>• provide templates for promotion/education materials</li> </ul>

In addition, the following summarizes the sector-specific input received:

**Municipalities:**

- In general, most municipalities are supportive of moving forward with organic waste diversion. However, most municipal representatives require additional information on the cost of doing organic waste collection and processing before they can consider it seriously.
- A few municipalities are very enthusiastic to implement a collection service once a composting facility is available.
- Others do not expect to pursue organic waste diversion in the foreseeable future due to other municipal priorities and/or a lack of local support.

**Haulers:**

- Haulers are ready and able to provide organic waste collection services once there is enough demand in an area to create a business opportunity.
- Waste haulers are already transporting organic waste for some customers, often hauling loads of organic waste from specific organic waste generators to farmers.

**ICI Generators:**

- There is already some redistribution and reuse of organic waste from grocers and restaurants to farms, social service organizations and sometimes homeowners (for chickens, composting). One of the challenges for businesses is finding a consistent and reliable end user.
- Although there is general support from the business sector for the idea of organic waste diversion, it may be challenging for some ICI locations due to the lack of space (an issue in downtown Nelson in particular) or the cost. Although the tipping fee for organic waste will be lower than the one for garbage, there is an additional cost for collection that may mean that a business's overall waste management costs may go up.

**Small scale solution advocates:**

- Gleaning is a well-established practice in the Kootenays already. However, it would be good to try to connect ICI food waste generators with farmers. Social media could be a potential tool for this purpose.
- Any small scale solution should be simple and low-tech.
- Small communities need a decentralized processing option. Some of the on-site processing options for ICI locations could be applicable for use by small communities.
- There are a broad range of technologies available. For example, Bokashi can be scaled up to service a business or small community.
- A potential challenge could be how to unload food waste from a municipal collection vehicle into a small scale in-vessel composter or other form of technology. A bucket-exchange program may work best in a small scale community program.

**5.2 Community Questionnaire**

In June and July 2017, RDCK asked residents to respond to a questionnaire about their current waste management practices, including their use of available yard waste collection sites and backyard composting. Approximately 600 people responded to the questionnaire. Of those, 47% said that they haul their yard waste to a regional district or municipal collection facility and 62% said they backyard compost.

The questionnaire also asked respondents to indicate their level of agreement with the following statement, "It is important to introduce programs for diverting food waste from the landfill, even if it increases user costs." 53% of respondents agreed with this statement, 26% disagreed, and 21% neither agreed nor disagreed.

**5.3 Future Plans for Community and Stakeholder Engagement**

The RDCK intends to obtain additional input from stakeholders and the general public once the draft organic waste diversion strategy is prepared. Stakeholder and general public consultation on the draft strategy is planned for the fall of 2017.



## **6 Considerations for Strategy Development**

To ensure that a sustainable and robust organic waste diversion program can be implemented in the RDCK, environmental, economic and social issues must be given full consideration in the development of a regional organic waste diversion strategy. The following section outlines the Project Team's understanding of these issues in the RDCK as well as their implications on strategy development.

### **6.1 Roles and Responsibilities for Solid Waste Management**

In the RDCK, the regional district and its municipal partners have different roles and responsibilities with respect to solid waste management. The regional district is responsible for developing the “big picture” plans for the entire region that work to meet waste disposal goals and targets. Member municipalities are responsible for providing residential (and sometimes commercial) collection services in their community, while the regional district operates transfer stations, residential recycling depots and landfill facilities, and transfers materials between these facilities. Private sector waste management companies provide curbside service in rural areas, and service multi-family residential buildings as well as the ICI sector.

Consequently, with respect to strategy development, the Project Team assumes that member municipalities and private haulers will provide food waste collection services while the regional district will provide transfer and processing facilities. The regional district will collaborate with its member municipalities and private sector haulers to ensure that the timing and provision of food waste transfer and processing facilities is coordinated with the timing and provision of collection services. The RDCK will also work with collection service providers to develop consistent information and education materials to residents and businesses throughout the region.

### **6.2 Organics Processing Capacity**

As discussed in Section 2.3, the RDCK has already developed infrastructure at their disposal facilities to compost yard and garden waste, wood waste, biosolids and septage. RDCK staff believes that the closed Central Landfill near Salmo and the Creston Landfill would provide excellent sites for aerated windrow composting of food and yard waste; with the Central Landfill providing processing capacity for the West and Central Sub-Regions and the Creston Landfill providing capacity for the East Sub-Region.

The proposed processing facilities would be based on the successful Regional District of Kootenay Boundary facility at the Grand Forks Landfill. RDCK staff have prepared preliminary capital and operating cost estimates for food waste transfer and processing at the Central Landfill site that range from \$59 to \$75 per tonne. The cost per tonne for food waste composting at the Creston Landfill would be higher due to the lower economy of scale (i.e. less food waste).

### **6.3 Geography and Demographics**

Resource Recovery services in the RDCK are delivered through three established sub-regional service areas due to geography. However, while the East Sub-Region is physically separated from the Central Sub-Region by the Kootenay Pass and therefore requires a separate processing facility at the Creston Landfill, the geography of the West and Central Sub-Regions is such that an organics processing facility at the Central Landfill site provides for reasonable transfer distance for both regions.



The development of an organics diversion strategy is also affected by demographics in the RDCK. Roughly 50% of residents in the RDCK live in municipalities that provide curbside garbage collection services while the other 50% live in rural areas where they must self-haul their garbage to transfer stations. As discussed in Section 4, curbside collection programs recover significantly more food waste than drop-off programs (52 kg per person versus 10 kg per person), which means that they are generally more cost-effective.

#### **6.4 Supporting Policies**

As discussed in Section 3, disposal bans are a proven and low-cost policy tool that maximizes food waste diversion from the ICI sector and creates a level playing field (i.e. all businesses need to participate in best practices for waste management). Although stakeholder feedback was not entirely supportive of bans as a tool to drive ICI participation in organic waste diversion, the RDCK should consider this tool if diversion performance is low in the ICI sector. (See more on performance measures in Section 8.)

#### **6.5 Community Support**

Community support is essential to a successful organics diversion program. Enthusiasm for organic waste diversion is reportedly high throughout many RDCK communities. However, as noted in Section 5.2, in a recent community questionnaire on waste management, only 53% agreed with the statement that “it is important to introduce programs for diverting food waste from the landfill, even if it increases user costs.” This suggests that there is a gap between enthusiasm for the concept of organic waste diversion and the willingness to pay for it. It will be important for municipalities to consult with their community in regards to the design and cost for organic waste collection in order to ensure that the service meets the need of the community, and to gain buy-in prior to establishing a service.

Similarly, for the ICI sector, it will be important for the RDCK and waste haulers to be transparent regarding the financial implications of organic waste diversion. Although tipping fees for organic waste are expected to be significant lower than those for garbage, depending on the size of the business and the proportion of their garbage that is organic waste, the cost of an additional collection service may increase the overall waste management costs from some businesses. Effective communication of the RDCK’s intentions associated with organic waste and its implications will be required to ensure support of the ICI sector.



## 7 Recommended Organic Waste Diversion Strategy

Based on the options and considerations discussed above, the organic waste diversion strategy was prepared.

### **Organic Waste Processing at the Central and Creston Landfills**

RDCK will establish organic waste processing facilities for residential and ICI food scraps at the Creston Landfill and the closed Central Landfill near Salmo. These sites have space for a composting facility and are well-buffered from surrounding land uses.

Preliminary costs estimates developed by RDCK staff to set up a windrow composting facility at Central Landfill and transfer service for Nelson and Castlegar range from \$59 to \$75 per tonne. The cost per tonne for food waste composting at the Creston Landfill would be higher due to the lower economy of scale (i.e. less food waste).

The timing of the development of these sites will be driven by the establishment of collection programs in the RDCK's largest municipalities (Creston, Castlegar and Nelson).

The Village of Salmo has also indicated a significant level of interest in organic waste diversion. Due to their proximity to the Central Landfill, this strategy envisions Salmo's participation in organic waste collection once the composting facility at the Central Landfill is operational.

### **Organic Waste Transfer Stations**

RDCK would expand their transfer station services in Nelson and Castlegar to include organic waste. These facilities will be able to receive organic waste from municipal collection programs, as well as from commercial collection providers servicing customers in the municipalities and in the surrounding electoral areas.

### **Supporting Municipalities**

The RDCK will provide technical support to all municipalities interested in establishing curbside and/or depot-based organic waste collection services.

Due to their population and economic activity, the municipalities of Creston, Castlegar and Nelson represent the largest opportunity for organic waste diversion and have indicated a willingness to consider residential curbside collection of organic waste. RDCK will support these 3 municipalities in their design and implementation of curbside collection programs for organic waste with an aim to ensure that local composting and organic waste transfer capacity is available, and that the collection programs are compatible with the transfer and composting systems.

Many smaller municipalities have expressed their interest in establishing an organic waste diversion program for their local homes and businesses. Although the RDCK will not be providing organic waste processing services for communities that are unable deliver to the organic waste processing or transfer facilities noted above, the RDCK will support municipalities interested in establishing their own organic waste management solutions. Support could include:



- Providing technical advice on collection and small-scale processing options.
- Assisting with the identification of appropriate processing technologies that can be installed and operated locally. There are several options available to small communities that can manage food waste including in-vessel composters and Bokashi.
- Assisting with the design of the collection program;
- Identification of grant funding opportunities; and,
- Providing templates for communication and educational materials.

In some areas, such as Kaslo, the RDCK may also be able to provide space at their local waste management facility to host a municipal composting operation.

The level of support RDCK will be able to provide to individual municipalities will be dependent on staff availability. It's anticipated that, in time, municipalities that are early adopters of organic waste diversion will be able to assist other municipalities in the design and implementation of their organic waste diversion services.

### **Industrial, Commercial and Institutional (ICI) Organic Waste Generators**

ICI organic waste generators include all businesses and institutions that generate food waste, with the largest generators being grocers, restaurants, food and beverage manufacturers, institutions with kitchens, and caterers.

ICI sector participation in organic waste diversion is expected to be voluntary. Using variable tipping fees and targeted communications, commercial waste haulers and generators will be encouraged to establish collection services for source-separated food waste (including soiled papers, cardboard and waxed cardboard) that can be delivered to the organic waste transfer stations (Nelson and Castlegar) or the composting facility at the Creston Landfill.

Beyond having a commercial collection service for organic waste, ICI participation in organic waste diversion could also include:

- participating in food redistribution,
- giving food waste to farmers for use as animal feed, and
- on-site management techniques (composting, Bokashi or digestion).

Once ICI organic waste collection services are well-established in the Creston, Castlegar and Nelson areas, it's recommended that RDCK assess the level of ICI participation in organic waste diversion. If participation levels are low, RDCK should assess options to increase participation, including:

- a. A disposal ban on ICI organic waste
- b. Municipal requirement to source-separate organic waste at ICI locations
- c. Increase the price differential between the garbage and organic waste tipping fees
- d. More promotion and education targeting the ICI sector.



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## Residential Participation

In all areas of the regional district, but most importantly for residents in areas without curbside organic waste collection, the RDCK will design and implement a program to increase the awareness of opportunities to self-manage organic waste. This is likely to include:

- a. a financial incentive for purchase of a backyard composter or Bokashi kit (e.g. a mail-in rebate)
- b. Workshops on on-site management techniques, e.g. Vermicomposting, Bokashi, how to compost in areas with bears
- c. A media campaign done in concert with WildSafe BC
- d. A food waste reduction campaign, like “Love Food, Hate Waste.”

Additionally, on a voluntary basis, residents living in the vicinity of the RDCK food waste management facilities (expected to be located in Nelson, Castlegar and Creston) that do not have curbside organic waste collection would be welcome to drop-off their food waste.



## 8 Performance Measures

The following table provide an estimate of the reduction in per capita landfilled waste that can be achieved as a result of each phase of the strategy. To achieve these reductions will require municipal participation, as shown in the table, as well as participation of the ICI sector (haulers and generators).

**Table 8-1 Anticipated Performance, By Phase**

Phase 1		
	Residential (t)	ICI (t)
Nelson	451	159
Castlegar	351	121
Creston	234	81
Salmo	55	17
Electoral areas - West Sub-Region	-	45
Electoral areas - Central Sub-Region	-	40
Electoral areas - East Sub-Region	-	30
<b>Total Annual Tonnes</b>	<b>1,468</b>	
<b>Reduction in RDCK per capita disposal</b>	<b>25 kg</b>	
Phase 2		
	Residential (t)	ICI (t)
Nelson	451	317
Castlegar	351	241
Creston	234	161
Salmo	55	34
Kaslo	61	29
Nakusp	88	48
New Denver	36	14
Silverton	18	6
Slocan	23	8
Electoral areas - West Sub-Region	-	90
Electoral areas - Central Sub-Region	-	80
Electoral areas - East Sub-Region	-	61
<b>Total Annual Tonnes</b>	<b>2,406</b>	
<b>Reduction in RDCK per capita disposal</b>	<b>40 kg</b>	
Phase 3		
	Residential (t)	ICI (t)
Nelson	451	317
Castlegar	351	241
Creston	234	161
Salmo	55	34
Kaslo	61	29
New Denver	36	14
Silverton	18	6
Nakusp	88	48
Slocan	23	8
Electoral areas - West Sub-Region	120	90
Electoral areas - Central Sub-Region	107	80
Electoral areas - East Sub-Region	81	61
<b>Total Annual Tonnes</b>	<b>2,714</b>	
<b>Reduction in RDCK per capita disposal</b>	<b>46 kg</b>	



For Phase 1, because participation of the ICI will be voluntary, only 50% of the total estimated ICI diversion (as presented in Table 4-5) is anticipated. This will come from businesses that are early adopters of opportunities that can enhance their environmental performance, and from those ICI locations that are attracted to the potential waste management cost savings that organic waste diversion can offer (this is generally for large and medium scale organic waste generators).

In Phase 2, if needed, efforts to drive ICI participation will be ramped up to achieve 100% of the estimated diversion. Based on ICI sector behaviours observed in other BC jurisdictions, many businesses will only change their waste management system when required to do so through a disposal ban or mandatory source-separation bylaw.

Upon full implementation, the organic waste diversion strategy, as presented, could reduce the per capita disposal rate from 483 kg to 437 kg, approximately 10%. This reduction is significantly less the estimated proportion of landfilled waste that is considered organic waste (34%). The reasons for this are:

- This strategy targets food waste and food-soiled paper because there are already diversion programs in place for yard waste and wood waste. However, not all of the organic waste landfilled is food waste. Based on a waste composition study undertaken by the Regional District of North Okanagan (who also has yard waste and wood waste diversion programs in place), 50-75% of the organic portion of landfilled waste is food waste, with the remainder being yard waste and wood waste.
- This strategy includes curbside food waste collection for homes within municipalities, since these are the areas receiving curbside garbage collection. Because only 48% of the RDCK population lives within municipalities, the potential for diversion of residential food waste is less.
- Diversion programs do not achieve 100% diversion of the targeted waste material. Upon full implementation of any food waste diversion strategy, food waste will still be found in the disposal stream.