



Notice of Meeting and Meeting Agenda Environmental Services Committee

Wednesday, January 27, 2016

11:30 AM

6th Floor Boardroom

V. Derman (Chair), R. Windsor (Vice Chair), R. Atwell, D. Blackwell,
B. Desjardins (Board Chair, ex officio), C. Hamilton, R. Kasper,
W. McIntyre, J. Ranns, K. Williams

1. Approval of Agenda

2. Adoption of Minutes

- 2.1. 16-120 Adoption of Environmental Services Committee Minutes of November 25, 2015

Recommendation: That Environmental Services Committee minutes of November 25, 2015, be adopted.

Attachments: [2015-11-25 Minutes Environmental Services Committee](#)

3. Chair's Remarks

4. Presentations/Delegations

5. Committee Business

- 5.1. 16-123 Liaison to Roundtable on the Environment (verbal)

- 5.2. 16-119 2016 CRD Board Standing Committee Terms of Reference and Work Programs (ESC)

Recommendation: 1. That the terms of reference for the 2016 Environmental Services Committee as attached in Appendix A be approved; and
2. That the Environmental Services Committee recommend to the Capital Regional District Board:

That the Committee priorities and work program as outlined in the Priorities Dashboard, be confirmed.

Attachments: [Staff Report: 2016 Board Standing Committee Terms of Reference](#)
[Appendix A: 2016 TOR Environmental Services Committee](#)
[Appendix B: Priorities Dashboard ESC](#)
[Appendix C: Service Plans Environmental Services Committee](#)

5.3. 16-107 Extension of Contract 13-1765 - Operation of the Hartland Landfill

Recommendation: That the Environmental Services Committee recommend to the Capital Regional District Board:
That Contract No. 13-1765 - Operation of the Hartland Landfill be extended until Dec 31, 2016.

Attachments: [Staff Report: Extension of Contract 13-1765 - Hartland Landfill Operation](#)
[Appendix A: Cell #2 to Cell #3 Landfilling Transition Plan](#)

5.4. 16-105 CRD Roundtable on the Environment Energy Strategy Proposed Initiatives

Recommendation: That staff incorporate the Roundtable on the Environment recommendations which can be included within the current service delivery and that staff continue to pursue external grant opportunities that will support regional energy related planning and programming.

Attachments: [Staff Report: Roundtable on the Environment Energy Strategy Initiatives](#)
[Appendix A: RTE Energy Strategy Presentation to ESC](#)
[Appendix B: RTE memo to ESC Re: Long-Term Energy Strategy](#)

5.5. 16-94 Association of Vancouver Island and Coastal Communities Recommendations on Solid Waste Management for Vancouver Island

Recommendation: That the Environmental Services Committee:
1. Appoint a new Capital Regional District representative to continue participation on the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste;
2. Endorse the Association of Vancouver Island and Coastal Communities Special Committee's proposed priority areas of work for continued discussion; and
3. Forward the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste's State of Solid Waste Management report to the Capital Regional District Special Task Force on Integrated Resource Management for information.

Attachments: [Staff Report: AVICC Recommendations on Solid Waste Management](#)
[Appendix A: AVICC State of Waste Management report](#)
[Appendix B: AVICC Long-Term Strategy for Solid Waste report](#)

6. Roundtable Discussion**6.1. 16-124 Roundtable Discussion (verbal)****7. New Business****8. Motion to Close the Meeting**

8.1. 16-129 Motion to Close the Meeting

Recommendation: That the meeting be closed in accordance with the Community Charter Part 4, Division 3, 90 (1)(g) litigation or potential litigation affecting the regional district; (j) information that is prohibited, or information that if it were presented in a document would be prohibited, from disclosure under section 21 of the Freedom of Information and Protection of Privacy Act; and (m) a matter that, under another enactment, is such that the public may be excluded from the meeting.

9. Adjournment

Next Meeting: February 24, 2016

To ensure quorum, please advise Nancy More (250-360-3024) if you or your alternate CANNOT attend.

Meeting Minutes

Environmental Services Committee

Wednesday, November 25, 2015

9:30 AM

6th Floor Boardroom

PRESENT

DIRECTORS: J. Brownoff (Chair), D. Blackwell, C. Hamilton, R. Kasper (for M. Tait, Vice Chair), D. Martin (for W. McIntyre), J. Ranns, C. Stock (for A. Finall), K. Williams, R. Windsor (9:36), G. Young, N. Jensen (Board Chair, ex officio)

STAFF: L. Hutcheson, N. Bandringa, Environmental Science Officer, Environmental Protection and Water Quality; H. Gibson, Senior Manager, Environmental Partnerships; G. Harris, Senior Manager, Environmental Protection and Water Quality; R. Smith, Senior Manager, Environmental Resource Management; N. More, Committee Clerk (recorder)

The meeting was called to order at 9:32 a.m.

1. Approval of Agenda

MOVED by Director Williams, SECONDED by Alternate Director Stock,
That the agenda be approved with the supplementary agenda.
CARRIED

2. Adoption of Minutes

2.1. 15-1053 Minutes of October 28, 2015, Environmental Services Committee

MOVED by Director Williams, SECONDED by Alternate Director Stock,
That the Environmental Services Committee minutes of October 28, 2015, be
adopted.
CARRIED

3. Chair's Remarks

The Chair remarked that staff will report on the Association of Vancouver Island and Coastal Communities (AVICC) recommendations on solid waste management for Vancouver Island once the AVICC report has been released.

4. Presentations/Delegations

Director Windsor entered the meeting at 9:36 a.m.

4.1. 15-1264 Presentation: Kim Stephens, Partnership for Water Sustainability, Georgia Basin Inter-Regional Education Initiative

K. Stephens provided an update on activities of the Georgia Basin Inter-Regional Educational Initiative, of which the CRD is a partner, and spoke about the publication "Beyond the Guidebook 2015: Towards a Watershed Health Legacy in the Georgia Basin", produced as part of the program to educate local governments on how to achieve sustainable watershed systems through asset management. Main points included: the publication previews the program for integrating the water balance services provided by soil, water and trees into asset management; and local governments can foster a new land ethic through integrated watershed management strategies.

4.2. 15-1281 Delegation: Kelly Gorman, Bottle Depot, re agenda item 5.4

K. Gorman, Operations Manager of the Bottle Depot, made a presentation on glass recycling in the region, including glass collection in the local market place and environmental, social and financial implications of glass being returned at depots, and requested that the CRD reconsider the pickup of glass at curbside. The delegation provided a PowerPoint presentation, on file at Legislative and Information Services.

5. Committee Business

5.1. 15-1241 Award of Contract 15-1843 - Household Hazardous Waste Management and Hazmat Services

L. Hutcheson provided highlights of the report. The Committee discussed the nature and volume of household hazardous waste, the increase in the estimated annual contract cost, the structure of the contract, the lack of additional bidders, provincial stewardship programs, and the need to advocate for identifiable containers with proper labelling that lasts and public education.

**MOVED by Director Windsor, SECONDED by Alternate Director Kasper,
That the Environmental Services Committee recommend to the Capital Regional District Board:**

That Contract 15 1843, Household Hazardous Waste Management and Hazmat Services, in the amount of \$382,544.69 (exclusive of GST) for the first year of the contract (12 months), be awarded to Tervita Corporation and that the Capital Regional District Board Chair be authorized to approve the contract and subsequent contract extension(s).

CARRIED

5.2. 15-1273 Regional Source Control Program Five-Year Review (2009-2013) and Four-Year Implementation Plan (2016-2019)

H. Gibson provided highlights of the report. The Committee discussed the potential for source control of household hazardous waste.

**MOVED by Alternate Director Stock, SECONDED by Director Windsor,
That the Environmental Services Committee recommend to the Capital Regional District Board:**

- 1. That the Five Year Review of the CRD's Source Control Program (2009 2013) be received for information and forwarded to the Ministry of Environment; and**
- 2. That the Regional Source Control Program Four Year Implementation Plan (2016 2019), attached as Appendix B, be approved.**

CARRIED

**MOVED by Director Windsor, SECONDED by Alternate Director Kasper,
That staff be directed to report back to Committee on the Capital Regional District Board taking on an advocacy role for stewardship levies.**

CARRIED

5.3. 15-1150 Hartland Landfill Environmental Program 2014 Annual Report

L. Hutcheson provided highlights of the report and provided clarification around the disposition of leachate gas.

**MOVED by Alternate Director Stock, SECONDED by Director Williams,
That the Environmental Services Committee recommend to the Capital Regional District Board:**

- 1. That the draft Hartland Landfill Environmental Program 2014 Annual Report be approved; and**
- 2. That staff be directed to forward the final annual report to the BC Ministry of Environment and post it on the Capital Regional District website.**

CARRIED

5.4. 15-1152 Residential Curbside Glass Collection for Recycling

L. Hutcheson provided highlights of the report. The Committee discussion included the following points:

- convenience for the public in disposing of glass for recycling instead of into the landfill
- glass with refundable deposit and glass that has no deposit or refund value
- keeping glass separate and uncontaminated from other recyclables
- glass collected under Multi-Material BC system is recycled on the mainland
- assessing whether the public desires to take non-deposit glass to local depots
- letters from local industries that use recycled glass
- examining the contract to see if changes could be made for local glass collection, including risk of penalties

**MOVED by Director Blackwell, SECONDED by Director Windsor,
That the Environmental Services Committee recommend to the Capital Regional District Board:**

That staff be directed to report on the implications if the Board were to reconsider curbside collection of glass.

CARRIED

5.5. 15-1245 Royal Bank of Canada Blue Water Grant Activities Summary

G. Harris provided highlights of the report, including that the grant was in support of integrated watershed management. N. Bandringa presented a summary of the grant activity with the aid of a PowerPoint presentation.

**MOVED by Alternate Director Stock, SECONDED by Director Windsor,
That the Environmental Services Committee recommend to the Capital Regional
District Board that this report be received for information.
CARRIED**

5.6. 15-1246 Invasive Species Management

L. Hutcheson provided highlights of the report.

**MOVED by Alternate Director Stock, SECONDED by Director Williams,
That the Environmental Services Committee recommend to the Capital Regional
District Board:
That the Capital Regional District continue to manage invasive species on lands
under its responsibilities, enhance education and awareness of disposal options
and overall invasive species management through existing programs, and add a
second staff representative on CRISP to support that partnership.
CARRIED**

6. New Business: There was none.**7. Adjournment**

**MOVED by Director Blackwell, SECONDED by Director Windsor,
That the meeting be adjourned at 11:16 a.m.
CARRIED**

CHAIR

RECORDER



Making a difference...together

REPORT TO THE ENVIRONMENTAL SERVICES COMMITTEE MEETING OF WEDNESDAY, JANUARY 27, 2016

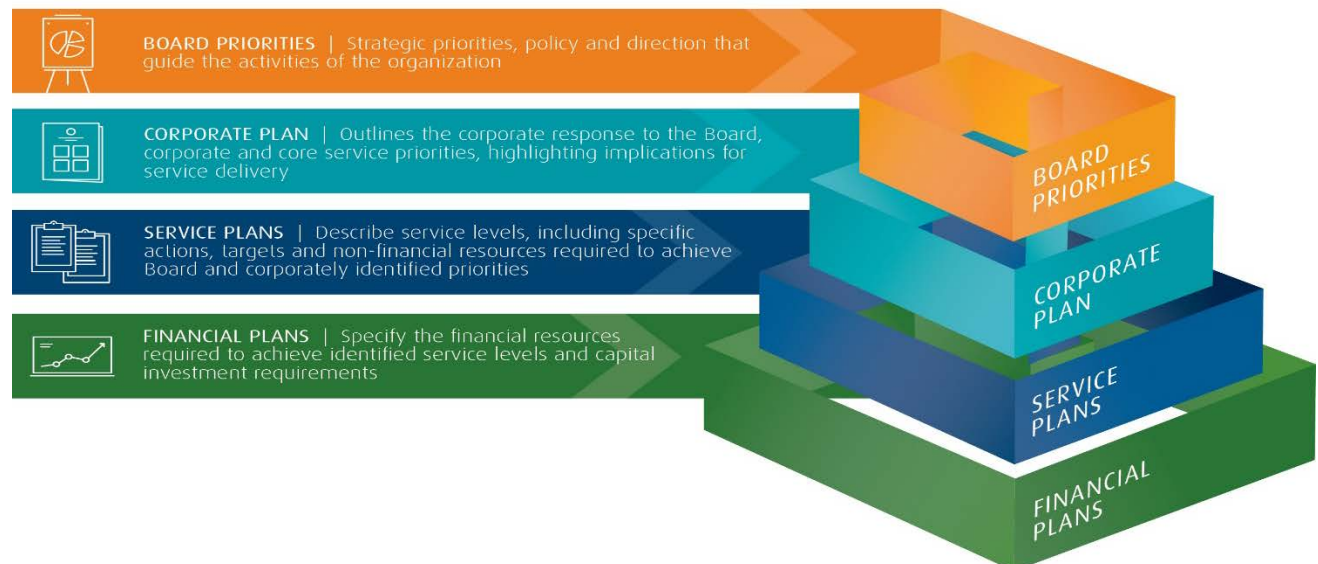
SUBJECT 2016 CRD Board Standing Committee Terms of Reference and Work Programs

ISSUE

To establish the Terms of Reference for the 2016 CRD Board Standing Committees including a high-level orientation for committee members and an update on the 2015-2018 Board Strategic Priorities and 2015-2018 Corporate Plan Initiatives.

BACKGROUND

In 2015, the following 2016 to 2019 planning cycle was initiated to establish a longer-term focus regarding the allocation of resources required to deliver the programs and services need by the community, and to accomplish Board priorities:



In May 2015, the Board approved the *CRD Board Strategic Priorities 2015-2018* (the “*Board Priorities*”) that identifies 12 strategic areas and 51 priorities to be initiated over the four-year term. The corresponding *CRD Corporate Plan 2015-2018* (the “*Corporate Plan*”) was then developed to introduce corporate strategies and actions aimed at achieving the Board priorities.

As part of the planning process, in the Fall 2015, each Board standing committee reviewed the relevant departmental and divisional service plans. The multi-year service plans outlined core service information, including key service drivers such as trends, service levels, workforce considerations, and performance measures and provided the committee an opportunity to make service amendments as necessary.

Each year, the Board Chair determines the Board standing committee structure and governance model to assist the Board in accomplishing its strategic initiatives along with the corporate and divisional initiatives. The authority to establish standing committees is provided by Section 795(2) of the *Local Government Act* and the CRD Board Procedures Bylaw.

To assist the Board Chair with this determination, the Governance Committee was tasked with making recommendations regarding the Board standing and select committee structure. These recommendations were approved by the Board on December 9, 2015 and the resulting Board Standing Committees were established by the Board Chair for 2016:

- Committee of the Whole
- Core Area Liquid Waste Management
- Electoral Area Services
- Environmental Services
- Finance
- Governance
- Planning, Transportation and Protective Services
- Regional Parks

At its meeting held January 13, 2016, the Board received the terms of reference for the 2016 Board Standing Committees and referred them to the respective Standing Committees for review and approval. The proposed terms of reference for the 2016 Environmental Services Committee are attached as Appendix A.

In addition to the above, the Board directed that a status update on the 2015-2018 Board Priorities and Corporate Plan be prepared for each committee for review and confirmation. The *Priorities Dashboard* is attached as Appendix B.

As part of the orientation for this inaugural committee meeting, staff will provide a high-level overview that covers aspects of the service, governance and, staff roles and responsibilities.

ALTERNATIVES

Alternative 1:

1. That the terms of reference for the 2016 Environmental Services Committee as attached in Appendix A be approved; and
2. That the Environmental Services Committee recommend to the Capital Regional District Board:
That the Committee priorities and work program as outlined in the *Priorities Dashboard*, be confirmed.

Alternative 2:

That the Environmental Services Committee recommend to the Capital Regional District Board:

1. That the terms of reference be amended; and/or
2. That the Committee priorities and work program outlined in the *Priorities Dashboard* be amended.

IMPLICATIONS

The terms of reference that have been developed for each committee identify the mandate/purpose of the committee, its establishment and authority, the composition, procedures and staff resources. For the most part, the committees are structured around specific service areas and the terms of reference identify the primary staff liaison(s) for each committee. The terms of reference for the Environmental Services Committee remain unchanged from 2015 with the exception of the following:

Advocacy Role

The terms of reference include making recommendations to the Board to advocate to senior levels of government for programs and regulations to reduce emissions and/or prepare for climate change. The Committee could consider referring this initiative to the Climate Action Inter-Municipal Task Force (formerly Steering Committee) or alternatively, this initiative could be added to the terms of reference as a mandate of the committee.

Climate Action

In addition, the mandate for the Climate Action Program includes a strategy and policy development component as well as the community initiatives and public outreach component. Oversight of the financial implications as it relates to the climate lens policy framework and risk register have been added to the Finance Committee terms of reference.

Committee Work Program

The Board priorities, Corporate Plan initiatives and divisional initiatives have been grouped by committee in the attached Priorities Dashboard to outline the work program for the Committee. In addition, the Dashboard also identifies the current status or progress to date on these various initiatives and proposed next steps. More detail about the strategies, actions or initiatives to achieve these priorities is included in the Corporate Plan and Service Plan (Appendix C).

The terms of reference and the Priorities Dashboard provide the committee with an opportunity to confirm the work program for 2016. Any changes to the work program may have an impact on service levels, the budget, and the ability of staff to deliver their work efficiently.

CONCLUSION

The terms of reference for the 2016 Environmental Services Committee are attached for consideration. The terms of reference, along with the Priorities Dashboard and high-level orientation, will serve to clarify the mandate, responsibilities and procedures governing the Committee.

RECOMMENDATIONS

1. That the terms of reference for the 2016 Environmental Services Committee as attached in Appendix A be approved; and
2. That the Environmental Services Committee recommend to the Capital Regional District Board: That the Committee priorities and work program as outlined in the *Priorities Dashboard*, be confirmed.

Submitted by:	Brent Reems, MA, LLB, Senior Manager, Legislative & Information Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

BR:ss

Attachments: Appendix A – 2016 Committee Terms of Reference
Appendix B – Priorities Dashboard
Appendix C – Service Plans

Terms of Reference

The logo for the Capital Regional District (CRD) is located in the top right corner of the header. It consists of the letters 'CRD' in a stylized, bold, sans-serif font, positioned above a dark, wavy horizontal line that spans the width of the header.

ENVIRONMENTAL SERVICES COMMITTEE

PREAMBLE

The Capital Regional District (CRD) Environmental Services Committee is a standing committee established by the CRD Board and will oversee and make recommendations to the Board regarding waste management, resource recovery, climate change and other environmental matters.

The Committee's official name is to be:

Environmental Services Committee

1.0 PURPOSE

The mandate of the Committee includes overseeing and making recommendations to the Board regarding the following functions:

- Policy matters pertaining to liquid waste management, i.e. beneficial use of biosolids, regional source control and energy recovery from sewage and treated effluent
- Regional solid waste function
- Waste diversion and recycling programs
- Hartland operations
- Resource recovery opportunities
- Stormwater quality function for the core area and Sooke, and the Southern Gulf Islands, Salt Spring Island, and Juan de Fuca electoral areas
- Climate Action Strategy & Program – policy, community initiatives and public outreach
- Roundtable on the Environment (RTE), including its members, terms of reference
- Millstream Meadows Remediation
- Environmental and sustainability matters
- Integrated watershed management planning – community initiatives and public outreach

The Committee may also make recommendations to the Board to advocate to senior levels of government for programs and regulations to reduce emissions and/or prepare for climate change.

The Committee will also:

- serve as the Plan Monitoring Advisory Committee for the current Solid Waste Management Plan (SWMP)
- stand as the Steering committee for the revised SWMP

The following committees will report through the Environmental Services Committee:

- Climate Action Inter-Municipal Task Force
- Integrated Solid Waste and Resource Management Plan Public and Technical Advisory Committee (PTAC)
- Roundtable on the Environment

2.0 ESTABLISHMENT AND AUTHORITY

- The committee will make recommendations to the Board for consideration; and
- The Board Chair will appoint the Committee Chair, Vice Chair and committee members.

3.0 COMPOSITION

- The Chair, Vice Chairs and members are appointed annually by the Board Chair.
- All Board members are permitted to participate in standing committee meetings, but not vote, where an item of local significance is on the agenda (Board resolution Nov. 12, 2014).

4.0 PROCEDURES

- The committee shall meet on a monthly basis, except August and December, and have special meetings as required;
- The agenda will be finalized in consultation between staff and the Committee Chair and any committee member may make a request to the Chair to place a matter on the agenda;
- With the approval of the Committee Chair and the Board Chair, committee matters of an urgent or time sensitive nature may be forwarded directly to the Board for consideration; and
- A quorum is a majority of the committee membership and is required to conduct committee business.





5.0 RESOURCES AND SUPPORT

- The General Manager Parks and Environmental Services will act as liaison to the committee; and
- Minutes and agendas are prepared and distributed by the Legislative & Information Services Department.

Priorities Dashboard > Environmental Services Committee




CONDITION LEGEND

-  No issues / Proceeding as planned
-  Potential or emerging issue/problem
-  Problem/issue has arisen
-  Ahead of schedule / Timing has changed

Priority	Also Reviewed By	Status and Condition			Resolution by Board/Committee	Comments	Next Steps	
		Not Started	In Progress	Completed			Action	Timing
AGRICULTURAL LAND & FOOD SECURITY Establish educational programming to promote local food and its benefits.	<ul style="list-style-type: none"> ▶ <i>Planning, Transportation & Protective Services Committee</i> 					Included food-related educational programming in summer 2015 outreach efforts	<ul style="list-style-type: none"> ▶ Deliver edible gardening workshop ▶ Engage stakeholders on local food education and partnership opportunities 	<ul style="list-style-type: none"> ▶ <i>Q2, 2016</i> ▶ <i>Q2, 2016</i>
BIODIVERSITY & ECOSYSTEM HEALTH Showcase best practices for managing invasive species on CRD lands.	<ul style="list-style-type: none"> ▶ <i>Regional Parks Committee</i> ▶ <i>Regional Water Supply Commission</i> 					Ongoing management of invasive species on CRD parks and watershed lands on a project-by-project basis, e.g., broom removal and restoration in Mill Hill	<ul style="list-style-type: none"> ▶ Enhance awareness of invasive species disposal options and management ▶ Increase staff representation in the Capital Region Invasive Species Partnership (CRISP) 	<ul style="list-style-type: none"> ▶ <i>Q1, 2016</i> ▶ <i>Q1, 2016</i>
BIODIVERSITY & ECOSYSTEM HEALTH Determine future CRD role in regional wildlife management (fallow deer, bullfrogs, geese, etc.).	<ul style="list-style-type: none"> ▶ <i>Electoral Area Services Committee</i> ▶ <i>Environmental Services Committee</i> ▶ <i>Governance Committee</i> ▶ <i>Planning, Transportation & Protective Services Committee</i> ▶ <i>Regional Water Supply Commission</i> 				12-Aug-15, CRD Board	Prepared briefing note on geese management; prepared briefing note bullfrog management; 2015 discussions at committees and commissions indicate support for operational wildlife management but questions remain about need for regional wildlife service	<ul style="list-style-type: none"> ▶ Wildlife management continues on an operational level ▶ Governance Committee to consider establishing a working group 	<ul style="list-style-type: none"> ▶ <i>Ongoing</i> ▶ <i>Q3, 2016</i>
CLIMATE CHANGE Accelerate corporate mitigation and adaptation activities.	<ul style="list-style-type: none"> ▶ <i>Finance Committee</i> 					Completed high-efficiency boiler upgrade at CRD Kings Road housing complex; completed preliminary engineering designs for lighting and boiler upgrades at SEAPARC; completed inventory of CRD fleet and buildings; amending staff report template for major initiatives and capital projects to include climate lens	<ul style="list-style-type: none"> ▶ Present report from the CRD Roundtable on the Environment's (RTE) Energy Strategy to Environmental Services Committee ▶ Test staff report template (with climate lens) on pilot projects ▶ Realign resources and reorganize Risk, Insurance & Facility Management Division to develop new corporate mitigation and adaptation policies ▶ Develop Corporate Climate Action Framework ▶ Expand Climate Action Program service delivery ▶ Begin retrofit at SEAPARC ▶ Develop Climate Change Adaptation Strategy for the Greater Victoria Water Supply Area 	<ul style="list-style-type: none"> ▶ <i>Q1, 2016</i> ▶ <i>Q1, 2016</i> ▶ <i>Q2, 2016</i> ▶ <i>Q2, 2016</i> ▶ <i>Q2, 2016</i> ▶ <i>Q3, 2016</i> ▶ <i>Q4, 2016</i>



Priorities Dashboard ➤ Environmental Services Committee

CONDITION LEGEND
 No issues / Proceeding as planned
  Potential or emerging issue/problem
  Problem/issue has arisen
  Ahead of schedule / Timing has changed

Priority	Also Reviewed By	Status and Condition			Resolution by Board/Committee	Comments	Next Steps	
		Not Started	In Progress	Completed			Action	Timing
CLIMATE CHANGE Pursue strategic partnerships to help achieve community mitigation and adaptation targets.						Completed Tap by Tap program for multi-unit residential buildings; initiated heat pump retrofit incentive program; provided sea level rise analysis and information and delivered capacity-building workshops; submitted response to the Province on its Climate Leadership Plan; participated in advisory group on proposed amendments to provincial flood hazard area land use management guidelines; led 2015 SolarCRD initiative; supported B.C. Sustainable Energy Association climate change education for elementary schools; delivered Resilient Region breakfast series	<ul style="list-style-type: none"> ▶ Develop a checklist for identifying, evaluating and prioritizing potential climate-related partnerships ▶ Continue to pursue, maintain and/or establish partnerships ▶ Launch Ready Set Solve initiative ▶ Pursue partnership with utilities for food service establishment energy- and water-saving initiative ▶ Support Green Shores™ training workshops ▶ Deliver education outreach to elementary schools ▶ Develop Climate Action Sub-Strategy 	<ul style="list-style-type: none"> ▶ Q1, 2016 ▶ Ongoing ▶ Q1, 2016 ▶ Q2, 2016 ▶ Q1, 2016 ▶ Q1, 2016 ▶ Q3, 2016
EDUCATION, OUTREACH & INFORMATION Expand on successful education partnerships and program delivery to include innovative in-person outreach and educational programs.	<ul style="list-style-type: none"> ▶ Regional Parks Committee ▶ Regional Water Supply Commission 					Continued resident energy conservation partnership with BC Hydro; delivered outreach activities in 38 community events, connecting with over 13,000 residents; established new integrated watershed community group; implemented RBC Blue Water Project	<ul style="list-style-type: none"> ▶ Bring forward proposal on development of centre dedicated to outreach, education and engagement ▶ Complete RBC Blue Water Project 	<ul style="list-style-type: none"> ▶ Q4, 2016 ▶ Q1, 2016
ENVIRONMENTAL PROTECTION Undertake monitoring, education and remediation programs to support decision-making and management of natural resources.	<ul style="list-style-type: none"> ▶ Regional Parks Committee ▶ Saanich Peninsula Wastewater Commission 					Completing preliminary water quality monitoring and analysis for Elk/Beaver Lake and engaging with province as appropriate	<ul style="list-style-type: none"> ▶ Present to Board tendered bids for weed harvester for Elk/Beaver Lake ▶ Create part-time Elk/Beaver Lake watershed coordinator ▶ Continuing Millstream Meadows remediation efforts ▶ Increase contaminant identification on stormwater quality in Saanich Peninsula ▶ Begin update of habitat component of Harbours' Inventory 	<ul style="list-style-type: none"> ▶ Q1, 2016 ▶ Q2, 2016 ▶ Ongoing ▶ Ongoing ▶ Q1, 2016

Priorities Dashboard ➤ Environmental Services Committee

CONDITION LEGEND
 No issues / Proceeding as planned
  Potential or emerging issue/problem
  Problem/issue has arisen
  Ahead of schedule / Timing has changed

	Priority	Also Reviewed By	Status and Condition			Resolution by Board/Committee	Comments	Next Steps	
			Not Started	In Progress	Completed			Action	Timing
Integrated Resource Management	INTEGRATED WASTE MANAGEMENT Ensure responsible management of wastewater for the entire capital region. Investigate region-wide solutions to liquid and solid waste. Investigate combined liquid and solid waste management plans.	<ul style="list-style-type: none"> Core Area Liquid Waste Management Committee Electoral Area Services Committee Integrated Waste Management Task Force Saanich Peninsula Wastewater Commission 					Awarded contract for kitchen scraps; delivered a workshop for the Committee of the Whole to facilitate discussion on potential integration opportunities; realigned resources and reorganized to form Environmental Planning & Engineering Division; completed five-year review of Regional Source Control Program	<ul style="list-style-type: none"> Establish Integrated Waste Management Task Force Regularly monitor and report on the effectiveness of wastewater programs Begin four-year Regional Source Control Action Plan 	<ul style="list-style-type: none"> Q1, 2016 Ongoing Q1, 2016
	REGIONAL INFRASTRUCTURE Ensure that resources are available for investment in current and future infrastructure, demonstrating efficiency and value for money and meeting regulatory and service requirements.	<ul style="list-style-type: none"> Core Area Liquid Waste Management Committee Electoral Area Services Committee Finance Committee Planning, Transportation & Protective Services Committee Regional Parks Committee 					Conducted financial review of Environmental Resource Management division resulting in \$1.44M reduction overall in 2016 budget; initiated commercial scales replacement project at Hartland Landfill	<ul style="list-style-type: none"> Increase security measures and regularize landfill attendant positions to meet operational needs Undertake preliminary waste stream analysis to guide future education and policy efforts Complete scales replacement project 	<ul style="list-style-type: none"> Q2, 2016 Q2, 2016 Q1, 2016

Service Plan for Environmental Partnerships

2016-2019

Capital Regional District

Date submitted: ***October 2015***



Making a difference...together

Table of Contents

1	Overview	1
1.1	Division & Service Summary	1
1.2	Organization Chart.....	3
1.3	Key Trends, Issues & Risks – Service Specific	3
1.4	Link to Strategic Priorities.....	4
2	Services	5
2.1	Service Levels	5
2.2	Workforce Considerations	7
3	Divisional Initiatives & Budget Implications.....	7
4	Goals & Performance Indicators	9
	Contact	10

1 Overview

1.1 Division & Service Summary

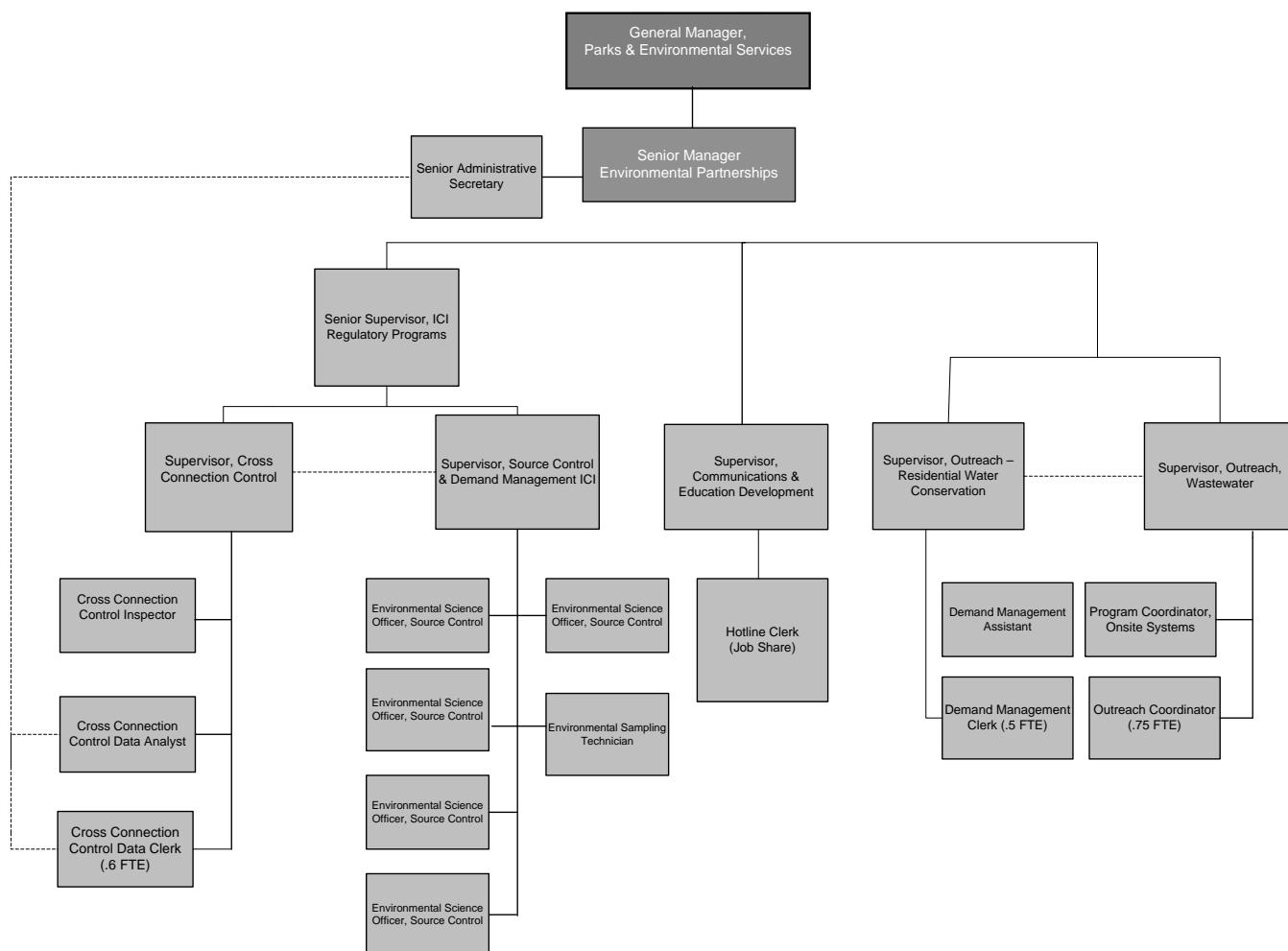
Environmental Partnerships Division is responsible for integrating environmental compliance with outreach and education to deliver services that foster sustainable environmental behavior. The division uses a comprehensive tool box approach, including social marketing, education and environmental compliance to provide services and resources that inform, motivate and engage citizens, businesses and local government partners. The division delivers services in five main areas:

- Demand Management
- Regional Source Control
- Cross Connection Control
- Onsite Wastewater Management
- Communications and Environmental Education

Service Purpose, Role or Overview	Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
Demand Management Promotes the wise and efficient use of water to defer costs of infrastructure expansion	13 municipalities 3 electoral areas	Requisition through water rate	Regional Water Supply Commission (RWRC) Water Advisory Committee (WAC)
Regional Source Control Protects the marine receiving environment, sewage collection and treatment facilities and public health and safety by reducing contaminants discharged into the region's sanitary sewer systems	10 municipalities 3 electoral areas 4 First Nations 2 federal facilities	Requisition	Environmental Services Committee (ESC) Core Area Liquid Waste Management Committee (CALWMC) Saanich Peninsula Wastewater Commission Ganges Sewer Local Service Commission Highland Water and Sewer Local Services Commission Magic Lake Estates Water and Sewer Local Services Committee

Service Purpose, Role or Overview	Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
Cross Connection Control Protects public health by removing or isolating sources of contamination that may flow in a reverse direction into the Regional Water Supply	13 municipalities 3 electoral areas	Requisition through water rate	RWSC WAC
Onsite Wastewater Management Monitoring & Compliance Protects public health and safety and the environment by reducing the number of malfunctioning onsite treatment systems through monitoring and bylaw compliance	4 municipalities	Requisition	CALWMC
Onsite Wastewater Outreach & Education Supports owners and operators of onsite treatment systems by promoting proper care and maintenance and providing educational tools and resources	13 municipalities 1 electoral area	Internal recoveries	ESC
Communications and Environmental Education Engages and educate residents, businesses and students in the region to promote sustainable behavior through departmental campaigns, initiatives and services	13 municipalities 3 electoral areas	Internal recoveries	ESC

1.2 Organization Chart



1.3 Key Trends, Issues & Risks – Service Specific

Trends:

Demand Management

- There continues to be an ongoing decline of indoor water consumption due to regulatory changes in the BC Building Code which may impact future water conservation program development and delivery.
- Climate change impacts may affect water supply levels due to longer, drier weather; as such future water conservation efforts may need to be increased.

Communications and Education

- Demand for educational activities and programs to promote sustainable behavior is increasing. Integrated messaging and coordinated outreach activities are critical to help residents understand and address environmental issues in a cost-effective manner.

Issues:

Regional Source Control

- Public education will need to continue to reinforce the message that source control is an important first step in sewage treatment, even following installation of enhanced sewage treatment in the core area.

Cross Connection Control

- The first round of audits and re-audits of facilities will require additional capacity to insure a timely completion.

Onsite Systems Management

- The current regulatory framework for onsite wastewater management requires pump-out of septic tanks but does not address malfunctioning systems, which means environmental contamination, health concerns, nuisance to neighbours and nutrient enrichment of sensitive water bodies may not be addressed.
- There is no consumer protection information for the onsite wastewater industry.

Communications and Education

- The funding reduction for blue box outreach means that the Hotline service to the public is being reduced to half-time and transformed to an automated information service supported by online tools.

1.4 Link to Strategic Priorities

The division has a link to the following strategic priorities:

INTEGRATED WASTE MANAGEMENT

- Ensure responsible management of wastewater for the entire capital region

DRINKING WATER

- Protect and maintain an adequate supply of safe, reliable drinking water

EDUCATION, OUTREACH & INFORMATION

- Expand on successful education partnerships and program delivery to include innovative in-person outreach and educational programs
- Demonstrate transparency and increase visibility through the provision of accessible, relevant, timely and useable data

PUBLIC ENGAGEMENT AND COMMUNICATIONS

- Develop public participation strategies, including implications and performance metrics, as a part of all major initiatives and implement more options for two-way dialogue and engagement
- Share stories of collaboration and accomplishments

2 Services

2.1 Service Levels

	Service Level Adjustments in Role/Scope				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Demand Management	Administer water conservation bylaw Respond to 1700 public enquiries per year	No change	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Deliver 24 water conservation educational workshops	No change	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Coordinate 25 community outreach events	No change	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Coordinate water cart presence at 15 community events	No change	Adjust to meet service delivery needs, as required	No change	Adjust to meet service delivery needs, as required
	Conduct 5-10 water audits for local businesses	10 water audits/yr	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
Regional Source Control	Conduct inspections, monitoring and enforcement for 2,000 businesses and institutions connected to sanitary sewer	No change	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Conduct 150 sampling events	No change	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Conduct 1,000 coordinated inspections	No change	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Deliver 55 outreach campaigns, events and	No change	Review & Assess	Adjust to meet service	Review & Assess

	Service Level Adjustments in Role/Scope				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
	educational initiatives for residents, businesses and schools			delivery needs, as required	
Cross Connection Control	Conduct 350 facility audits for backflow prevention devices	900/yr	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Monitor and track 20,000 back flow prevention devices	23,000/yr	25,000/yr	28,000/yr	30,000/yr
Onsite Wastewater Management	Outreach to 27,000 households with onsite sewage systems	No change	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Monitor and promote the compliance of onsite systems regulated by bylaw to achieve a minimum of 80% compliance	No change	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Deliver pilot maintenance assessment program (25 system assessments)	No change	20 system assessments per year	Review & Assess	Adjust to meet service delivery needs, as required
Communications and Environmental Education	Deliver outreach and education through participation in 52 facility tours and 74 school presentations	40 tours & 59 presentations	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess
	Deliver Hotline service – currently 7 hours per day	3.5 hours/day	Review & Assess	Adjust to meet service delivery needs, as required	Review & Assess

2.2 Workforce Considerations

	Workforce (FTEs)				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Senior Manager	1	1	1	1	1
Administration	1	1	1	1	1
Demand Management	2.5	3	3	3	3
Regional Source Control	8	8	8	8	8
Cross Connection Control	3.6	4.6	4.6	4.6	4.6
Onsite Wastewater Management	2.75	2.75	2.75	2.75	2.75
Communications and Environmental Education	2	1.5	1.5	1.5	1.5
Total	20.85	21.85	21.85	21.85	21.85
Supplemental FTEs		1.0	1.0	1.0	1.0
Combined Total	20.85	21.85	21.85	21.85	21.85

Cross Connection Control – includes the addition of 1.0 FTE inspector for a four-year term

Communications and Environmental Education – reduction of 0.5 FTE in Hotline staffing

Demand Management – includes the addition of 0.5 FTE for water cart outreach and support for ICI program

3 Divisional Initiatives & Budget Implications

Title & Estimated Completion Date	Description	Strategic Priority Reference	Budget Implications
2016			
Edible Gardening Workshop To be completed in 2019	To deliver a workshop to encourage residents to convert lawns / yard to edible gardens	Agriculture Land & Food Security	Core budget
Residential Water Survey To be completed in 2016	Conduct residential water surveys	Drinking Water	Core budget
Business Water Conservation Outreach Campaign To be completed in 2017	New online assessment tools developed; launch of “Just Ask” campaign, continued collaborations with external partners	Drinking Water	Core budget

Title & Estimated Completion Date	Description	Strategic Priority Reference	Budget Implications
RSCP Four-Year Action Plan To be completed in 2019	Implement four-year plan which includes coordinated program strategies, outreach and education, inspections and monitoring, program review and metrics, bylaw amendments and research of emerging treatment technologies	Integrated Waste Management	Core budget
Source Control: First Step in Sewage Treatment To be completed in 2019	Campaign to promote source control practices in general and counter the perception that source control will no longer be relevant once sewage treatment is in place in the core area	Integrated Waste Management	Core budget
Grease Interceptor Compliance-Tracking Technologies To be completed in 2017	Research and pilot compliance tracking technologies to increase efficiency and effectiveness of food service inspections and increase bylaw compliance	Integrated Waste Management	Core budget
Business Sector One-Window Approach To be completed in 2019	Ongoing campaign to promote and increase awareness of the Capital Regional District services offered to businesses and to promote environmental best practices and regulatory requirements to operate within the capital region.	Education, Outreach and Information	Core budget
Cross Connection Control Audits To be completed in 2022	Complete the first round of Cross Connection Control facility audits and undertake the re-audits of severe hazard facilities	Drinking Water	Continuous four year supplementary for \$174,000.00.
Outreach and Public Engagement Centre To be completed in 2018	Research, develop, and launch a centre in the Fisgard building dedicated to outreach, education and engagement on CRD initiatives, successes, and collaborations	Public Engagement & Communications	2016 - core budget to develop conceptual plan; 2017 & 2018 continuous supplementary
Strategic Communications Services for Environmental Services Ongoing from 2016	Implement a new communications service for Environmental Services which will include media relations, social media, website and strategic communications campaigns	Public Engagement & Communications	Core budget
2017			
Multi-residential Integrated Outreach Campaign To be completed in 2018	Reaching and engaging multi-residential property owners, landlords and tenants to encourage water and energy conservation, pollution prevention, technologies and behavioral change	Education, Outreach and Information	Core budget
Maintenance Assessment Program To be completed in 2019	Encourage residents to develop and adhere to a site-specific maintenance plan and provide a financial incentive to do so	Integrated Waste Management	Continuous supplementary for \$20,000 with matching funds from industry

Title & Estimated Completion Date	Description	Strategic Priority Reference	Budget Implications
2018			
Leak Detection Initiative for Business To be completed in 2019	Identify eligible businesses through auditing and retail data analysis to conduct leak detection services	Drinking Water	Core budget
2019			
No new initiatives			

4 Goals & Performance Indicators

Service Goals	Indicators or Measures
Demand Management To defer infrastructure expansion of region's drinking water supply system for 50 years	<ul style="list-style-type: none"> Annual reduction in water consumption by ICI sector (target 100,000 cubic meters) Number of community outreach events CRD participates in and/or supports annually* (target 25) Number of community events that are supported with the Drinking Water Cart (target 15 annually) Number of CRD educational workshops delivered or partnered on annually* (target 24)
Regional Source Control To protect public health and safety, sewage collection and treatment facilities, and the marine receiving environment by reducing the discharge of contaminants	<ul style="list-style-type: none"> Percentage of businesses in compliance with CRD codes of practice* (target 95%) # of coordinated facility inspections conducted annually (target 1000) Inspect 33% of all food service facilities annually for compliance with source control bylaw Decrease or maintain priority contaminant loadings to the core area marine environment on 3-5 year trend assessment cycles
Cross Connection Control To protect public health by removing or isolating sources of contamination that may back flow into the Regional Water Supply System	<ul style="list-style-type: none"> # of annual backflow incidents reported in Regional Water Supply (target is 0) # of cross-control audits conducted annually (target 900)
Onsite Wastewater Management	<ul style="list-style-type: none"> 80% or better compliance rate with bylaw for Type 1, 2 and 3 onsite systems

To protect public health and environmental by ensuring residents properly maintain their onsite wastewater treatment systems.	<ul style="list-style-type: none"> Increased participation in Onsite Wastewater Management workshops over 2015 levels (target 50 residents; 50 industry members)
Communications and Education To educate businesses and residents about sustainable environmental behaviours	<ul style="list-style-type: none"> Participation rates of residents in two-way dialogue and engagement opportunities* % of social media inquiries/posts responded to within 4 business hours of initial contacts Number and impact of projects and partnerships that demonstrate support for reductions in greenhouse gas emissions and support increased climate resiliency* Number of partnerships focused on local food education*

*Corporate indicator – multiple divisions may contribute to this measure.

Contact

Name: Heidi Gibson
Title: Senior Manager
Contact information: 250-360-3307

Service Plan for Environmental Planning & Engineering

2016-2019

Capital Regional District

Date submitted: ***October 2015***



Making a difference...together

Table of Contents

1	Overview	1
1.1	Division & Service Summary	1
1.2	Organization Chart.....	4
1.3	Key Trends, Issues & Risks – Service Specific	4
1.4	Link to Strategic Priorities.....	5
2	Services	6
2.1	Service Levels	6
2.2	Workforce Considerations	7
3	Divisional Initiatives & Budget Implications.....	8
4	Goals & Performance Indicators	9

1 Overview

1.1 Division & Service Summary

The Environmental Planning and Engineering Division is responsible for providing professional engineering and construction management services to a number of CRD divisions and departments and ensuring CRD engineering and project stewardship standards are maintained throughout the organization. The division is also responsible for the preparation and management of the CRD liquid waste management plans, integrated waste management and resource recovery plans, and ensuring the implementation of the commitments made under the plans.

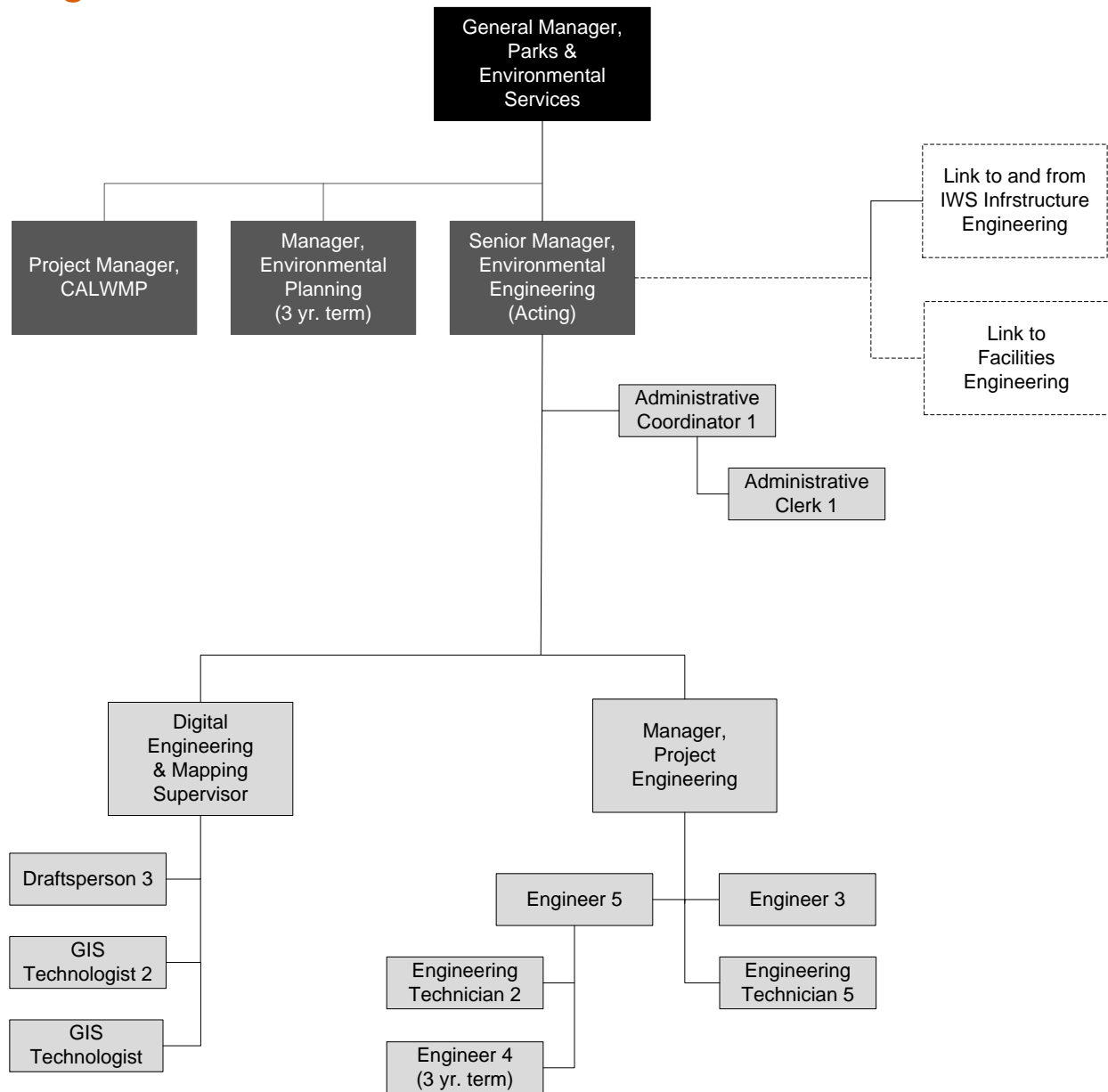
Administrative and contract management staff provide administrative, financial and clerical support to all divisional functions.

Service Purpose, Role or Overview		Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
Engineering & Project Management Services Provide engineering feasibility studies, detailed design, tendering, construction management and commissioning services	Integrated Water Services Department (Regional Odour Control Program, Capital Projects)	Core Area municipalities	Requisition from participating municipalities	Core Area Liquid Waste Management Committee (CALWMC) and CRD Board
	Environmental Resources Management Division (Capital Projects at Hartland Landfill) (Development and implementation of solid Waste Management Plans)	All 13 municipalities and 3 electoral areas	Requisition and landfill tipping fees	Environmental Services Committee (ESC), Solid Waste Advisory Committee and CRD Board
	Regional Parks Division (Capital projects) (Asset management program)	All 13 municipalities and 3 electoral areas	Requisition, capital funds and grants	Regional Parks Committee and CRD Board
	Planning and Protective Services (Capital projects)	All 13 municipalities and 3 electoral areas	Requisition, capital funds and grants	Electoral Area Services Committee and CRD Board

Service Purpose, Role or Overview		Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
	Environmental Protection/Partnerships Division (Develop and implement strategies for regional odour management originating from sewer trunk system and treatment plants) (Remediation Projects-Millstream Meadows)	All 13 municipalities and 3 Electoral areas	Service requisitions	Service area dependent
	Core Area Liquid Waste (Provide engineering support on as-needed basis to the Core Area Wastewater treatment Program)	Core Area municipalities	Requisition, Capital Funds and Grants	CALWMC, CRD Board
Develop & Implement Liquid Waste Management Plans	Inflow & Infiltration Program Develop and implement strategies to reduce I&I into sewers to minimize conveyance, treatment and disposal costs to provide reliable sewer service for the community in compliance with regulations related to sewer overflows	Core Area municipalities	Requisition from participating municipalities	CALWMC and CRD Board
	Core Area Liquid Waste Management Plan Ensure implementation of the commitments set out in the Core Area Liquid Waste Management Plan	Core Area municipalities	Requisition from participating municipalities	CALWMC and CRD Board

Service Purpose, Role or Overview		Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
	<p>Saanich Peninsula Liquid Waste Management Plan</p> <p>Ensure implementation of the commitments as set out in the Saanich Peninsula Liquid Waste Management Plan</p>	Saanich Peninsula municipalities	Requisition from participating municipalities	Saanich Peninsula Wastewater Commission and CRD Board
Corporate Project Stewardship	<p>CRD Project Stewardship Initiative</p> <p>Develop and implement CRD-wide project stewardship framework to standardize project leadership and management across all CRD departments</p>	All CRD Divisions	Internal recoveries	Executive Leadership Team

1.2 Organization Chart



1.3 Key Trends, Issues & Risks – Service Specific

Many of the capital projects that the division works on are funded through grants from senior levels of government. Increasingly, grant applications require comprehensive project information including detailed design. This requires the division to plan projects well in advance and have shovel ready projects in hand.

The enhanced focus on resource recovery and the integration of liquid and solid wastes offers an opportunity for the division to provide specialized technical support (e.g., district energy and heat recovery system design and operation) to achieve Board objectives on climate action.

The divisional work load is likely to increase over the next few years with more capital upgrades being planned as part of the Asset Management Program implementation across the organization.

Project information needs are continuing to grow around GPS and terrestrial laser surveys, and the geomatics group of the division has been able to respond by rapidly adapting to newer technology and getting the job done more efficiently and cost-effectively.

1.4 Link to Strategic Priorities

The Environmental Engineering Division provides project management services in completing a wide range of capital projects for Parks & Environmental Services and other CRD departments that contribute to achieving Board Strategic Priorities. Specific linkages to the Board Strategic Priorities are listed below.

INTEGRATED WASTE MANAGEMENT

- Realign resources to effectively deliver on Board directives related to integrated waste management and develop an overarching integrated plan
- Implement an assessment framework on integration opportunities, consider innovative approaches and report on effectiveness of programs

CLIMATE CHANGE

- Realign resources to effectively deliver on Board directives related to climate change and implement policy and practices to demonstrate leadership in operations

ACTIVE & MULTI-MODAL TRANSPORTATION

- Build and manage trails as transportation corridors

REGIONAL INFRASTRUCTURE

- Ensure that resources are available for investment in current and future infrastructure, demonstrating efficiency and value for money and meeting regulatory and service requirements

CORPORATE DEVELOPMENT

- Evaluate the use of innovative technologies and corporate support systems for continuous improvement and effective service delivery
- Ensure CRD service delivery is effectively supported through the development of best practices

PUBLIC ENGAGEMENT & COMMUNICATIONS

- Develop public participation strategies, including implications and performance metrics, as a part of all major initiatives and implement more options for two-way dialogue.

2 Services

2.1 Service Levels

Service Areas	Service Levels				
	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Integrated Water Services	Core Area Liquid Waste Management Plan	No Change	Provide additional Planning and Project Management on the CALWMP	Provide additional Planning and Project Management on the CALWMP	Provide additional Planning and Project Management on the CALWMP
	Regional Odour Management Program	No Change	No Change	No Change	No Change
	Capital Projects	No Change	Number of Capital Projects to upgrade odour control systems will increase	Number of Capital Projects to upgrade odour control systems will increase	Number of Capital Projects to upgrade odour control systems will increase
	Operations Support	No Change	No Change	No Change	No Change
Environmental Resource Management	Capital Projects	No Change	No Change	No Change	No Change
	Operations Support	No Change	No Change	No Change	No Change
Regional Parks	Capital Projects: E&N Rail Trail and TransCanada Trail	Construction of TCT and next Phase of E&N to start	Construction of next Phase of E&N to continue along with other capital projects.	No Change	No Change
	Operations Support	Increase in condition assessments on critical infrastructure	Increase in condition assessments on critical infrastructure	No Change	No Change
Planning & Protective Services	Capital Projects	No Change	No Change	No Change	No Change
	Operations Support	No Change	No Change	No Change	No Change

Service Areas	Service Levels				
	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Environmental Partnerships/ Protection	Capital Projects: Provide Eng. support on the Millstream Remediation Project	No Change	No Change	No Change	No Change
	Operations Support	TBD	TBD	TBD	TBD

2.2 Workforce Considerations

	Workforce				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
FTEs	14	13	13	13	13
Supplementary FTEs	1	2	2	2	1
Combined Total	15	15	15	15	14

A 3-year term position in project management was required 2014-2016 to meet the increased workload associated with implementation of Regional Parks Projects, addition of landfilling contract management at the Hartland landfill and an overall growth in the number of corporate capital projects. The subsequent 3-year term position in Engineering Project Management will be required 2017-2019 to continue with the increased workload previously handled by the 2014-2016 term position.

A new 3-year term position will be required from 2016-2018 to provide environmental planning support for the Core Area Wastewater Treatment Program.

3 Divisional Initiatives & Budget Implications

Title & Estimated Completion Date	Description	Board Strategic Priority Reference	Budget Implications
2016 – 2019			
I&I Private Property Sewer Lateral Initiative December 2016	Develop a model Private Property Bylaw for municipalities to adopt and concurrently set up a rebate program for sewer lateral smoke testing.	Integrated Waste Management Regional Infrastructure	Core Budget
East Sooke Fire Hall December 2016	Complete, commission and turn over facility to East Sooke Fire Commission	Protective Services Regional Infrastructure	EAS Capital Reserves and Grants
E&N Rail Trail and Trans-Canada Trail Development Projects December 2016	Complete design, construction and commissioning of these two important capital projects	Active & Multi-Modal Transportation	Capital Reserves (Parks) and Grants
Core Area Wastewater Treatment Program TBD	Realign resources to deliver on Core Area Wastewater Treatment Project and acquire additional expertise on technologies and solutions Environmental Engineering will be an active participant in the design, construction and commissioning of this project.	Integrated Waste Management	TBD
Integrated Waste Management Plan TBD	Investigate an overarching Liquid and Solid Waste Management Plan	Integrated Waste Management	TBD

4 Goals & Performance Indicators

Service Goals	Indicators or Measures
Ensure preparation, management, and implementation of liquid waste management plans	<ul style="list-style-type: none">• Qualitative observations on demonstrated progress toward integration of liquid and solid wastes*• Submit amendment no. 10 of Core Area Liquid Waste Management Plan to Ministry of Environment by Spring 2016.
Provide specialized engineering and project management support to multiple divisions	<ul style="list-style-type: none">• Percentage of capital projects completed on time and on budget* (i.e., phase 2 & phase 3 of E&N Rail Trail; East Sooke Fire Hall; projects at Hartland)• Number of infrastructure replacement projects*• Sustainable asset funding plans in place*

*Corporate indicator – multiple divisions may contribute to this measure

Contact

Name: Joshua Frederick, P.Eng.
Title: Acting Senior Manager, Environmental Engineering
Contact information: 250-360-3097

Service Plan for Environmental Protection

2016-2019

Capital Regional District

Date submitted: ***October 2015***



Making a difference...together

Table of Contents

1	Overview	1
1.1	Division & Service Summary	1
1.2	Organization Chart.....	4
1.3	Key Trends, Issues & Risks – Service Specific	4
1.4	Link to Board Strategic Priorities	5
1.5	Service Levels	6
2	Services	11
2.1	Service Levels	11
3	Divisional Initiatives & Budget Implications.....	12
4	Goals & Performance Indicators	14
	Contact	15

1 Overview

1.1 Division & Service Summary

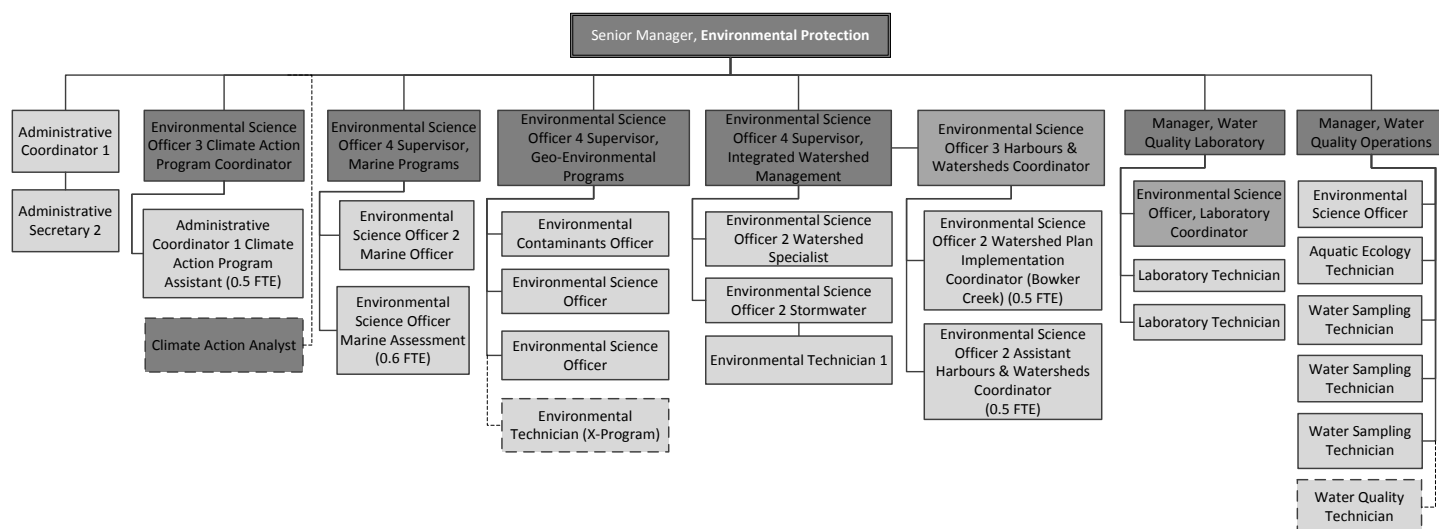
The Environmental Protection Division provides environmental support and expertise to the organization, municipalities and electoral areas, with a key focus on climate action, drinking water quality, contaminant monitoring and assessment associated with both liquid and solid waste treatment, and integrated watershed management. Staff provide scientific, technical and regulatory expertise, and work with all internal departments and divisions, municipalities and electoral areas, external regulators and stakeholders, as well as community stewardship groups. The division assists the CRD's various services to meet human health and environmental protection requirements, along with providing environmental data for local government commitments.

Service Purpose , Role or Overview	Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
Climate Action (mitigation and adaptation) Support local governments in climate goals/commitments Support CRD in corporate climate goals/commitments Climate data and indicators Liaise and advocate to senior levels of government Public education and outreach	All municipalities, electoral areas (EA) and First Nations (FN) (regulatory via Local Government Act)	Requisitions and Grants	Environmental Services Committee (ESC)
GeoEnvironmental Programs Environmental Contaminants Hartland Environmental Programs Millstream Meadows Remediation	All municipalities and electoral areas(regulatory) All municipalities and electoral areas (regulatory) Core municipalities, Ministry of Forests, Lands and Natural Resources Operations (cost-share)	Allocation from IWS and ES Allocation from ERM Capital project Requisition	ESC ESC ESC
Wastewater & Marine Environmental Programs Core Area (Macaulay and Clover points)	Core municipalities (regulatory)	Allocation from IWS	Core Area Liquid Waste Management Committee (CALWMC)

Service Purpose , Role or Overview	Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
Saanich Peninsula Wastewater Treatment Plant	Sidney, North Saanich, Central Saanich (regulatory)	Allocation from IWS	Saanich Peninsula Wastewater Commission (SPWWC)
Ganges Harbour WWTP	Salt Spring Island (regulatory)	Allocation from IWS	Ganges Sewer Local Services Committee (LSC)
Maliview Estates WWTP	Salt Spring Island (regulatory)	Allocation from IWS	Highland Water and Sewer LSC
Magic Lake Estates (Schooner Way WWTP and Cannon Crescent WWTP)	Pender Island (regulatory)	Allocation from IWS	Magic Lake Estates Water and Sewer LSC
Port Renfrew WWTP	Port Renfrew (regulatory)	Allocation from IWS	Port Renfrew Utility Services Committee
Biosolids (Sludge) - Saanich Peninsula WWTP	Sidney, North Saanich, Central Saanich, (regulatory)	Allocation from IWS	SPWWC
Biosolids (Sludge) - Ganges Harbour WWTP	Salt Spring Island (regulatory)	Allocation from IWS	Ganges Sewer LSC
Biosolids (Sludge) - Burgoyne Bay, Ganges Harbour Wastewater Treatment Plant, SGI septage	Salt Spring Island, Pender Island, Mayne Island and Galiano Island (regulatory)	Allocation from IWS	Salt Spring Island Liquid Waste Disposal LSC
Integrated Watershed Management Programs			
Harbours & Watersheds	Core municipalities (not Oak Bay)	Requisition and Grants	ESC or CALWMC
Bowker Creek Initiative	Oak Bay, Saanich, Victoria	Direct invoice	ESC or CALWMC
Stormwater Core Area	Core municipalities, Esquimalt FN and Songhees FN	Requisition	ESC or CALWMC
Stormwater Saanich Peninsula	Sidney, North Saanich, Central Saanich and Peninsula FN	Requisition	SPWWC
Stormwater Source Control Saanich Peninsula	Sidney, North Saanich, Central Saanich	Requisition	SPWWC
Stormwater Salt Spring Island	Salt Spring Island (SSI)	Requisition	Salt Spring Island Director,

Service Purpose , Role or Overview	Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
Stormwater Southern Gulf Islands	Southern Gulf Islands Electoral Area (SGI)	Requisition	Electoral Areas Services Committee (EASC)
Stormwater Juan de Fuca	Juan de Fuca Electoral Area (JDF)	Requisition	Southern Gulf Islands Director, EASC
Stormwater Sooke	Sooke	Requisition	Juan de Fuca Director, EASC
			Sooke Council
Water Quality			
Water Quality Monitoring	Municipalities of Regional Water Supply (RWS) area, JDF and various local service areas	Allocation from IWS and Local Service Areas (LSA)	Regional Water Supply Commission (RWSC) , Regional Water Advisory Committee (RWAC) and various LSA Commissions
Water Quality Laboratory Services	Municipalities of RWS area, JDF and various local service areas	Allocation from IWS and LSA	RWSC, RWAC and various LSA Commissions
Aquatic Ecology Laboratory Services	Municipalities RWS area, JDF and various local service areas	Allocation from IWS and LSA	RWSC, RWAC and various LSA Commissions
Saanich Peninsula Wastewater Treatment Plant Laboratory Services	Sidney, North Saanich, Central Saanich and Peninsula FN	Allocation from IWS and LSA	SPWWC

1.2 Organization Chart



1.3 Key Trends, Issues & Risks – Service Specific

Climate Action Demand: In 2008, the region and corporation set greenhouse gas emission (GHG) reduction (mitigation) targets for 2020 and beyond; however, community and corporate GHG trends remain stagnant. The region should also anticipate climate change effects (adaptation) such as shifting weather patterns and sea level rise in the coming decades. *Demand for climate action support will continue to increase* as energy prices increase, deadlines for emission reduction targets approach, impacts on local services and assets are identified, and regulatory direction from higher levels of government are implemented

Meeting Regulatory Requirements: The Hartland Landfill monitoring program confirms that the landfill remains in compliance for its regulatory obligations. *Proposed regulatory changes* (i.e., new landfill criteria) *or landfill upgrades* (expansion or expanded services) *have the potential to significantly impact the level of monitoring required for both operational and compliance requirements.* Further, additional requirements may result from planning and implementation of integrated waste management decisions as they relate to the liquid waste management project for the core area municipalities. Federal wastewater monitoring requirements are dependent upon flow volumes. Currently, the Macaulay and Clover systems require weekly monitoring, but the flow volumes of these two facilities are approaching the threshold that would require monitoring three times per week. *If this flow threshold is exceeded in the 2016-2019 time period, additional funds would be required for the extra wastewater monitoring.*

Changing Service Needs: The regional water supply remains unfiltered (i.e., no filtration plant required at this time). A new *chloramination treatment plant* is underway which should stabilize water quality in the distribution system. Despite ongoing capital works, aging infrastructure and expanding new distribution, combined with variable chlorine residuals in the distribution network, will require additional water quality monitoring resources to ensure the public health is protected at all times over the near to medium term. The *acquisition and preparation of the Leech River watershed* for future drinking water use *requires expansion of existing water quality monitoring services* to include this potential new water source in the medium to long-term timeline. There is a lack of sufficient baseline data on the Leech River water quality and quantity, which will need to be gathered prior to strategic planning. The division will also provide new watershed coordination for the Elk/Beaver Lake system, on behalf of the Regional Parks division.

Lab Accreditation: The analytical labs will seek accreditation to *ISO 17025: General Requirements for the Competence of Testing and Calibration Laboratories* to meet current industry standards and maintain regulatory and public confidence in our drinking water quality. To provide more efficient and effective support to CRD-owned systems on Salt Spring Island and the Southern Gulf Islands, the laboratory services will also bring most analyses in-house. This will lead to an increase in overall workload by 30%, making *expansion and updating of the CRD Water Quality Labs a key issue for 2016-2019.*

1.4 Link to Board Strategic Priorities

The Division will provide support to all departments across a variety of services on corporate projects and in support of core service delivery, and as such may have a role in supporting numerous priorities. Specifically the division has a direct link to the following priorities:

ENVIRONMENTAL PROTECTION

- undertake monitoring, education and remediation programs to support decision-making and management of natural resources

CLIMATE CHANGE

- realign resources to effectively deliver on Board directives relating to climate change and implement policy and practices to demonstrate leadership in operations
- develop a climate framework to guide decision-making, establish a working group to identify climate change priorities and maximize partnerships

DRINKING WATER

- protect and maintain an adequate supply of safe, reliable drinking water
- invest in the renewal and replacement of aging infrastructure to deliver an adequate supply of safe, reliable drinking water

BIODIVERSITY & ECOSYSTEM HEALTH

- assess service needs, respond to issues that threaten ecological health such as wildlife and invasive species, and profile best practices
- integrate a climate lens in our land acquisition strategies
- establish a working group to identify ecosystem health priorities

PUBLIC ENGAGEMENT & COMMUNICATIONS

- develop public participation strategies, including implications and performance metrics, as part of all major initiatives and implement more options for two-way dialogue and engagement
- share stories of collaboration and accomplishments

OUTREACH, EDUCATION & INFORMATION

- expand on successful education partnerships and program delivery to include innovative in-person outreach and educational programs
- demonstrate transparency and increase visibility through the provision of accessible, relevant, timely and usable data and information

1.5 Service Levels

		Service Level Adjustments in Role/Scope				
Service		Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Climate Action	Mitigation and Adaptation	Advance local and regional climate mitigation and adaptation goals	Accelerate corporate climate action efforts (planning, implementation, reporting).	Review and Assess	Review and Assess	Adjust to meet service delivery needs, as required.
	Support to municipalities and internal CRD departments	Facilitate regional coordination	Engage in 2 climate mitigation or adaptation projects			
Geo-Environmental Programs	Environmental Contaminants	Manage 1 septage disposal contract servicing approximately 30 truck liquid waste service providers	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Trucked Liquid Waste compliance monitoring, stakeholder outreach and reporting Controlled Waste permitting and reporting Septage contract management, monitoring and reporting Odour monitoring and reporting	Odour monitoring of regional sewer trunk system				
	Hartland Environmental	Regulatory compliance monitoring at 178 locations	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Compliance monitoring, assessment and reporting Operational support					

		Service Level Adjustments in Role/Scope				
Service		Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Geo- Environmental Programs	Millstream Meadows Remediation Monitoring, site management and reporting	Implement remediation and investigation to achieve Certificate of Compliance Rezoning	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Core Area 2 outfalls Compliance monitoring, assessment and reporting 5-year dynamic monitoring cycle	Provide wastewater compliance monitoring and reporting and marine outfall monitoring, assessment and reporting services	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
Wastewater & Marine Environmental Programs	Saanich Peninsula 1 outfall Compliance monitoring, assessment and reporting 4-year dynamic monitoring cycle	Provide wastewater compliance monitoring and reporting and marine outfall monitoring, assessment and reporting services	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Electoral Areas (JDF, SGI, SSI) 5 outfalls Compliance monitoring, assessment and reporting 4-year dynamic monitoring cycle	Provide wastewater compliance monitoring and reporting and marine outfall monitoring, assessment and reporting services (wastewater assessment monitoring – Ganges Harbour only)	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Biosolids Monitoring Saanich Peninsula,	Sludge assessment monitoring	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.

		Service Level Adjustments in Role/Scope				
Service		Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
	Electoral Areas facilities Compliance monitoring, assessment and reporting Annual monitoring program					
Integrated Watershed Management	Harbours & Watersheds Facilitation of multi-stakeholder engagement for Bowker Creek Initiative, Gorge Waterway Initiative, Esquimalt Lagoon Initiative, Victoria and Esquimalt harbours	Provide monitoring, assessment, reporting and coordination services for 5 harbour systems and various multi-use watersheds	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Elk & Beaver Lake Watershed Coordination	n/a	Develop and implement a watershed management plan	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess
	Stormwater Core Area Compliance monitoring, assessment and reporting	Monitor 650 discharges	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
		Hold 6 IWM inter-municipal meetings	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
		Monitor all high public-use beaches in winter for enterococci	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.

		Service Level Adjustments in Role/Scope				
Service		Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
	Stormwater Saanich Peninsula	Monitor 290 discharges	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Compliance monitoring, assessment and reporting	Monitor all high public-use beaches in winter for enterococci	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
Integrated Watershed Management	Stormwater Source Control Saanich Peninsula	Monitor and oversee all industrial and commercial connections to the Saanich Peninsula stormwater sewer system	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Stormwater- Salt Spring Island	Support watershed protection initiatives as required through the Salt Spring Watershed Protection Authority	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Stormwater - Southern Gulf Islands	Monitor 80 discharges	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Stormwater Juan de Fuca	Monitor 97 discharges	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Stormwater Sooke	Provide monitoring services Modify program to meet Ministry of Environment	Year 1 – 5 year cycle	Year 2 – 5 year cycle	Year 3 – 5 year cycle	Year 4 – 5 year cycle

		Service Level Adjustments in Role/Scope				
Service		Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
	assessment and reporting	(MOE) requirements for Sooke				
Water Quality	Drinking Water Quality Monitoring Source water and distribution system monitoring, assessment and reporting	Provide monitoring, assessment, reporting and operation support services to the Greater Victoria Regional Water System, the JDF, SSI and SGI local service areas	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess	Adjust to meet service delivery needs, as required.
	Drinking Water Quality (Main) Laboratory Services Physical and chemical analytical services, assessment and reporting	Provide laboratory analytical and reporting services to the Greater Victoria Regional Water System, the JDF, SSI and SGI local service areas, and Regional Parks campgrounds and regional trail fountains	Laboratory accreditation 30% increase in workflow through in-house LSA monitoring	Consolidation with SPWWTP Lab	Review and Assess	Adjust to meet service delivery needs, as required.
	Drinking Water Quality Aquatic Ecology (AE) Laboratory Services Biological analytical services, assessment and reporting	Provide laboratory analytical and reporting services to the Greater Victoria Regional Water System, the JDF, SSI and SGI local service areas, and Regional Parks campgrounds and regional trail fountains	Laboratory accreditation 30% increase in workflow through in-house LSA monitoring	Review and Assess	Adjust to meet service delivery needs, as required.	Review and Assess
	SPWWTP Laboratory Analytical Services	Provide laboratory analytical and reporting services for	Review and Assess	Consolidation with main WQ Lab	Review and Assess	Adjust to meet service delivery needs, as required.

		Service Level Adjustments in Role/Scope				
Service		Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
	Physical and chemical analytical services, assessment and reporting	SPWWTP, and CRD-operated wastewater treatment facilities and outfalls on SSI and SGI				

2 Services

2.1 Service Levels

	Work force (FTEs)				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Senior Manager and Administration	3	3	3	3	3
Climate Action Program	1.5	1.7	1.7	1.7	1.7
GeoEnvironmental Programs	4	4	4	4	4
Integrated Watershed Management Program	6	6	6	6	6
Wastewater & Marine Environmental Program	2.6	2.6	2.6	2.6	2.6
Water Quality Operations and Laboratories	10	11	11	11	11
Subtotal FTEs	27.1	28.3	28.3	28.3	28.3
Supplementary FTEs	3 ¹	1.5 ²	1.5	1.5	1.5
Combined TOTAL FTEs	30.1	29.3	29.3	29.3	29.3

Climate Action Program will increase by 0.2 FTE

Water Quality Operations will increase by 1 FTE (in 2016 term position changes to regular FTE)

Supplementary:

1: in 2015 currently using 3 full time term/auxiliary positions; (Climate Action Analyst, Water Quality Technician, Wastewater Technician)

2: in 2016 Climate Action program will decrease by 1 FTE term (Analyst moved to Corporate Climate Action); Water Quality term position changes to regular FTE; Integrated Watershed Management will increase by 0.5 FTE term, Wastewater & Marine Environmental program will continue 1 FTE term (extension of existing term position)

3 Divisional Initiatives & Budget Implications

Title & Estimated Completion Date	Description	Priority Reference	Budget Implications
2016			
Support Board Strategic Priorities for Climate Action Ongoing	Provide additional support to address Board Strategic Priorities on topic of climate action	Climate Change	\$26,000 continuous supplemental for 0.2 FTE
Millstream Meadows Remediation Land Management Planning & Implementation To be completed in 2020	Plan and implement property improvements (temporary property use and long term rezoning) to balance remediation costs and prepare the property for sale; Implement remediation plan and investigations to achieve Certificate of Compliance	Environmental Protection	Capital budget
Harbours Inventory Ongoing	Updating of 1999/2000 habitat survey of Core harbours sub-surface, and intertidal zones	Biodiversity and Ecosystem Health	\$20,000 continuous supplemental – 4 years (2016-2019)
Elk/Beaver Lake Watershed Coordination To be completed in 2019	Establishment of a part-time coordinator to develop and implement a management plan for multi-use watershed Integrated natural resource management to improve water quality and reduce algae blooms in Elk and Beaver Lakes	Biodiversity & Ecosystem Health Economic Development 11b	\$122,000 continuous supplemental for 0.5 FTE - 4 years (2016-2019)
Stormwater Quality on the Saanich Peninsula ongoing	Increase efforts to identify contaminant sources and work with municipalities to resolve issues	Environmental Protection	\$10,000 continuous supplemental at direction of Saanich Peninsula Wastewater Commission
Water Quality Analytics ongoing	Increase capacity of operational and analytical service levels	Drinking Water	\$70,250 continuous supplemental for 1 FTE
Laboratory Equipment Upgrade To be completed in 2016	Replacement and upgrading of essential analytical equipment	Drinking Water Environmental Protection	\$60,000 single supplemental Capital budget
pH and Corrosion Study To be completed in 2016	Undertake a pH and corrosion study of distribution system to evaluate risks to infrastructure and compliance with Drinking Water Guidelines	Regional Infrastructure Environmental Protection	\$30,000 single supplemental Capital budget

Title & Estimated Completion Date	Description	Priority Reference	Budget Implications
Laboratory Accreditation To be achieved in 2017 with maintenance ongoing	Accreditation to the internationally recognized standard, <i>ISO 17025 General Requirements for the Competence for Testing and Calibration Laboratories</i>	Environmental Protection Corporate Development	\$30,000 single supplemental (\$20,000 continuous supplemental 2017) Capital budget
EQIS Database Enhancements To be completed in 2017 with maintenance ongoing	Develop functional improvements to the existing water quality database	Corporate Development	\$31,000 single supplemental (\$15,000 continuous supplemental 2017) Capital budget
Chlorine Residual Online Monitoring To be completed in 2017	Install two additional chlorine online monitors per year for assessing adequate water quality in the Juan de Fuca Electoral Area and Regional Water Supply area	Drinking Water	\$30,000 single supplemental each year (2 years) Capital budget
Water Quality Sampling and Operational Support Ongoing	Increase role in reviewing and recommending on IWS activities	Drinking Water Environmental Protection	\$10,000 continuous supplemental
2017			
Drinking Water Safety Plan (DWSP) To be completed in 2018	Develop and implement a DWSP for JDF and RWS as "best management practice" for efficiently addressing risks in a water system; Phase 1	Drinking Water	2017: \$40,000 single supplemental 2018: \$30,000 single supplemental Capital budget
2018			
Laboratory Renovations To be completed in 2018	In preparation for combining the water and wastewater laboratories, the laboratory space at 479 Island Hwy will be redesigned to accommodate both labs and SPWWTP equipment will be moved as necessary	Environmental Protection Regional Infrastructure	\$75,000 single supplemental Capital budget
2019			
Nutrient Analyzer To be completed in 2019	Expand and improve capital for internal analysis	Environmental Protection Regional Infrastructure	\$60,000 single supplemental Capital budget

4 Goals & Performance Indicators

Service Goals	Indicators or Measures
Contribute to community and corporate climate action goals	<ul style="list-style-type: none"> Number and impact of projects and partnerships that demonstrate support for reductions in greenhouse gas (GHG) emissions and for increased climate resiliency*
Provide specialized information and technical support	<ul style="list-style-type: none"> Percentage of environmental water quality sampling plans reviewed and updated* Achieve lab accreditation to ISO 17025 Provide monitoring for streams with continuous flows and/or water flows annually (target 9 streams by 2019) 90% of sewer odor monitoring assessment stations monitored and reported on annually
Maintain regulatory compliance monitoring activities for government agencies, member municipalities or other stakeholders	<ul style="list-style-type: none"> Provide sampling, analysis, and reporting of in-house drinking water samples within 5 business days 95% of the time. 100% of operational and compliance samples (outfall, stormwater, landfill) collected, analyzed and reported on annually Conduct a minimum of 4 landfill gas ambient, foundation and perimeter well monitoring activities annually
Maintain assessment requirements for government agencies, member municipalities or other stakeholders	<ul style="list-style-type: none"> 90% of sludge assessment samples collected and reported 20% of all stormwater discharges sampled annually 80% of all high-rated stormwater discharges investigated annually Number of exceedences of provincial water quality objectives at Elk/Beaver Lake compared to previous years* Reduction in days of blue-green algae blooms compared to previous years at Elk/Beaver Lake 15% of businesses inspected annually as a part of Stormwater Source Control on Saanich Peninsula Conduct a minimum of 12 controlled waste audits annually
Increase community and municipal engagement opportunities	<ul style="list-style-type: none"> Number of community outreach events the CRD participates in and/or supports annually* Participation rates of residents in two-way dialogue and engagement opportunities * Number of CRD educational workshops delivered or partnered on annually * Number of Inter-Municipal Meetings held each year Number of stakeholders engaged through educational programming on biodiversity and ecological health issues * Number of volunteer hours leveraged in restoration or stewardship activities (target 300 hours annually)*


* Corporate indicator – more than one division may contribute to this measure.

Contact

Name: Glenn Harris
Title: Senior Manager
Contact information: 250-360-3090

Service Plan for Environmental Resource Management

2016-2019



Capital Regional District

Date submitted: ***October 2015***

CRD
Making a difference...together

Table of Contents

1	Overview	1
1.1	Division & Service Summary	1
1.2	Organization Chart.....	2
1.3	Key Trends, Issues & Risks – Service Specific	2
1.4	Link to Board Strategic Priorities	3
2	Services	3
2.1	Service Levels	3
2.2	Workforce Considerations	6
3	Divisional Initiatives & Budget Implications.....	7
4	Goals & Performance Indicators	9
	Contact	9

1 Overview

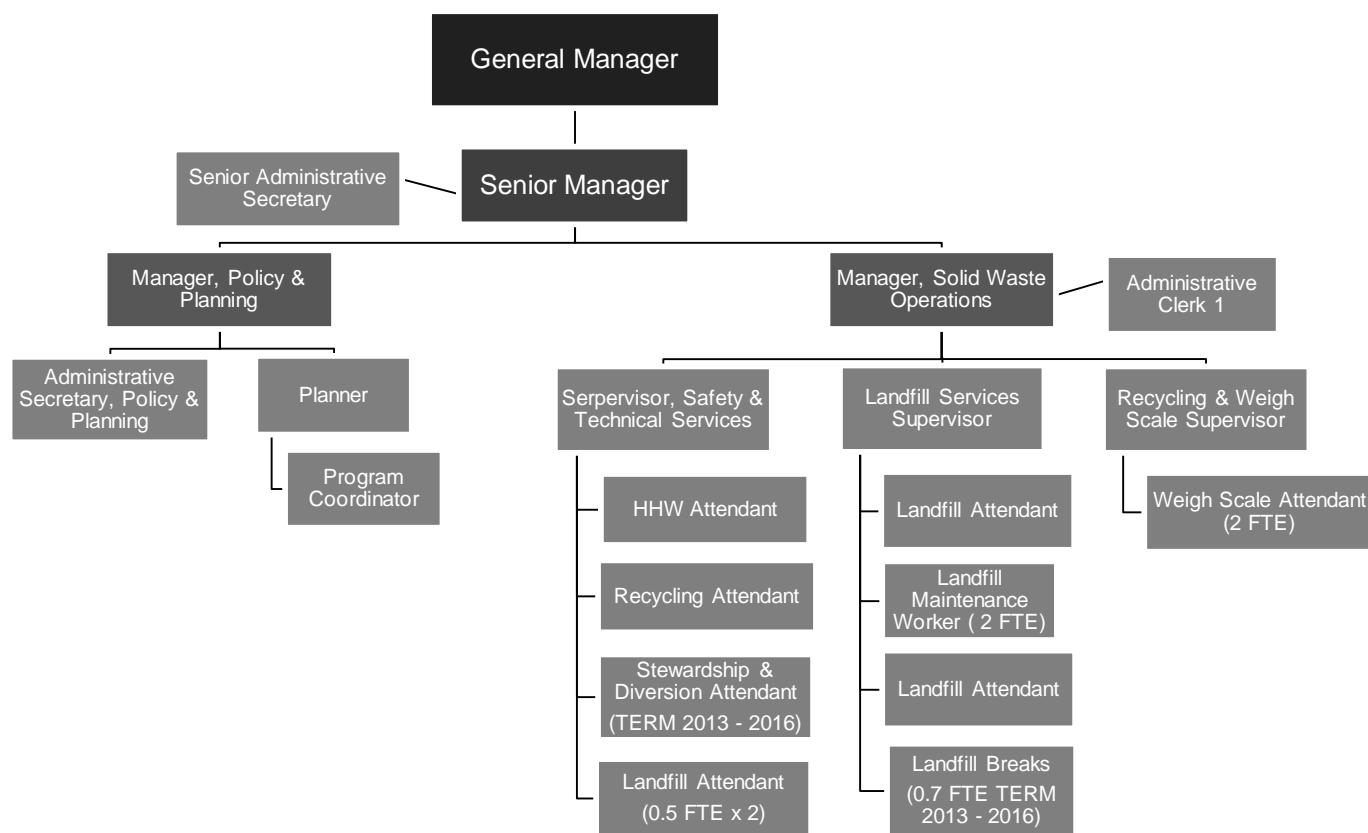
1.1 Division & Service Summary

Environmental Resource Management's (ERM) mission is to efficiently and effectively manage the region's solid waste resources in an environmentally, socially and economically responsible manner. The ERM division is responsible for municipal solid waste management in the Capital Region, including waste reduction, recycling programs and operation of Hartland landfill.

The CRD sees waste as a commodity and seeks the highest and best use for these resources by applying the 5R hierarchy of Reduce, Reuse, Recycle, Resource Recovery and Residual Management. Services range from planning and policy development, bylaw and contract administration to landfill operations. The division is responsible for the a new solid waste management plan, facility licensing, recycling and household hazardous waste collection programs, the regional kitchen scraps strategy, community education and support programs, landfill bans, as well as leachate and landfill gas management.

Service Purpose , Role or Overview	Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
Diversion Services Planning, Policy Recycling Programs	All jurisdictions in region	Landfill tipping fees Funding from product stewardship programs	Environmental Services Committee (ESC)
Landfilling Services Disposal Services and Environmental Compliance	All jurisdictions in region	Landfill tipping fees	ESC
Recovery Services Landfill gas recovery and electricity generation	All jurisdictions in region	Landfill tipping fees Sale of electricity	ESC

1.2 Organization Chart



1.3 Key Trends, Issues & Risks – Service Specific

Landfill tipping fee revenues are no longer sufficient to fully cover the costs of both landfill operations and diversion programs. A new long term financial model is required.

Diversion Services

- The CRD's current per capita disposal rate aligns with the Ministry's new waste disposal service target of 350kg/capita by 2020. The remaining waste materials in the landfill will be more difficult and costly to divert.
- Lifecycle management of consumer products is shifting from local governments to producers through Extended Producer Responsibility (EPR) programs, but not always at full cost recovery. There are opportunities to divert more stewardship materials from the landfill.
- Planning and development of in-region kitchen scraps processing capacity is ongoing. A new Solid Waste Management Plan (SWMP) will provide direction for the future.

Landfilling Services

- The potential movement of garbage out of region for disposal remains a concern due to possible loss of revenue and reduced environmental oversight.

- Residual material is becoming more costly and difficult to manage as WorkSafe BC identifies an increasing variety of materials that need to be managed with heightened worker safety standards.
- Hartland air space is an important regional asset. The creation of a new long term residual management reserve fund will provide certainty for regional residuals management capacity for the future.

Recovery Services

- Staff are continually investigating new integration and recovery opportunities to optimize landfill gas recovery and maximize resource recovery revenue.

1.4 Link to Board Strategic Priorities

The Division has a link to the following strategic priorities:

INTEGRATED WASTE MANAGEMENT

- Realign resources to effectively deliver on Board directives relating to integrated waste management and develop an overarching integrated plan
- Implement an assessment framework on integration opportunities, consider innovative approaches and report on the effectiveness of programs.

CLIMATE CHANGE

- Realign resources to effectively deliver on Board directives relating to climate change and implement policy and practices to demonstrate leadership in operations

AGRICULTURAL LAND AND FOOD SECURITY

- Review opportunities for regional agricultural incentives and initiate food security educational programming

PUBLIC ENGAGEMENT AND COMMUNICATIONS

- Develop public participation strategies, including implications and performance metrics, as a part of all major initiatives and implement more options for two-way dialogue.

2 Services

2.1 Service Levels

	Service Level Adjustments in Role/Scope				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Diversion Services					
Planning and Policy Development	SWMP development (currently at Stage 2)	Complete Stage 3 of SWMP	New SWMP determines service levels	Adjust to meet service delivery needs, as required	Review and Assess

	Service Level Adjustments in Role/Scope				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
	Administer 49 agreements and contracts	The number of agreements will increase as the Ministry of Environment adds new Extended Producer Responsibility (EPR) programs (e.g., mattresses, construction & demolition waste)	Adjust to meet service delivery needs, as required	Adjust to meet service delivery needs, as required	Adjust to meet service delivery needs, as required
	Administer 5 licensed transfer stations on Salt Spring under the Transfer Station Bylaw	The number of licensed transfer stations will increase if other areas (e.g., North Pender Island) request similar bylaws during the SWMP process	Review and Assess	Adjust to meet service delivery needs, as required	Review and Assess
	Administer Compost Facilities Bylaw (no licensed facilities as of June 2014)	Compost bylaw administration varies with number/types of unlicensed and licensed facilities	Review and Assess	Review and Assess	Review and Assess
Recycling Programs Delivery	Curbside collection of packaging & printed paper (PPP)	Glass to be collected as a separate third stream, as per Multi Material BC (MMBC) requirements	Review and Assess	Review and Assess	Review of MMBC agreement may result in further service level changes
	Curbside collection from 123,000 households (HH)	Add new HH (approx. 1,000 HH/year) to collection	No change	Review and Assess	Adjust to meet service delivery needs, as required
	PPP collection from 6 Electoral Area depots	No change	MMBC incentive review may increase depot funding	Review and Assess	Review of MMBC agreements may result in further service level changes
	Hartland recycling facility collects over 80 items from 28 product categories	Increase number of items if Ministry mandates more collection under EPR legislation	Review and Assess	Adjust to meet service delivery needs, as required	Review and Assess

Service Level Adjustments in Role/Scope					
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
	Education to support all recycling programs	Reduce & revise Hotline service to reflect MMBC funding (reduce to 0.5 FTE)	No change	Review and Assess	Adjust to meet service delivery needs, as required
	Kitchen scraps strategy in place (15,000 tonnes diverted in 2014)	Increase tonnage diverted beyond 15,000 tonnes	Review and Assess	Adjust to meet service delivery needs, as required	Review and Assess
	Household Hazardous Waste (HHW) program (Hartland, mobile events on Salt Spring and Gulf Islands as well as off-site pickup of orphan HHW materials)	Discontinue HHW collection from Salt Spring and Gulf Islands locations as well as off-site pickup of orphan HHW materials	No change	No change	No change
Landfilling Services					
Disposal services	Administer five contracts and agreements	Adjust to meet service delivery needs, as required	Adjust to meet service delivery needs, as required	Adjust to meet service delivery needs, as required	Adjust to meet service delivery needs, as required
	Residential service at bin area (Mon – Fri 9 am to 5 pm, Sat 9 am to 2 pm) 45,000 vehicles	Review and Assess	Adjust to meet service delivery needs, as required	Review and Assess	Adjust to meet service delivery needs, as required
	Commercial service at active face (Mon – Fri 7 am to 5 pm, Sat 9 am to 2 pm) 120,000 tonnes @\$110/tonne	Potential new EPR and SWMP diversion programs will decrease tonnages. Maintain tip fee rate to prevent leakage of garbage	Review and Assess	Review and Assess	Tervita landfill (Highlands) is reaching capacity. Construction & demolition tonnage at Hartland may increase.
	Controlled waste 7,500 tonnes @\$157/tonne	Amend tipping fee rate for asbestos to reflect increased handling costs	Review and Assess	Adjust to meet service delivery needs, as required	Review and Assess
Environmental Compliance	Leachate management	No change	No change	No change	No change

	Service Level Adjustments in Role/Scope				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
	(meet or exceed Regional Source Control Program)				
	Environmental monitoring (meet or exceed Ministry requirements)	No change	No change	No change	No change
Recovery Services					
Provide Recovery Services	Landfill gas capture (current capture rate 55%)	Increase capture rate to 75% to meet Ministry guideline	Review and assess	Adjust to meet service delivery needs, as required	Review and Assess
	Electricity generation equivalent to powering 1,100 homes	Facility upgrade to maintain or exceed generation	Review and assess	Adjust to meet service delivery needs, as required	Review and assess

2.2 Workforce Considerations

	Workforce (FTEs)				
Service	Base year 2015	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Diversion	12.25	12.25	12.25	12.25	12.25
Landfilling	8.26	8.26	8.26	8.26	8.26
Recovery	1.19	1.19	1.19	1.19	1.19
Total	21.7	21.7	21.7	21.7	21.7
Supplementary	1.7	1.7	1.7	1.7	1.7
Total	21.7	21.7	21.7	21.7	21.7

In the 2013 budget, there were two 3-year term positions created. One was a 0.7 FTE Landfill Breaks position to provide daily break relief for up to six landfill employees. The second was a 1.0 FTE Stewardship and Diversion Attendant to address an increasing number of stewardship commodities collected at the Hartland Depot as well as conduct on-site maintenance.

For 2016 the 0.7 FTE Landfill Breaks position has been added as a permanent position. There is a demonstrated ongoing need to provide break relief to maintain service levels during regular operating hours.

For 2016 the 1.0 FTE Stewardship and Diversion Attendant has been continued for a further 4-year term, renewed annually, and will now provide labour in relation to stewardship commodities as well as the operation of the new Kitchen Scraps

Transfer Station at Hartland. The work associated with this position will continue at a full time capacity, and be extended annually until 2019, until a long term decision is made regarding a regional kitchen scraps processing.

3 Divisional Initiatives & Budget Implications

Title & Estimated Completion Date	Description	Priority Reference	Budget Implications
2016			
Financial Review ERM expenditure adjustments to transition from a growth business model to a program maintenance model Ongoing	2016 budget was adjusted to maintain existing programs Primary Budget Drivers: Service Reductions <ul style="list-style-type: none"> Reduction to Blue Box administration and hotline service levels as a result of new MMBC funded collection contract Consolidation of CRD Household Hazardous Waste program at Hartland and elimination of offsite collection programs Program Adjustments/Efficiencies <ul style="list-style-type: none"> Adjustment of kitchen scraps diversion and processing volumes based on current trends Reduction of wood waste diversion and processing costs by using optimizing onsite re-use at Hartland 	n/a	\$1.44 M reduction overall (\$250,000) continuous (\$140,000) continuous (\$550,000) continuous (\$100,000) continuous
Solid Waste Management Plan Stage 3 To be completed in 2016	Conduct public consultation and complete plan for approval by Board and Ministry	Integrated Waste Management	Core budget
Blue Box Glass Collection To be completed in 2016	Address potential issues arising from separate collection of glass at the curb	Environmental Protection	Supplementary as required
Kitchen Scraps Processing Ongoing	Develop regional kitchen scraps processing capacity	Integrated Waste Management	Supplementary as required

Title & Estimated Completion Date	Description	Priority Reference	Budget Implications
		Regional Infrastructure	
Waste Stream Analysis To be completed in 2016	Conduct waste stream analysis as per Ministry guidelines	Integrated Waste Management	\$125,000 Single supplementary Waste stream analysis
Hartland Landfill & Recycling Facility Operations To be reviewed annually	Maintain service levels by providing break relief. Complete work associated with stewardship materials and kitchen scraps management.	Education, Outreach and Information	\$121,700 Continuous supplementary 0.7 FTE Landfill Breaks position 1.0 Term (up to 4 years) Stewardship and Kitchen Scraps Attendant position
Hartland Landfill Security Ongoing	Review security arrangements	Corporate Development	\$100,000 Continuous supplementary Increased security
Controlled Waste Complete in 2016	Amend controlled waste fees to cover costs of more difficult to manage materials	Environmental Protection	Core budget (cost recovery)
2017 - 2019			
SWMP	Implement strategies identified in the new plan	Integrated Waste Management	Supplementary items as required by the SWMP

4 Goals & Performance Indicators

Service Goals	Indicators or Measures
Diversion Services Manage solid waste in an environmentally, socially and economically responsible manner	<ul style="list-style-type: none"> • Adoption of Solid Waste Management Plan by Board and approval of plan by provincial ministry in 2016 • Revenue to cost ratio ≥ 1 by 2020 (current ratio is <1) • Decrease waste disposal per capital (target <369 kg)
Landfilling Services Continue to optimize landfill operations	<ul style="list-style-type: none"> • Optimize use of landfill cover material at Hartland (target 5:1 garbage to cover ratio) • Increase compaction rate at Hartland (target minimum 850kg/m³)
Recovery Services Optimize landfill gas resource recovery at Hartland	<ul style="list-style-type: none"> • Percentage of methane gas captured at Hartland Landfill* (75% target)

*Corporate indicator – multiple divisions may contribute to this measure.

Contact

Name: Russ Smith
 Title: Senior Manager
 Contact information: 250-360-3080

**REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, JANUARY 27, 2016**

SUBJECT **Extension of Contract 13-1765 – Operation of the Hartland Landfill**

ISSUE

To consider a one-year extension to Contract No. 13-1765 – Operation of the Hartland Landfill.

BACKGROUND

At its meeting of December 11, 2013 the Capital Regional District (CRD) Board approved a motion to award Contract No. 13-1765, the operation of the Hartland landfill, to Chew Excavating Ltd. from January 1, 2014 to June 30, 2016. With the contract scheduled to expire in June, the CRD has the option to extend the contract up to one year upon serving written notification, no less than 30 days prior to the expiration of the contract. A decision regarding the extension of the contract is needed now to allow sufficient time for a tendering process to be completed and ensure operational continuity should the CRD choose not to extend the current contract.

Under this contract, the contractor provides and operates the heavy equipment used to compact refuse and construct the landfill in accordance with the filling plan. The filling plan calls for the landfill to be filled in selected sections known as cells, in a set sequence to allow for a number of requirements such as stable construction, quarrying, installation of environmental controls and optimal air space use.

The expiration of Contract No. 13-1765 was set to coincide with the commencement of the construction of Cell 3, which will be an open and straightforward filling area relatively easy to construct. However, there is a delay in the commencement of the construction of Cell 3 due to the need to first construct a leachate toe drain at the base of the cell. This means that landfilling operations will continue in Cell 2 to a higher elevation, which involves a more constrained and complex landfilling operation (see Appendix A). With this change, landfilling in Cell 3 is not expected to commence until approximately September 2016. In view of the challenges associated with continuing to landfill in Cell 2, transitioning to a new contractor while still working in Cell 2 could pose potential risks with respect to proper construction and efficient refuse compaction. The current contractor has detailed knowledge of the intricacies of working in difficult areas within the landfill and is performing beyond the contractual requirements. Staff believe it would be prudent to maintain the use of the current contractor until landfilling operations have been fully established within Cell 3 of the landfill.

ALTERNATIVES

That the Environmental Services Committee recommend to the Capital Regional District Board:

Alternative 1

That Contract No. 13-1765 – Operation of the Hartland Landfill be extended until December 31, 2016.

Alternative 2

That Contract No. 13-1765 – Operation of the Hartland Landfill not be extended and the work be tendered for approval by the Capital Regional District Board.

ECONOMIC IMPLICATIONS

The annual value of Contract No. 13-1765 is approximately \$1.2 million, with an annual CPI adjustment. Fees are paid based on hourly rates for machinery actually used and funding for Contract No. 13-1765 or a subsequent new contract is contained within in the 2016 to 2019 Environmental Resource Management budget.

ENVIRONMENTAL IMPLICATIONS

Ensuring that optimal landfill construction and compaction rates are maintained will help to maximize the use of air space and extend the life of the landfill.

CONCLUSION

Contract No. 13-1765, set to expire June 30, 2016, may be extended. Landfilling during 2016 will be challenging as Cell 2 is completed and landfilling transitions into Cell 3. The current contractor possesses the expertise to work successfully within these operational constraints and an extension of their contract until December 31, 2016 is recommended to facilitate a smooth transition into landfilling in Cell 3.

RECOMMENDATION

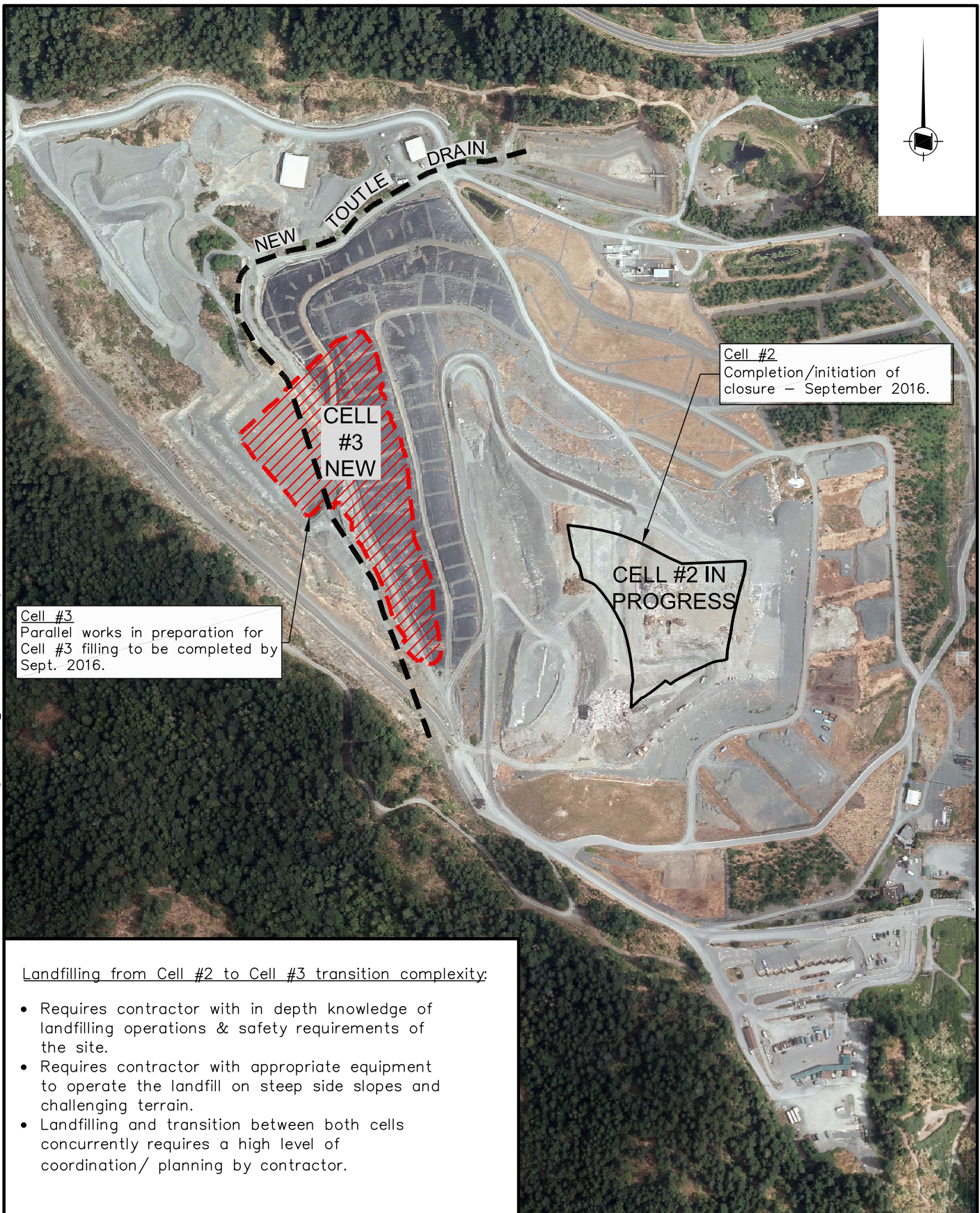
That the Environmental Services Committee recommend to the Capital Regional District Board:

That Contract No. 13-1765 – Operation of the Hartland Landfill be extended until Dec 31, 2016.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks and Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP

CR/TW:dd

Attachment: Appendix A – Cell #2 to Cell #3 Landfilling Transition Plan



Making a difference...together

HARTLAND LANDFILL

CELL #2 TO CELL #3 LANDFILLING TRANSITION PLAN

DESIGNED G.C.	DRAWN L.B.	SCALE 1:5000	CHECKED G.C.	APPROVED J.F.	DATE 12/01/16	DWG. NO. 24-W778-1	REV.	SHT OF	1 1
------------------	---------------	-----------------	-----------------	------------------	------------------	------------------------------	------	-----------	--------

**REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, JANUARY 27, 2016**

SUBJECT **CRD Roundtable on the Environment Energy Strategy Proposed Initiatives**

ISSUE

At the October 28, 2015 Environmental Services Committee (ESC) meeting, the Capital Regional District (CRD) Roundtable on the Environment (RTE) recommended that the CRD Board develop a long-term community energy strategy and undertake related priority initiatives. Following the recommendation, the ESC requested that staff report back on energy-related programming within existing workplans and the resources required to develop and implement a new energy strategy.

BACKGROUND

The CRD Board requested the RTE to provide guidance on long-term energy opportunities for the region. In response, the RTE recommended a framework and proposed initiatives in support of a long-term energy strategy. The RTE Energy Strategy presentation from October 28, 2015 is attached as Appendix A, and the November 3, 2015 memo with proposed initiatives is attached as Appendix B.

The CRD has a number of divisions that would be responsible for supporting a long-term energy strategy through their service delivery. The CRD Regional Planning division has developed, or is in the process of developing, a number of plans that would support regional energy goals, including the Pedestrian and Cycling Master Plan, the Regional Transportation Plan and the Regional Growth Strategy (RGS). Furthermore, the CRD is currently engaged in a number of activities that support the CRD Board's strategic priorities related to advancing corporate climate action, including updating decision making processes.

The CRD Climate Action Program (CAP) has a mandate to support regional climate action collaboration (which is directly and indirectly related to energy concerns) amongst the CRD, municipalities and electoral areas. Since its inception, CAP has supported and led a number of education, outreach, capacity building, planning and implementation projects related to both climate mitigation and climate adaptation. With direction from the ESC and CRD Board, CAP receives input from the CRD Climate Action Inter-Municipal Working Group (i.e., staff) and Steering Committee (i.e., elected officials) to refine program priorities.

Historically, CAP has been heavily reliant on leveraging external funding from granting agencies, utilities and senior levels of government to implement projects that co-benefit participating parties. It is anticipated that the new provincial Climate Leadership Plan, to be released in spring 2016, will provide further direction on provincial programming that could support CRD climate goals and future leveraging opportunities.

For 2016, CAP plans to undertake a number of projects that relate to energy. To date, those that are confirmed include:

1. *Climate Action Sub-Strategy* (the Strategy) – CAP is required to complete a climate strategy (i.e., blueprint) as part of the RGS process. While content will be confirmed once the Board

determines the final components of the RGS, the Strategy will likely be scoped to how the CRD can support regional climate action goals related to both mitigation and adaptation. Energy considerations will be included in this Strategy and framed to actions that the CRD has a current mandate to undertake and those that will support municipalities in their goals. Ultimately, climate and energy-related actions will be confirmed by internal CRD departments, the CRD Climate Action Inter-Municipal Working Group and Steering Committee. Due to budget limitations, additional energy-related analysis and modelling will not be completed as part of the Strategy completion.

2. *CRD Top-Up of Oil to Heat Pump Incentive Program* – A provincially-led incentive program. The CRD has committed to topping up incentives for 125 homeowners and promoting the initiative.
3. *Ready, Set, Solve: Student Climate Challenge* – A CRD-led program to connect student teams in solving real climate and energy challenges of municipalities and non-profit organizations. Funding provided by BC Hydro, University of Victoria, Camosun College and CRD.
4. *Energy Conservation Outreach* – As part of a funding commitment with BC Hydro, CAP will link energy conservation messaging to outreach campaigns, including social media and in-person booths (working with the Environmental Partnerships division). For example, using this funding, CAP developed Climate Action To-Go Kits in 2012 and has partnered with regional libraries to distribute the kits through 2016.

Additional energy related programming being considered for 2016 includes:

5. *Food Service Establishment Greenhouse Gas, Energy and Water Saving Initiative* – CAP is currently in negotiations with Fortis BC to support a pre-rinse spray valve and faucet aerator swap-out program to reduce community water and energy use across the region.

CAP has capacity to include some of the RTE proposed initiatives (see Appendix B) within existing workplans, namely:

- *Conservation campaign* – This can be linked to existing and planned outreach and education activities.
- *Energy visioning contest* – This could be completed within the existing service budgets; however, there are timing constraints if the purpose is to inform the Climate Action Sub-Strategy.
- *Energy benchmarking for buildings* – The Province has indicated that energy benchmarking will be included in the provincial Climate Leadership Plan. The Province is considering different approaches, such as developing new guidelines, providing an opt-in regulation for local governments or updating existing regulations. Benchmarking was identified as an interest of the Climate Action Inter-Municipal Working Group, so staff anticipate that CAP will support a review of this initiative. Implementation of any projects or programs would require additional resources and be presented to ESC once policy directives are confirmed.

- *Policies for zero carbon mobility* – CAP and Regional Planning will continue to inform stakeholders on provincial directives, leverage provincial funding and support municipal implementation in coordination with existing inter-municipal and agency working groups.
- *Decision-making lens* – In addressing the Board's strategic priority to provide a climate lens for Board decision making, staff are currently developing a framework to meet this objective. Once in place, there may be opportunity to advance its components to include energy specific considerations.
- *Long-term energy strategy* – Energy considerations will be included in the CRD's Climate Action Sub-Strategy. The Strategy will be scoped to those actions that the CRD can do under existing service mandates.

The CAP service requisition is currently at its maximum value under the existing bylaw. Any new resource requirements would trigger a Climate Action Service Bylaw update. CAP currently does not have the capacity to:

- *Implement an energy benchmarking for buildings program* – If the region were interested in pursuing benchmarking requirements, a program would be required to support capacity building, training and reporting. Once provincial directives are confirmed, options can be further considered.
- *Undertake an energy affordability study* – Staff do not recommend pursuing an energy affordability study at this time. The CRD can rely on other data sources from senior levels of government and utilities to inform future CRD programming related to energy.
- *Develop a community long-term energy strategy* – A community energy strategy crosses many planning processes, service delivery and jurisdictions. To be successful, the strategy would require significant resources to coordinate the development and implementation of a regional, long-term approach. As a regional strategy, the CRD, municipalities and electoral areas would share responsibility for successful implementation. Current CAP service resources do not allow for development of a comprehensive community long-term energy strategy.

ALTERNATIVES

That the Environmental Services Committee recommend to the Capital Regional District Board:

Alternative 1

That staff incorporate the Roundtable on the Environment recommendations which can be included within the current service delivery and that staff continue to pursue external grant opportunities that will support regional energy related planning and programming.

Alternative 2

That staff bring back a report identifying costs, timing and intergovernmental implications associated with developing and implementing a more comprehensive community-focused long-term energy strategy.

ENVIRONMENTAL IMPLICATIONS

Incorporating corporate and community energy efficiency and reduction initiatives will reduce regional greenhouse gas emissions, build resiliency against fossil fuel reliance and reduce the overall carbon footprint in the region.

INTERGOVERNMENTAL IMPLICATIONS

A community energy strategy beyond the scope of existing CRD mandates would require municipalities and electoral areas to share responsibility for implementation. Significant consultation with CRD staff and Board, and municipal/electoral area staff and elected officials would be required to complete a strategy.

FINANCIAL IMPLICATIONS

The CAP service is able to incorporate many of the RTE's priority initiatives within the existing service delivery.

CONCLUSIONS

The RTE recommends that the CRD develop a long-term energy strategy and implement priority initiatives for the capital region. The CAP service can accommodate many of the recommended initiatives in their existing service plan. Some RTE recommendations exceed current CAP service capacity, which would have service implications currently not accounted for in the 2016-2019 Environmental Protection Division Service Plan. Additional resources would be required to undertake these additional projects.

RECOMMENDATION

That staff incorporate the Roundtable on the Environment recommendations which can be included within the current service delivery and that staff continue to pursue external grant opportunities that will support regional energy related planning and programming

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

NE:cam

Attachments: Appendix A – CRD Roundtable on the Environment Energy Strategy Presentation to CRD Environmental Services Committee (October 28, 2015)
Appendix B – CRD Roundtable on the Environment memo to CRD Environmental Services Committee (November 3, 2015)



DRAFT FRAMEWORK FOR A CAPITAL REGION LONG-TERM ENERGY STRATEGY

Presentation to the Environmental Services Committee

Capital Regional
District Roundtable on
the Environment (RTE)

October 28, 2015

MEETING OBJECTIVES:

- Present proposed guiding framework for a “2050 Energy Strategy”
- Receive input from the Environmental Services Committee
- Seek a decision regarding process to develop a 2050 Energy Strategy

AGENDA

1. Background
2. Guiding Framework (*Presentation & Discussion*)
3. Recommendations (*Discussion*)

BACKGROUND

- Capital Regional District Board sought guidance on long-term energy opportunities for the region from the Roundtable on the Environment (RTE) (2014)
- Provided “Energy 101” workshop to staff and RTE (2014)
- Delivered a workshop with the Environmental Services Committee (ESC) (June 24, 2015)
- Consulted Climate Action Inter-Municipal Working Group (October 2015)

WHY IS ENERGY IMPORTANT?

ECONOMIC

- Energy affects the cost of living, business and government

Year	Approved BC Hydro Rate Increase
2014	9%
2015	6%
2016	4%
2017	3.5%
2018	3%

- Energy conservation and efficiency reduces energy costs and achieves a payback on investment
- Creates jobs in the region & economic development

WHY IS ENERGY IMPORTANT?

SOCIAL

- Vital part of our community fabric
- Can enhance social values
- Energy is a regional issue

WHY IS ENERGY IMPORTANT?

ENVIRONMENTAL

- Energy production and use creates environmental impacts
- Clean energy, efficient alternatives



GUIDING FRAMEWORK



GUIDING FRAMEWORK



GUIDING FRAMEWORK





RECOMMENDATIONS FOR PRINCIPLES, VISION AND GOALS



PRINCIPLES

Apply long-term “systems” thinking

Contribute to economic vitality

Ensure equity and affordability

Contribute to resilience

Build a collaborative strategy

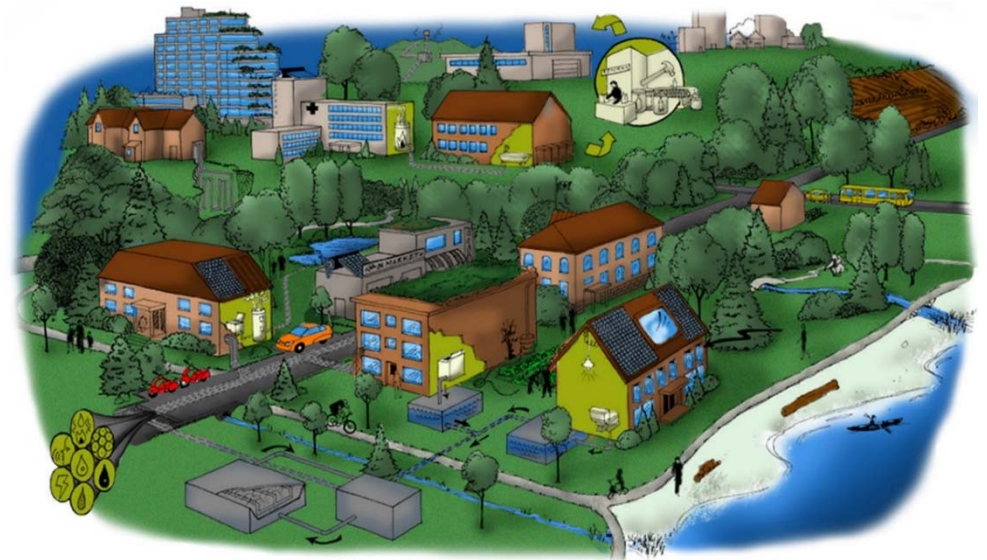


VISION

We recommend an artist's rendering of a vision for our energy system in 35 years

Develop as a contest, as a tool for community engagement

The Energy Strategy vision would be articulated by this illustration and the goals



GOALS

- Reduce Energy Demand
- Transition to Low-impact Energy Sources
- Create a Low Carbon Region
- Demonstrate Corporate Leadership



LINKAGES WITH BOARD PRIORITIES

GOAL	BOARD PRIORITIES
Demand Reduction	<ul style="list-style-type: none">▪ Climate Change▪ Integrated Waste Management▪ Active & Multi-Modal Transportation▪ Agricultural Land & Food Security▪ Economic Development▪ Biodiversity & Ecosystem Health
Low-impact Energy	<ul style="list-style-type: none">▪ As above
Low Carbon Region	<ul style="list-style-type: none">▪ Climate Change
Corporate Leadership	<ul style="list-style-type: none">▪ Governance▪ Public Engagement & Communications

ACHIEVING THIS VISION AND GOALS WILL REQUIRE TARGETS AND INITIATIVES IN FOUR INTERCONNECTED AREAS

- Buildings
- Transportation
- Utilities
- Consumer goods

PAST AND CURRENT INITIATIVES

(Examples of regional and local projects)

- Note: not a comprehensive list

- Corporate and local energy and climate action plans
- Regional Transportation Plan
- Oil to Heat Pump Incentive Program – top-up (current)
- Livesmart BC: Small Business Program (2011 to 2013)
- Time of Sale Home Energy Labelling Pilot (2011)
- Level 2 Electric Vehicle Charging Infrastructure Installation (2012)
- Solar Hot Water Ready Opt-In Regulation (2013 – current)
- Tap by Tap: Multi-Unit Residential Building Regional Program (2013&15)
- Solar CRD (2014 – 2015)
- Multiple municipal corporate projects (fleet and building upgrades)

RECOMMENDATIONS - SUMMARY

RECOMMENDATIONS

1. That CRD staff be directed to report on options to develop a 2050 Energy Strategy for the region
2. That the 2050 Energy Strategy:
 - a. Consider the RTE's proposed principles and goals
 - b. Consider the RTE's proposed priority initiatives
3. That funding be provided to support the development of the strategy, including:
 - a. A contest to develop an artist's rendering of a vision for the strategy
 - b. The development and adoption of targets to meet the goals
 - c. Identification of initiatives (through energy and emissions modeling)
4. That the RTE be consulted during the development of the strategy

Key Considerations

CONTACTS:

Andrew Pape-Salmon: apapesalmon@rdh.com

Cora Hallsworth: cora-h@live.com

Lynn Bailey (RTE Chair): ldbailey@shaw.ca

THANK YOU



**ADDITIONAL SLIDES:
RECOMMENDATIONS FOR PRIORITY
INITIATIVES**



PROPOSED SHORT-TERM INITIATIVES

(2016 TO 2018)

1. Decision-making lens
2. Energy affordability study
3. Energy benchmarking of buildings
4. Policies for zero-carbon mobility
5. Conservation Campaign

LONG-TERM INITIATIVES

(2018 TO 2050)

Priority initiatives supporting 2050 goals:

1. Energy affordability measures – tax reform
2. Building energy disclosure
3. Regional transportation authority
4. Zero-carbon, district energy utility
5. Built environment retrofit revolving fund

MEMO

TO: Environmental Services Committee (ESC), Capital Regional District (CRD)

CC: Larisa Hutcheson, General Manager, Parks & Environmental Services
Glenn Harris, Senior Manager, Environmental Protection
Members, CRD Roundtable on the Environment

FROM: CRD Roundtable on the Environment (RTE)

DATE: November 3, 2015

SUBJECT: Long-term Energy Strategy for the Capital Region

File: 0360-20
RTE - Correspondence

The Roundtable on the Environment wishes to thank you for the October 28, 2015 opportunity to present and discuss our proposed framework for a Capital Region Long-term Energy Strategy. We appreciated hearing Directors' perspectives on this work, and are writing to respond to some of the points raised.

A. THE NEED FOR IMMEDIATE ACTION

The RTE concurs the time for action on energy and climate change is now, including individual action. The need for immediate action is a point we have repeatedly emphasized in our presentations to the ESC as well as the Committee of the Whole. It is also why we provided our advice on critical short-term energy initiatives, as requested by the ESC on June 24, 2015. While we did not have time to go through our recommendations on October 28, they are included in your agenda package. More detailed descriptions follow.

a) Proposed Short-term Initiatives (2016-2018)

The RTE is proposing that CRD staff develop a number of short-term initiatives to set the stage for long-term goal achievement, drawing on outside experts as appropriate. These initiatives will complement CRD and municipal leadership on tackling energy costs and emissions for internal operations. While jurisdictional authority and resources will require further consideration, given the urgency of the issue as expressed by ESC members, this should not be a rationale for delay.

1. Conservation Campaign

The CRD would conduct a multi-pronged campaign focused on energy conservation. This could include a social marketing campaign for residents and businesses (informed by examples such as Richmond's Building Energy Challenge and BOMA BEST) and a Home Energy Coaching project (e.g., expansion of pilot currently being initiated in Saanich). This will address Directors' comments on the need to catalyze action by residents and businesses.

2. Policies for Zero Carbon Mobility

The CRD would provide recommendations to member municipalities and electoral areas as well as other partners on practical, inexpensive policies and model by-laws that can be rapidly deployed with the intent to facilitate the fastest zero emission vehicles (ZEV) uptake by residents and businesses. Example policies are:

- Free parking to ZEV throughout the CRD
- Electric vehicle fast charge building/electrical permits - priority, low/no fee
- High occupancy vehicle (HOV) lane access for ZEV
- Maximize bicycle and pedestrian amenities in all future road work - new and maintenance
- Maximize ZEV purchases by CRD and member municipalities

3. Energy Benchmarking of Buildings

Annual reporting of energy consumption data by building owners and managers. The CRD would seek endorsement of a regional approach and develop a regional bylaw. The aim would be to achieve region-wide annual reporting of energy consumption data for buildings over 50,000 sq. ft. (original Seattle threshold) and publish the average energy-use and emissions intensity of buildings by type and size of building. This will encourage individual action by building owners and managers to improve energy efficiency and minimize energy costs, thereby improving productivity and competitiveness and creating local jobs.

4. Decision-making “Lens”

Every policy, planning and operational decision considered by the CRD would be evaluated around its alignment with the energy strategy. This can be thought of as a Phase 2 enhancement of the new GHG lens already in place. Common evaluation criteria would be defined and used to assess each decision, and performance regularly reported on and evaluated. The principles we have proposed provide important guidance for ensuring any initiatives undertaken do not have unforeseen consequences over the longer-term.

5. Energy Affordability Study

This study would review all aspects of energy use in the region: Energy rates, Consumption by fuel type, Taxation, Alternatives, Who pays and Who benefits? It would provide the basic information necessary for developing regional economic and fiscal policy that would provide the incentives for achieving the proposed long-term energy strategy goals.

b) Corporate and Community Energy and Emissions Plans

The completion of corporate and community-wide inventories and plans by the CRD and member municipalities and electoral areas is an essential element of a comprehensive long-term energy strategy. More than half of the region’s municipalities already have a community energy plan in place. The CRD has committed staff resources towards the development of a corporate energy and emissions inventory and reduction plan (which is an important aspect of its corporate leadership). A regional energy strategy would help support those local governments that do not yet have an energy plan to kick-start their own initiatives (funding is available from BC Hydro and the FCM for

this work). It could also identify opportunities to align energy planning efforts across all municipalities and electoral areas.

B. LONGER-TERM OPPORTUNITIES

While immediate action is undoubtedly needed, it needs to be put in the context of longer-term trends and challenges. Consequently, the RTE strongly supports the Directors' original and repeated desire for a long-term strategy through which long-term implications and opportunities can be considered. As discussed at the meeting, much more can be achieved to reduce energy demand through changes to land use, transportation and the built environment. All of these actions take more time to implement. Please note the RTE has also proposed long-term initiatives (2018-2050). These are designed as an extension of the short-term initiatives to achieve the 2050 goals through multiple stages.

C. THE NEED FOR INDIVIDUAL ACTION AND BEHAVIOUR CHANGE

As stated earlier, the RTE agrees individual behaviours and actions are critically important for achieving a sustainable long-term energy future. As one Director mentioned, "the public is here now." We feel public engagement would help encourage individual action and behaviour change. That is reflected in our recommended "Conservation Campaign" for engagement around the long-term energy strategy. We are also recommending the CRD conduct a contest for an artistic rendering of a vision for the region's energy system in 35 years as a tool for community and citizen engagement. This could be a contest to submit visual images that could be combined in a collage, or in a workshop where a professional artist depicts imagery described by participants in real-time.

CONCLUSIONS AND NEXT STEPS

Energy is a regional issue. Many energy initiatives require an economy of scale that is optimized at a regional or multi-regional level (e.g., addressing transportation over the Malahat). While some solid steps on energy and greenhouse gas management have been taken in the region, numerous untapped opportunities exist for further leadership and action. The RTE believes a long-term regional energy strategy would create a significant opportunity for the region to expand and diversify its economy, reduce costs, improve social values and well-being, lower our ecological footprint, and make the region even more attractive in an increasingly competitive world.

The RTE is appointed by the CRD Board to provide advice on long-term, strategic issues. Our members have done a significant amount of work over the past year to frame the energy issue, offer our advice on a framework for a long-term energy strategy, and offer our advice on the most important short and long-term actions to get our region to a more sustainable energy future. More in-depth analysis and consultation is now required, both of which extend beyond our mandate as a volunteer organization.

As per our recommendations, the RTE recognizes the CRD requires new resources to develop and implement a 2050 Energy Strategy for the region, likely including contracted expert input. We look forward to hearing from senior CRD staff on opportunities for advancing and funding this critically important regional initiative.

**REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, JANUARY 27, 2016**

SUBJECT **Association of Vancouver Island and Coastal Communities
Recommendations on Solid Waste Management for Vancouver Island**

ISSUE

To obtain Capital Regional District (CRD) review and feedback on the Association of Vancouver Island and Coastal Communities (AVICC) Special Committee on Solid Waste Management's recommended long-term strategy for solid waste.

BACKGROUND

The AVICC Special Committee on Solid Waste Management was formed in response to a need identified by AVICC members to initiate a process to work toward finding a long-term sustainable strategy for solid waste management on Vancouver Island and the coastal communities. The nine regional districts within the AVICC region are committed participants. The committee began its work on May 1, 2015 and is expected to be complete and present the findings at the AVICC convention in April 2016.

The Comox Valley Regional District retained Tetra Tech EBC to prepare an AVICC State of Waste Management report (Appendix A) to support the goals of the AVICC Special Committee. The report recommends a variety of options for AVICC solid waste collaboration. An October 16, 2015 facilitated seminar session with the AVICC in Nanaimo reviewed the collaboration options and distilled them into a draft AVICC Long-Term Strategy for Solid Waste for consideration by participating regional districts by March 4, 2016.

Proposed priority areas of work, for further discussion by the AVICC Special Committee on Solid Waste (Appendix B), include:

Immediate Priorities:

- AVICC Partnership
 - develop communication strategy and a unified education program
- Advocacy
 - encourage the Province and industry to review and expand waste reduction and diversion policies

Short-Term Priorities:

- Long-term Disposal – AVICC solid waste disposal capacity
- Regulation and Enforcement – consistent AVICC disposal bans and bylaws

Long-Term Priorities:

- Organics Waste Reduction Strategies
- Recycling Collection and Drop-off Programs
- Financially Sustainable Model
- Construction and Demolition Sector Strategy
- Institutional, Commercial and Industrial Sector Strategy
- Regulations and Enforcement

The previous CRD representative on the AVICC committee was Director Brownoff, former Chair of the CRD Environmental Services Committee (ESC). Director Brownoff no longer serves on the ESC. To ensure continued participation on the AVICC Special Committee on Solid Waste a new CRD representative will need to be appointed by the ESC Chair prior to the next AVICC meeting which reconvenes in Nanaimo on March 18, 2016.

ALTERNATIVES

That the Environmental Services Committee:

Alternative 1

1. Appoint a new Capital Regional District representative to continue participation on the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste;
2. Endorse the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste's proposed priority areas of work for continued discussion; and
3. Forward the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste's, *State of Solid Waste Management* report the Capital Regional District Special Task Force on Integrated Resource Management for information.

Alternative 2

1. Appoint a new Capital Regional District representative to continue participation on the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste;
2. Endorse only specific priority areas of work for continued discussion by the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste; and
3. Forward the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste's, *State of Solid Waste Management* report the Capital Regional District Special Task Force on Integrated Resource Management for information.

RECOMMENDATIONS

That the Environmental Services Committee:

1. Appoint a new Capital Regional District representative to continue participation on the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste;
2. Endorse the Association of Vancouver Island and Coastal Communities Special Committee's proposed priority areas of work for continued discussion; and
3. Forward the Association of Vancouver Island and Coastal Communities Special Committee on Solid Waste's, *State of Solid Waste Management* report the Capital Regional District Special Task Force on Integrated Resource Management for information.

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP

RS:dd

Attachments: Appendix A – Tetra Tech EBC, *AVICC State of Waste Management* report
Appendix B – AVICC Long-Term Strategy for Solid Waste report



**Comox Strathcona
Waste Management**

Association of Vancouver Island and Coastal Communities: The State of Waste Management

SEPTEMBER 2015



TETRA TECH EBA

CONTACT INFO:
Wilbert Yang • 604.608.8648
Wilbert.Yang@tetrattech.com

FILE: ENVSWM23638-01

Page 12

This page intentionally left blank.

EXECUTIVE SUMMARY

Tetra Tech EBA Inc. (Tetra Tech EBA) was retained by Comox Valley Regional District (CVRD) to conduct a Solid Waste Management (SWM) Research Project, to support the goals of the Association of Vancouver Island and Coastal Communities (AVICC) special SWM committee.

The aim of the special SWM committee is to understand how member regional districts manage their solid waste, identify mutual goals, objectives and challenges, and to see where collaborative opportunities could benefit the AVICC. Regional districts share similar issues with respect to waste management systems; the need to reduce waste generation and increase diversion to protect limited resources, dwindling landfill capacity, and escalating management costs. For the AVICC to meet its objectives, the committee requires comprehensive and comparable information from all member regional districts.

All regional districts that are part of the AVICC special SWM committee were contacted as part of this research project to develop comparable data and information regarding the current state of waste management in each regional district. The data has been summarized, and aggregate totals and averages have been calculated to establish statistics about AVICC solid waste management programs.

Data on disposal and diversion per capita was collected. The average annual disposal rate across all eight regional districts is 399 kg/capita. The Province is proposing target disposal rates of 350 kg/capita by 2020. This was announced by British Columbia MOE on May 21, 2015. Most of the regional districts in the AVICC have met or are close to meeting the Province's target. It is worth noting, however, that to date no regional district is fully capturing or tracking the management of construction and demolition (C&D) waste, much of which is being exported and it is not consistently tracked or measured. AVICC members generally have higher recycling rates, ranging from 86 kg/capita up to 595 kg/capita. The average across all regional districts is 453 kg/capita. These rates are a reflection of long term and successful diversion programs that enjoy high participation rates among residents, particularly from single family households. All regional districts are collecting yard waste in some capacity with a range from 11 kg/capita to 175 kg/capita, with an overall average of 80 kg/capita captured through source separated composting programs. Those regional districts with Food Scraps collection see the highest kg/capita quantities of organics diversion.

There is no consistent pattern to the total amount of recycling, organics and garbage generated per capita. Powell River generates the least total quantity of total materials that are managed at 473 kg/capita, and the highest is the Comox Strathcona and Cowichan Valley Regional Districts that produce upward of 1,250 kg/capita of material that is managed.

Tipping fees range from \$95 per tonne to \$215 per tonne. High local tipping fees are driving some waste across regional district borders and/or off the Island and Coastal Communities altogether. Overall 320,000 tonnes of garbage were disposed, and of this 30,000 tonnes were exported by, AVICC regional districts in 2014. Based on each region's garbage generation rate and respective tipping fees, the overall cost of disposal (i.e. tipping fee multiplied by garbage tonnage totalled for each regional district) was calculated to be \$37.9 million across all AVICC members. Limited disposal capacity and increased costs in managing and operating existing landfill, have led to an overall increase in tipping fees across Vancouver Island and Coastal Communities, in an effort to maintain revenues and fund solid waste management systems.

All regional districts in the AVICC have signed up to the MMBC stewardship program for Packaging and Printed Paper (PPP) in some capacity (curbside or depot financial incentives). Almost all municipalities within the regional districts are signed up, with the exception of the Town of Comox and the City of Powell River. In total about 97% of all AVICC member residents' are covered by MMBC subsidies whether they receive curbside collection or self-haul to the local drop-off depot.

An increasing number of communities across British Columbia (and North America) are diverting organic material. CRD, CoVRD, and RDN all have residential food scraps collection programs in place, and CSWM and the District of Sechelt are currently conducting food scraps collection pilots. Organic material typically composes roughly 40% of the garbage, so removing it from the disposal stream is critical to improving diversion rates and reducing landfill gas generation. CoVRD, RDN, and Sunshine Coast Regional District (SCRD) all have organic processing facilities that accept food scraps. The combined capacity of existing organics processing facilities is roughly 65,000 tonnes per year, although this doesn't include the multiple small private facilities on Vancouver Island and Coastal Communities that accept yard waste. CSWM and CRD are also looking at options for constructing an organics processing facility in their jurisdiction.

Financial models for regional districts are based primarily on tipping fees. 63% of AVICC regional district operating budget revenues come from tipping fees. Finding a sustainable funding model is challenging especially since diversion programs impact revenue. As diversion rates increase, using tipping fees to finance the solid waste system becomes less practical. Raising tipping fees to cover budget shortfalls also presents its own challenges. Tipping fees can be increased however if set too high it could increase illegal dumping or cross border disposal.

Without a flow control mechanism in place, waste can flow out of the system to out of region facilities that have lower tipping fees. Finding the right balance is particularly challenging for Regional Districts that have no more disposal capacity and are paying extremely high tipping fee rates to dispose their garbage to the U.S. Other revenue sources for solid waste management operating budgets are outlined in Table 3 including taxation (12%), MMBC and EPR revenue (9%), utility fees (6%), and the remainder coming from permits, fines, operations, grants, loans or past surpluses.

Based on outcomes from a workshop held with the AVICC special SWM committee on June 19th, 2015 a series of 20 recommendations were developed and are included in Table 14 as considerations for collaboration opportunities within AVICC partnership. This includes opportunities to work on the following areas:

- AVICC partnerships;
- Long-term disposal capacity;
- Organics waste reduction strategies;
- Recycling collection and drop-off programs;
- Financially sustainable model;
- ICI sector strategy;
- C&D sector strategy;
- Regulations and enforcement; and
- Advocacy.

There are a wide range of solid waste management issues that AVICC members could collaborate on. From a political perspective, the most challenging areas for collaboration (e.g., shared disposal capacity, a unified tipping fee, and waste control) also offer the greatest potential for mutual gains in the long-term. Although some regional districts have landfill capacity in the short to mid-term while others – namely Cowichan Valley and Powell River – do not, the reality is that all regional districts have a disposal challenge in the long-term (20 to 40 years from now). Opportunities to site a new landfill are limited, and planning to export waste to the U.S. as a long-term strategy is not without risk. Taking a long-term perspective, all AVICC regional districts need to consider how much waste can be reduced through zero waste policies and approaches, and what options there are for disposing the residual.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	III
1.0 INTRODUCTION	1
1.1 Project Objectives	1
2.0 SOLID WASTE MANAGEMENT TRENDS.....	1
2.1 Recycling	1
2.2 Organics Management	3
2.3 Mixed Waste Material Recovery Facility.....	6
2.4 Waste to Energy	6
2.4.1 Durham Region WTE Facility	7
2.4.2 City of Edmonton WTE Facility	7
2.4.3 Tri-Regional District WTE Feasibility Study	7
2.5 Institutional, Commercial, and Industrial Sector and Multi-Family Residential Waste Management	8
2.6 Construction and Demolition Sector Waste Management.....	8
2.7 Waste Management Financing	9
3.0 ASSOCIATION OF VANCOUVER ISLAND AND COASTAL COMMUNITIES SOLID WASTE OVERVIEW	9
3.1 Disposal and Composting Facilities.....	9
3.2 Solid Waste Management Plans.....	12
3.3 Per Capita Disposal and Diversion	12
3.4 Residual Management.....	13
3.5 Recycling	15
3.6 Organics Management	15
3.7 Financial Models.....	15
3.8 Collaboration Efforts	18
3.8.1 Comox Strathcona Waste Management.....	18
3.8.2 Tri-Regional District Solid Waste Study.....	18
3.9 Policies and Bylaws	19
4.0 ASSOCIATION OF VANCOUVER ISLAND AND COASTAL COMMUNITIES MEMBER SOLID WASTE PROFILES	20
4.1 Alberni-Clayoquot Regional District.....	20
4.2 Capital Regional District	22
4.3 Comox Strathcona Waste Management.....	23
4.4 Cowichan Valley Regional District.....	24
4.5 Mount Waddington Regional District	25
4.6 Regional District of Nanaimo	26
4.7 Powell River Regional District.....	27
4.8 Sunshine Coast Regional District	28
5.0 AVICC SWOT ANALYSIS	29
6.0 COLLABORATION OPPORTUNITIES FOR AVICC.....	30

7.0 CLOSURE.....33**LIST OF TABLES IN TEXT**

Table 1: CCME Canada-Wide Action Goals for Extended Producer Responsibility	2
Table 2: Association of Vancouver Island and Coastal Communities Member Solid Waste Overview .	11
Table 3: Primary Revenue Sources for Solid Waste Management Operating Budgets.....	16
Table 4: Breakdown of Revenue Sources for Operating Budgets	17
Table 5: Alberni-Clayoquot Regional District Key Metrics	21
Table 6: Capital Regional District Key Metrics.....	22
Table 7: Comox Strathcona Waste Management Key Metrics	23
Table 8: Cowichan Valley Regional District Key Metrics	24
Table 9: Mount Waddington Regional District Key Metrics.....	25
Table 10: Regional District of Nanaimo Key Metrics.....	26
Table 11: Powell River Regional District Key Metrics.....	27
Table 12: Sunshine Coast Regional District Key Metrics.....	28
Table 13: Strengths, Weaknesses, Opportunities, and Threats Analysis	30
Table 14: Recommendations and Options for AVICC Solid Waste Collaboration	31

LIST OF FIGURES IN TEXT

Figure 1: Process Flow Diagram for Aerobic Composting.....	4
Figure 2: Process Flow Diagram for Anaerobic Digestion with Composting as a Finishing Step	5
Figure 3: Cost of Thermal Processing Versus Capacity	8
Figure 4: Map of Association of Vancouver Island and Coastal Communities Regional Districts, Depicting Landfill and Composting Facilities.....	10
Figure 5: Solid Waste Management Plan Year of Approval and Current Status	12
Figure 6: Per Capita Disposal, Recycling, and Organics Diversion.....	13
Figure 7: Remaining Planned or Available Disposal Capacity in Years.....	14
Figure 8: Municipal Solid Waste Tipping Fees.....	14
Figure 9: Breakdown of Contributing Revenue Sources for Regional District Solid Waste Management Operating Budgets	16

APPENDICES

Appendix A	Tetra Tech's General Conditions
Appendix B	Workshop Minutes
Appendix C	Workshop Presentation

ACRONYMS & ABBREVIATIONS

Acronym	Definition
ACRD	Alberni-Clayoquot Regional District
AVICC	Association of Vancouver Island and Coastal Communities
BC	British Columbia
C&D	Construction and Demolition
CCME	Canadian Council of Ministers of the Environment
CRD	Capital Regional District
CSWM	Comox Strathcona Waste Management
CVRD	Comox Valley Regional District
CoVRD	Cowichan Valley Regional District
EOW	Every Other Week
EPR	Extended Producer Responsibility
GHG	Greenhouse Gas
ICI	Industrial, Commercial and Institutional
kg	Kilogram
MARR	Major Appliances and Recycling Roundtable
MMBC	Multi Material British Columbia
MOE	British Columbia Ministry of Environment
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
MWRD	Mount Waddington Regional District
RDN	Regional District of Nanaimo
PPP	Packaging and Printed Paper
PRRD	Powell River Regional District
SRD	Strathcona Regional District
SSO	Source Separated Organics
SWM	Solid Waste Management
SWMP	Solid Waste Management Plan
SCRD	Sunshine Coast Regional District
SWOT	Strengths, Weaknesses, Opportunities and Threats
WM	Waste Management
WTE	Waste to Energy

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Comox Valley Regional District and their agents. Tetra Tech EBA Inc. (Tetra Tech EBA) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Comox Valley Regional District, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in Tetra Tech EBA's Services Agreement. Tetra Tech EBA's General Conditions are provided in Appendix A of this report.

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) was retained by Comox Valley Regional District (CVRD) to conduct a Solid Waste Management (SWM) Research Project, to support the goals of the Association of Vancouver Island and Coastal Communities (AVICC) special SWM committee.

The aim of the special committee is to understand how member regional districts manage their solid waste, identify mutual goals, objectives and challenges, and to see where collaborative opportunities could most benefit the AVICC. Regional districts share similar issues with respect to waste management systems; the need to reduce waste generation and increase diversion to protect limited resources, dwindling landfill capacity, and escalating management costs. The intention of this committee is to identify possible solutions to waste management issues, either as a whole group, or through strategic partnerships between jurisdictions.

1.1 Project Objectives

For the AVICC to meet its objectives, the committee requires comprehensive and comparable information from all member regional districts. Establishing this baseline will enable the committee to identify collaborative opportunities and work towards developing mutually beneficial long-term solid waste management strategies. The objectives of this project are as follows:

- Summarize the state of SWM in each AVICC regional district;
- Review relevant legislation; and
- Identify synergies and collaborative SWM strategies for AVICC members.

For this project, information was collected through a series of interviews with staff from each participating regional district. A workshop was held in the Regional District of Nanaimo (RDN) on Friday June 19, to present findings to committee members, corroborate information compiled to date, and to further understand each regional districts priorities and challenges. The discussions from this workshop have been integrated into the report findings and the meeting minutes can be found in Appendix B, and a copy of the presentation is included in Appendix C.

2.0 SOLID WASTE MANAGEMENT TRENDS

Over the past thirty years, the waste management industry has changed from strictly focussing on landfill disposal, to one that includes recycling, organics processing, extended producer responsibility and energy from waste. These changes are due to a range of drivers including the need to minimize environmental impacts, conserve natural resources, develop financially sustainable waste management systems, and depleting landfill disposal capacity.

The following section outlines important and emerging trends in waste management that have an impact on the planning and decision-making processes of the AVICC. Understanding the implications of these trends will support AVICC members to develop solid waste management plans and infrastructure that are resilient to the changing landscape and support the needs of their communities 50 years from now.

2.1 Recycling

Change in Materials

With the continual change and development in technology and product design, the quantities and types of recyclable materials produced are in constant flux. In particular, the success of plastics has resulted in the ongoing replacement of non-plastic materials with plastic products and packaging, leading to an increase in their prevalence

and disposal. In contrast to bottle and non-bottle rigid plastics, some plastic packaging is challenging to recycle due to use of complex multi-material laminates. Continuing demand for complex plastics due to their versatility and properties, means that recycling technologies will need to evolve. Other end-of-life recovery options, e.g., waste-to-energy, are also increasingly being adopted.

Growth in the plastics industry has resulted in a mirrored decline in glass packaging, which by contrast is heavy and therefore costly to transport. However, consumer preferences for glass bottles for beer and wine still drives demand. In 2011, glass bottles accounted for over 60% of the beer packaging market in the US¹.

Simultaneously, the recycling industry has seen a dramatic decline in fibre, particularly newsprint, which has reduced by more than 50% since its peak in 2000². Advances in high speed internet access and the proliferation of smartphones, has made digital the preferred platform for media content and information sharing. This unanticipated decrease has left some material recovery facilities (MRFs) with significant excess equipment capacity.

Extended Producer Responsibility Programs

In British Columbia, Extended Producer Responsibility (EPR) (formerly referred to as Industry Product Stewardship) is an environmental policy approach in which the producer's responsibility for reducing environmental impact and managing the product is extended across the whole life cycle of the product, from selection of materials and design to its end-of-life (MOE). EPR, as legislated through the Provincial Recycling Regulation, continues to evolve and there is no guarantee that municipalities will be involved or that they will be compensated for what collection options they choose to offer through municipal programs. That said, there are tax reduction benefits inherent in EPR program development since the responsibility, and financial burden, of end-of life management is shifted from local governments (and tax payers) to manufacturers.

The Canadian Council of Ministers of the Environment (CCME) published a Canada-wide Action Plan for EPR in 2009. It is a strategic plan rather than a specific regulation, so there is some concern on how follow up will be reinforced by each jurisdiction and if EPR will remain a priority for CCME. While a Canada-wide implementation of EPR programs will have more impact, it should be noted that the British Columbia Recycling Regulation is on schedule for implementation. The 2015 and 2017 goals are summarized in Table 1. All materials slated for 2015 are now covered by EPR programs in British Columbia.

Table 1: CCME Canada-Wide Action Goals for Extended Producer Responsibility

2015	2017
Packaging and printed paper (PPP) materials	Construction materials
Household hazardous waste	Demolition materials
Electronics and electrical equipment	Furniture
Mercury-containing lamps	Textiles and carpet
Automotive products	Appliances including ozone-depleting substances

The most recent program to be legislated in British Columbia is PPP, which includes products currently collected in municipal curbside and depot based recycling programs and expands beyond it to include packaging from a broader array of products. MMBC's PPP program launched in May 2014 for the residential sector, which includes single family and multi-family dwellings, and is managed by the industry-funded non-profit Multi Material British Columbia

¹ www.researchandmarkets.com/reports/3086502/glass-packaging-market-for-food-and-beverages.

² Making Sense of the Mix: Analysis and Implications of the Changing Curbside Recycling Stream (Green Spectrum Consulting LLC, and Resource Recycling Inc., 2015).

(MMBC). Public streetscapes will also be covered by the MMBC program in the future. While most local governments have found that the incentive does not cover all operational costs for curbside collection programs if they continue to deliver services themselves (municipalities have generally reported cost recovery of between 40 and 60%), the incentive still represents a significant saving. Depot based recycling programs are offered a price per tonne for recyclable materials collected, and the cost of transport of the materials from the depot are covered by MMBC.

In addition to the existing EPR programs, two other programs are currently being developed in British Columbia:

- Major Appliances and Recycling Roundtable (MARR) for large appliances and white goods; and
- Mattress and Box Spring Recycling Program.

Changing Collection Approaches

Recent years has also seen a trend towards single-stream recycling, whereby residents are provided with large capacity carts or bins in which they co-mingle or mix all their recyclables into one bin as a single stream. Single stream recycling is becoming more common in some municipalities as additional processing facilities have been built that can efficiently sort the materials into clean materials streams for recycling. The benefits include lower overall collection costs, increased participation due to ease of use, and ability to combine with an automated collection program. Drawbacks include increased contamination and residuals. Specifically, the fibre stream is less clean at the end of processing compared with a source separated fibre stream, and therefore receives a lower price in the recycling market.

As well as expanding the types of packaging that can be collected, MMBC has also imposed some restrictions. Specifically, they will not accept glass in curbside programs and consider it to be contamination. Municipalities and regional districts that have signed on to MMBC need to either provide a separate recycling box for glass, or alternatively tell residents to take glass to collection depots. StewardChoice, a second PPP industry steward that has submitted a plan to the British Columbia Ministry of Environment (MOE), may become a competing industry steward for PPP collection starting in 2016 if their plan is approved by the MOE.

2.2 Organics Management

Food Scraps Collection Programs

Food scraps also known as food waste, or organics includes anything that is compostable from fruit and vegetable peelings to yard waste, bones and meat, to food soiled paper and napkins. These organic materials are the largest portion of residential garbage, representing up to 40% by weight. Due to the large amount of organics in the garbage, many regional districts and municipalities have started to implement source separated organics (SSO) curbside programs to divert organics from disposal. Currently over 64% of residents in the province are part of regional districts or municipalities that have started collecting SSO and have banned organic waste from disposal.

On Vancouver Island, CoVRD, RDN, and Capital Regional District (CRD) have residential food scraps collection programs within their regional districts from some residents. As a result of these initiatives, the overall quantity of food scraps in the garbage has been decreasing over time. It is estimated, from 2014 curbside collection data, that residential food scraps diversion programs in BC are collecting approximately 75 kg/capita/yr. Collection approaches include collecting food and yard waste together in one green bin (most Metro Vancouver municipalities) or source separated food scraps only (CoVRD, RDN, and Toronto).

With the introduction of yard waste and food scraps collection programs, it is less necessary to collect all material streams (garbage, recycling, and organics) on a weekly basis. As a result, every other week (EOW) garbage and

recycling collection services have become more common. Over the past five years a number of British Columbia municipalities have switched to EOW garbage collection, including the City of Victoria, the Regional District of Nanaimo and the majority Metro Vancouver communities. Municipalities that have implemented EOW garbage collection and weekly organics collection have seen the following:

- 20% to 40% reduction in collection and disposal costs;
- 25% to 40% reduction in the disposal rate; and
- Diversion rates of just over 70%.

Organics Processing Facilities

The primary methods for processing organic matter are aerobic composting (with oxygen), and anaerobic digestion (without oxygen). Within these two processing methods, there are many different technology options available.

Aerobic Composting is the microbial degradation of organic materials in the presence of oxygen. An **aerobic in-vessel** system is an engineered system in which favourable composting conditions are induced in order to accelerate the degradation process and contain it within a manageable area. Although the technology is relatively new, it is expanding rapidly and many options are already in use, including several facilities on Vancouver Island and Coastal Communities and within Metro Vancouver. Aerobic in-vessel composting systems come in a variety of sizes and technologies, and produces usable soil amendment, potentially requiring additional curing. Figure 1 illustrates the various steps required to produce a soil product.

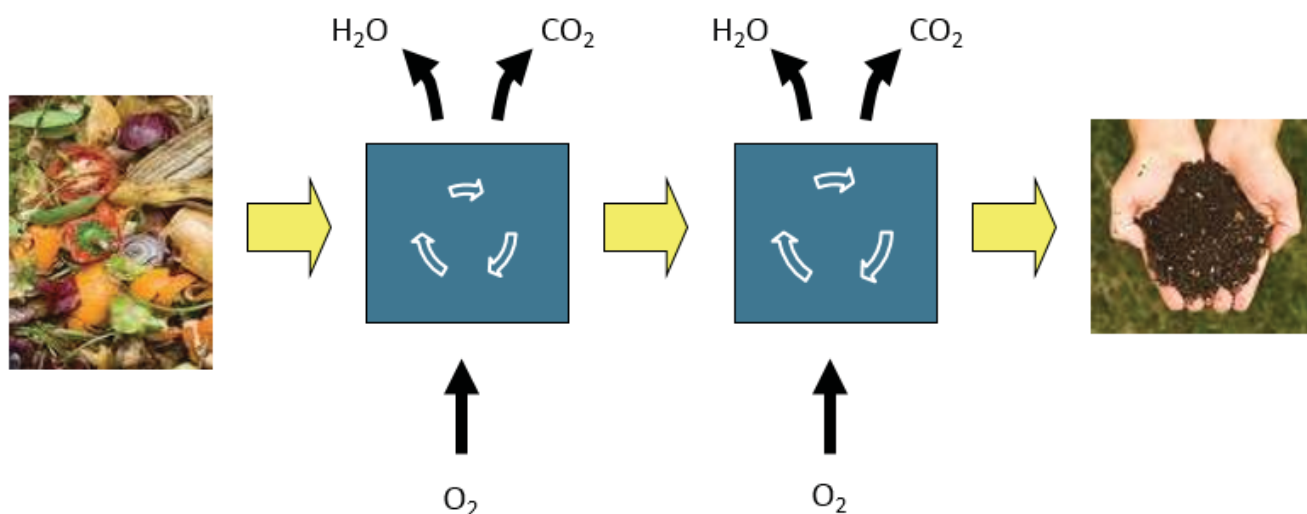


Figure 1: Process Flow Diagram for Aerobic Composting

One notable requirement of aerobic in-vessels systems is the addition of a bulking agent. To achieve an output that can be considered as compost, a certain ratio of Carbon to Nitrogen is required. Organics (i.e., food waste) are typically rich in nitrogen, so a source of carbon generally needs to be added to the system to achieve the proper balance. Generally, wood waste, wood chips, sawdust, or wood pellets are used, however, in some cases paper or cardboard can also be used as a bulking agent. Bulking agents also serve to control moisture content. The ratio and recommended bulking agent depends on the specific technology used.

Anaerobic Digestion is a process in which organic material is degraded in the absence of oxygen. The by-products of anaerobic digestion are biogas, which can be used as an energy source. In some instances, a liquid extract is used as a fertilizer and a solid components which, depending on process parameters, can be used as

soil-amendment or processed further to create a finished compost. Anaerobic systems are becoming increasingly popular for food scraps processing due to their ability to generate power. Their major drawback is that operation and maintenance costs are high compared with aerobic systems. Figure 2 illustrates the difference between anaerobic and aerobic processing options.

Odour management is a major challenge for organics processing facilities. When facilities are built in or near populated areas, odour issues are the most significant cause of adverse publicity and facility closures due to regulatory pressures. Factors that influence generation of odours include: feedstock composition, decomposition rates, availability of the nutrients in the feedstock to the microbes, how well mixed the feedstocks are, and several physical factors, such as moisture content, particle size, oxygen content, and temperature. As well as managing the above factors, biofilters, and vaporizing technologies can be used to reduce or treat odours.

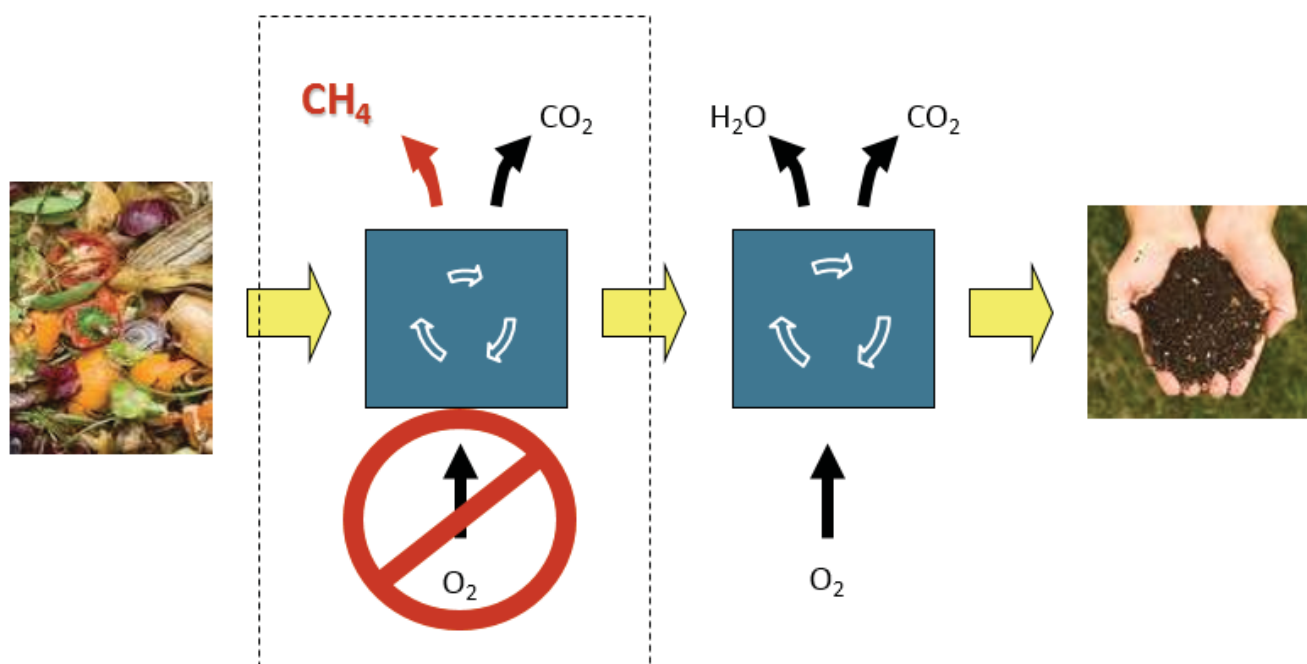


Figure 2: Process Flow Diagram for Anaerobic Digestion with Composting as a Finishing Step

2.3 Mixed Waste Material Recovery Facility

Mixed waste material recovery facilities, also known as dirty MRFs accept mixed MSW and then separate out recyclable and compostable materials through a combination of manual and mechanical sorting. The residual waste is then disposed of. Although utilized by a number of U.S. cities, mixed waste MRFs remain a controversial approach to recycling. The quality of recyclables tends to be low after processing and materials are often downgraded (for example, fibre is composted rather than processed to be used as fibre again). Many facilities have not reached their diversion targets – although promising up to 80%, most facilities actually achieve around 50%.

The Fraser Valley Regional District is undergoing an assessment of mixed waste MRF and overall system diversion options. This includes the development of regional approaches to improve overall efficiency and cost of building and running an advanced MRF to sort garbage and remove recyclable commodities to conserving the long-term disposal capacity at landfills in the region.



2.4 Waste to Energy

Despite diversion programs, there is still residual waste that needs to be dealt with. Given the declining amount of landfill capacity and the significant challenges associated with siting new landfills, long-term disposal options are a high priority for regional governments. Waste to Energy (WTE) technologies are often considered a more viable option than landfilling since it converts waste materials to energy which can then be used in place of burning virgin fossil fuel. WTE facilities generate high pressure steam that can be used for industrial processes or to make electricity such as the WTE facility in Burnaby pictured below.



WTE facilities generally reduce the quantity of the residual waste materials. Depending on the technology used, expected reductions include the following:

- **Mass reduction:** 80% by weight; and
- **Volume reduction:** > 90%.

Environmental concerns associated with these systems include air emissions that could impact air quality, and residuals from the process (fly ash and bottom ash) that still require landfill disposal.

WTE technologies need to be operated at their designed processing capacity to be economical. If they are designed and sized appropriately to meet anticipated long term disposal capacities then the cost can be as projected. Two examples are summarized below.

2.4.1 Durham Region WTE Facility

Durham Region in Ontario is in the process of commissioning their mass burn WTE facility. It employs a similar thermal processing technology to Metro Vancouver's WTE facility in Burnaby. This facility is estimated to cost \$260 million and process 140,000 tonnes per year.

Although this facility cost \$260 million, much of the foundation and infrastructure was designed for a 400,000 t/yr facility. This facility has elevated capital costs which affects its unit processing cost. The calculated unit processing cost for the Durham WTEF is estimated to be \$250 per tonne. This includes a 20 year amortization at a interest rate of 6%. If the facility was built for its design capacity, the unit processing cost is estimated to be \$150 per tonne. This includes the cost for disposal of the residuals.



2.4.2 City of Edmonton WTE Facility



The City of Edmonton in Alberta is also commissioning a WTE facility that uses gasification technology from Enerkem. This facility is one of the first commercial scale gasification facilities in North America and cost over \$210 million. It is designed to process 100,000 tonnes of MSW annually.

The unit processing cost was calculated for the Enerkem facility. Additional pre-processing activities supports higher operating costs (estimated to be 20% higher than the Durham WTEF). The unit processing cost is estimated to be \$195 per tonne.

2.4.3 Tri-Regional District WTE Feasibility Study

In 2010, the Tri-Regional District Solid Waste Study was commissioned that assessed the feasibility of thermal treatment (or WTE) technologies for MSW for the three southern Vancouver Island regional districts. The study assessed different technologies, considering the combined solid waste available from the three regional districts. The figure below illustrates the expected unit processing cost for thermal treatment technologies based on their design processing capacity. For the three regional districts, the design capacity was 200,000 tonnes per year. This indicates a unit processing capacity that is just over \$100 per tonne. For more information see Section 3.5.

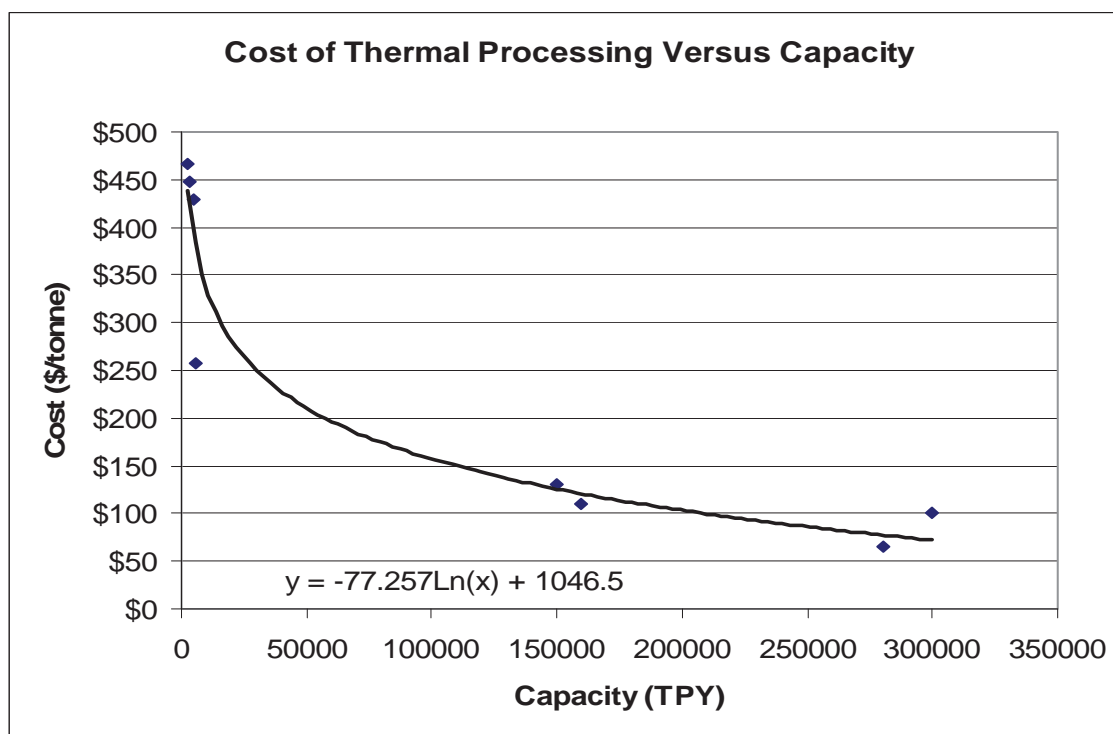


Figure 3: Cost of Thermal Processing Versus Capacity

2.5 Institutional, Commercial, and Industrial Sector and Multi-Family Residential Waste Management

Most municipalities and regional districts in British Columbia have implemented successful single family residential recycling programs, with diversion rates reaching over 70%. However, overall diversion rates are pulled down because of much lower rates in the Institutional, Commercial, and light-Industrial (ICI) sector and multi-family housing. Challenges can include space limitation for additional containers for recycling and organics diversion, training and education of staff and residents for using the program, and the use of shared bins by multiple users, and the cost of adding additional recycling and organics collection. Private sector waste haulers typically collect and process waste and recyclable materials from these sectors.

Metro Vancouver, for example, has been working closely with the ICI sector to launch the organics disposal ban which started in January 1, 2015 and to start enforcing the ban in July 1, 2015. Metro Vancouver has consulted with the ICI sector and provided educational materials as well as tools and direct support for businesses. They have also developed bylaw templates for recycling and organics diversion bans for municipalities. The City of Calgary has also developed an ICI waste diversion strategy with disposal bans at the centre of the action plan to reduce waste. Paper, cardboard and organics bans are all in development as well as a recycling bylaw that requires source separation. The City also intends to support the ICI sector with direct assistance programs, promotion and certification programs, monitoring and reporting, and consulting with industry ICI Working Group. Successful ICI and Multi-Family organics strategies have used landfill bans along with enforcement mechanisms such as fines to enforce the material bans.

2.6 Construction and Demolition Sector Waste Management

Likewise, C&D waste needs to be tracked and recycled in order to reach zero waste goals. C&D waste can make up a significant portion of the waste stream, and many of the materials can be reused and recycled and help meet

waste reduction and diversion goals. The proper disposal and recycling of C&D debris has been recognized as a challenge for regional districts and municipalities in British Columbia. The materials can be easily shipped to regions with less controls or bylaws, or illegally dumped on vacant or municipally owned land creating possible soil and groundwater contamination. Regional districts need to ensure that C&D waste is recycled, and what is not recyclable is brought to authorized and licensed facilities for transfer and proper disposal. C&D waste programs are being established in a number of jurisdictions that building permit, and demolition permits must include the development of a recycling plan, and a requirement that all waste is disposed at a licensed facility.

2.7 Waste Management Financing

In 1990 the provincial government required all regional districts to develop solid waste management plans that would contribute towards the overall goal of 50% reduction in waste disposal per person by the end of the year 2000. Since then most regional districts in the province have adopted the long-term goal of working towards Zero Waste and have set more ambitious diversion targets of 70 or 80% by 2020.

To meet targets, regional governments across British Columbia have invested in diversion programs, commonly financed (or subsidized) by tipping fee revenue from their landfill. As residual waste tonnages decrease and diversion rates increase, this form of financing has been stretched to the limits. Even with tipping fees of up to \$200 per tonne, most regional districts face a funding gap and challenges of waste export across regional, provincial and federal borders is beginning to emerge.

This issue has resulted in a renewed interest in waste flow control regulations, to eliminate export of materials and create a sustainable financing mechanism for a regional district's waste management system. In early 2015 Metro Vancouver's Bylaw 280, which required that all residential and ICI garbage be delivered to Metro Vancouver facilities, was rejected by British Columbia MOE. Hauler franchises in the ICI sector have also garnered some interest in British Columbia. A hauler franchise is a system in which a jurisdiction allows solid waste collection services to be provided by selected private waste haulers but requires haulers to bid on through a request for proposal and enter into a commercial franchise agreement with the jurisdiction to provide exclusive waste hauling services to a specific geographic area within the jurisdiction. Under this franchise system, all customers within the specified area would have service provided by the same hauling company, and the terms for service would be defined in the RFP.

Another way to fill the financing gap is by relying less on variable revenue streams (tipping fees) and more on fixed revenue sources such as taxation or utility fees.

3.0 ASSOCIATION OF VANCOUVER ISLAND AND COASTAL COMMUNITIES SOLID WASTE OVERVIEW

This study takes a benchmarking approach, identifying key metrics and system components, to enable a comparison between different regional districts. Metrics that were collected for the overview are provided in the table below. Some of this information is also presented visually in the subsequent figures and charts.

3.1 Disposal and Composting Facilities

Figure 4 is a schematic map of AVICC member regional districts that depicts landfills and organics processing facilities, including both public and privately owned and operated sites. The aim of this map, along with the supporting data provided in Table 2, is to show the processing capacity of the AVICC and potential opportunities for collaboration. Transfer stations and recycling facilities, including MRFs, have not been included since recycling processing infrastructure is less of a challenge and provides fewer opportunities for collaboration. More detailed

maps of each regional district – including the names of the facilities – can be found in the individual regional district summaries at the end of the report.

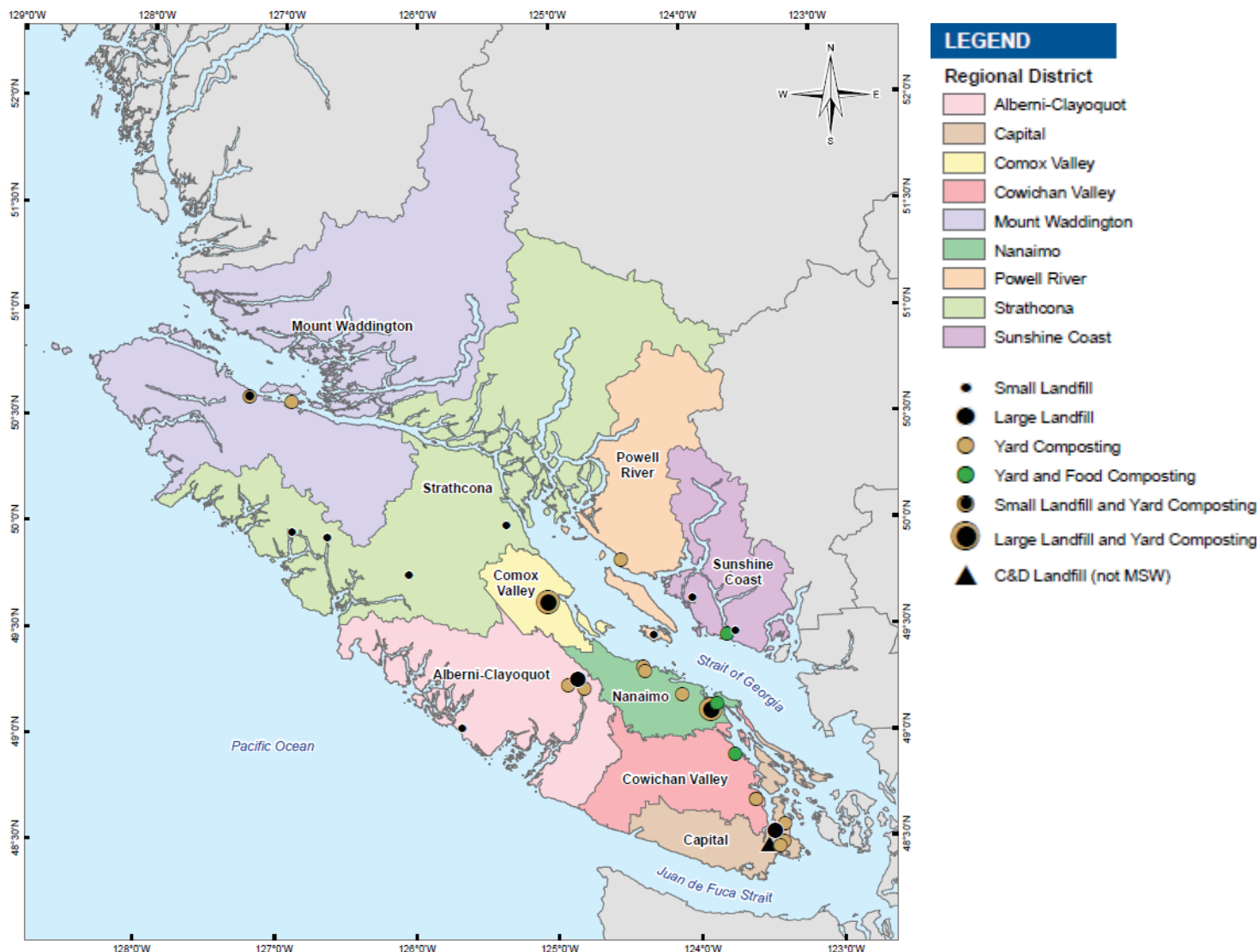


Figure 4: Map of Association of Vancouver Island and Coastal Communities Regional Districts, Depicting Landfill and Composting Facilities

Table 2: Association of Vancouver Island and Coastal Communities Member Solid Waste Overview

Metric	Alberni Clayoquot	Capital	Comox/ Strathcona	Cowichan Valley	Mount Waddington	Nanaimo	Powell River	Sunshine Coast	Total
General Information									
Population	31,061	372,463	104,950	81,704	11,523	150,404	19,480	29,584	801,169
Area (km ²)	6,588	2,340	19,977	3,475	20,244	2,038	5,075	3,777	63,514
Density (population/km ²)	4.7	153.8	5.25	23.1	0.57	71.9	3.9	7.6	12.6
SWMP* Approved (Year)	2008	1995	2013	1995	1996	2004	1996	2011	
SWMP Current Status		Stage 3		Amended 2007	Stage 1	Stage 2	Stage 3		
Disposal/Capita (kg)	699	369	610	286	542	335	236 ⁴	352	399
Diversion Rate	22%	52%	51%	74%	32%	68%	50%	50%	57%
Residual Management									
Generated/yr (MT)	21,597	137,306	64,292	23,333	6,243	52,237	4,604	10,229	319,653
Exported/yr (MT)	0	0	0	23,333	0	1,915	4,604	0	29,852
Landfill Capacity ¹ (m ³)	1,340,880	10,872,000	286,770	0	779,542	2,400,000	0	251,771	15,930,963
Landfill Capacity ¹ (yrs)	80	35	25	0	80	25	0	15	
Tipping Fee	\$95	\$110	\$120	\$140	\$115	\$125	\$215	\$150	
Disposal Cost ²	\$2,051,715	\$15,082,980	\$7,715,040	\$3,266,620	\$717,911	\$6,529,611	\$2,283,945	\$1,534,350	\$37,888,087
Organics Management									
Generated/yr (MT)	409	15,219	4,690	11,356	2,011	26,250	902	3,318	64,087
Exported/yr (MT)	0	15,219	0	0	0	0	0	0	15,219
Capacity ³ (MT)				37,200		22,500	902		60,602
Recycling									
Generated/yr (MT)	4,700	132,057	62,436	66,918	986	86,603	3,713	5,563	362,976
Population served by MMBC	100%	100%	87%	100%	100%	100%	34%	100%	97%

¹Including planned expansion. ²Disposal cost = tipping fee x garbage generated.

³Excludes small, private yard/wood waste facilities. ⁴Does not include C&D waste

*Solid Waste Management Plan (SWMP)

3.2 Solid Waste Management Plans

Each regional district is at a different stage with its SWM Plan as outlined in Figure 5. The Comox Strathcona Waste Management (CSWM) Plan was the most recent SWM Plan to be approved by the British Columbia MOE in 2013, while Powell River Regional District's (PRRD) new SWMP has been completed and is just awaiting final approval.

Cowichan Valley Regional District (CoVRD) and the Capital Regional District has taken a slightly different approach; rather than developing an entirely new SWM Plan they have passed amendments to the original Plan, which were approved in 1995. For the CoVRD there have been a total of three amendments approved, in 1997, 2002 and most recently in 2006, expiring in 2016. For the CRD there has been a total of 12 amendments with the last one occurring in 2012.

The MOE recently announced its intention to update guidelines for preparing regional solid waste management plans. The aim of the updated guideline is to reduce the burden on local governments, and to make the planning and approval process more efficient.

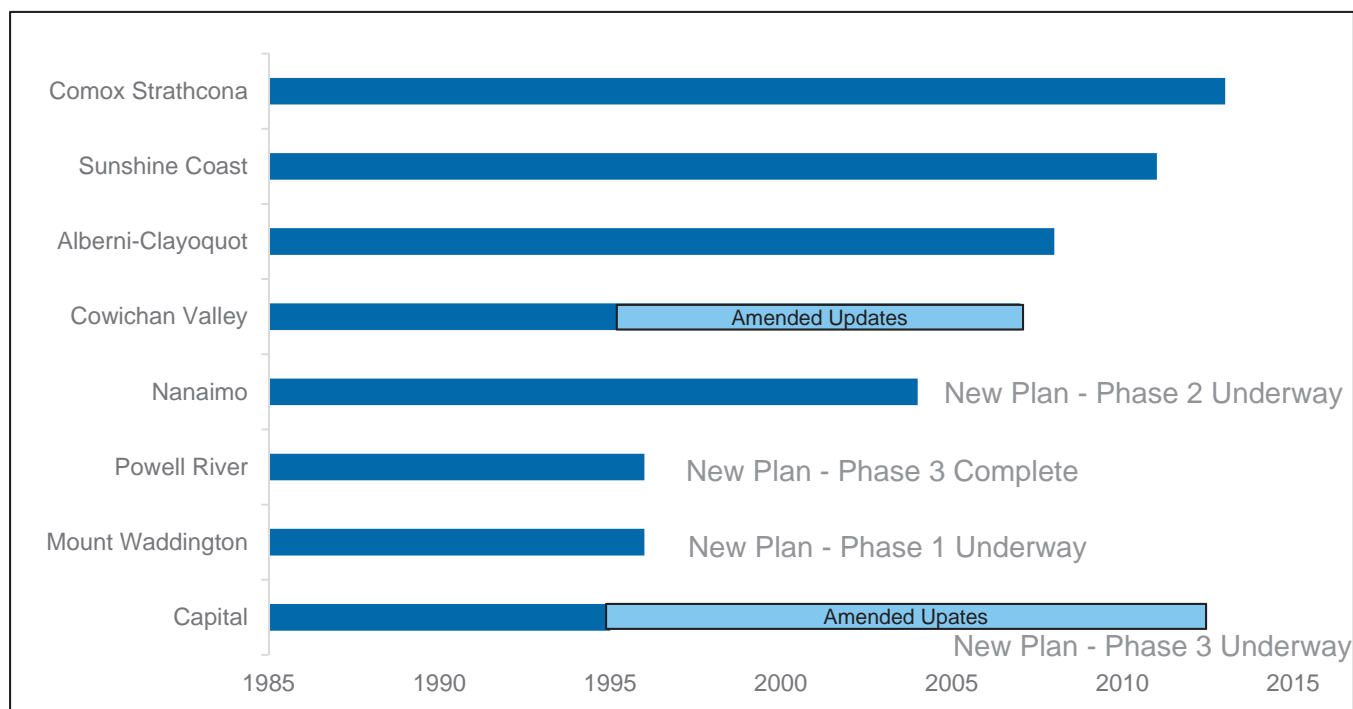


Figure 5: Solid Waste Management Plan Year of Approval and Current Status

3.3 Per Capita Disposal and Diversion

Data on disposal and diversion per capita was collected. The average disposal across all eight regional districts is 399 kg/capita. The Province has a ministry service plan target that lowers the municipal solid waste disposal rate to less than 350 kg/capita by 2020. This was announced by British Columbia MOE on May 21, 2015.

Most of the regional districts in the AVICC have met or are close to meeting the Province's target. It is worth noting, however, that to date no regional district is fully capturing or tracking the management of C&D waste, much of which is being exported.

Figure 6 depicts disposal per capita, recycling per capita and diversion of organics per capita for each regional district. All regional districts are collecting yard waste in some capacity, and those with Food Scraps collection see the highest kg/capita quantities of organics diversion. There is no consistent pattern to the amount of recycling and garbage produced per capita.

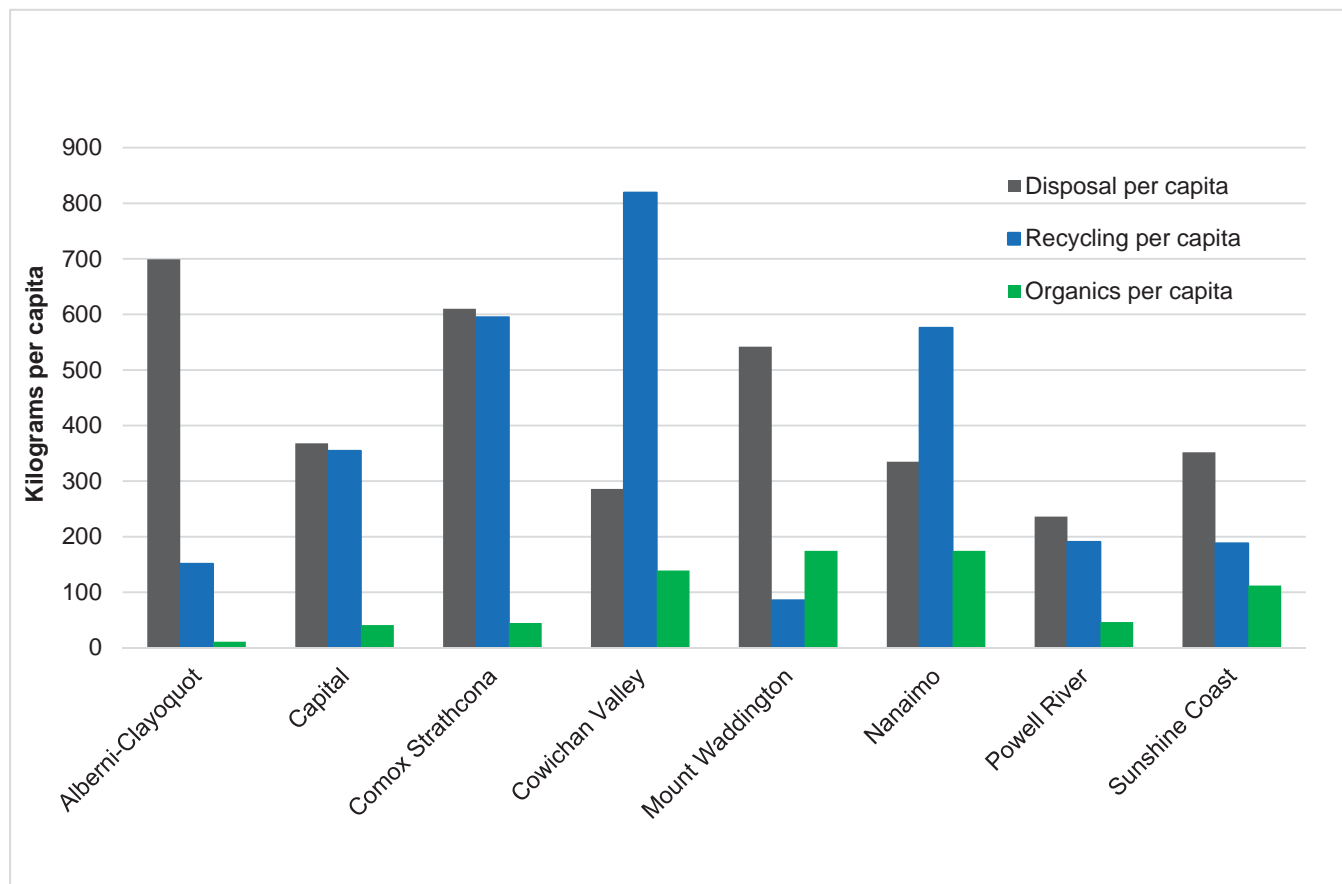


Figure 6: Per Capita Disposal, Recycling, and Organics Diversion

3.4 Residual Management

Of the eight AVICC member regional districts, two have no local landfill capacity remaining – CoVRD and PRRD. Both regional districts are currently exporting residual waste to a U.S. landfill in Washington State. Figure 7 shows the remaining disposal capacity, in years, for each regional district.

Limited disposal capacity in these, and other, regional districts has led to an overall increase in tipping fees across Vancouver Island and Coastal Communities, in an effort to maintain revenues and fund solid waste management systems. Tipping fees, depicted in Figure 8, currently range from \$95 per tonne in Alberni-Clayoquot Regional District (ACRD), to \$215 per tonne in PRRD. High local tipping fees are driving waste across regional district borders and/or off the Island and Coastal Communities altogether. Overall 320,000 tonnes of garbage were disposed of, and of this 30,000 tonnes were exported by, AVICC regional districts in 2014. Based on each region's garbage generation rate and respective tipping fees, the overall cost of disposal (i.e. tipping fee multiplied by garbage tonnage totalled for each regional district) was calculated to be \$37.9 million across all AVICC members.

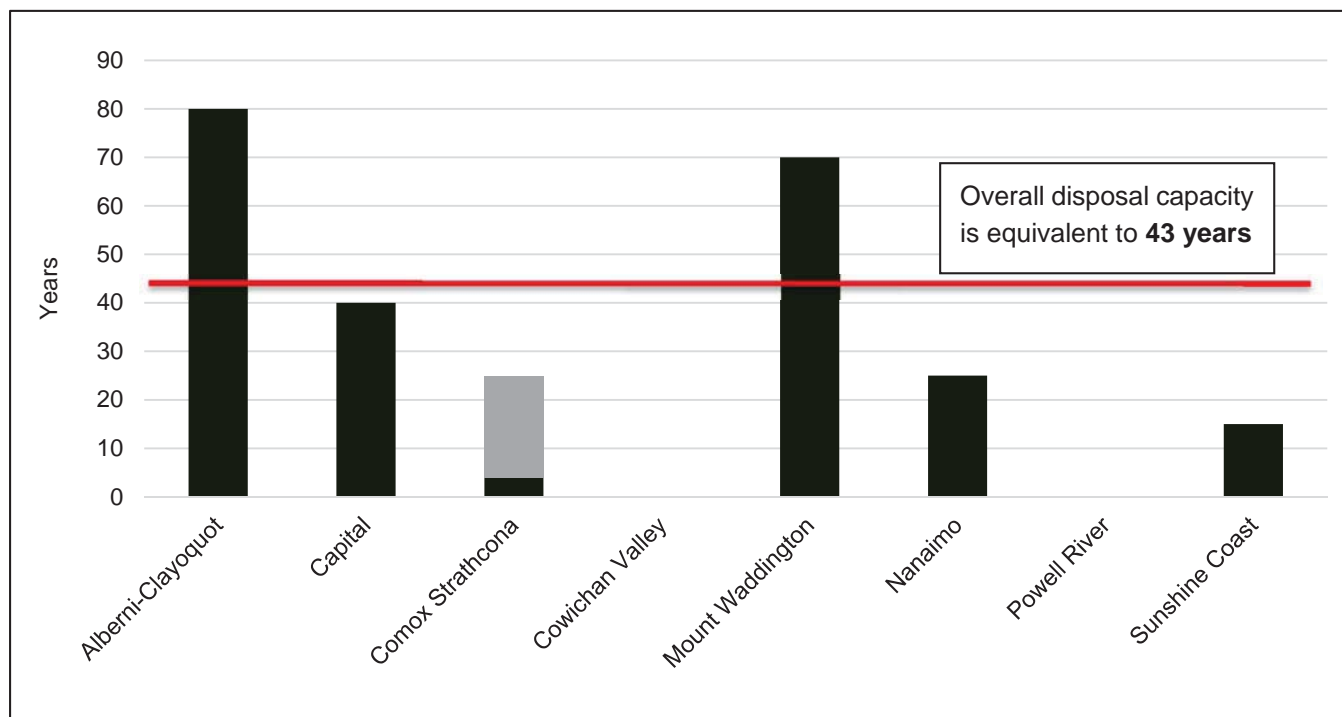


Figure 7: Remaining Planned or Available Disposal Capacity in Years

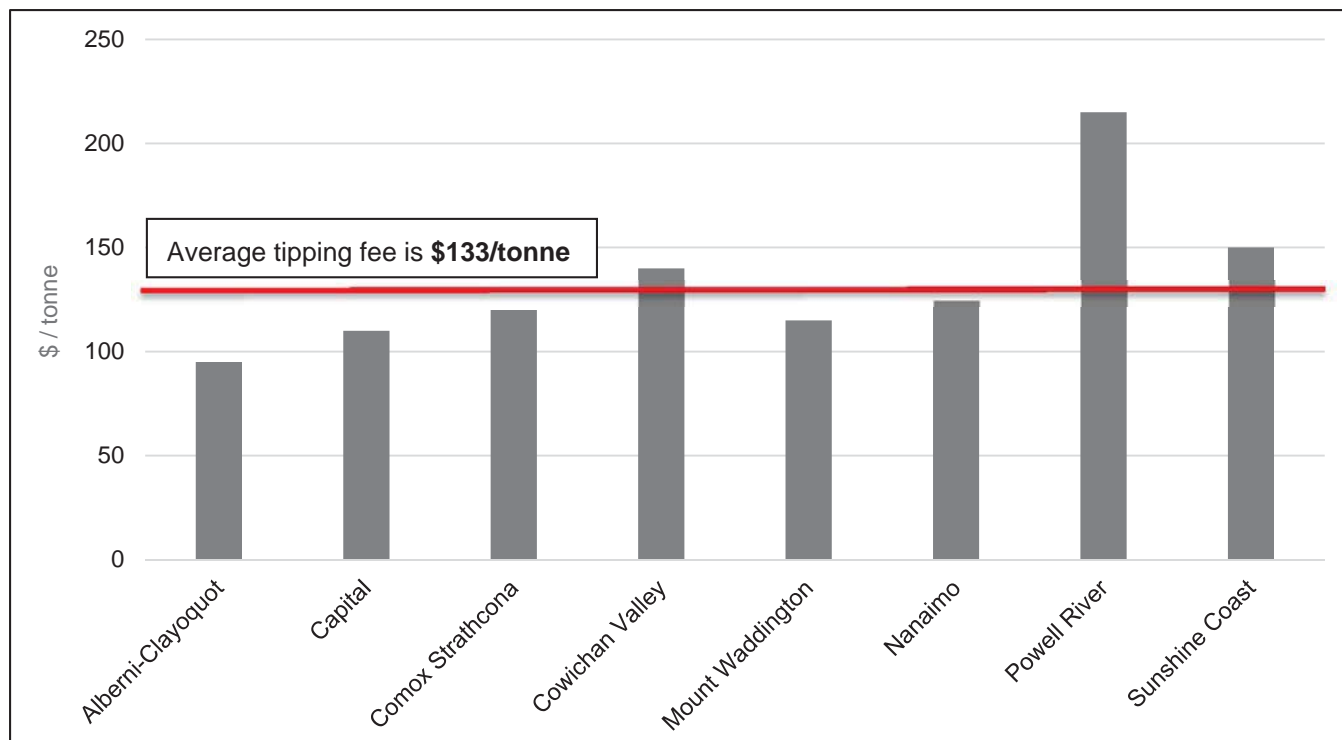


Figure 8: Municipal Solid Waste Tipping Fees

3.5 Recycling

As shown in Figure 6, AVICC members generally have high recycling rates, ranging from 86 kg/capita up to 595 kg/capita in CoVRD. The average across all regional districts is 453 kg/capita. These rates are a reflection of long term and successful diversion programs that enjoy high participation rates among residents, particularly from single family households.

AVICC members have a range of recycling services and infrastructure across their regional districts. Many communities receive curbside recycling services (roughly 70% of the population across all regional districts) although more rural populations are serviced by drop-off depots. Landfill sites also have their own depot areas where they accept a range of recyclable materials. As well as the regional district-owned drop-off depots, there are a wide range of private recycling facilities operating across the AVICC. These private facilities recycle various materials and primarily cater to the private sector. There are seven MRFs in CRD, CSWM, and RDN.

All regional districts in AVICC have signed up to the MMBC stewardship program for PPP in some capacity (curbside or depot financial incentives). Almost all municipalities within the regional districts are signed up, with the exception of the Town of Comox and the City of Powell River. In total about 97% of all AVICC member residents' are covered by MMBC subsidies whether they receive curbside collection or self-haul to the local drop-off depot. No SCRDR municipalities are a part of MMBC, however they have access to self-haul depots that have signed up with MMBC.

3.6 Organics Management

An increasing number of communities across British Columbia (and North America) are diverting organic material. Collection approaches include collecting food and yard waste together (e.g., Metro Vancouver municipalities) and separate collection streams for food waste and yard waste (e.g., CoVRD and RDN). As noted above, CRD, CoVRD, and RDN all have residential food scraps collection programs in place, and CSWM and the District of Sechelt are currently conducting food scraps collection pilots. Organic material typically composes roughly 40% of the garbage, so removing it from the disposal stream is critical to improving diversion and reducing landfill gas generation.

CoVRD, RDN, and Sunshine Coast Regional District (SCRDR) all have organic processing facilities that accept food scraps. The CoVRD has two private composting facilities who accept food scraps, and a third one that accepts yard and garden debris. The organic processing facilities that accept food scraps have faced various challenges with odour issues, despite using in-vessel technologies. One staff member who was interviewed for the study noted that to combat odour issues a technological resolution was required, which may require a much larger facility (to reach economies of scale) that could be shared by multiple regional districts. The combined capacity of existing organics processing facilities is roughly 65,000 tonnes per year, although this doesn't include the multiple small private facilities on the Island and Coastal Communities that accept yard waste. CSWM and CRD are also looking at options for constructing an organics processing facility in their jurisdiction.

3.7 Financial Models

Financial models for regional districts are typically based on tipping fees. Finding a sustainable funding model is challenging especially since diversion programs would affect revenue. As diversion rates increase, using tipping fees to finance the solid waste system, becomes less practical. Tipping fees can be increased however if set too high it could increase illegal dumping or cross border disposal practices. Without a flow control mechanism in place, waste will flow out of the system to out of region facilities that have lower tipping fees. Finding the right balance is particularly challenging for Regional Districts that have no more disposal capacity and are paying extremely high rates to dispose their garbage to the U.S.

Regional Districts have a range of income sources available to them to pay for solid waste management, and each one employs a slightly different model. Primary revenue sources for solid waste management operating budgets are outlined in Table 3.

Table 3: Primary Revenue Sources for Solid Waste Management Operating Budgets

Primary Revenue Sources	% Contribution to SWM Operating Budget
Tipping Fee Revenues	32% to 79%
MMBC Subsidies/EPR Revenues	2% to 17%
Taxation	0% to 54%
Utility Fes	0% to 24%

Financial information about each regional district's revenue sources was requested. The overall revenue for AVICC's eight regional districts were combined and is depicted in Figure 9. The breakdown for each regional district is in the Table 4. These numbers are for operating expenses only and do not take into account financing of capital projects and/or municipally-run programs. A regional district's operating expenses depends on the infrastructure and services they manage (e.g., curbside collection programs, operating a landfill etc.). For example, curbside recycling services tend to be financed primarily through MMBC incentives and taxation and/or utility fees, whereas infrastructure and landfill operations tends to be more heavily resourced through tipping fees.

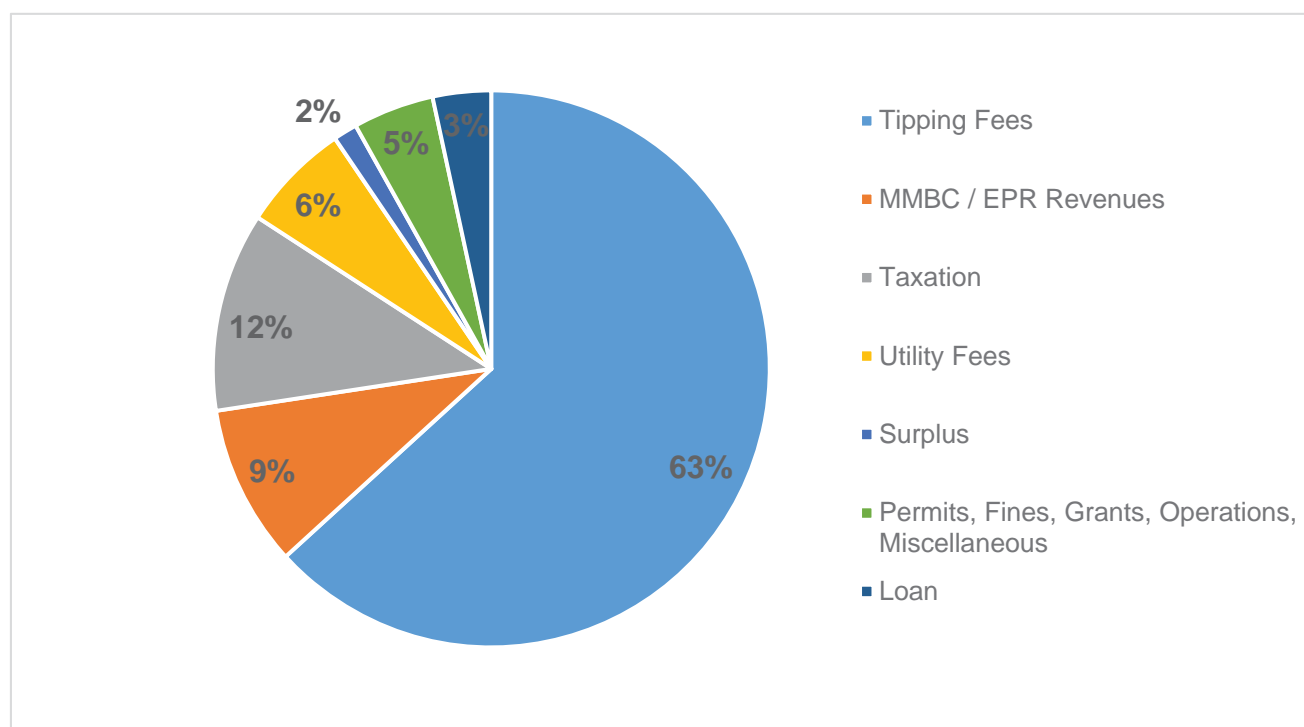


Figure 9: Breakdown of Contributing Revenue Sources for Regional District Solid Waste Management Operating Budgets

Table 4: Breakdown of Revenue Sources for Operating Budgets

Description	ACRD	CRD	CSWM	CoVRD	MWRD	RDN	PRRD	SCRD
Operating Budget¹	\$3,289,500	\$19,810,879	\$11,754,067	\$7,300,000	\$973,417	\$11,888,000	\$1,780,407	\$3,778,965
Population	31,061	372,463	104,950	81,704	11,523	150,404	19,480	29,584
Area (km²)	6,588	2,340	19,977	3,475	20,244	2,038	5,075	3,777
Density (population/km²)	4.7	153.8	5.25	23.1	0.57	71.9	3.9	7.6
Revenue	\$3,289,500	\$19,424,186	\$11,754,067	\$7,310,000	\$1,150,237	\$13,167,375	\$1,780,407	\$4,082,605
<i>Tipping Fees</i>	\$2,126,543	\$15,384,915	\$8,502,565	\$2,450,000	\$370,886	\$7,267,000	\$861,735	\$2,133,840
<i>MMBC/EPR Revenue</i>	\$355,000	\$3,331,124	\$192,200	\$600,000	\$123,365	\$1,024,375	\$30,369	\$135,000
<i>Taxation</i>	\$183,264	\$0	\$707,135	\$3,960,000	\$536,976	\$462,000	\$236,906	\$1,066,920
<i>Utility Fees</i>	\$0	\$0	\$0	\$0	\$0	\$3,183,000	\$0	\$746,845
<i>Surplus</i>	\$603,693	\$0	\$257,422	\$0	\$0	\$0	\$0	\$0
<i>Permits, Fines, Grants, Operations, Misc.</i>	\$21,000	\$708,147	\$0	\$300,000	\$0	\$1,231,000	\$651,397	\$0
<i>Loan</i>	\$0	\$0	\$2,094,745	\$0	\$0	\$0	\$0	\$0
<i>First Nation Requisition</i>	\$0	\$0	\$0	\$0	\$119,010	\$0	\$0	\$0
Shortfall/Profit	\$0	(\$386,693)³	\$0	\$10,000	\$176,820	\$1,279,375⁴	\$0	\$303,640
Cost/Capita²	\$106	\$53	\$112	\$89	\$84	\$79	\$91	\$128

¹ Budget year: 2015 (ACRD, CSWM, CoVRD, RDN), 2014 (CRD, MWRD, PRRD, and SCRD).

² Based on operating budget only for the regional district (No municipal costs included). Some regional districts provide collection services to electoral areas, and other operate depots so financial numbers are not directly comparable as different services are offered.

³ Funded with surplus

⁴ Surplus includes money that is dedicated for transfer to reserve for landfill closure.

3.8 Collaboration Efforts

3.8.1 Comox Strathcona Waste Management

The CVRD is responsible for solid waste management planning in both the CVRD and the Strathcona Regional District (SRD) geographic areas. The service is governed by a board of directors that includes elected officials from member municipalities and electoral areas of both regional districts and is branded.



CSWM manages all of the solid waste infrastructure and services for both regions. This includes responsibility for two regional waste management centres that serve the Comox Valley and Campbell River, as well as a range of transfer stations and smaller waste-handling and recycling facilities for the electoral areas of the CVRD and the SRD. The CSWM service manages over 100,000 tonnes of waste and recycled material and oversees a number of diversion and education programs.

CSWM has demonstrated that two regional districts can work together on solid waste management planning and operation. This sub-regional partnership allows to build some economies of scale and sharing of resources.

3.8.2 Tri-Regional District Solid Waste Study

A few AVICC members have previously collaborated on solid waste management initiatives. In 2011, the RDN, CVRD and CRD jointly commissioned a Tri-Regional District Solid Waste Study that assessed thermal treatment technologies for MSW. The study assessed different technologies, considering the combined waste available from the three regional districts. It was estimated that the facility should have capacity to process about 225,000 tonnes per year of waste (after organics management and recycling programs have been maximized). The three technologies considered were:



- Mass burn;
- Gasification; and
- Plasma gasification.

Finding of this study include the following:

- Mass burn was the most proven, reliable, and lowest cost technology;
- Capital cost in the order of \$210 million;
- Unit processing cost estimated at \$115 to \$120 per tonne (for mass burn technology); and
- Gasification and Plasma Gasification technology cost approximately 40% and 55% more, respectively.

3.9 Policies and Bylaws

The BC Environmental Management Act grants the authority and responsibility to manage all municipal solid waste and recyclables to regional districts. Section 24 of the Act outlines how regional districts are responsible for developing and implementing SWMP's that provide long term plans for the management of municipal solid waste, including waste diversion and disposal activities. The most common policies and bylaws that exist in AVICC regional districts include:

- Material bans from disposal as garbage (once stable alternative use is identified)
- Waste stream management licencing and/or facility authorization systems
- Bylaws – tipping fees, requirements for minimum levels of service, organics diversion, codes of practice for facilities etc.

Regional districts can enact landfill bans on materials. The Regional District of Nanaimo has had the practice of banning materials from disposal once a viable recycling alternative is in place since 1991. Currently there are over material bans including drywall (1991), cardboard (1992) paper, metal and tires (1998), commercial food waste (2005), yard and garden waste (2007) wood waste (2007) EPR materials (2007), household plastic containers (2009) and metal food and beverage containers (2009)³. In addition there are a number of other materials and wastes that are prohibited at solid waste disposal facilities.

The authority to license and regulate solid waste facilities is given to regional districts through BC's Environmental Management Act and the licensing bylaw can be enacted through inclusion in the solid waste management plan. Section 25 of the Act contains provisions for the licensing of solid waste management facilities and haulers by regional districts. All facilities that handle municipal solid waste (MSW) in whole or part are can be included in the licensing system with the exception of those facilities covered under other provincial regulations such as landfills and incinerators, soil facilities, stewardship program depots, concrete and asphalt recycling and auto wreckers. Transfer stations, recycling depots, composting facilities, material recovery facilities and brokers can be subject to the licensing system. The Regional District of Nanaimo (RDN) and the Cowichan Valley Regional District (CoVRD), working in partnership, adopted Waste Stream Management Licensing Bylaws No. 1386 (RDN) and 2570 (CoVRD) in 2004. Under these bylaws, the RDN and the CoVRD are authorized to license all private or non-government operated municipal solid waste diversion and recycling facilities within their respective regions. The bylaws were established under the authority of both the RDN and CoVRD SWMP.

Enforcement mechanisms to ensure compliance with policies and bylaws can be difficult. All of the options including material bans and facility licensing systems work best when regional districts and neighbouring regional districts collaborate to follow or develop similar programs. This can help prevent the movement of waste to avoid landfill bans or bylaws in one jurisdiction. For example regional districts also have the ability to licence haulers, however if a hauler is not based in the regional district it becomes difficult to have any enforcement mechanisms to implement the licensing requirement.

From time to time, the MOE has also developed considerations that Ministry staff will use during the review of SWMP's and approval. In 2010 a Waste to Energy information sheet outline a series of critical criteria that would be expected of local governments before considering the inclusion of WTE facilities within their SWMP's. This included a minimum target of 70% reduce, reuse and recycle of waste before utilizing a WTE facility as a waste management option.

³ Maura Walker and Associates (2013) Solid Waste Management Plan Update: Stage One Report

4.0 ASSOCIATION OF VANCOUVER ISLAND AND COASTAL COMMUNITIES MEMBER SOLID WASTE PROFILES

Each regional district manages their SWM system differently. For example some regional districts own and operate their own disposal systems, while others contract the service to the private sector. Collection approaches also differ; some are provided by the public sector and others by the private sector, some are administered by the regional district and others by the municipality, and some provide drop off depots instead of curbside collection services. These differences also extend to how services are funded.

The following sub-sections provide high level summaries of each regional districts' solid waste management system. Section 4.0 takes a benchmarking approach, comparing key metrics across regional districts.

4.1 Alberni-Clayoquot Regional District

ACRD is a federation of member Municipalities; Port Alberni, Tofino, Ucluelet, Treaty First Nations; Huu-ay-aht, Yuułu?it̓ath̓ and Uchucklesaht Tribe Government and six electoral areas; "A" (Bamfield), "B" (Beaufort), "C" (Long Beach), "D" (Sproat Lake), "E" (Beaver Creek), and "F" (Cherry Creek). Alberni-Clayoquot Regional District is within the traditional territory of ten First Nations. Roughly 60% of the population lives in Port Alberni. Established in 1967, the Alberni-Clayoquot Regional District provides services to their member jurisdictions. As service providers, the Regional District provides three distinct roles:

- Serves as local government to the six (unincorporated) electoral areas, providing basic local services such as community planning, water supply and fire protection;
- Serves as an inter-jurisdictional service body providing sub-regional services to different combinations of municipalities; electoral areas and First Nations; and
- Responsible for providing regional services and undertaking key activities on behalf of the entire region.



Photo 1: Alberni Valley Landfill

Table 5: Alberni-Clayoquot Regional District Key Metrics

Description	Metric
Population	31,061
Per Capita Disposal	699 kg/year
Diversion Rate	22%
Tipping Fee	\$95/tonne
Disposal Capacity	70 years

Programs and Infrastructure

Roughly 30% of the population has curbside garbage and recycling collection, and the remainder use recycling depots or self-haul garbage directly to the landfill or transfer station. ACRD has five recycling depots, three of which are owned by the regional district and funded by MMBC. There are two private composting facilities that handle yard waste, saw dust and fish waste. ACRD has two landfills (Alberni Valley and West Coast Landfill) and a transfer station.



Photo 2: Ucluelet Recycling Depot

Priorities

- Implementing an old corrugated cardboard disposal ban;
- Achieving 50% diversion; and
- Possible construction and wood waste ban.

4.2 Capital Regional District

CRD's jurisdiction is the Southern tip of Vancouver Island and the surrounding 70 Gulf Islands. CRD has 13 municipalities; Central Saanich, Colwood, Esquimalt, Highlands, Langford, Metchosin, North Saanich, Oak Bay, Saanich, Sidney, Sooke, Victoria, View Royal, and three electoral areas; Juan de Fuca, Southern Gulf Islands, Salt Spring Island.

The CRD is directly accountable to municipal partners and electoral areas for regional and sub-regional services and is the local government for the electoral areas, where it provides many sub-regional and local services. The CRD has a direct relationship with individuals, households, businesses, organizations and institutions that access regional utilities and services, and with communities that collaborate for regional services on behalf of their residents. It also works collaboratively with First Nations and senior levels of governments. Their mission is "diverse communities working together to better serve public interest and build a livable, sustainable region".



Photo 3: Hartland Landfill

Table 6: Capital Regional District Key Metrics

Description	Metric
Population	372,463
Per Capita Disposal	368 kg/year
Diversion Rate	52%
Tipping Fee	\$110/tonne
Disposal Capacity	35 years

Programs and Infrastructure

Roughly 60% of the population has curbside garbage, recycling and food scraps collection. CRD has three private composting facilities that accept yard waste and wood waste. Food scraps are taken to Fisher Road in Cowichan Valley or Harvest Power in Metro Vancouver. CRD has seven recycling depots and two MRFs (mixed waste recycling facilities). The whole population is covered by MMBC subsidies. There are two landfills: Hartland and Tervita Highwest. Tervita accepts C&D (construction and demolition) waste. Additionally, there is a transfer station at Port Renfrew.

Priorities

- Finalize new Solid Waste Management Plan;
- Develop an integrated food waste processing facility in the region; and
- Develop a financially sustainable model for the solid waste management system.



Photo 4: Mayne Island Recycling Depot

4.3 Comox Strathcona Waste Management

The CSWM, provides regional solid waste services to CVRD and SRD. This system is managed by the CVRD.

CVRD is a federation of three municipalities; the Town of Comox, the City of Courtenay, and the Village of Cumberland, and three electoral areas; Baynes Sound – Denman/Hornby Islands, Lazo Nort, and Puntledge-Black Creek.

SRD is a federation of five member municipalities; City of Campbell River, the Village of Gold River, the Village of Sayward, the Village of Tahsis, the Village of Zeballos, and four electoral areas; Sayward – Kyuquot/Nootka, Cortes Island, Discovery Islands – Mainland Inlets, and Oyster Bay – Buttle Lake. In addition, there are 14 First Nations with reserve lands located in the CSWM area.



Photo 5: Campbell River WM Centre

Table 7: Comox Strathcona Waste Management Key Metrics

Description	Metric
Population	104,950
Per Capita Disposal	610 kg/year
Diversion Rate	51%
Tipping Fee	\$120/tonne
Disposal Capacity	4 + 21 years

Programs and Infrastructure

More than 95% of the population has curbside garbage collection, and around 75% have curbside recycling and yard waste collection. The CSWM is responsible for servicing two regional waste management centres that serve the Comox Valley and Campbell River, as well as a range of transfer stations and recycling facilities for the electoral areas of the CVRD and the Strathcona Regional District. A planned expansion at Comox Valley will give the regional district an additional 21 years of landfill capacity. There are also two private facilities that process yard waste, and a food scraps composting pilot underway at Comox Valley. The CSWM service manages over 100,000 tonnes of waste and recyclable materials, and oversees a number of diversion and education programs.



Photo 6: Comox Valley WM Centre

Priorities

- Construct the new landfill by 2017;
- Build a regional composting facility; and
- Construct a transfer station to support the new landfill.

4.4 Cowichan Valley Regional District

The Cowichan Valley is nestled between Victoria to the South and Nanaimo in the north. CoVRD has four municipalities including the City of Duncan, the District of North Cowichan, the Town of Ladysmith, the Town of Lake Cowichan, and nine electoral areas including: Mill Bay/Malahat, Shawnigan Lake, Cobble Hill, Cowichan Bay, Cowichan Station/Sahtlam/Glenora, Cowichan Lake South/Skutz Falls, Saltair/Gulf Islands, North Oyster/Diamond and Youbou/Meade Creek.

The CoVRD is responsible for regional solid waste planning, policy and bylaw development and enforcement and operation of solid waste facilities. CoVRD administers contracts for curbside garbage and recycling in electoral areas and the long-haul trucking and disposal of residual MSW.

The CoVRD provides garbage collection for selected electoral areas while provide recycling pick up service for all electoral areas. Private collector picks up garbage and food waste from Areas A, B and C.



Photo 7: Bings Creek WM Centre

Table 8: Cowichan Valley Regional District Key Metrics

Description	Metric
Population	81,704
Per Capita Disposal	286 kg/year
Diversion Rate	74%
Tipping Fee	\$140/tonne
Disposal Capacity	0 years

Programs and Infrastructure

Roughly 80% of the population has access to curbside garbage and recycling services. In addition, all four municipalities have food scraps collection. CoVRD and its' municipalities have all signed on to MMBC and the regional district manages several recycling depots, including the transfer stations. CoVRD has three transfer stations (Bings Creek, Peerless Creek, and Meade Creek) where residual MSW is collected before being consolidated on B-Train trailers for long-haul transportation to a U.S. landfill for disposal. There are also three private composting facilities, two of which process residential food waste.



Photo 8: Bings Creek WM Centre

Priorities

- Find a local solution to garbage disposal; and
- Resolve odour issues at composting facilities.
- Plan for future needs, i.e. yard and garden and food scraps composting

4.5 Mount Waddington Regional District

The MWRD is the governing body that provides local services, planning, solid waste, parks, and economic and tourism development services for the residents of Northern Vancouver Island and part of British Columbia's mainland coast.

MWRD stretches from Keta Lake to Brooks Peninsula to Cape Scott on Northern Vancouver Island, and reaches from Cape Caution up to the birthplace of the Klinaklini River and back down to Johnstone Strait on the coast. The regional district encompasses a number of settlements, including five municipalities; Alert Bay, Port Alice, Port Hardy and Port McNeill, and four electoral areas. MWRD services some very small and isolated communities although roughly 60% of the population lives along the east coast in Port Hardy and Port McNeill.



Photo 9: 7 Mile Compost Windrows

Table 9: Mount Waddington Regional District Key Metrics

Description	Metric
Population	11,523
Per Capita Disposal	542 kg/year
Diversion Rate	32%
Tipping Fee	\$115/tonne
Disposal Capacity	70 years

Programs and Infrastructure

Approximately 95% of the population has curbside garbage collection. Residents either have curbside recycling collection in addition, or are served by regional district-owned recycling depots. The regional district and its member municipalities are all signed up to MMBC. MWRD owns the 7 Mile Landfill which has recently undergone an upgrade including a biocover to reduce methane. There are several transfer stations which collected garbage and transport it to 7 Mile.



Photo 10: 7 Mile Recycling Depot

Priorities

- Services for isolated communities; and
- Cost benefit analysis of introducing organics curbside collection.

4.6 Regional District of Nanaimo

The RDN is British Columbia's fifth most populous Regional District. Roughly 75% of the population lives along the coast. Communities within the regional district include the municipalities of Nanaimo, Lantzville, Parksville, and Qualicum Beach.

The RDN is responsible for administration, local governance and services in the seven electoral areas that are within the region.



Photo 11: Church Road Transfer Station in Parksville, BC

Programs and Infrastructure

Essentially the entire regional district is provided curbside collection services for garbage, recycling and food scraps. RDN and its' municipalities are signed up to MMBC and receive subsidies for their curbside programs and depots. There are three private MRFs in RDN. The landfill has been operational since 1991 and has a gas collection system linked to British Columbia Hydro. The transfer station in Parksville collects around 50% of the districts garbage, servicing the northern part of the district. There are two private composting facilities, one of which accepts residential food waste.

Table 10: Regional District of Nanaimo Key Metrics

Description	Metric
Population	150,040
Per Capita Disposal	335 kg / year
Diversion Rate	68%
Tipping Fee	\$125 / tonne
Disposal Capacity	25 years



Photo 12: RDN Regional Landfill

Priorities

- Solid waste management plan review;
- To address the implication of waste export that is taking place;
- Develop a financially sustainable model for the solid waste management system;
- Advance diversion beyond 70%"; and
- Assess long term disposal options.

4.7 Powell River Regional District

PRRD is located on the west coast of British Columbia about 175 km north of Vancouver, within the traditional territory of the Sliammon (Tla'amin) First Nation. It is bound by the Sunshine Coast Regional District to the south, the Squamish Lillooet Regional District to the northeast, the Comox-Strathcona Regional District to the northwest, and the Georgia Strait to the west.

PRRD includes one municipality, the City of Powell River, and five electoral areas. Texada, Savary and Lasqueti Islands, are all located within the boundaries of PRRD. Roughly 70% of the population live in the City. Lasqueti Island operates under a Sub Plan to the Solid Waste Management Plan as it has its own landfill and recyclables go to Vancouver Island. Lasqueti Island Population, waste volumes and PRRD owned recycling depot will not be included in the following data as there are currently no numbers for volume or weight disposed of at the landfill.



Photo 13: Augusta Recyclers Transfer Station

Table 11: Powell River Regional District Key Metrics

Description	Metric
Population	19,480
Per Capita Disposal	236 kg/year
Diversion Rate	50%
Tipping Fee	\$215/tonne
Disposal Capacity	0 years



Photo 14: Augusta Recyclers Transfer

Programs and Infrastructure

Roughly 68% of the population has curbside collection for garbage and recycling, with organics curbside collection planned for 2016. PRRD is signed up to MMBC but the City of Powell River is not. In addition to the six PRRD-owned recycling depots (including at the transfer station), there is a privately owned depot that accepts commercial recyclables, C&D recyclables, and has an MMBC depot within the operation. Augusta Recyclers owns a private transfer station, which collects all of the region's MSW before it is exported to the U.S. PRRD does not have any landfill capacity remaining. PRRD recently issued a request for expressions of interests for organics diversion and will be moving to the request for proposals in fall 2015.

Priorities

- Finalize the new solid waste management plan;
- Implement an organics diversion program;
- Expand EPR beyond existing programs; and
- Develop a potential resource recovery centre (grant applied for).

4.8 Sunshine Coast Regional District

The SCRD is located within the traditional territories of the Sechelt and Squamish First Nations. SCRD's municipalities and electoral areas include: District of Sechelt, Town of Gibsons, Sechelt Indian Government District, Egmont/Pender Harbour, Halfmoon Bay, Roberts Creek, Elphinstone, and West Howe Sound. Roughly 50% of the population lives in Gibsons and Sechelt.



Photo 15: Salish Soils – Gore Cover Composting System

SCRD's vision is "A community for all generations connected by our unique coastal culture, diverse economy and treasured natural environment".

Table 12: Sunshine Coast Regional District Key Metrics

Description	Metric
Population	29,584
Per Capita Disposal	352 kg/year
Diversion Rate	50%
Tipping Fee	\$150/tonne
Disposal Capacity	15 to 20 years

Programs and Infrastructure

Approximately 95% of the population has curbside collection services for garbage. Some residents have curbside recycling but the majority use recycling depots. There are three private depots, one in Gibsons, one in Sechelt, and the other at Pender Harbour. SCRD has two landfills; Sechelt and Pender Harbour although Pender Harbour is being closed in 2015. There is a private composting facility with a GORE-cover system that accepts yard waste, food scraps and fish waste. Only the District of Sechelt residents have curbside recycling. The SCRD funds PP drop-off at each of the three recycling depots.



Photo 16: Gibson's Recycling Depot

Priorities

- Closure of Pender Harbour Landfill and conversion to a transfer station;
- Review the 24 initiatives outlines in the SWMP to prioritize for post-2015; and
- Develop a financially sustainable model for the solid waste management system.

5.0 AVICC SWOT ANALYSIS

Based on the benchmarking across regional districts that Tetra Tech conducted, the current Strengths, Weaknesses, Opportunities and Threats (SWOT) was developed. A SWOT analysis helps provide a good all-around view of the AVICC's current and forward-looking opportunities and threats. The SWOT analysis was presented at the AVICC workshop in Nanaimo on June 19, 2015, and augmented by regional district representatives. The SWOT analysis, was used as a brainstorming session, and a tool to gain a collection of ideas regarding the current state of solid waste management, and potential future collaboration opportunities. The table below integrates all the ideas and issues identified, both before and during the workshop.

Table 13: Strengths, Weaknesses, Opportunities, and Threats Analysis

<p>Strengths</p> <ul style="list-style-type: none"> ▪ Good public knowledge and participation in existing programs ▪ High capture of residential recycling ▪ Good range of items accepted for recycling at depots ▪ AVICC committee's commitment to collaboration ▪ Overall landfill capacity (43 years) allows time for long term planning ▪ Some of the lowest Per Capita Waste Disposal rates in British Columbia ▪ Private sector involvement in waste diversion 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ Multi-family waste management has poor diversion and involvement overall. ▪ Rural/urban divided and consistent level of service not provided to everyone in the region ▪ C&D waste tracking and disposal ▪ ICI waste diversion and recycling level is weak ▪ Tipping fees driving waste across borders ▪ Tipping fees are a key source of revenue for waste programs (lower disposal rates decrease revenue needed to operate the system) ▪ Service delivery for rural and remote residents
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Unified SWM plans and systems ▪ Decreased reliance on landfills ▪ EPR program collaboration to achieve scale ▪ Increased organics collection to improve waste diversion ▪ Collaboration for processing/disposal of materials (shared landfill capacity, waste to energy, organics processing facilities) ▪ Management of greenhouse gas from landfills ▪ Consistent messaging ▪ Unified approach to regulations (e.g., Disposal bans, building design) ▪ Coordinated advocacy efforts (National Zero Waste Council, British Columbia MOE, EPR Stewards) ▪ Federal and provincial legislation changes 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Challenges around emerging technologies – take a long time to plan, very expensive, and high risk ▪ Waste export may not be reliable in the long term due to border concerns, exchange rates ▪ Federal and provincial legislation changes ▪ Lack of localized landfill capacity ▪ Stability of EPR programs over time ▪ Solid waste system resilience ▪ Likelihood of siting a new landfill for more disposal capacity

6.0 COLLABORATION OPPORTUNITIES FOR AVICC

There are a wide range of solid waste management issues that AVICC members could work together on. From a political perspective, the most challenging areas for collaboration (e.g., shared disposal capacity, a unified tipping fee, and waste control) also offer the greatest potential for mutual gains in the long-term.

Although some regional districts have landfill capacity in the short to mid-term while others – namely Cowichan Valley and Powell River – do not, the reality is that all regional districts have a disposal challenge in the long-term (20 to 40 years from now). Opportunities to site a new landfill are limited, and planning to export waste to the U.S. as a long-term strategy is not without risk. Taking a long-term perspective, all AVICC regional districts need to

consider how much waste can be reduced through zero waste policies and approaches, and what options there are for disposing the residual.

The average disposal rate across all eight regional districts is currently 399 kg/capita. Based on the RDN's experience (and other organics case studies), implementing organics diversion strategies could reduce this amount by about 70 kg/capita⁴. Introducing enhanced C&D diversion programs (e.g., wood waste ban) could lead to an additional reduction of 100 kg/capita for those regional districts who have not yet implemented bans. Overall, with high performing organics and C&D diversion strategies, the average disposal for AVICC regional districts could be reduced to as low as 285 kg/capita.

Table 14: Recommendations and Options for AVICC Solid Waste Collaboration

Area of Work	Item #	Recommendation and/or Option Description	Key Driver
AVICC partnership	1.	Develop a vision and goals for the AVICC including: <ul style="list-style-type: none"> A communication strategy A unified education program 	<ul style="list-style-type: none"> Establish a platform for effective collaboration Develop clarity of all recycling efforts across the AVICC
	2.	Continue to meet regularly – identify one solid waste challenge or opportunity to investigate at each meeting. <ul style="list-style-type: none"> Establish a 3 to 5 year process to maintain and update the 2015 baseline report information 	<ul style="list-style-type: none"> Establish a platform for effective collaboration Build understanding of priorities
Long-term disposal	3.	Conduct an assessment to forecast future solid waste disposal demand of AVICC member populations in 20, 40, and 60 years' time.	<ul style="list-style-type: none"> Ensure accurate data and assumptions for making long-term investment decisions
	4.	Review the mid and long-term business case for a WTE energy facility with all AVICC members giving waste as a feedstock.	<ul style="list-style-type: none"> Need to effectively manage residual waste
Organics waste reduction strategies	5.	Develop a comprehensive AVICC organics strategy that engages the residential and ICI sectors. Build on existing organics systems in place in RDN and CoVRD.	<ul style="list-style-type: none"> Reduce per capita garbage generation Increase diversion rate Ensure regional processing capacity aligns with organics diversion strategies (e.g., curbside programs and disposal bans)
	6.	Conduct an assessment of organic feed stock and analysis of capacity needs along with a review of combined existing and planned organics infrastructure to ensure sufficient processing capacity is in place, either in the private and/or the public sector.	
	7.	Standardize organics curbside collection to provide consistency for materials collected, including food scraps and food-soiled paper.	
Recycling collection and drop-off programs	8.	Establish consistency in materials collected in curbside recycling programs and accepted at depots.	<ul style="list-style-type: none"> Increase diversion Optimize services and program efficiency Maximize participation
	9.	Implement common promotion and education programs throughout the AVICC. Focus on standardizing messaging, colours and system types.	

⁴ MWA Environmental Consultants, CWMA Conference 2014.

Area of Work	Item #	Recommendation and/or Option Description	Key Driver
Financially sustainable model	10.	Explore implications of establishing unified tipping fee: <ul style="list-style-type: none"> Impact on revenue; Impact on tonnages disposed; Impact on leakage; and Impact on illegal dumping. 	<ul style="list-style-type: none"> Establish a sustainable financial model
	11.	Assess leakage and export of waste by private haulers and private landfills. Explore opportunities for government control of waste collection systems (flow control/franchising).	
ICI sector strategy	12.	Engage the ICI sector in constructive dialogue to identify opportunities for collaboration to address waste diversion issues. Establish an initial network of ICI contacts and use to educate and promote goals (e.g., organics and other disposal bans).	<ul style="list-style-type: none"> Increase diversion
C&D sector strategy	13.	Track all C&D waste generated including what is disposed in the region and what is exported.	<ul style="list-style-type: none"> Increase diversion Increase longevity of existing landfill capacity
	14.	Expand or add areas to existing landfills to sort and separate recyclable C&D materials while other materials are stockpiled to be used for cover at the landfill or shipped out of region for recycling or beneficial reuse or energy recovery.	
	15.	Develop permit process that requires contractors to assess waste materials generated and develop a diversion strategy, and provide contractors with tools to support them.	
	16.	Ensure all regional districts have requirements that all C&D waste must be disposed of at a licensed facility, and have similar rules regarding the requirement of disposal and diversion.	
Regulations and enforcement	17.	Ensure that disposal bans and bylaws are consistent across regions to reduce leakage across borders.	<ul style="list-style-type: none"> Track material generation and movement Increase diversion Ensure program costs are efficient
	18.	Ensure that accurate and consistent metrics and statistics are taken for all materials (MSW, C&D, Recycling, Organics, Etc.) and receiving facilities (including private) are documented in terms of meeting standards and providing accurate data.	
	19.	Develop a consistent enforcement strategy to support regulations.	
	20.	Develop standards for odour levels for organic processing	
Advocacy	21.	Advocate British Columbia MOE and industry groups to review and expand waste reduction and diversion policies.	<ul style="list-style-type: none"> Adopt and implement new EPR programs Refine and improve existing EPR programs

7.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech EBA Inc.



Prepared by:
Jessica Frank, M.Sc.
Project Manager – Waste Management
Environment Practice
Direct Line: 778.945.5776
Jessica.Frank@tetrattech.com



Prepared/Reviewed by:
Avery Gottfried, ME, P.Eng.
Solid Waste Planning Engineer
Environment Practice
Direct Line: 778.945.5749
Avery.Gottfried@tetrattech.com



Reviewed by:
Wilbert Yang, P.Eng.
Waste Planning Team Lead
Environment Practice
Direct Line: 604.608.8648
Wilbert.Yang@tetrattech.com

/bj:jmt

APPENDIX A

TETRA TECH'S GENERAL CONDITIONS

GENERAL CONDITIONS

GEOENVIRONMENTAL REPORT

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of Tetra Tech EBA's client. Tetra Tech EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than Tetra Tech EBA's Client unless otherwise authorized in writing by Tetra Tech EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of Tetra Tech EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where Tetra Tech EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed Tetra Tech EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Tetra Tech EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of Tetra Tech EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Tetra Tech EBA. The Client warrants that Tetra Tech EBA's instruments of professional service will be used only and exactly as submitted by Tetra Tech EBA.

Electronic files submitted by Tetra Tech EBA have been prepared and submitted using specific software and hardware systems. Tetra Tech EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

3.0 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by Tetra Tech EBA in its reasonably exercised discretion.

4.0 INFORMATION PROVIDED TO TETRA TECH EBA BY OTHERS

During the performance of the work and the preparation of the report, Tetra Tech EBA may rely on information provided by persons other than the Client. While Tetra Tech EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, Tetra Tech EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

APPENDIX B

WORKSHOP MINUTES



MEETING MINUTES

MEETING TIME:	11:15 am – 4:00 pm	DATE:	June 19, 2015
LOCATION:	Board Chambers, Nanaimo Regional District Office 6300 Hammond Bay Road, Nanaimo	FILE:	704-ENVSWM03638-01
ATTENDEES:	Avery Gottfried, Wilbert Yang – Tetra Tech (Presenters) 22 total from AVICC and 8 of the 9 regional districts (Capital, Cowichan Valley, Nanaimo, Alberni-Clayoquot, Comox Valley, Strathcona, Powell River, Sunshine Coast)		
ABSENT:	Mount Waddington		

1.0 INTRODUCTIONS & EXPECTATIONS

- Ian Morrison – Cowichan Valley RD – Great opportunity. Currently ship garbage to the US. We have a high diversion rate and a high cost. Issues include rural services and illegal dumping. Looking at new technologies and ideas to make them happen. Collaboration to get new opportunities. Deal with our own waste closer to home.
- Ian Winn – Sunshine Coast RD – Get new board up to speed on plan as there are a lot of new faces, how to implement all 24 ideas in the plan, and how to prioritize them. Want high diversion rates but how to get there. Prioritization and how to collaborate, and what can be achieved.
- John McNabb – Alberni Clayoquot RD – Mixed system, diverse due to spread out location. Available life of landfill can change quickly if land claims and other issues come up. Want to improve their diversion, and future diversion solutions. Don't want a new landfill site in the future. Look at options beside landfills. What has been unsuccessful elsewhere and learn from it so we don't make the same mistakes.
- Stan Gisborne – Powell River RD – Ship waste to US. Just went to RFP for new compost site. Best way to deal with their waste as it is expensive. Have looked at shipping to the Island before and that is costly. Spent 5+ years trying to find a new landfill site and were not able to identify any.
- Edwin Grieve – AVICC – Moving target with the Ministry. New guidelines, want for 70% organics diversion for 2020. Who knows if they are rigid or flexible in meeting the new guidelines?
- Jude Schooner – Strathcona RD – Really wants more diversion, best way to help financial situation as landfilling is only getting more expensive. Looked into extending the landfill life in Tahsis or transferring waste to Comox, all options are expensive and ultimately went with transferring waste to Comox as running small landfills holds a lot of liability and long term risk. Regulatory – BCMOE – find a way to get infrastructure funding for ideas from the AVICC and overall collaboration between regional districts.
- Judy Brownoff – Capital RD – Solid Waste Management Plan update and local organics management have been the issue, along with liquid waste management. All caught up in long issues for the past year. Biggest issue is landfill life and solid waste finances (more diversion results in less revenue for balancing budget). Proud that tipping fees pay for everything – but now the financial sustainability is at risk as not enough revenue from tipping fees, may need taxation to level out the cost.

- Alec McPherson – Nanaimo RD – How to cover the cost for solid waste management is the main issues. You pound down in one area and the problem pops up elsewhere. Best idea for you may not be best for all, and let's be aware of that. Is there consensus in the community for what way to go – can diversion go to 80%. Biggest issues with landfill fixed costs. Need province to allow them to delegate the responsibility, such as flow control, the way they want to manage their waste. More diversion is key, but it gets more expensive. Saw a presentation recently for Multi-Family dirty material recovery facility (MRF) – but could cost \$10 million dollars. Hard job to see what current reality is. What are the best solutions for the island, given the current systems, and how to change our current systems so that we can get there? Wilbert has a tough job to make this happen.
- Rod Nichol – Comox Valley RD– Likes what he heard about the waste to energy (WTE) facility in Edmonton, other facilities use and recycle ash to make building products. Also there is a new wood waste, drywall and slaughterhouse waste processing facility in Malaysia that is a great WTE facility. If we have the tonnage we can help make these technologies happen.

Expectations Summary from Flip Chart:

- Island Solution;
- Understand what other are facing;
- Learn from others;
- Other options outside of landfills;
- Ways to achieve more diversion;
- Learn about funding opportunities;
- Financial sustainability;
- How can a AVICC catchment are solid waste management system work; and
- Manage solid waste in a manner that island residents are proud of.

2.0 SOLID WASTE SYSTEM OVERVIEWS AND TRENDS

- Slide 9 – Map of all landfills and composting operations.
 - Comment: Idea – Each region becomes an expert and managing a product and finds a way to deal with it.
 - Discussion – Given the projected closures in the short term (Comox Valley and Sunshine Coast) there will eventually only be 4 larger landfills, 1 Demolition and land clearing waste landfill and 7 small landfills remaining for the entire AVICC region. Show this on the map.
- Slide 10 – Disposal per capita. Slide has been updated. (Axes labels were shifted.)
- Slide 11 – Disposal capacity. Slide Updated.
 - Question: did we compare landfills to show which ones are actually meeting the Ministry standards?
 - Answer: no we are not going to that level of detail for this study.

- Slide 15 – AVICC Overview – Organics. Slide updated with clarification to food waste or yard waste composting facilities.
 - Comments: We currently collect only food scraps without yard waste, which makes a low carbon compost with high nitrogen. It's hard to make a marketable product this way. If we focus on the product we want to make, we would take yard waste as well to help solve this problem. Private landscaping compost operations take the yard waste as it makes good quality compost and we not are stuck with the difficulty of dealing with food scraps.
 - Feedback: Include in the report: info that shows current collaboration that has happened. For example, the WTE tri-regional study.
- Slide 16 – Alberni Clayoquot – currently have 2 SWMP related documents under development. Updated. Plan implementation and review is underway.
- Slide 21 – Comox Strathcona – building a regional composting facility in Campbell River or Comox
- Slide 34 – Trends – Recycling
 - Comment – glass in BC is doing well due to California legislation that requires a specific amount of recycled glass content in new wine bottles. This legislation helped create the market for the recycled product.
- Slide 35 – Trends – Organics
 - Comment – Comox Valley RD finished a pilot for organics collection with two different collection systems:
 - Every other week garbage, weekly organics in Cumberland – very high organics uptake and 70% participation
 - Weekly garbage and organics in Comox – less uptake 40% participation
- Slide 40 – Trends – WTE
 - Comment: Capital costs for these big systems such as gasification. In the range of \$95-\$130/tonne. How will this align for different costs at different disposal locations? Comox has undergone a large amount of work to determine what a universal tipping fee rate should be which takes into account many different parts of the system.

3.0 SWOT ANALYSIS

Additions to ideas presented in the PowerPoint slides:

Strengths:

- Good public knowledge and involvement in existing programs. The public is keen to do more diversion.
- # Items accepted for recycling at some depots.

Opportunities:

- Unified solid waste management plans.
- Decrease reliance on landfills.

Weakness:

- Multi-family waste management. Poor diversion and involvement overall.
- Rural/urban divide and providing service to everyone in a region, or across the AVICC.

Threats:

- Challenges around emerging technologies. They take a long time to plan, cost a lot, and come with a lot of risk.

Identification of Ideas for Break-Out Group Discussion and Prioritization:

A long list of opportunities, issues and challenges was created by the group and can be found in the table below. In total 9 collaborative opportunities, 4 challenges, and 5 issues were identified. For the opportunities, 3 key themes emerged and so the 9 ideas were consolidated and grouped into 3. (The original list of 9 is provided below and the 3 that were included in the short list for discussion are in the table). Each member was given 5 dots to prioritize options list in the Table below.

Collaborative Opportunities: regrouped the long list of 9 into the 3 in the table below.

- Plan for Waste to Energy;
- Coordination of landfill capacity to use by other regional districts;
- Unified solid waste system and the management of risk and liability between all parties;
- Consistent Messaging for practice of solid waste;
- Collaboration on specific waste streams (e.g. Organics and garbage);
- Involvement of the private sector in this conversation;
- Unified approach to laws and requirements (e.g. Disposal bans, building design [deconstruction]); and
- Combined lobbying efforts (including the zero waste council).

Table: Items for Breakout Group Discussion

Theme	Discussion Topic	Score
Opportunity	Long term disposal capacity options; coordination of sharing existing disposal capacity.	8
Opportunity	Unified approaches: <ul style="list-style-type: none"> Disposal bans Accepted materials Building design (deconstruction) Combined lobbying efforts 	13
Opportunity	Consistent education and messaging. Leading by example.	14
Challenge	Financial stability and alternative financial models for solid waste budgets. Including private funding and involvement.	12

Theme	Discussion Topic	Score
Challenge	Management of hazardous waste materials by the private sector.	1
Challenge	Enforcement of illegal dumping laws (Construction demolition waste and contaminated soil ending up in Cowichan Valley RD – hard to control but now have a large number of contaminated sites they must clean up).	7
Challenge	Time frame to develop emerging technology.	0
Issue	Reduction of materials not cover by EPR.	0
Issue	Non-recyclable packaging (laws to ban this).	6
Issue	Getting MMBC to accept recyclable materials that are not packaging in the blue box program or depots.	4
Issue	Time frame required to amend solid waste management plans.	0
Issue	Having multiple regional districts develop coordinated waste management plans.	11

4.0 IDENTIFIED PRIORITIES DISCUSSION

From the above ideas and general discussion during the workshop, we grouped a number of issues and participants decided to focus on the following 3 key priorities:

1. Financial Models and financial stability. Including alternative funding opportunities.

- Can we have a high level summary of the unified rate cost study that was done in Comox Valley RD.
- Opportunity for external GMF funding if projects are done in partnership across regions.
- Note that sharing budgets is difficult, need each municipally involved as well – example is a curbside program where the budgets are all ok, but other aspects of the waste program are struggling. It's not possible to shift money from one to the other without each municipality voting to agree to this.
- What fiscal frameworks exist that go beyond using Tipping fees for revenue?
- Reminder – We first need to determine what we fundamentally want to do with solid waste, determine the core values such as organics bans. Then we will know what kind of financial models we may need. We are not just going for the cheapest system here, we want the best system.
- Be wary of the moving target – costs can double in a short period of time for infrastructure.

2. Unified approaches and having multiple regional districts develop joint solid waste management plans.

- Unified approach to laws and material bans (or also ensuring they all accept specific materials for recycling);
- Consistent education and messaging across regions;
- Sharing landfill capacity;
- Consistent laws and enforcement;

- Best opportunities will come from a unified approach;
- Reach out to the Province, we will need resources to get this process started, and how to get more resources;
- We can use AVICC to lobby EPR on a joint, unified approach, same with MMBC and the Province;
- Can start to pilot some ideas come next year as the first step; and
- This can help make sure that materials don't keep jumping from region to region, depending on who has a ban in place or who has weaker enforcement or control.

3. Long – Term Capacity and sharing of existing disposal capacity

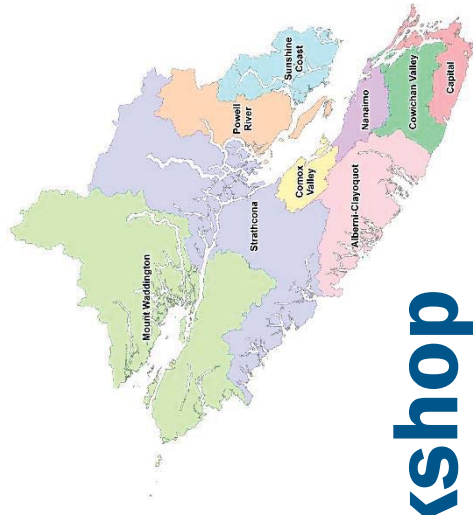
- Need to get to 70% diversion before ideas like WTE can even be presented to the Province; and
- Seen as an end goal, not the first issue to tackle.

APPENDIX C

WORKSHOP PRESENTATION



TETRA TECH



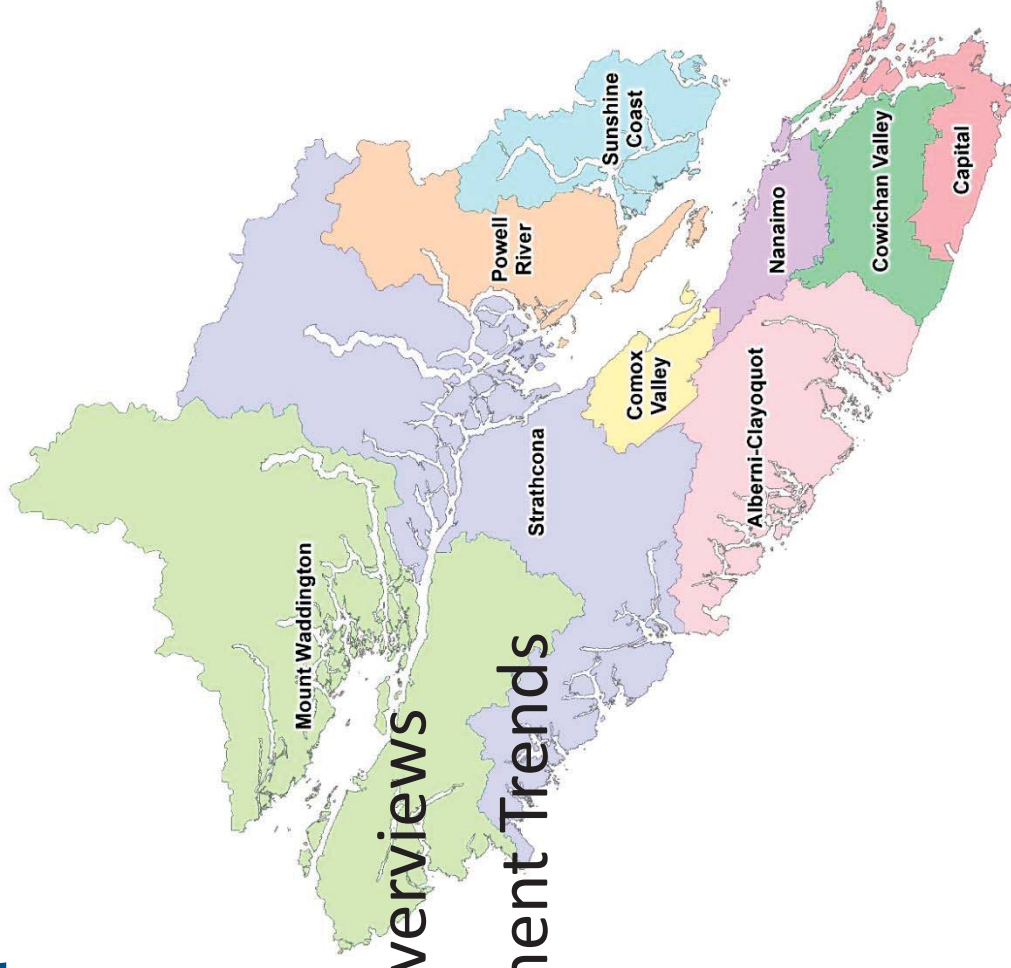
AVICC: Solid Waste Workshop



Page 78
June 19, 2015

Workshop Agenda

- Introductions
- Project Objectives
- Solid Waste System Overviews
- Solid Waste Management Trends
- SWOT Analysis
- Break Out Sessions
- Presentations
- Next Steps



Introductions

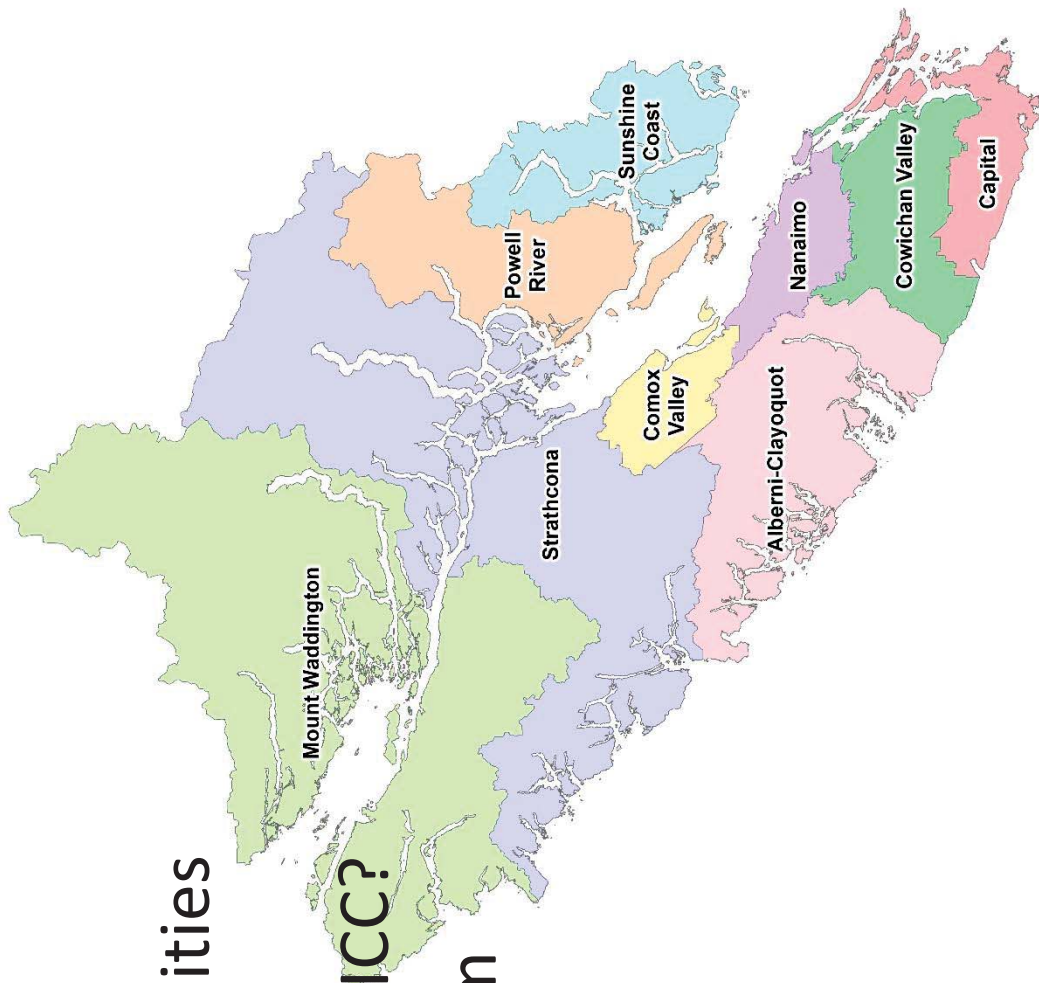
- Workshop Leader(s)
 - Wilbert Yang, P. Eng., Senior Waste Management Engineer
 - Avery Gottfried, ME, P. Eng., Solid Waste Planning Engineer
 - Jessica Frank, Project Management Coordinator
- AVICC Representatives
 - Your name
 - Who you represent
 - Expectations for the workshop

Workshop Objectives

- Baseline for solid waste management practices for Vancouver Island and Coastal Communities
- Understanding of issues and challenges
- Identify opportunities for collaboration

Guiding Questions

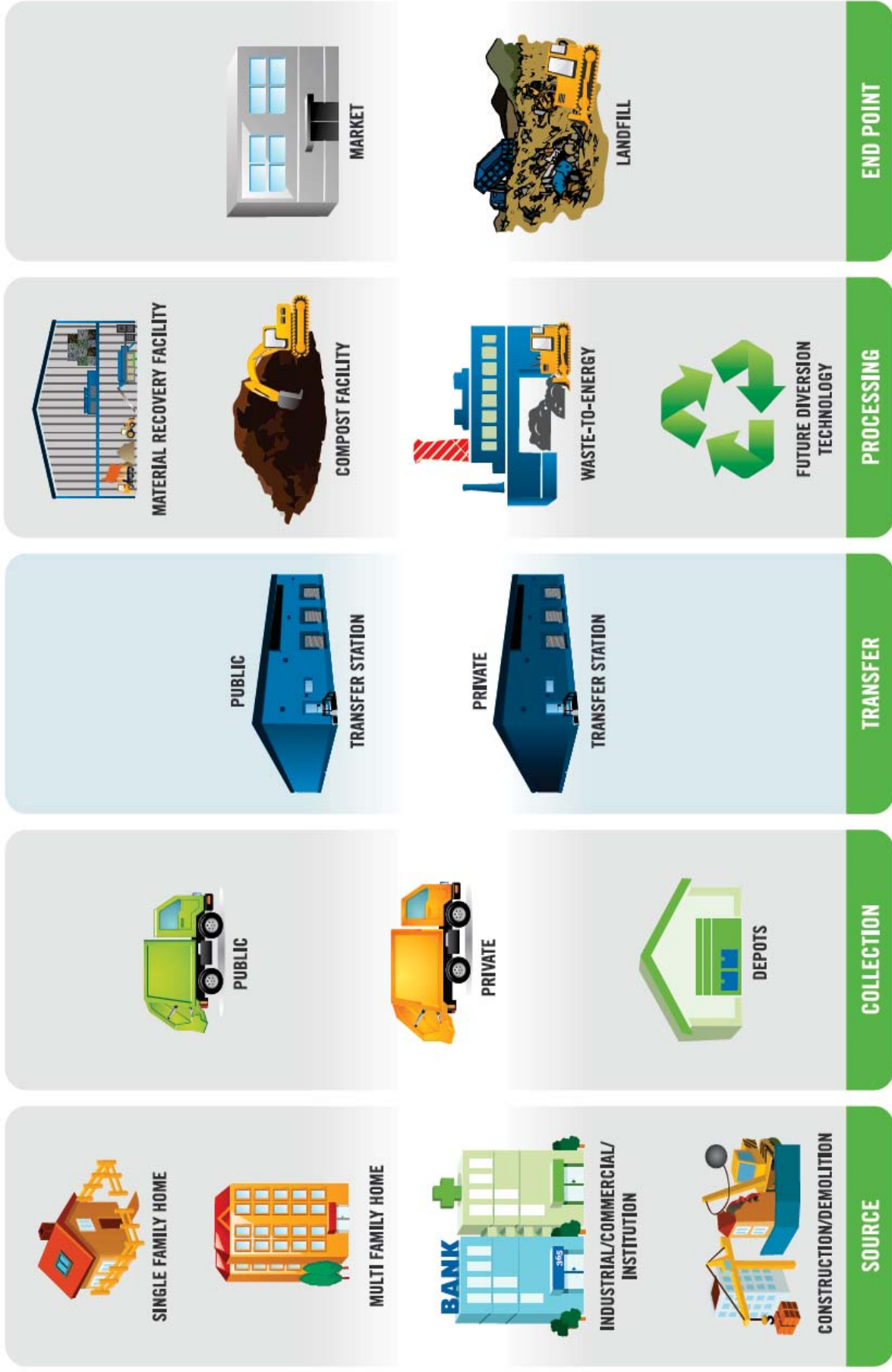
- What are the opportunities to advance solid waste management in the AVICC?
- What can we learn from each other?
- What could we do cooperatively?
- Who should lead?



Project Deliverable

- Report that summarizes workshop objectives
- Presentation in a “Consumer Report” style to help regional districts:
 - Understand solid waste system performance;
 - Identify areas for improvement;
 - Learn from others; and
 - Opportunities for collaboration.

SOLID WASTE MANAGEMENT - FLOW DIAGRAM

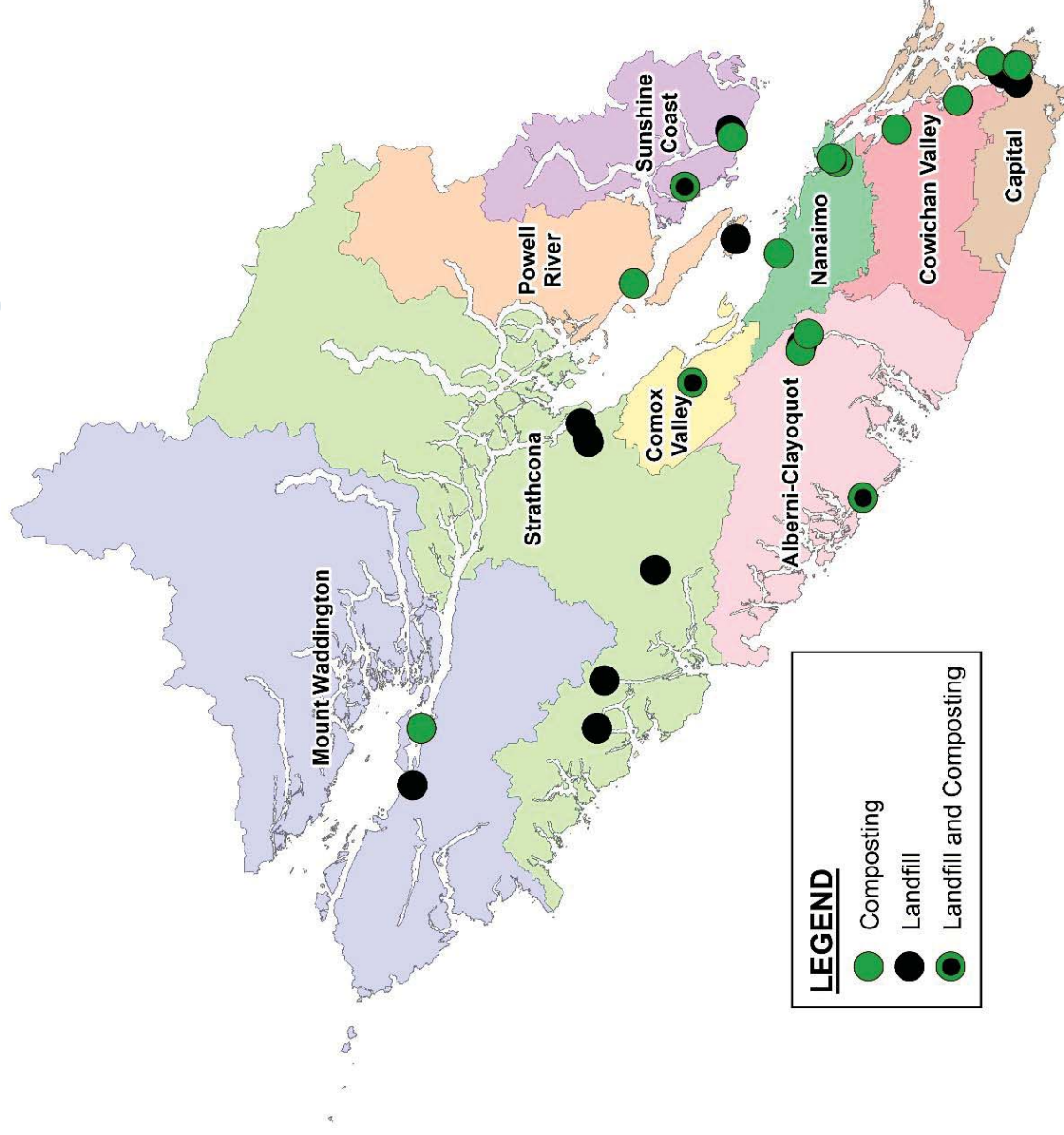


AVICC Overview - Disposal

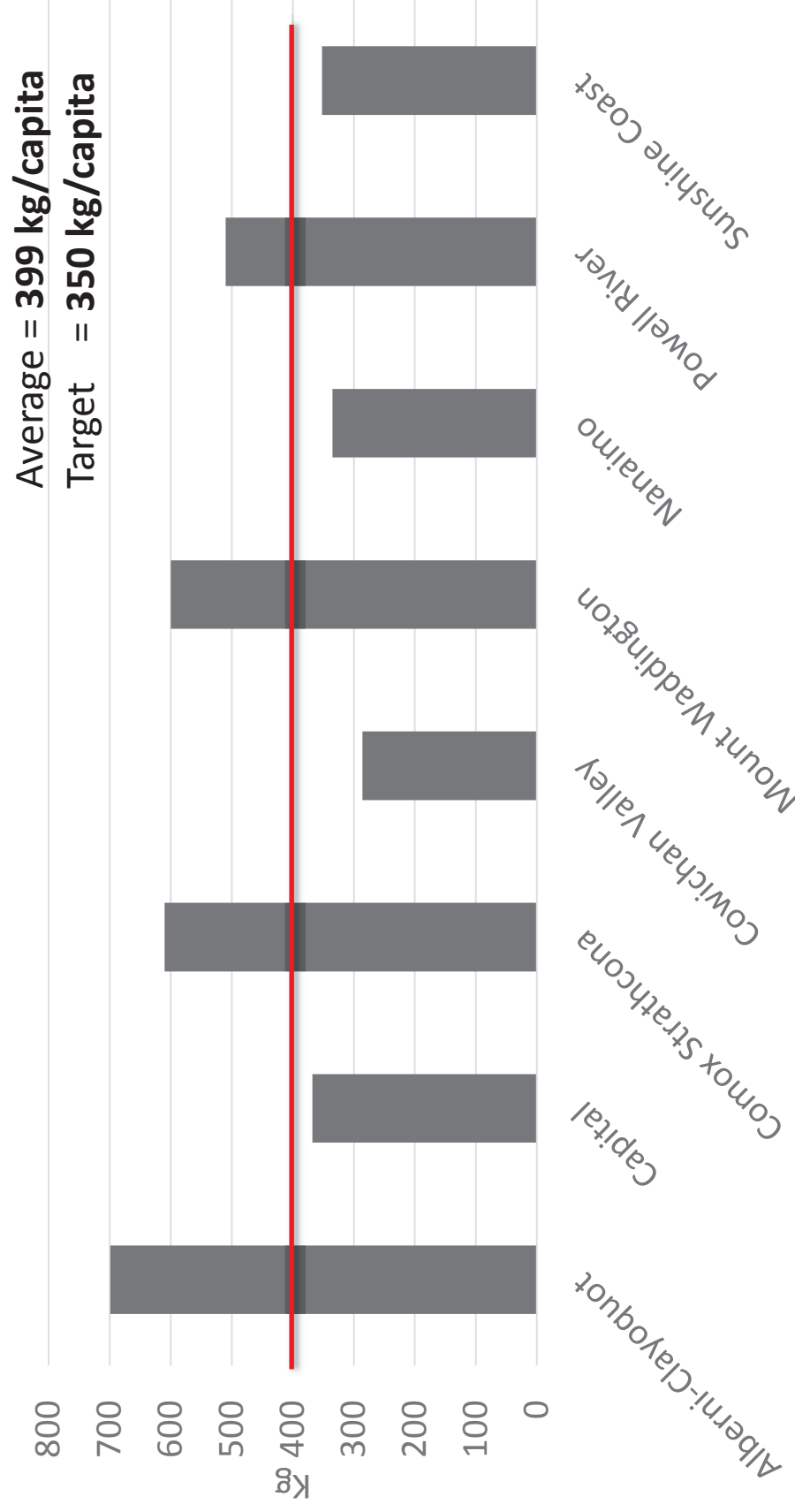
- Population: 800,000
- Population Distribution: 88% in 4 Regional Districts
- Disposal (2013): 320,000 tonnes
- Disposal per capita*: 399 kg/capita
 - Range: 236 to 699 kg/capita
 - BC Average (2012): 570 kg/capita
- Tipping fees (average): \$133/tonne
 - Range: \$95 to \$215 /tonne

* Construction & Demolition disposal figures not complete

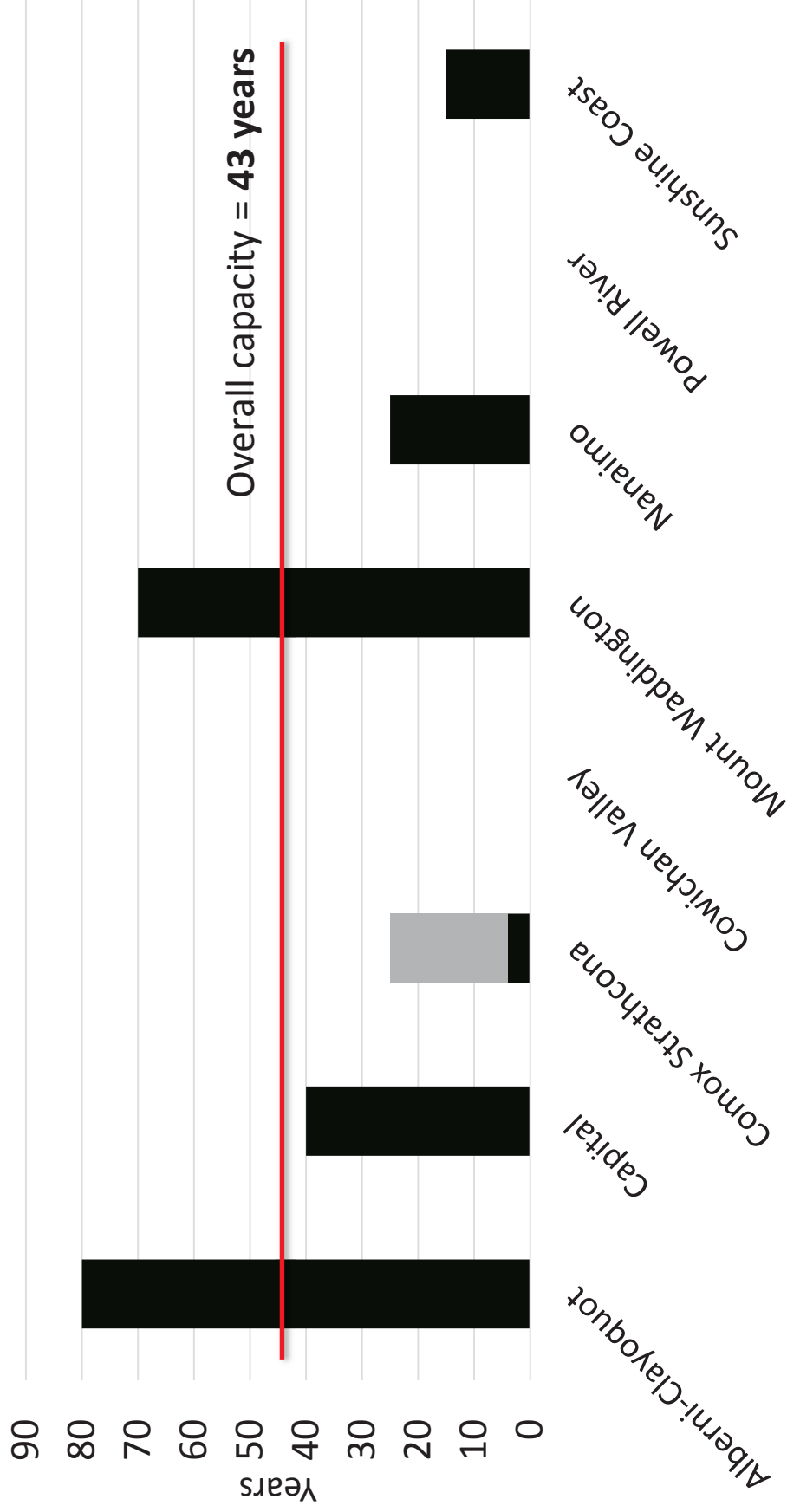
Landfill and Composting Operations



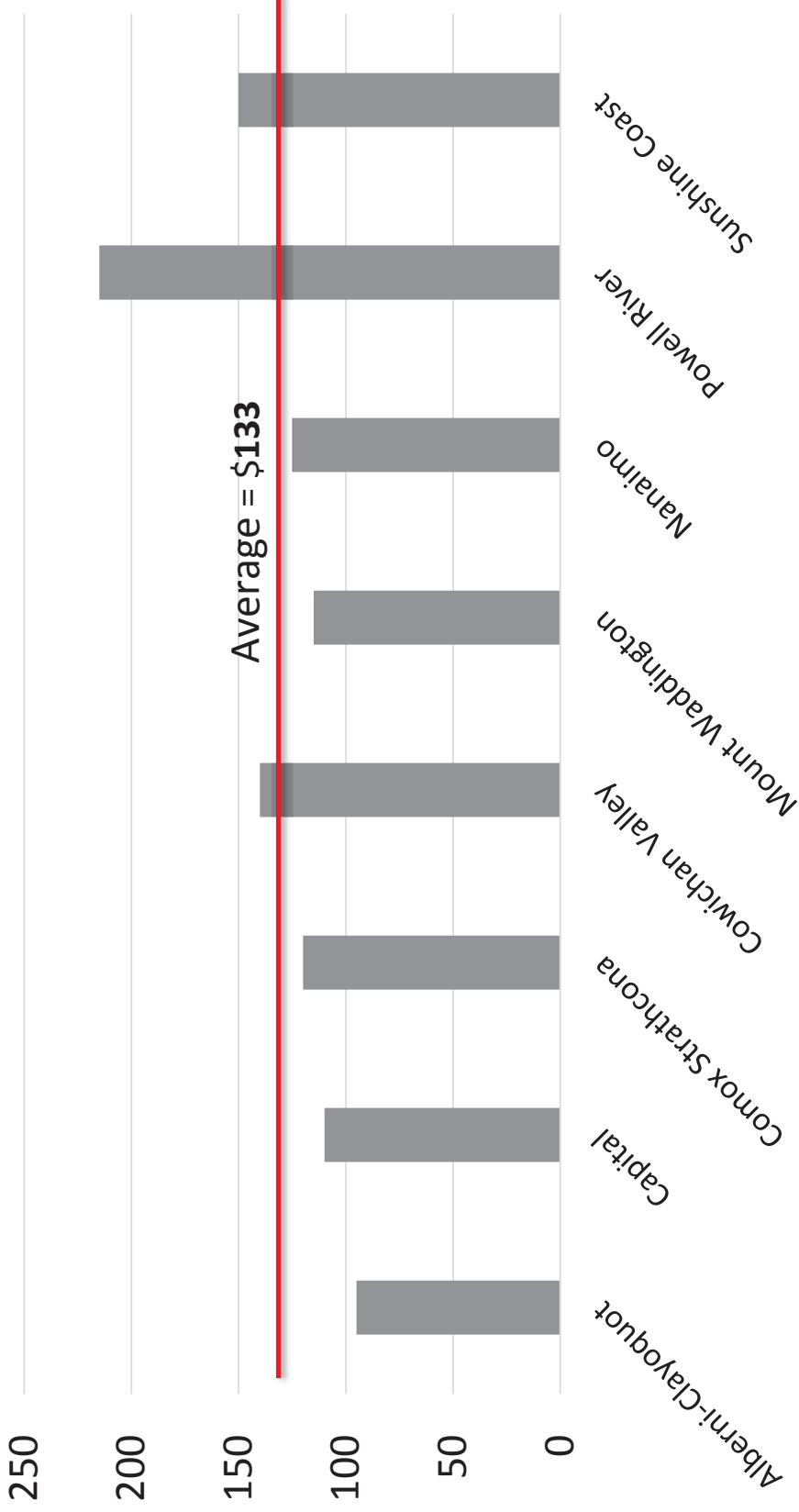
AVICC Overview – Disposal per Capita



AVICC Overview – Available Landfill Disposal Capacity



AVICC Overview – Garbage Tipping Fees

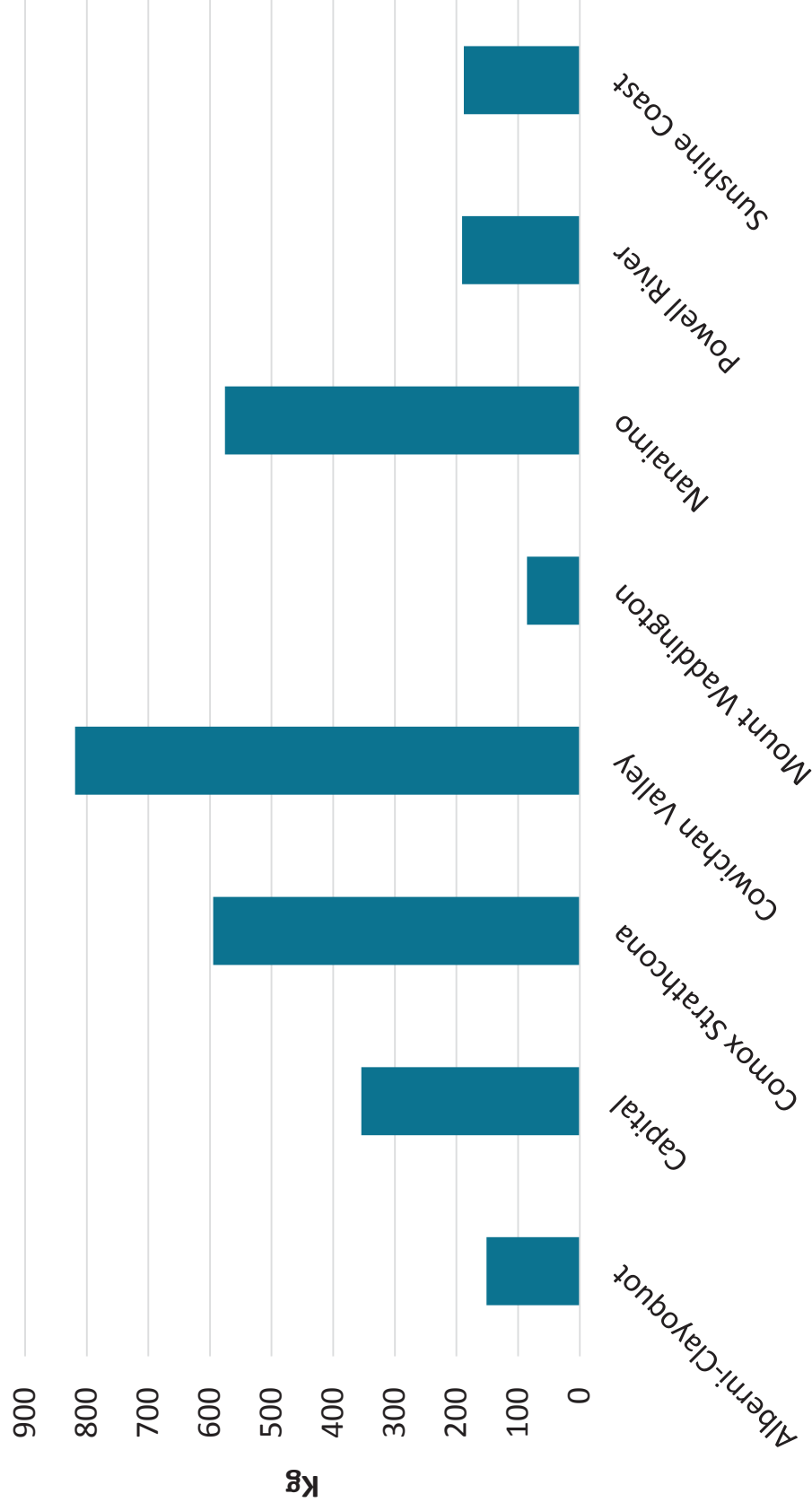


Total disposal cost (tipping fee x garbage tonnage) = **\$37.9 million**

AVICC Overview - Recycling

- Recycling:
 - More recycled than disposed (362,976 tonnes)
 - Almost all communities receives incentives from MMBC
- Recycled per capita (Average): 453 kg/capita
 - Range 86 to 595 kg/capita
- 7 Material Recycling Facilities in the AVICC area
 - CRD
 - CSWM
 - NRD

AVICC Overview – Recycling per capita



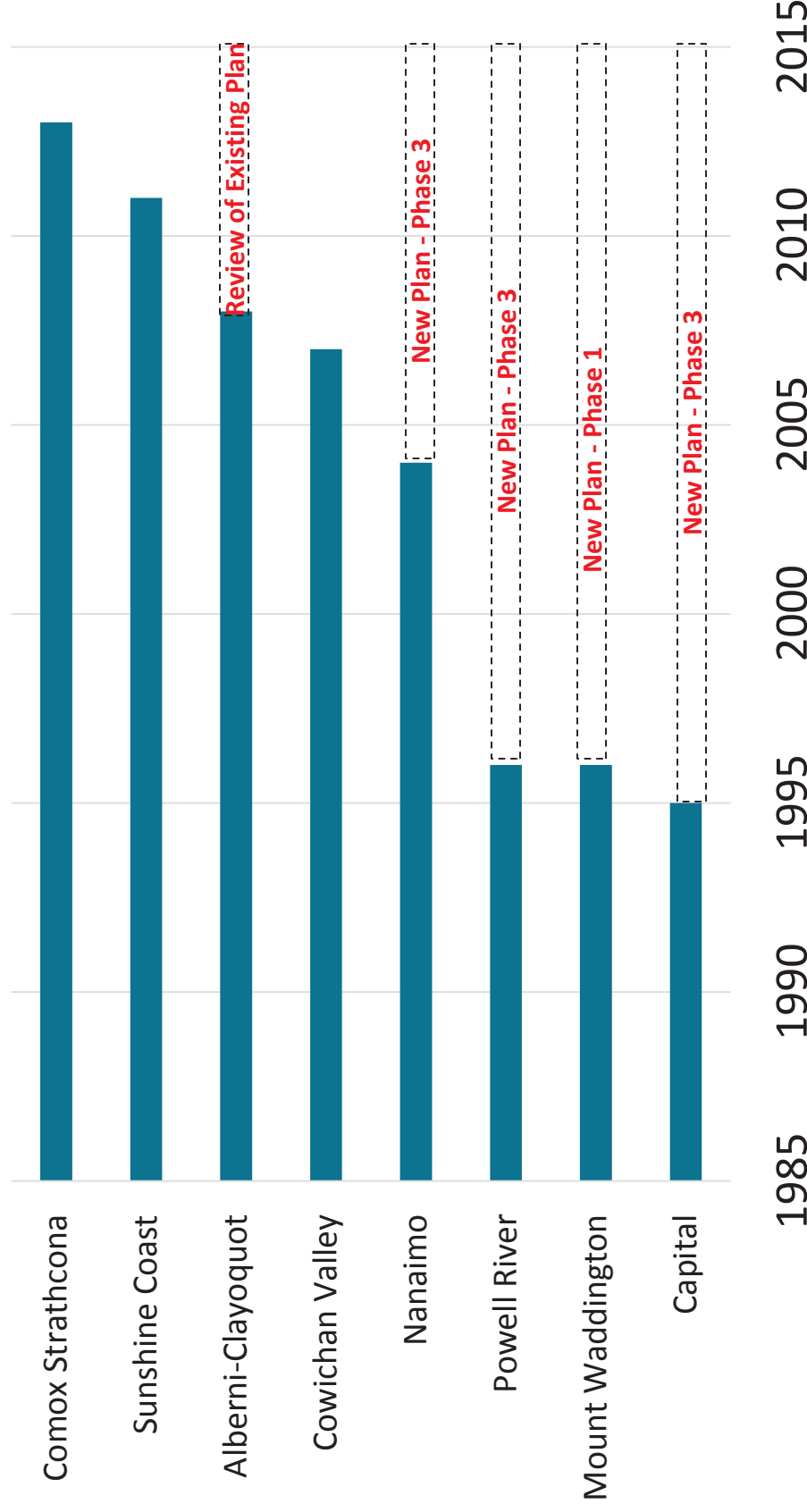
AVICC Overview - Organics

- **Ladysmith, BC** – one of the first to start collecting food waste from residents
- CowichanVRD, RDN and CRD are collecting residential food waste
- Food waste composting facilities in RDN, CowichanVRD, and Sunshine Coast
- Private yard waste composting facilities in all regional districts
- Communities across Canada are considering food waste diversion

Organics diversion total: 65,000 tonnes per year

Solid Waste Management Plan

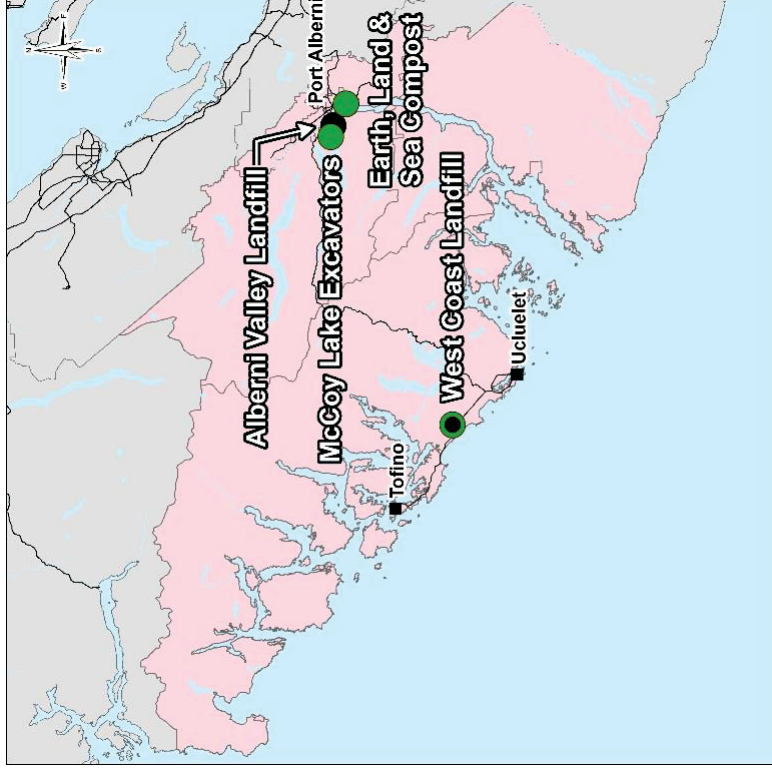
Year of Approval



Summary - Alberni Clayoquot

- SWMP Approved 2008
- Population 30,876
- Per Capita Disposal 699 kg/yr
- Diversion Rate 22%
- Tipping Fee \$95 /t
- Disposal Capacity 70 yrs

- Garbage 21,597 t
- Recycling 4,700 t
- Organics (yard) 409 t



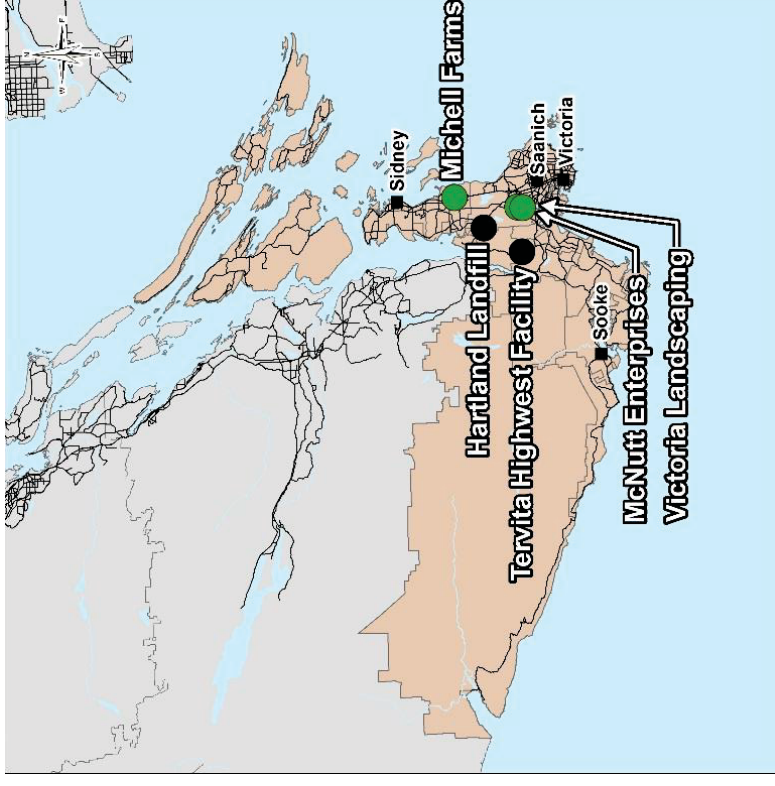
Summary - Alberni Clayoquot

- Priorities
 - Implementing the OCC disposal ban
 - Can achieve 50% diversion
 - Possible construction and wood waste ban
- Opportunities for collaboration
 - Finding facilities for materials that ACRD plans to ban from disposal e.g. organics and wood waste

Summary - Capital

- SWMP Approved 1995*
- Population 372,463
- Per Capita Disposal 368 kg/yr
- Diversion Rate 52%
- Tipping Fee \$110 /t
- Disposal Capacity 30 yrs

- Garbage 137,118 t
- Recycling 132,057 t
- Organics 15,219 t



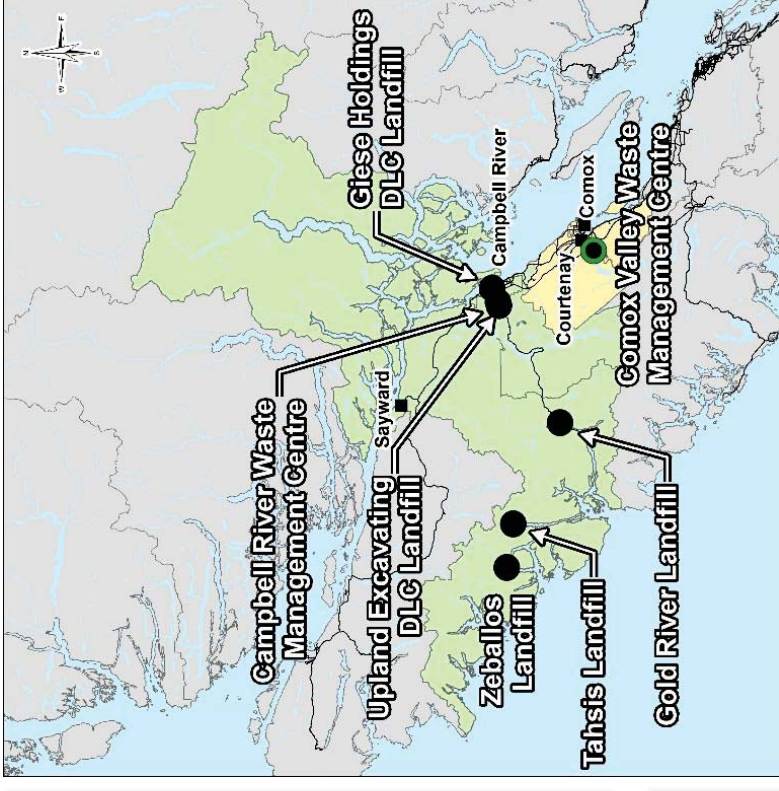
Summary - Capital

- Priorities
 - Revision of SWM Plan. Currently in Phase 3
 - Develop integrated food waste processing capacity in the region (currently exporting to Cowichan Valley and/or Harvest Power in Richmond)
 - Develop a sustainable financial model for SWM
- Opportunities for collaboration
 - Financial sustainability models
 - Shared landfill space - be part of the solution
 - Consolidation of tonnages for shared facility (WTE)

Summary – Comox Strathcona WM

- SWMP Approved 2013
- Population 104,950
- Per Capita Disposal 610 kg/yr
- Diversion Rate 51%
- Tipping Fee \$120 /t
- Disposal Capacity 4 yrs*

- Garbage 64,292 t
- Recycling 62,436 t
- Organics (yard) 4,690 t



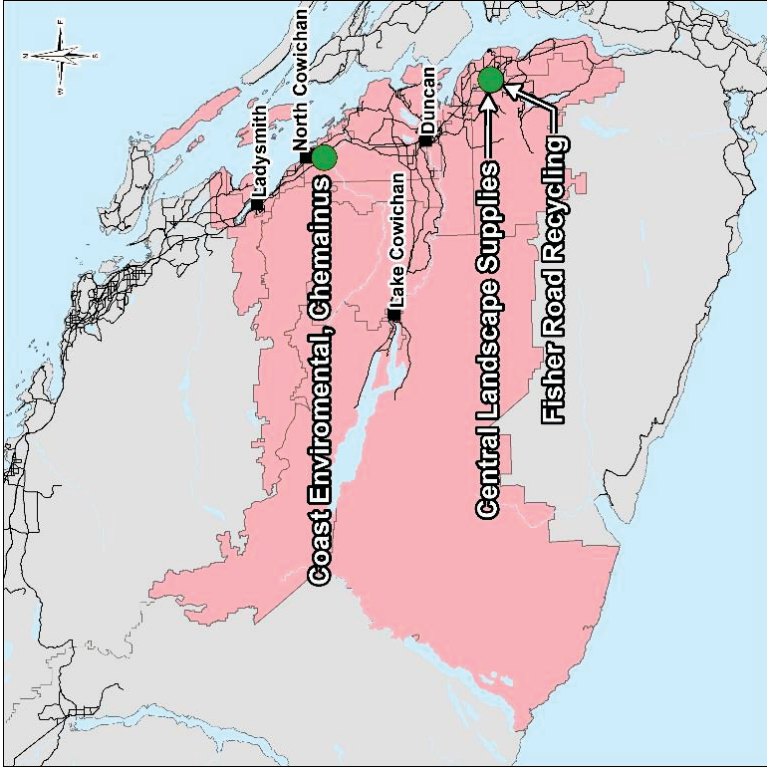
Summary – Comox Strathcona WM

- Priorities
 - Construct a new landfill by 2017
 - Build a regional composting facility in the next few years
 - Closure of Campbell River Landfill
 - Construct new Transfer Station to support the new landfill
 - Finding the funds to do all the work
- Opportunities for collaboration
 - Benefits of economies of scale from working together
 - Opportunity for a shared mega landfill (consolidated service and fee to include transportation)

Summary – Cowichan Valley

- SWMP Approved 1995*
- Population 81,704
- Per Capita Disposal 286 kg/yr
- Diversion Rate 74%
- Tipping Fee \$140 /t
- Disposal Capacity 0 yrs*

- Garbage 23,333 t
- Recycling 66,918 t
- Organics 11,356 t



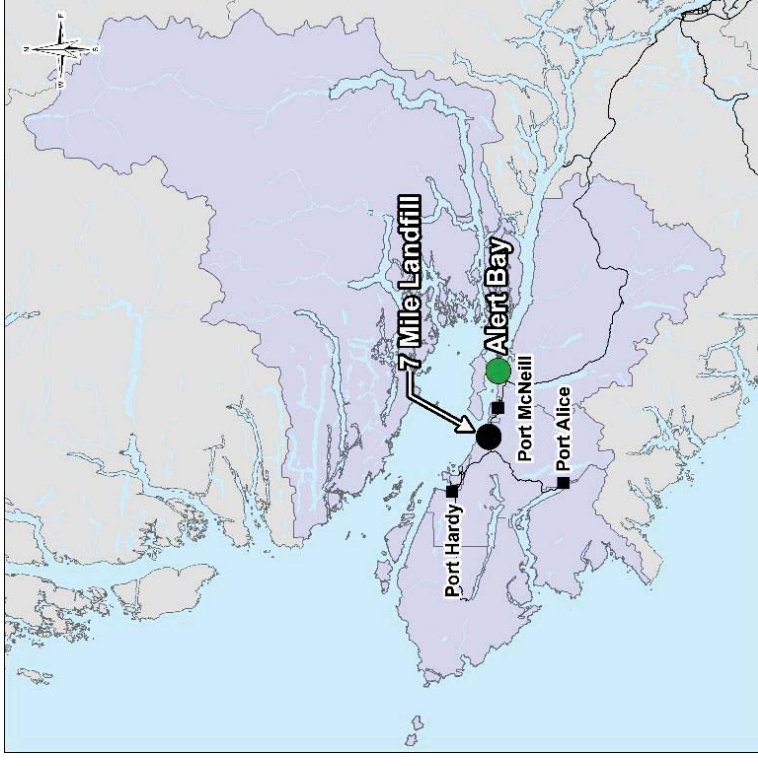
Summary – Cowichan Valley

- Priorities
 - Finding a local solution to garbage disposal
 - Composting – facilities have odour issues that require a technological resolution
- Opportunities for collaboration
 - Local solutions to garbage disposal e.g. collaboration for landfill or WTE facility
 - High tech organics processing solutions
 - Leakage – loss of solid waste to other jurisdictions

Summary – Mount Waddington

- SWMP Approved 1996*
- Population 11,523
- Per Capita Disposal 542 kg/yr
- Diversion Rate 32%
- Tipping Fee \$115 /t
- Disposal Capacity 70 yrs

- Garbage 6,243 t
- Recycling 986 t
- Organics (yard) 2,011 t



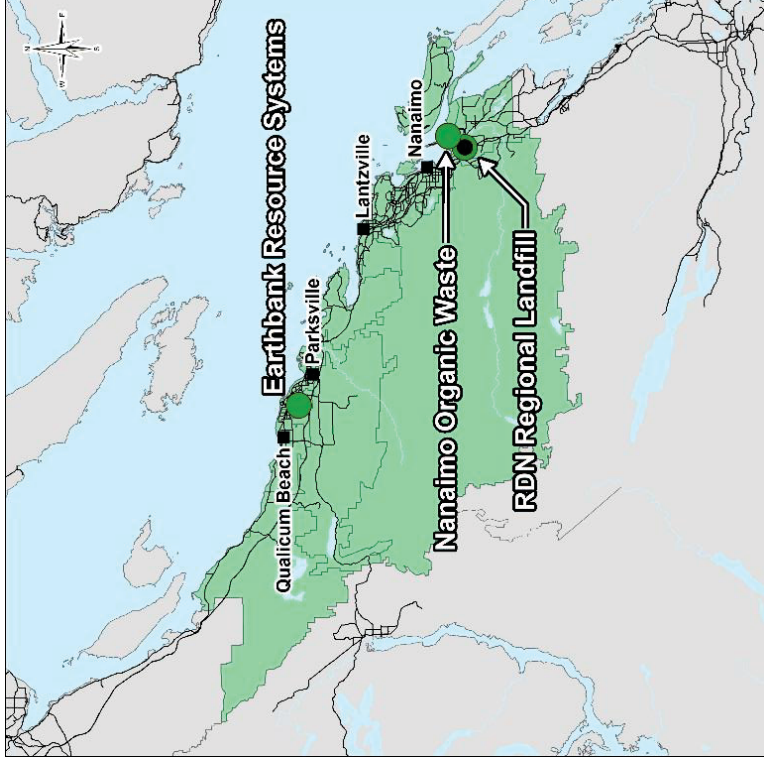
Summary – Mount Waddington

- Priorities
 - Need to provide services for small isolated communities – poor transport links, long distances
 - Cost benefit analysis of introducing organics collection
- Opportunities for collaboration
 - Primarily there to observe
 - Have invested in the landfill and are happy with program
 - Concern over impact of StewardsChoice – if undercuts MMBC, rural communities will suffer

Summary – Nanaimo

- SWMP Approved 2004*
- Population 150,040
- Per Capita Disposal 335 kg/yr
- Diversion Rate 68%
- Tipping Fee \$125 /t
- Disposal Capacity 25 yrs

- Garbage 52,237 t
- Recycling 86,603 t
- Organics 26,250 t



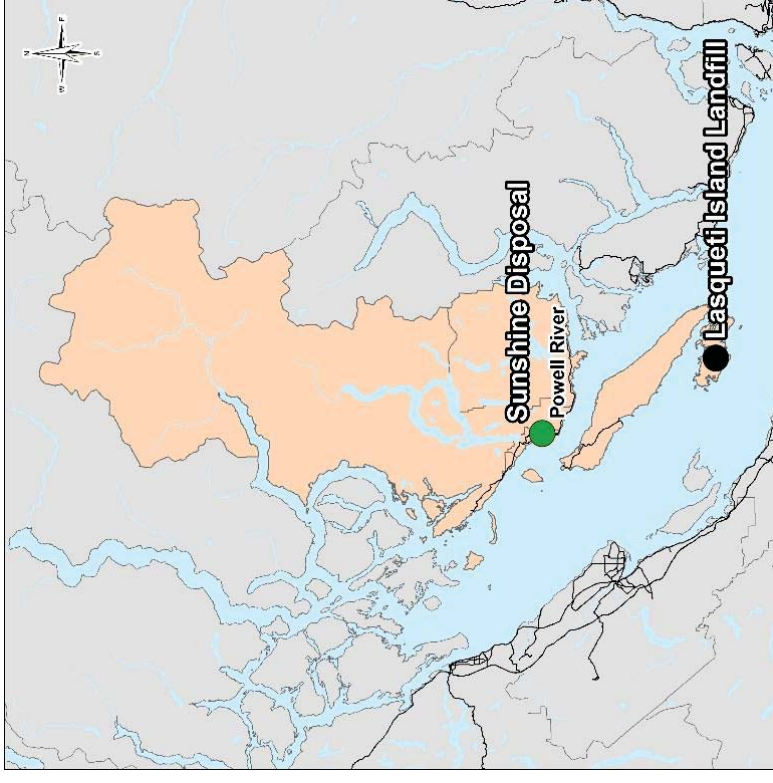
Summary – Nanaimo

- Priorities
 - SWM Plan review – underway
 - Managing waste export – could look at changing by-laws
 - Sustainable financing for the system – because of export tipping fees are not providing sufficient revenue
 - Advance diversion beyond 70%”, maybe using a MRF
 - Long term disposal options
- Opportunities for collaboration
 - Cooperative approach to marketing recyclables
 - Potential for a joint emerging technology

Summary – Powell River

- SWMP Approved 1996*
- Population 19,480
- Per Capita Disposal 236 kg/yr
- Diversion Rate 50%
- Tipping Fee \$215 /t
- Disposal Capacity 0 yrs

- Garbage 4,604 t
- Recycling 3,713 t
- Organics (yard) 902 t



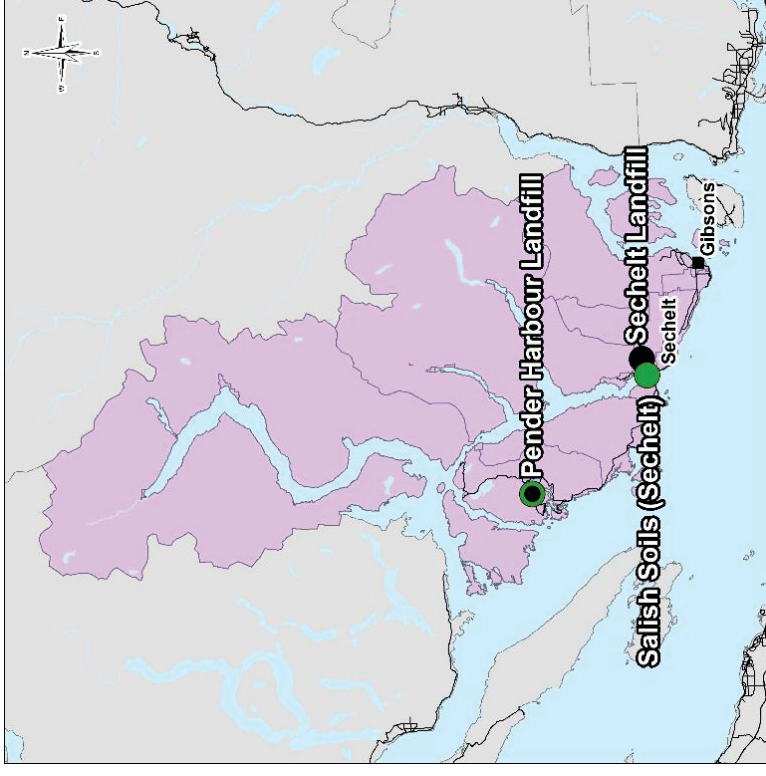
Summary – Powell River

- Priorities
 - Finalize SWM Plan
 - Implement organics diversion program
 - Expand EPR beyond existing programs – local opportunities
 - Potential resource recovery centre – applied for grant
- Opportunities for collaboration
 - Possibility of using another regions' landfill for disposal
 - Exploring all options for residuals (after max. diversion)

Summary – Sunshine Coast

- SWMP Approved 2011
- Population 29,584
- Per Capita Disposal 352 kg/yr
- Diversion Rate 50%
- Tipping Fee \$150 /t
- Disposal Capacity 15-20 yrs

- Garbage 10,229 t
- Recycling 5,563 t
- Organics 3,318 t



Summary – Sunshine Coast

- Priorities
 - 24 Initiatives in SWMP
 - Including curbside organics and EOW garbage collection
 - Closure of Pender Harbour Landfill and conversion to a TS
 - Reviewing priorities for post 2015
- Opportunities for collaboration
 - Developing financially sustainable SWM models
 - Information sharing
 - Service delivery for rural residents

Solid Waste Management Trends

Trends – Recycling

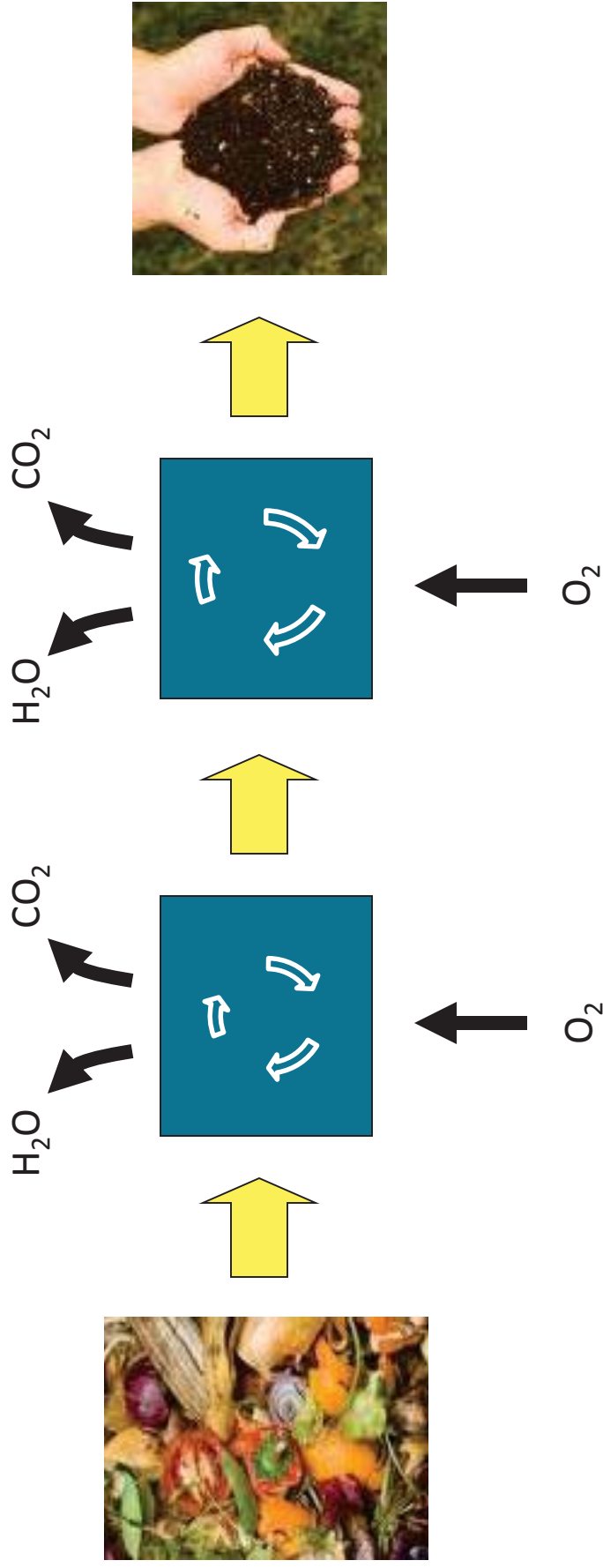
- Materials changing:
 - Less paper (mainly ONP)
 - Less glass
 - More plastic
- EPR support (MMBC)
 - Money good
 - Restrictions on what is collected
- Collection approach changing:
 - Glass being excluded
 - Single stream vs source separated

Trends – Organics Management

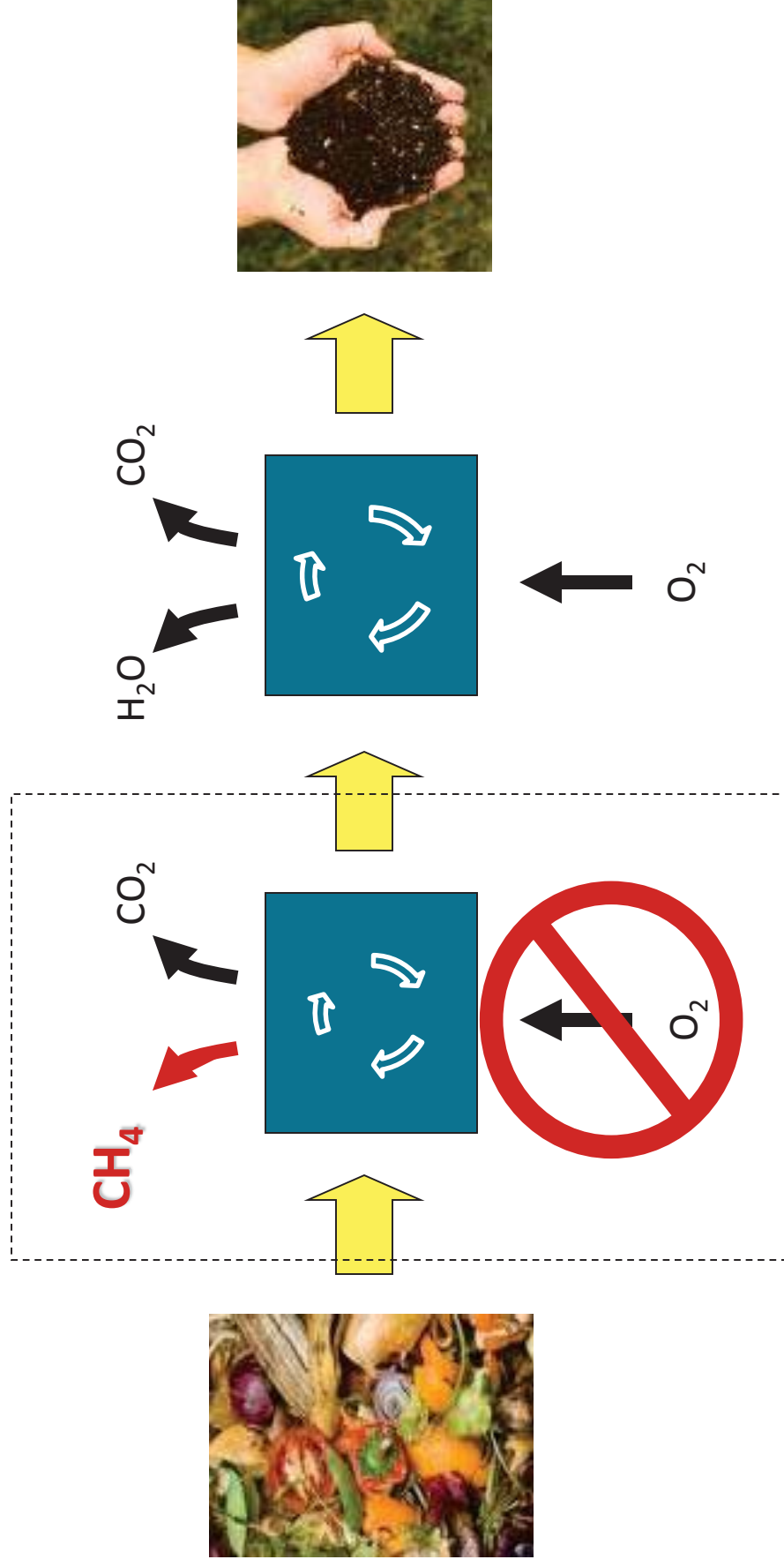
- Organics typically 40% of the disposal stream
- More and more communities diverting organics (food waste and soiled paper)
- Collection approaches include:
 - Food and yard waste (Metro Van municipalities)
 - Source separated food waste (CVRD, RDN and Toronto)



Composting Process



Anaerobic Process



Trends – Organics Management

- Odour management primary concern for facilities
- Bi-weekly garbage collection and weekly organic collection is resulting in 80% diversion of organics in the waste stream



Trends – Organics Management

- Many technologies available
- Anaerobic digestion becoming more popular
 - Composting still required to transform organic material into a quality soil amendment



Trends – Waste To Energy

- Not a disposal option
- Converts waste materials to energy
- Usually another process required after WTE process



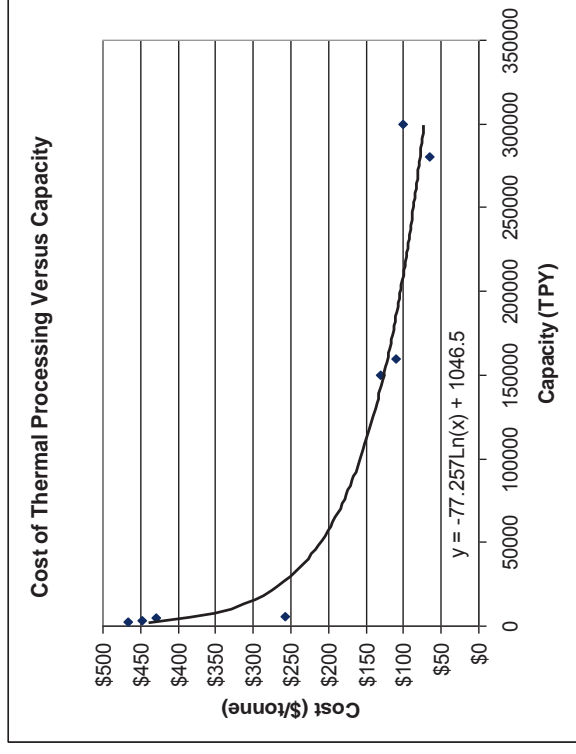
Trends – Waste To Energy (Thermal)

- Mass Burn – Metro Vancouver
- 280,000 tonnes/yr
- Generates high pressure steam that can be used for industrial processes or make electricity (25 MW)
- Mass reduction: 80%
- Volume reduction: >90%



Trends – Waste To Energy

- Issues:
 - Air emissions
 - Cost
 - Residuals (Fly ash & Bottom ash)
- Cost from Tri-Regional District Study:
 - Capital Cost = \$235M
 - Capacity = 200,000 t/yr



Trends – Waste To Energy

- Gasification – Edmonton
- Supplier: Enerkem
- Start Date: 2015
- Converts MSW into methanol, ethanol and chemical intermediates
- First full scale commercial facility



Trends – Waste To Energy

- Less air emissions (w.r.t. Mass Burn)
- Higher cost (Double)
- Cutting edge issues/delays
- Spent to Date:
 - Capital Cost > \$200M
 - Capacity = 100,000 t/yr



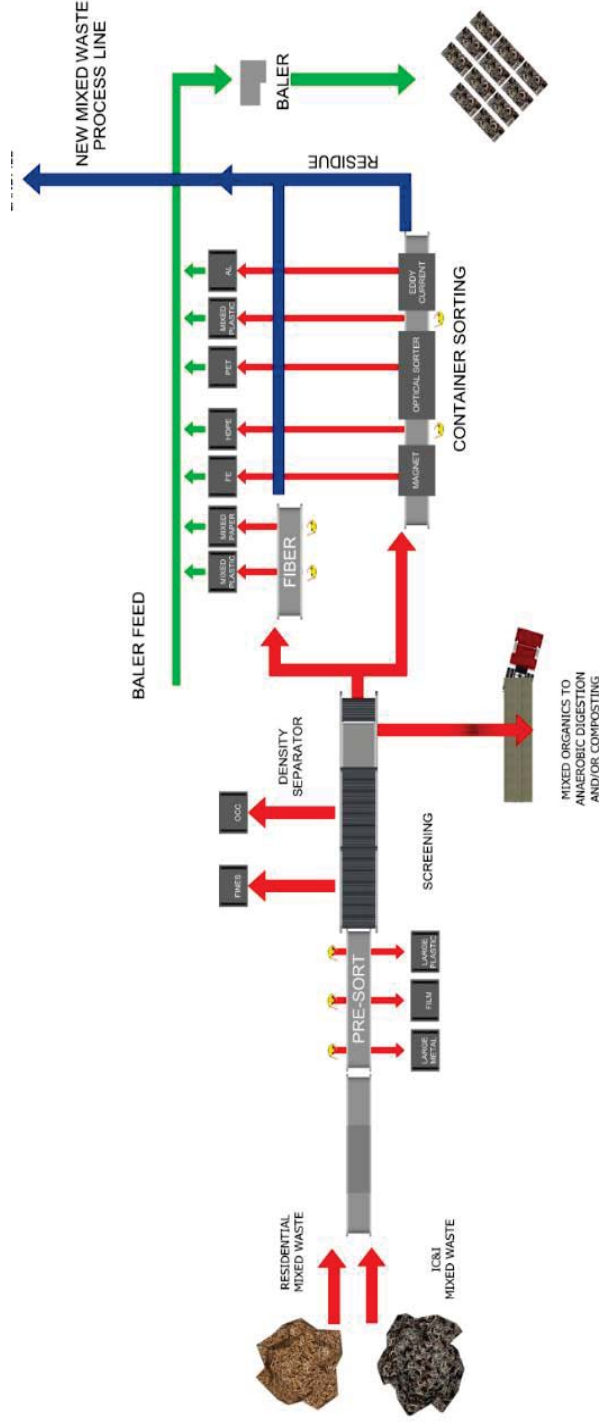
Trends – Mixed Waste/Dirty MRFs

- Controversial approach to recycling
- Parts of US cities use it as a primary form of recycling
 - Quality of recyclables tend to be low
 - Can achieve 50% diversion



Trends – Mixed Waste/Dirty MRFs

- Dirty MRF's can enhance recycling
 - Food waste diversion makes waste drier and easier to sort
 - Potentially more diversion can occur?



Trends – Refuse Derived Fuel

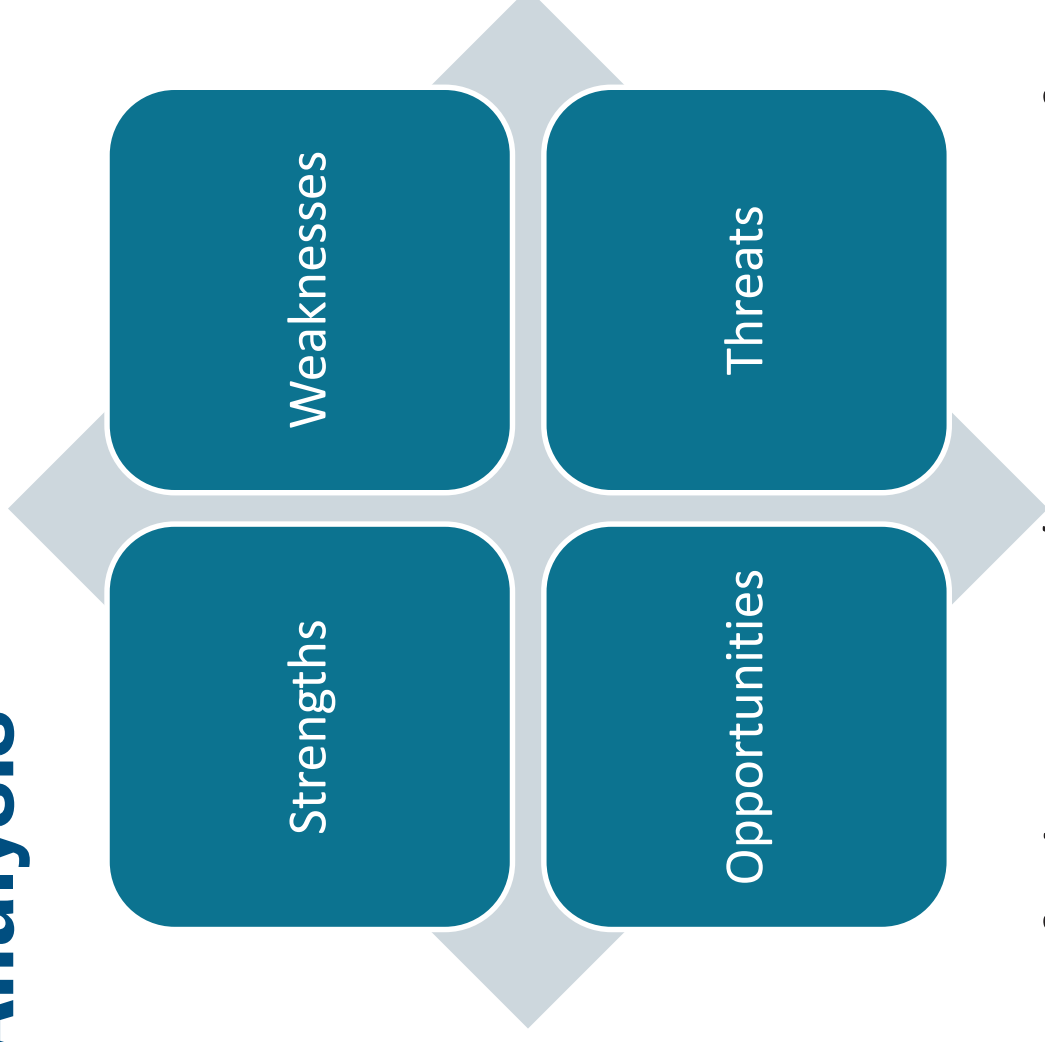
- RDF – product produced from dirty MRFs
- Typically used as a replacement for fossil fuels such as coal
- Likely users of RDF:
 - Cement Kilns
 - Coal Power Plants
 - Industrial processes



What does SWM look like in the AVICC in 50 or 100 years?



SWOT Analysis



- Exercise to find priorities (top 4-5 points for each area)

Strengths, Weaknesses, Opportunities & Threats (SWOT)

- Help share and compare ideas
- Bring a clearer common purpose and understand of factors for success
- Organize important factors linked to success and failure
- Provide linearity to decision making process

Strengths

- AVICC committee and collaboration
- Overall landfill capacity (40 years) allows time for long term planning
- Per capita waste generation rate is below the BC average
- High capture of residential recycling
- Private sector involvement in waste diversion

Opportunities

- EPR program collaborating and achieving economies of scale
- Increased organics collection to improve waste diversion
- Collaboration to achieve scale to solutions (processing organics, garbage, recyclables)
- Management of GHG from landfills

Weaknesses

- Construction and Demolition Debris (C&D) tracking and disposal
- Industrial, Commercial and Institutional (ICI) waste diversion and recycling
- Tipping fees that drive waste to lower cost options and leakage
- Tipping fees a key source of revenue for funding waste programs (lower disposal rates decrease revenue needed to operate the system)
- Service delivery for rural and remote residents

Threats

- Waste export may not be reliable due to boarder concerns, exchange rates
- Federal and provincial legislation changes (also an opportunity)
- Landfill capacity
- Stability and responsibility in EPR programs over time
- Solid waste system resiliency

Issues for Further Discussion in Break-Out Groups

- Items for discussion:
 - Issues
 - Challenges
 - Collaboration Opportunities

Break-Out Topics

- Five Groups
- Vote on following items for discussion:
 - Issues
 - Challenges
 - Collaboration Opportunities
- One or several topics to discuss
- Select a secretary and presenter in each group

Break-Out Guiding Questions

- What Will it Take to Achieve <x> Priority?
- What can we learn from each other?
- What could we do cooperatively?
- Who should lead / be involved?

Sample Identified Needs:

- Policies and Procedures
- Information and Communication
- Performance Standards and Guidelines
- Infrastructure

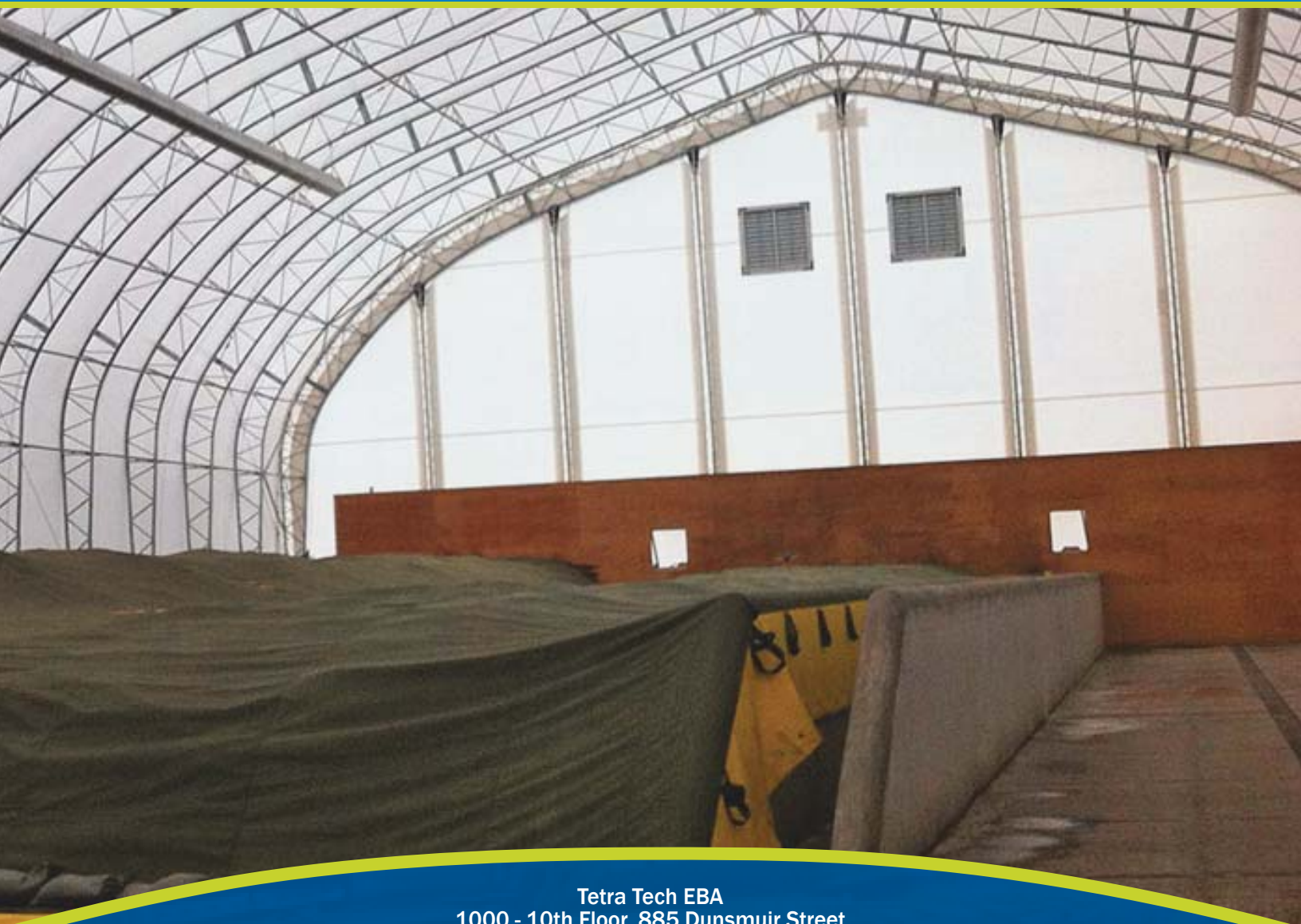
Next Steps

- Summary report of various programs
- Workshop results to be included



Comox Strathcona Waste Management

ASSOCIATION OF VANCOUVER ISLAND AND COASTAL COMMUNITIES: THE STATE OF WASTE MANAGEMENT



Tetra Tech EBA
1000 - 10th Floor, 885 Dunsmuir Street
Vancouver, BC V6C 1N5



TETRA TECH EBA

Association of Vancouver Island Coastal Communities - Special committee on solid waste management
Table of Regional District Contributions to October 15, 2015

	Staff time	Travel	Other costs	Total
Alberni Clayoquot				\$ -
Capital	\$ 2,500.00			\$ 2,500.00
Comox Valley	\$ 5,625.00	\$ 100.00		\$ 5,725.00
Cowichan Valley	\$ 1,950.00	\$ 225.00		\$ 2,175.00
Mount Waddington				\$ -
Powell River	\$ 1,494.50	\$ 748.80	\$ 1,114.94	\$ 3,358.24
Nanaimo	\$ 3,150.00	\$ 195.00	\$ 1,540.00	\$ 4,885.00
Strathcona	\$ 975.00	\$ 250.00		\$ 1,225.00
Sunshine Coast				\$ -
Comox Strathcona waste management (Tetra Tech report)			\$ 25,000.00	\$ 25,000.00
Totals	\$ 15,694.50	\$ 1,518.80	\$ 27,654.94	\$ 44,868.24

AVICC Long-Term Strategy for Solid Waste

Immediate Priorities:

Area of Work	Recommendation and/or Option Description	Key Driver	Status
AVICC partnership	Develop a vision and goals for the AVICC including: <ul style="list-style-type: none"> ▪ A communication strategy ▪ A unified education program 	<ul style="list-style-type: none"> ▪ Establish a platform for effective collaboration ▪ Develop clarity of all recycling efforts across the AVICC 	
	Continue to meet regularly – identify one solid waste challenge or opportunity to investigate at each meeting. <ul style="list-style-type: none"> ▪ Establish a 3 to 5 year process to maintain and update the 2015 baseline report information. 	<ul style="list-style-type: none"> ▪ Establish a platform for effective collaboration ▪ Build understanding of priorities 	
Advocacy	Advocate British Columbia MOE and industry groups to review and expand waste reduction and diversion policies.	<ul style="list-style-type: none"> ▪ Adopt and implement new EPR programs ▪ Refine and improve existing EPR programs 	

Short-Term Priorities:

Area of Work	Recommendation and/or Option Description	Key Driver	Status
Long-term disposal	Conduct an assessment to forecast future solid waste disposal demand of AVICC member populations in 20, 40, and 60 years' time.	<ul style="list-style-type: none"> ▪ Ensure accurate data and assumptions for making long-term investment decisions 	
Regulations and Enforcement	Ensure that disposal bans and bylaws are consistent across regions to reduce leakage across borders.		

Long-Term Priorities:

Area of Work	Recommendation and/or Option Description	Key Driver	Status
Organics waste reduction strategies	Review the mid and long-term business case for a WTE energy facility with all AVICC members giving waste as a feedstock.	<ul style="list-style-type: none">▪ Need to effectively manage residual waste	
	Develop a comprehensive AVICC organics strategy that engages the residential and ICI sectors. Build on existing organics systems in place in RDN and CoVRD.	<ul style="list-style-type: none">▪ Reduce per capita garbage generation▪ Increase diversion rate▪ Ensure regional processing capacity aligns with organics diversion strategies (e.g., curbside programs and disposal bans)	
	Conduct an assessment of organic feedstock and analysis of capacity needs along with a review of combined existing and planned organics infrastructure to ensure sufficient processing capacity is in place, either in the private and/or the public sector.		
	Standardize organics curbside collection to provide consistency for materials collected, including food scraps and food-soiled paper.		
Recycling collection and drop-off programs	Establish consistency in materials collected in curbside recycling programs and accepted at depots.	<ul style="list-style-type: none">▪ Increase diversion▪ Optimize services and program efficiency▪ Maximize participation	
	Implement common promotion and education programs throughout the AVICC. Focus on standardizing messaging, colours and system types.		
Financially sustainable model	Explore implications of establishing unified tipping fee: <ul style="list-style-type: none">▪ Impact on revenue;▪ Impact on tonnages disposed;▪ Impact on leakage; and▪ Impact on illegal dumping.	<ul style="list-style-type: none">▪ Establish a sustainable financial model	
	Assess leakage and export of waste by private haulers and private landfills. Explore opportunities for government control of waste collection systems (flow control/franchising).		

Long-Term Priorities (continued):

Area of Work	Recommendation and/or Option Description	Key Driver	Status
ICI sector strategy	Engage the ICI sector in constructive dialogue to identify opportunities for collaboration to address waste diversion issues. Establish an initial network of ICI contacts and use to educate and promote goals (e.g., organics and other disposal bans).	<ul style="list-style-type: none"> ▪ Increase diversion 	
C&D sector strategy	Track all C&D waste generated including what is disposed in the region and what is exported.	<ul style="list-style-type: none"> ▪ Increase diversion ▪ Increase longevity of existing landfill capacity 	
	Expand and add areas to existing landfills to sort and separate recyclable C&D materials while other materials are stockpiled to be used for cover at the landfill or shipped out of region to recycling or beneficial reuse or energy recovery.		
	Develop permit process that requires contractors to assess waste materials generated and develop a diversion strategy, and provide contractors with tools to support them.		
	Ensure all regional districts have requirements that all C&D waste must be disposed of at a licensed facility, and have similar rules regarding the requirement of disposal and diversion.		
Regulations and enforcement	Ensure that accurate and consistent metrics and statistics are taken for all materials (MSW, C&D, Recycling, Organics, etc.) and receiving facilities (including private) are documented in terms of meeting standards and providing accurate data.	<ul style="list-style-type: none"> ▪ Track material generation and movement ▪ Increase diversion ▪ Ensure program costs are efficient 	
	Develop a consistent enforcement strategy to support regulations.		
	Develop standards for odour levels for organic processing		