DRAFT REGIONAL ORGANICS DIVERSION STRATEGY

Municipal Curbside Organics Collection Workshop
February 20, 2019
Roles and Responsibilities for Solid Waste Management

Regional District
- Resource Recovery Plan
- Transfer
- Disposal
- Supporting Policies

Municipal Partners
- Collection
- Education
Resource Recovery Plan

• Approved by the Province in 2011
• Key Objectives:
  1. Improved service to the public
  2. Compliance with regulations and alignment with best practices
  3. Achieve financial sustainability
  4. Alignment with zero waste goals
2011 Resource Recovery Plan and Organic Waste Management

Objectives

- Develop higher value end uses for recycled organics
- Upgrade organics management infrastructure at RDCK facilities
- Reduce transportation costs by developing on site management options for yard and garden waste and wood waste (at some RDCK facilities)
What do we mean by organics?

- **Food Waste**
  - Backyard Compostable
    - fruits, vegetables
  - Backyard Non-compostable
    - Meat, bones, breads, non-liquid dairy, fats, food soiled paper

- **Yard & Garden Waste**
  - Small yard waste
    - Leaves, branches, grass clippings
Waste Composition in Similar Regions

- Food Waste: 22%
- Clean Wood: 7%
- Yard and Garden: 4%
- Non-Compostable Organics: 5%
- Paper: 17%
- Plastic: 16%
- Metals: 6%
- Building Materials: 5%
- Electronics: 4%
- Household Hygiene: 4%
- Glass: 4%
- Other: 6%

(Maura Walker & Associates Environmental Consultants)
BC Greenhouse Gas Emissions

B.C. GHG Emissions - 2012
2012 - Total B.C. GHG Emissions 61,500 Kilotonnes CO₂e

- Energy Sub-sector a: Stationary Combustion Sources 20,438 kt (33.2%)
- Energy Sub-sector b: Transport 23,334 kt (37.9%)
- Energy Sub-sector c: Fugitive Sources, 4,815 kt (7.8%)
- Industrial Processes 3,581 kt (5.8%)
- Solvent & Other Product Use 41 kt (0.1%)
- Agriculture 2,001 kt (3.3%)
- Afforestation and Deforestation 3,558 kt (5.8%)
- Waste 3,733 kt (6.1%)

Total Energy: 48,587 kt (79.0%)
## Benefits of Organic Diversion

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Social</th>
<th>Economic</th>
</tr>
</thead>
</table>
| • Reduces Greenhouse Gas emissions  
  • Preserves landfill capacity  
  • Reduces landfill leachate  
  • Improves soils | • Protects human health  
  • Mitigates against climate change  
  • Reduces landfill safety risks | • Extends landfill life  
  • Produces marketable product  
  • Provides employment  
  • Reduces costs to manage leachate and landfill gas |
New Provincial Targets for 2020

**EPR**
- 75% recovery of materials covered by extended producer responsibility programs

**Organics**
- 75% of BC’s population covered by organic waste disposal restrictions

**Disposal**
- Lower the provincial MSW disposal rate to 350 kg per capita
## Organic Disposal Restrictions 2018

<table>
<thead>
<tr>
<th>Regional District</th>
<th>2016 Population</th>
<th>2016 In Place</th>
<th>2018 In Place</th>
</tr>
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<tbody>
<tr>
<td>Alberni-Clayoquot</td>
<td>30,721</td>
<td>N</td>
<td>Y/N</td>
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<tr>
<td>Bulkley-Nechako</td>
<td>40,383</td>
<td>N</td>
<td>N</td>
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<tr>
<td>Capital</td>
<td>372,645</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Cariboo</td>
<td>63,111</td>
<td>N</td>
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<tr>
<td>Central Coast</td>
<td>3,428</td>
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<tr>
<td>Central Kootenay</td>
<td>60,775</td>
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<tr>
<td>Central Okanagan</td>
<td>197,075</td>
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<tr>
<td>Columbia-Shuswap</td>
<td>52,021</td>
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<tr>
<td>Comox-Strathcona</td>
<td>111,022</td>
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<td>Cowichan Valley</td>
<td>84,014</td>
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<tr>
<td>East Kootenay</td>
<td>74,975</td>
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<td>Fraser Valley</td>
<td>301,238</td>
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<tr>
<td>Fraser-Fort George</td>
<td>94,506</td>
<td>N</td>
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<tr>
<td>Kitimat-Stikine</td>
<td>36,270</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>Kootenay Boundary</td>
<td>29,926</td>
<td>N</td>
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<tr>
<td>Metro Vancouver</td>
<td>2,558,029</td>
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<tr>
<td>Mount Waddington</td>
<td>11,139</td>
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<td>N</td>
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<tr>
<td>Nanaimo</td>
<td>157,599</td>
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<tr>
<td>North Okanagan</td>
<td>85,164</td>
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<td>Northern Rockies</td>
<td>5,992</td>
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<tr>
<td>Okanagan-Similkameen</td>
<td>80,622</td>
<td>N</td>
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<tr>
<td>Peace River</td>
<td>66,504</td>
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<td>Powell River</td>
<td>20,328</td>
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<td>North Coast</td>
<td>17,389</td>
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<td>Squamish-Lillooet</td>
<td>62,665</td>
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<tr>
<td>Stikine</td>
<td>642</td>
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<td>Sunshine Coast</td>
<td>29,243</td>
<td>N</td>
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</tr>
<tr>
<td>Thompson-Nicola</td>
<td>135,074</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4,782,500</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of pop with restrictions</td>
<td></td>
<td><strong>66%</strong></td>
<td><strong>75%</strong></td>
</tr>
</tbody>
</table>
BC Regional District Disposal Rates 2016

[Bar chart showing disposal rates for various Regional Districts in BC, with the BC Average Disposal Rate indicated by a green line.]

waste in kg/capita

Disposal Rate
BC Average Disposal Rate
Draft Strategy

Processing
- RDCK will establish processing facilities for residential and ICI (commercial) food scraps at closed Central Landfill near Salmo and Creston Landfill (timing driven by municipal collection)
- Technology modelled on Grand Forks – turned windrow

Transfer
- RDCK will expand transfer station services in Nelson and Castlegar to include organic waste from municipal, private haulers and self-haul

Supporting Municipalities
- RDCK will provide technical support to all municipalities interested in establishing curbside or depot-based organic waste collection services

ICI Generators & Haulers
- RDCK will encourage ICI generators and haulers to divert food waste using variable tipping fees and targeted communications
- RDCK will consider disposal bans based on ICI participation

Resident Participation
- For residents in areas without curbside collection RDCK will design and implement a program to increase awareness of opportunities to self-manage organic waste
FEEDSTOCK ESTIMATES

Municipal Curbside Organics Collection Workshop
February 20, 2019
Reduction – Managed by Resident

Factsheet Series
Backyard Food Waste Digester

Food waste digesters are the easiest way to compost any type of kitchen scraps, including hard to manage kitchen waste like meat, breads, dairy and processed foods. Since these food scraps often attract rodents, the enclosed, half-buried digester acts as a deterrent, keeping rodents out of your compost and away from your home. Digesters can also be used to compost pet waste if placed at least 10 feet away from any garden or fruit producing trees. Digesters work very well in small backyards when the goal of composting is waste diversion as opposed to soil building, since they do not produce finished compost.

Effort Scale:
Easy 1 2 3 4 5 Hard

Put your food scraps in the cone and walk away!

Digesters are an easy and effective way to compost food waste in your backyard. While other methods of composting rely on a balance of materials and aeration to work properly, this system does not.

Instead, the digester uses heat from the sun and microbial activity to develop a rapid decomposition process, producing a nutrient-rich leachate that is absorbed into the soil. The digester is an aerobic process (with an important distinction between digesters and other composters is that digesters do not create compost and therefore do not need to be turned). The leachate from your digester is treated as a valuable source of nutrients to all your surrounding soil.

1. Use a Digester:
   - One or two digesters in a well-drained location in your yard. A minimum of 4 ft. of direct sunlight will ensure successful cone operation.
   - Site, locate your digester away from outbuildings, wood piles or other rodent access areas.

   Choose: you can encircle your digester with flowers or edible plants to take advantage of the nutrient-rich leachate they generate. However, if you are composting pet waste, be sure to locate the digester at least 10 feet (3 meters) from your veggie garden and fruit bearing trees and shrubs as a precaution. Adding some food scraps to addition to the pet waste will help the breakdown process. If you are composting cat waste, please note that cat litter cannot be added to the green cone. *Do not add compostable/biodegradable bags.

   Add all of your kitchen waste to your digester(s). While your digester can compost meat scraps, some other kinds of food scraps should also be added. (like humans, digesters work best on a well-balanced diet): Digesters cannot take any carbon-based materials (e.g. paper towel, newspaper, any yard or garden waste).

   Your kitchen waste should provide more than enough moisture for the bin, but if the material does appear dry, add a small amount of tepid water.

   For a household of 2-4 people, one digester should be sufficient. In optimal conditions, each digester can manage approximately 13 lbs of food scraps a week. However, if you’re using digesters as your only compost and produce a large amount of kitchen waste, you may need two digesters to ensure that all kitchen waste is diverted from the garbage.

   The food waste digester is not designed to produce finished compost and is best left in position for up to five years. At this time the decision can be made to relocate it to another region of your garden. However, if the digester is still working efficiently at this time, you may not need to rela-
Collection Options

Self-Haul Food Scraps

Curbside Collection
Feedstock Collection Estimates

• Limited or no data on self-managed reduction programs

• Limited data on self-haul drop-off programs

• Extensive data on recovery rates for curbside programs

<table>
<thead>
<tr>
<th>Kilograms per Household Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilograms per household</td>
</tr>
<tr>
<td>Drop-Off</td>
</tr>
<tr>
<td>Curbside</td>
</tr>
<tr>
<td>Recovery</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>117</td>
</tr>
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</table>
# Total Feedstock Estimate

<table>
<thead>
<tr>
<th>Sub-Region</th>
<th>Residential Tonnes</th>
<th>Commercial Tonnes</th>
<th>Total Tonnes</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Sub-Region</td>
<td>636</td>
<td>408</td>
<td>1,043</td>
<td>38%</td>
</tr>
<tr>
<td>Central Sub-Region</td>
<td>675</td>
<td>461</td>
<td>1,135</td>
<td>42%</td>
</tr>
<tr>
<td>East Sub-Region</td>
<td>315</td>
<td>221</td>
<td>536</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>1,626</td>
<td>1,090</td>
<td>2,714</td>
<td></td>
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</table>
Previously Proposed Compost Facilities

Turned Windrow  

Description

- Simple process
- Low operating cost
- Similar to Grand Forks
- Construct at closed Central Landfill
  - 2,000 tonnes/yr food waste
- Construct at Creston Landfill
  - 500 tonnes/yr food waste
- Central Landfill:
  - Capital: $535,000
  - Operating: $75/tonne food waste
Benefits of Central Landfill Site - Buffer

BC Organic Matter Recycling Regulation Siting Guidelines

<table>
<thead>
<tr>
<th>Distance from the composting site to:</th>
<th>Suggested minimum buffer zone distance (metres)</th>
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<tbody>
<tr>
<td>Property Line</td>
<td>15-30</td>
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<tr>
<td>Residential Area</td>
<td>400 to 1000</td>
</tr>
<tr>
<td>Hospitals</td>
<td>800 to 2000</td>
</tr>
<tr>
<td>Tourist Areas</td>
<td>400 to 1000</td>
</tr>
<tr>
<td>Farm</td>
<td>100</td>
</tr>
<tr>
<td>Commercial or industrial area</td>
<td>100 to 300</td>
</tr>
<tr>
<td>Private well or other potable water source</td>
<td>150</td>
</tr>
<tr>
<td>Wetlands, ponds, lakes, streams, etc.</td>
<td>150-300</td>
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PROVINCIAL ORGANICS INFRASTRUCTURE PROGRAM

Municipal Curbside Organics Collection Workshop
February 20, 2019
Organics Infrastructure Program

What is the Organics Infrastructure Program?

Low Carbon Economy Leadership Fund

$10 M

BC Government Funding

$10 M

Local Government

$10 M
Organics Infrastructure Program

Organic Infrastructure Program Objectives

- Reduce GHG emissions
- Expand processing capacity for organic residuals
- Divert new organic wastes to higher value end uses
- Support the use of nutrient recovery transformation technologies in the agricultural sector
Organics Infrastructure Program

Who will be eligible for this funding?

- Applicants will be Local Governments
- Local Governments have the option to partner with Indigenous Peoples and/or private sector organizations and/or other Local Governments
- Applicants and/or partners must contribute one-third of the project cost
# Eligibility Criteria

**Infrastructure Projects that:**

- Create new organic residuals processing capacity
- Divert unprocessed municipal organic waste from landfills and/or agricultural organic waste from land application
- Process municipal organic waste and/or agricultural organic waste for beneficial re-use
- Result in quantifiable green house gas (GHG) emission reductions
- Result in incremental capital spending
- Result in value-added streams from diverted organics
- Minimum one-third of total project costs are funded by the applicant
- Comply with relevant Provincial legislation
- Eligible expenditure is limited to March 31, 2022. Projects must be completed by December 31, 2022
Schedule

Application Timeline

- Stakeholder communication, Program Material Development
  - Summer 2018

- Review EOs with potential applicants
  - Fall 2018

- Expressions of Interest (EOIs)
  - Sept 2018

- Applications Open
  - Spring 2019
Organic Matter Recycling Regulation

- **Leachate** that is not collected and reused in the composting process must not be discharged into the environment unless authorized by the Act. (Division 3, Section 26 (3))

Leachate is defined in regulation

- **Odour** management – air contaminants cannot be discharged in a manner that causes pollution

- **Class A compost** may be distributed with no volume restriction

Class A compost requirements are defined
Composting Process

- **Preprocessing**
  - Inspect feedstocks
  - Prepare recipe
  - Grinding/Mixing

- **Active Composting**
  - Aeration

- **Curing**
  - Organic Material is further Matured

- **Screening**
  - Large particles and foreign matter are removed

- **Storage**
  - Final Product
Composting Recommended for the RDCK

Receiving and Material Preparation

• Receiving in 30 ft x 50 ft tarp structure

• Food waste and yard waste/wood chips blended with vertical auger mixer

• Material moved to aerated windrows with industrial loader
Composting Recommended for the RDCK

Aerated Windrow

- Lowest capital and operations cost considering OMRR requirements
- Most efficient use of space
- Uses equipment already available
- Greatest flexibility with volume changes - scalable
- Most efficient in cold weather
- Greater GHG reductions
Composting Recommended for the RDCK

Curing and Screening

• Curing windrows recommended on impermeable pad or on bed of woodchips on landfill area

• Screening using ¼” smaller screen system
Composting at Central Landfill

2,000 tonnes food waste plus 2,000 tonnes yard & garden / wood waste per year
Composting at Creston Landfill

750 tonnes food waste plus 750 tonnes yard & garden / wood waste per year
End Use Markets

- Municipal/Regional District Operations
- Domestic Use
- Garden Centre Sales
- Commercial Applications
- Agriculture
- Landfill Closure
Partnership Considerations

Regional District
- Resource Recovery Plan / Organic Waste Diversion Strategy
- Transfer
- Processing
- Supporting Policies

Municipal Partners
- Feedstocks
- Collection
- Education
# Supporting Municipalities

<table>
<thead>
<tr>
<th>CASTLEGAR</th>
<th>NELSON</th>
<th>CRESTON</th>
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<tbody>
<tr>
<td>Contracted Service</td>
<td>In-House Service</td>
<td>Contracted Service</td>
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<tr>
<td>Recycling Manual</td>
<td>Bi-Weekly garbage</td>
<td>Weekly garbage</td>
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<tr>
<td>Bi-Weekly garbage</td>
<td>Bi-Weekly (same day) recycling</td>
<td>No curbside recycling</td>
</tr>
<tr>
<td>Bi-Weekly recycling</td>
<td>Bag Tag System for garbage</td>
<td></td>
</tr>
<tr>
<td>Recycle BC funding</td>
<td>Blue Bag System for recycling</td>
<td></td>
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<tr>
<td>Seasonal yard waste collection</td>
<td>Recycle BC funding</td>
<td></td>
</tr>
<tr>
<td>Yard waste composting facility</td>
<td>Low curbside tonnage</td>
<td></td>
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</table>
What drives program design?

- Convenience
  - For residents
  - Behaviour forming
- Cost
  - User pay covers program costs (collection & tipping/processing)
- Sustainability
  - GHG reduction, Reduced disposal rate, Life of program
- Effectiveness
  - Meets the program objectives (doing the right things)
- Efficiency
  - Service delivery, scheduling (doing the things right)
Who collects?

- Resourcing considerations
  - In-house staff
  - Fleet requirements
  - Implications for other materials
    - Garbage tonnages
    - Recycle BC

- Ability for contractor to collect organics
  - Contract length to amortize cost of new trucks
What to collect?

- Food waste only
- Food & Yard waste
  - Separate
  - Co-mingled
How to collect?

Manual collection

- Manual
  - Suits food waste only
  - No change to route design necessary
  - Smaller carts
  - Less expensive to implement
How to collect?
Automated collection

- Automated
  - Suitable for food & yard waste co-mingled
  - Topography challenges
    - Hills, lanes, arm reach/swing
  - Larger carts
  - Density (space for storing carts)
  - Expensive to implement
  - Truck maintenance & longevity
    - Lift mechanism wear and tear
  - Change to overall program design
  - Administration (cart swaps, cart maintenance, ownership)
Cart-Based Collection

- Known as “automated” or “semi-automated” collection
- Often driven by OHS and WorkSafe
- Growing number of programs use them
- Require mechanised lifting
Cart-Based Collection - Pros

- Less worker injuries
- Increases labour pool for collection staff
- Often lower operating cost per household
- Carts are animal resistant (e.g. raccoons, dogs, crows)
- Carts can be made bear resistant (with clips)
- Less potential for litter
- Improved data gathering
- Enhanced community aesthetics on collection days
Cart-Based Collection - Cons

• Capital cost of the containers
• Can be challenging in areas with steep or narrow streets, rural roads, lanes
• Larger containers = more garbage = higher disposal costs
• Often higher contamination
• Proper placement at curb is required
• Does not easily accommodate extra material
• Increased storage space required
• Significant staff time required to implement a cart-based collection system
Organics

- Cart volume difference

  - 46 – 77 litre (suits manual collection of food waste only)
  - 80 litre (smallest for automated)
  - 120 litre (typical minimum size for automated)

- Space available for a LOT more organic waste!
Adding Yard Waste - Some Pros and Cons

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience</td>
<td>Increased Volume of Material Collected</td>
</tr>
<tr>
<td>Odour &amp; Pest Management</td>
<td>Increased Cost of Disposal</td>
</tr>
<tr>
<td>Customer Demand</td>
<td>Volume Constraints</td>
</tr>
</tbody>
</table>
Hybrid curbside collection options

- Split packer
- Stand-up right hand drive + regular driving position
- Automated lift arm for totes/carts
- Manual collection for bags & non-automated containers
When to collect?

- Weekly
  - Encourage organics participation
  - Wildlife interactions

- Bi-weekly
  - Better if yard waste included to reduce odours

- Seasonal variations
  - Yard waste “season”

- Public education & outreach
Curbside Collection scheduling

- Design to encourage participation -
  - Food Waste weekly
  - Garbage and Recycling on alternate weeks

Week 1 – Food waste & garbage
Week 2 – Food waste & recycling

- One split packer collection truck per week