



Sunshine Coast Regional District

Solid Waste Management Plan – The Foundation for Zero Waste Plan – Amendment No. 1

Developed By:

SCRD Solid Waste Management Plan Update Working Group

Technical Support Provided By:

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SCRD Infrastructure Services Department

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Executive Summary

In British Columbia, Regional Districts are mandated by the Provincial *Environmental Management Act* to develop Solid Waste Management Plans that define how each regional district plans to manage its solid wastes, including waste diversion and disposal activities. These plans are updated on a regular basis so that they reflect current needs, local priorities, market conditions, technologies and regulations.

The Sunshine Coast Regional District (SCRD) Board initiated a formal review process in May 2009 to develop a new Regional Solid Waste Management Plan (Plan). The existing Plan was approved in 2005, and has been used as a framework for planning and managing solid waste in the region. The Strategic direction for the new Plan is to address the following:

- **Zero Waste** – establish a strong foundation that supports the Regional District's achievements and commitment to develop a solid waste management system that works towards Zero Waste. Key objectives for this plan are to maximize the reduction of solid waste disposal in the SCRD landfill and to enhance and improve reuse, recycling and recovery of resources across the region.
- **Social and Environmental Sustainability** – establish a state in which future needs of the present generation are met without compromising the ability of future generations to meet their own needs;
- **Financial Sustainability** – is the degree to which a government can maintain its existing financial obligations both in respect of its service commitments to the public and financial commitments to creditors, employees and others without increasing the debt or tax burden relative to the economy in which it operates¹; and
- **Greenhouse Gas Reduction** – integrate solid waste management planning and implementation activities with the Regional District's *Community Energy and Emissions Plan* (CEEP) which is committed to reducing greenhouse gas (GHG) emissions in the region.

This new Solid Waste Management Plan (the Plan) includes the adoption of the **zero waste principle**, and thus combines the provincially mandated need to plan for the management of waste from our society, with moving forward the agenda of reducing and reusing the generation of discards to the extent that this can be achieved at the regional level. The Sunshine Coast stands out as one of the few regional districts in the Province of BC that has met the Provincial target of 50% waste diversion.

The ultimate objective of this Plan is to position the Sunshine Coast Regional District as a leader in the field of Zero Waste, to outline a roadmap of practical measures toward that goal, and to achieve the highest degree of environmental and human health protection. This Solid Waste Management Plan is also referred to as the **Sunshine Coast Regional District's Zero Waste Management Plan (ZWMP)**.

The Plan review process was based on the *Guide for the Preparation of Regional Solid Waste Management Plans by Regional Districts*, prepared by the BC Ministry of Environment. Critical elements of the plan review process are to ensure that there are adequate provisions for stakeholder involvement and public consultation throughout the process. The Regional District established a multi-stakeholder Working Group whose membership combined technical and public representation throughout the region. The Working Group reviewed all waste planning work and accepted the options that are being proposed to improve waste management services on the Sunshine Coast.

¹ Source: SCRD Public Sector Accounting Board Statement of Recommended Practice; Indicators of Financial Condition; SORP 4; May 2009

Guiding principles for this plan that were endorsed by the Working Group are:

1. *“Provide clear information on strategies and programs to reduce solid waste, according to the hierarchy of reduce, reuse, recycle, recovery, and residual management”*
2. *Zero Waste - is a goal that is both pragmatic and visionary, to guide people to emulate sustainable natural cycles, where all discarded materials are resources for others to use. Zero Waste means designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that may be a threat to planetary, human, animal or plant health.” (definition from the Zero Waste International Alliance)*
3. *The system must be financially affordable, and provide sufficient long-term disposal capacity.*
4. *Greenhouse Gas reduction must be integral part of the Plan implementation.*

The Plan Goals that elaborate on the Guiding Principles are:

- The solid waste management system must be environmentally sound. Ultimately, the SCRD will strive to achieve Zero Waste.
- The Zero Waste Management Plan must be consistent with the goals of the Community Energy and Emissions Plan.
- The system must be financially affordable, and provide sufficient long-term disposal capacity. The SCRD will strive to divert as much waste as possible from disposal, within the available budget.
- The programs selected for the Plan should be financially self-sustaining, based on the principle of “user pay”.
- The system must be responsive and flexible to the needs of the residents. Although this plan provides the direction for the next five years and provides strategic planning for the next 20 years, it must incorporate elements of flexibility that will allow it to respond to changing priorities and goals.
- The impact of solid waste management on greenhouse gas reduction goals for the province and the SCRD, should be considered and integrated into the Plan.

In 2009, a total of 13,045 tonnes of residential and commercial waste was disposed at SCRD landfills (Sechelt and Pender Harbour). Approximately 47% of the waste disposed comes from residential sources and 48% comes from commercial and institutional sources. The remainder of the waste disposed (5%) comes from construction and demolition (C&D) activity. This C&D waste is only a fraction of what is generated in the region. Some is utilized as a refuse derived fuel at a local pulp and paper mill and some is exported out of the region to be processed for recovery or disposed at private landfills. The amount of material that is exported out of the regional district is currently unavailable and makes calculating actual diversion and disposal numbers difficult. Similarly, it is not known how much is recycled by the commercial sector since records of this activity are not being reported to the SCRD.

Overall, the 2005 Solid Waste Management Plan has achieved a formidable 50% diversion, based on the available numbers. This was achieved through a combination of education, recycling, composting and product stewardship programs. The proposed Zero Waste Management Plan will increase this diversion number substantially.

The Zero Waste Management Plan will follow the waste management hierarchy, as used by the BC Ministry of Environment, and as supported by the Recycling Council of BC.



The following are major initiatives that are proposed for the new Regional Zero Waste Management Plan.

Reduce Initiatives

1. Incentive Based Tipping Fees (Raise the fees for items that can and should be recycled).
2. Material Disposal Bans (Consider banning materials from disposal where recycling options exist within a reasonable proximity).
3. Residential Waste Reduction Education (Education for residents).
4. Grass Cycling and Backyard Composting education program.
5. Waste Control System (Obtain figures from the private sector on recyclables and waste leaving the region).
6. Land Use Policies to Support Solid Waste Management Infrastructure (Make it easier for proponents to site compost plants, anaerobic digestion facilities and recycling operations).
7. Evaluation Process for Recycling Opportunities (Provide education and information on new technologies).
8. C&D Waste Diversion (Education for the construction industry).
9. Business Waste Diversion (Education for businesses).

Reuse Initiatives

10. Community Reuse & Repair Centres (Support through education and advertising).
11. Reuse Facilities at Landfills (Share Sheds).
12. Building Material Reuse Facilities (Education and promotion).
13. Deconstruction and Salvaging (Education and promotion).
14. Reuse Education (Using community based social marketing strategies).
15. Community Swap Day Pilot Program (One time trial of large swap initiative).

Recycle and Diversion Initiatives

16. Enhanced Drop-Off/Resource Recovery Facilities (Install and operate drop off depots in the major centres of Pender Harbour, Gibsons and Sechelt).

17. Curbside Collection of Recyclables (pilot collection services for recyclables and assess feasibility of expansion to households receiving waste pick-up).
18. Curbside Collection of Food Scraps (pilot collection services for food scraps and assess feasibility of expansion to households receiving waste pickup).
19. Processing Capacity for Food Scraps and Yard Waste (Contracts for the processing of regionally collected organic waste).
20. Extended Producer Responsibility (EPR) Management Programs (coordination with EPR stewards to work jointly where appropriate).

Residual Management

21. Sechelt Landfill Upgrades (bringing the landfill to a higher environmental standard, and capturing landfill gas).
22. Pender Harbour Landfill Upgrades (conversion of the landfill to a transfer station, while continuing to offer resource recovery services).
23. Garbage Collection (“Every-Other-Week” garbage collection service for residential waste).
24. Illegal Dumping Program (enhanced clean-up programs and education).

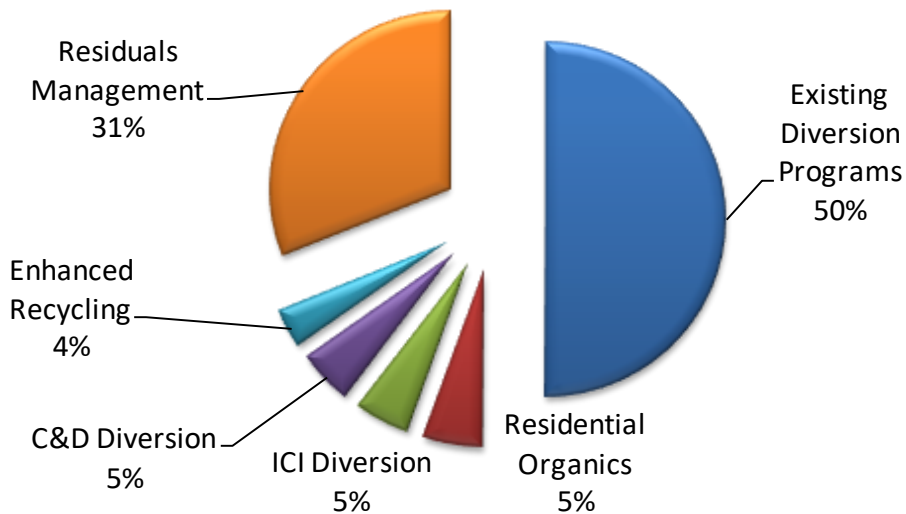
Waste Diversion is expected to increase from 50% at the beginning of the plan to as much as 69% within the five year Plan timeframe. An example of diversion progress is shown in the table below, however actual diversion progress will depend on the timing for implementation of Zero Waste initiatives. Where a range is provided, the low end of the range assumes curbside recycling and food scraps collection is implemented in pilot collection areas only, whereas the high end of the range assumes that, following a successful pilot, curbside collection services are expanded to all households receiving garbage collection services.

Year	Diversion (%)
2010	50%
2011	50%
2012	52%
2013	56 - 60%
2014	60 - 64%
2015	63 - 67%
2016	65 - 69%

The figures below illustrate how the Zero Waste initiatives contribute to reducing disposal in the SCRD.

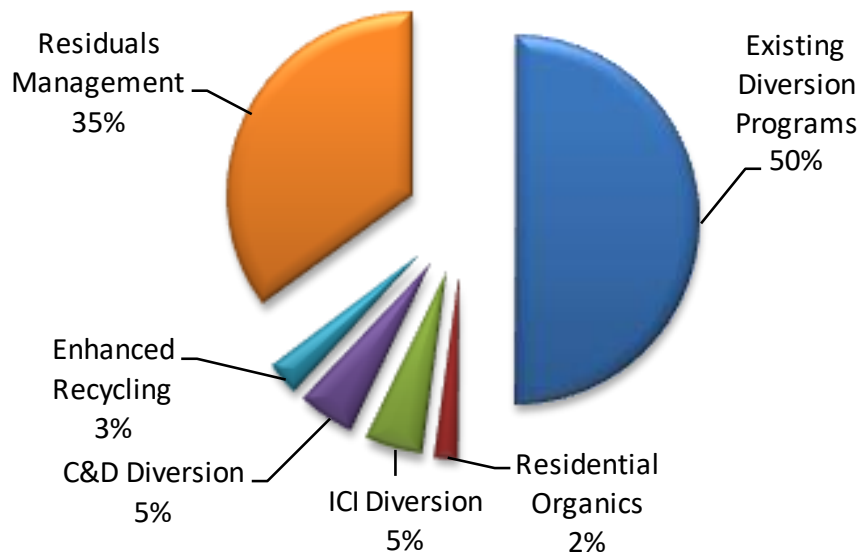
Resource vs. Disposal

(assuming curbside collection of recycling and food scraps expanded to all garbage collection customers)

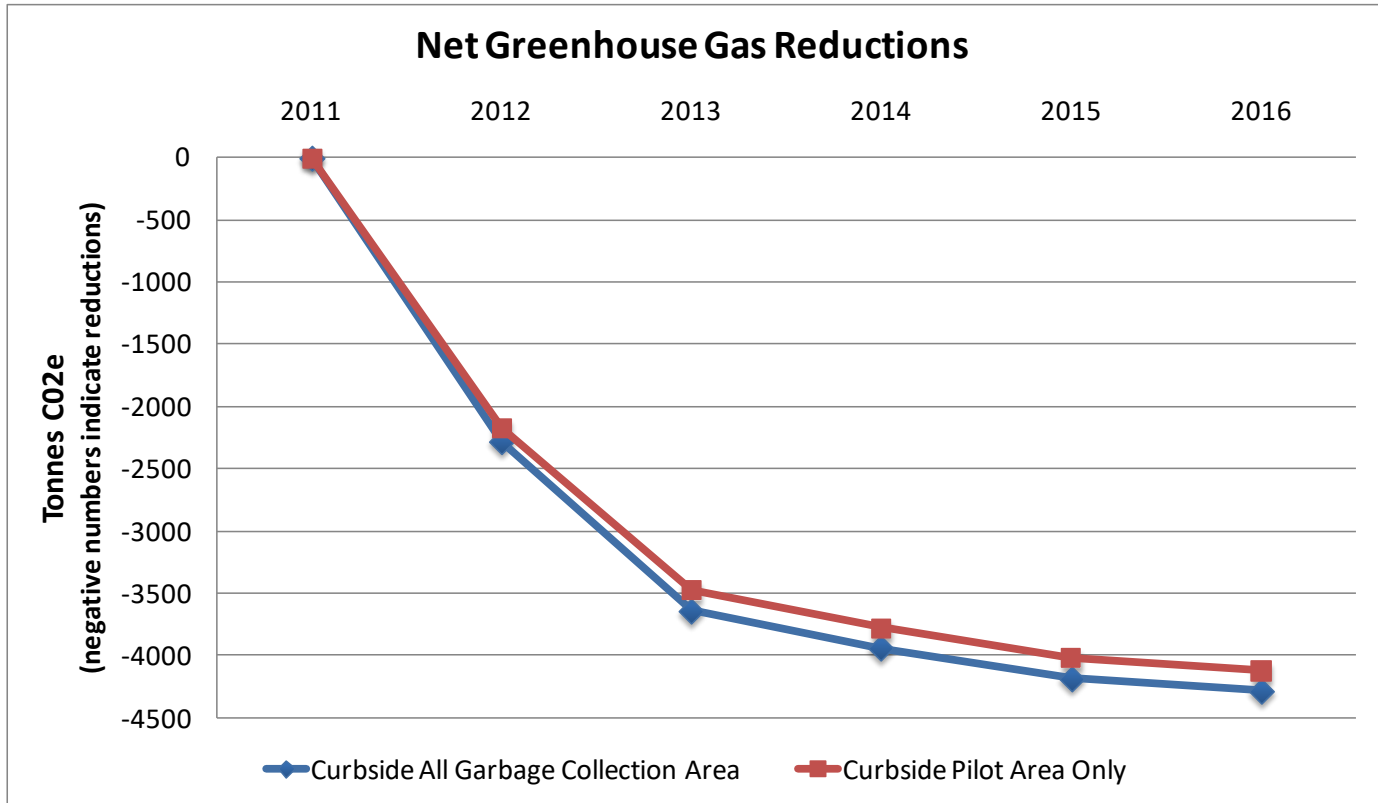


Resources vs. Disposal

(assuming curbside recycling and food scraps collection in pilot areas only)



In the figure below, the decrease in net GHG emissions is demonstrated as programs are put into place. Major contributors of GHG reduction are organics management programs and landfill upgrades that include landfill gas capture.



Cost recovery mechanisms that will be utilized to fund the Plan's implementation include:

- *Tipping fees* – To the extent possible, tipping fees and differential/incentive tipping fees will be used to cover the cost of landfill operations, upgrades, closure and future capacity planning.
- *User fees* – Where the programs provide tangible convenience to the user of the system, such as curbside collection of recyclables, organics and residuals, this cost will be recovered through user fees.
- *Taxation* – The principle of this ZWMP is user-pay, so taxation will be used where appropriate but not as a preferred option in all cases. Wherever possible, other forms of financing will be explored.
- *Provincial and federal grants* – Programs, such as the Green Municipal Fund, will be evaluated for their ability to contribute to all of the initiatives that will be undertaken as part of this plan, and applications submitted accordingly.
- Revenues from the sale of recyclable materials.
- Stewardship fees.

The Plan Monitoring Advisory Committee (PMAC) will continue to review Plan implementation activities. The composition of the PMAC will strive for a broad representation of interests in the region, and report annually on the effectiveness of the Zero Waste Management Plan initiatives with recommendations for improvement.

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1. Zero Waste Management Plan

“Zero Waste is a design principle for the 21st Century. It includes recycling but goes beyond recycling by taking a system-wide approach to the vast flow of resources and waste through human society” (GRRN)².

This solid waste management plan includes the adoption of the zero waste principle, and thus combines the conventional, provincially mandated need to plan for the management of discards and waste from our society, while moving forward the agenda of reducing and reusing the generation of discards to the extent that this can be achieved at the regional level. The Sunshine Coast stands out as one of the few regional districts in the Province of BC that has met the Provincial target of 50% waste diversion.

The ultimate objective of this Plan is to position the Sunshine Coast, BC as a leader in the field of Zero Waste, to outline a roadmap of practical measures toward that goal, and to achieve the highest degree of environmental and human health protection.

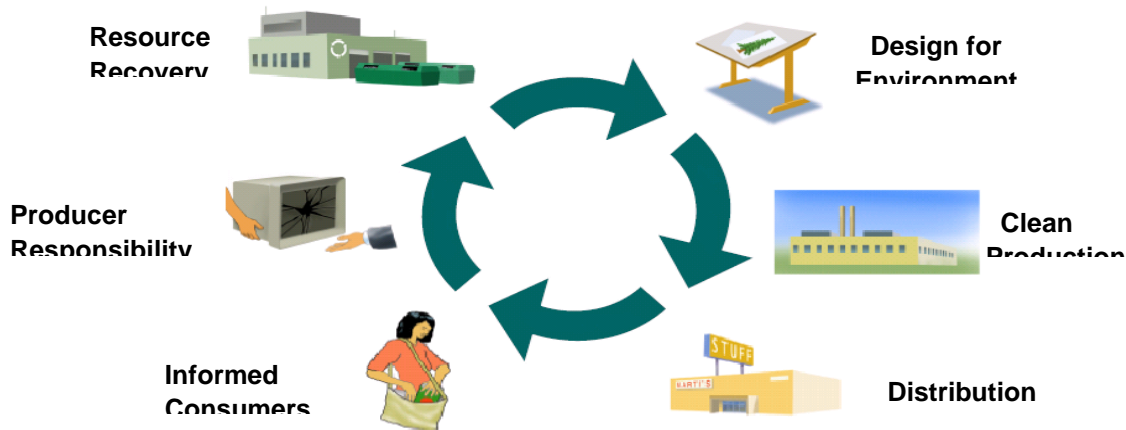
It is recognized that zero waste cannot be realistically achieved alone at the regional level. It requires major shifts at the federal and provincial levels, and within industry. This plan includes support for these higher level initiatives and provides guidance and direction at the local level towards the ultimate goal of zero waste. As this document establishes the Sunshine Coast Regional District’s plans for supporting a provincial and national transition to Zero Waste, it is therefore entitled the Sunshine Coast Regional District’s Solid Waste Management Plan – The Foundation for Zero Waste (the Plan).

1.1 What is Zero Waste?

Zero Waste is a philosophy and a goal that is driven by a notion to “close the loop” so that society can develop a sustainable economy. Zero Waste is a new paradigm for waste streams. Rather than viewing used materials as garbage in need of disposal, discards are viewed as valuable resources. Viewed in this way, a pile of rubbish may represent jobs, economic opportunity, and feedstock for new products³. Below is an illustration of a close loop model (Figure 1) that keeps resources in circulation and minimizes the need for extraction of virgin materials, whereas a linear system (Figure 2) results in disposal of resources (i.e., waste) and requires a constant demand for virgin resource extraction.

² www.grrn.org

³ *Zero Waste: A New Systems Approach Gaining Global Ground*, by Marti Matsch, EcoCycle (2000)

Figure 1. Close Loop Zero Waste Society**Figure 2. Linear Consumer Driven Society**

Zero waste is also a new waste management planning approach that emphasizes waste prevention rather than end-of-pipe waste management. From this perspective, zero waste is a design principle, rather than a goal or a target⁴. Zero Waste planning engages many more players than just the local governments who are traditionally responsible for waste management.

A Zero Waste framework for a Solid Waste Management System is a model that links communities, businesses and industries so that one's waste becomes another's feedstock. Furthermore, it also focuses on preventing pollution at its source which can be a means to create new local jobs in the community.

Although the definition for Zero Waste is not consistent throughout the world, the Zero Waste International Alliance defines Zero Waste in the following manner:

⁴ "Transitioning to Zero Waste – What can local governments do NOW?", By Helen Spiegelman, Product Policy Institute, dated March 20, 2006

"Zero Waste is a goal that is both pragmatic and visionary, to guide people to emulate sustainable natural cycles, where all discarded materials are resources for others to use. Zero Waste means designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that may be a threat to planetary, human, animal or plant health."

1.2 Requirements to Achieve Zero Waste

Achieving the goal of Zero Waste requires a concerted effort on the part of individuals, businesses, industry, and all levels of government. Below are important considerations that are required for achieving Zero Waste⁵ (*note, all quotes in italics are from this referenced source*).

Redesigning Products and Packaging for Durability, Reuse and Recyclability

Instead of perpetuating our throw-away society, products would be designed using fewer material types that could be easily reused or repaired when they have outlived their usefulness.

In British Columbia, the Province is influencing the redesign of products and packaging by mandating industry to manage the full cost of products including the end of life cost. This concept is known as Extended Producer Responsibility (EPR). Redesigning products and packaging for durability, reuse and recyclability will require significant innovation and leadership by industry and strong legislation at the provincial and federal levels.

Creating Jobs from Discards

Wasting materials in a landfill also wastes jobs that could be created if those resources were preserved. According to the new, ground-breaking report, Wasting and Recycling in the United States 2000, "On a per-ton basis, sorting and processing recyclables alone sustains ten times more jobs than landfilling or incineration⁶."

The transition to EPR in British Columbia will help to create more sustainable manufacturing and resource recovery industries, which in turn supports job creation and stability. At the local level, most of the jobs created from resource recovery are in the private sector. Regional Districts and municipalities can support the development of resource recovery jobs by investing in supporting infrastructure and services where it makes good financial sense to do so.

Producer Responsibility

Zero Waste puts the responsibility for materials entering the waste stream on the front-end with the manufacturer, not on the consumer at the back-end of the product's life. The end result is that manufacturers redesign products to reduce material consumption and facilitate reuse, recycling and recovery.

In British Columbia, this principle is being implemented by the Province through the BC Recycling Regulation, which identifies products for which industry is required to pay the management cost at all stages of the product's life cycle. This includes end of life recycling and disposal costs, in order to shift costs away from local governments and tax

⁵ "Zero Waste: A New Systems Approach Gaining Global Ground", by Marti Matsch, EcoCycle (2000)

⁶ By Brenda A. Platt and David Morris, "The Economic Benefits of Recycling" (Washington, DC: Institute for Local Self-Reliance, February 1993)

payers. Products already included under the BC Recycling Regulation include batteries, paint, pesticides, electronic waste, refundable bottles, pharmaceuticals, tires, and fluorescent light bulbs.

Costs for the recycling of used products and materials are generally built into the price of the products, which consumers must pay when they make a purchase. Manufacturers and producers that have less packaging and more recyclable/reusable or longer lasting products will therefore have a financial advantage in the marketplace. This is the incentive that will lead to continued improvement in the recyclability and re-use of products and materials and lead to an ever lowering quantity of disposed materials.

"True Cost" Accounting

The price of a product does not currently reflect the full costs of the environmental degradation and public health impacts associated with the virgin resource extraction, processing, manufacture, transportation, and disposal of that product. When the market prices begin to include such costs, the more environmentally-friendly product will also be the less expensive.

True cost accounting requires industry to assume a full cost accounting approach to business and investment. Senior levels of government can influence markets to recognize and report the full cost of production. All levels of government can employ true cost accounting principles with regards to internal business and policy decisions.

Investing in Infrastructure, Not Landfills

In many communities, strategies like unit-based pricing for garbage collection (commonly known as Pay-As-You-Throw) have created tremendous incentives for residents and businesses to reduce waste and have resulted in higher landfill diversion rates. Rather than using the tax base to build new landfills or incinerators, communities have also invested in recycling, composting, and reuse facilities. In some cases, communities have created integrated discard "malls" where various recycling and reuse businesses coexist in a location where consumers can come to drop-off any unwanted item.

Private enterprise and local government develop and operate facilities to manage discards and recover resources from waste. In the SCRD, strategies like the one-can limit for garbage collection and user pay pricing for waste disposal at landfills create incentive to reduce waste. This Plan also calls for the establishment of enhanced recycling infrastructure in keeping with a "one stop drop" resource recovery facility model or "discard mall".

Ending Tax Payer Subsidies for Wasteful and Polluting Industries

Pollution, energy consumption and environmental destruction start at the point of virgin resource extraction and processing. Our tax dollars subsidize many industries that make products from virgin materials, such as timber and mining. Zero Waste proposes ending these federal subsidies to enable recycled and reused products to compete on an even playing field. Without the subsidies, the market can determine which are truly the less expensive products.

Responsibility in this area lies primarily at provincial and federal levels, however local government can ensure that waste disposal activities are not subsidized (relative to recycling and resource recovery activities) in order to create a level playing field for business. For example, local taxation to subsidize landfill fees would make waste disposal appear artificially inexpensive, which in turn creates barriers to the development of viable resource recovery and recycling industries. In the SCRD, no taxes are used to subsidize landfilling operations. Tipping fees paid by users of landfill facilities cover all costs associated with operating, monitoring, and eventually safely closing the landfill.

1.3 Role of Local Government

Local governments play an important role in shifting a community's perspective towards a zero waste philosophy. Waste reduction is one of the key measures that local governments can influence through public education, waste

related policies (e.g., one-can limit on garbage collection) and services (e.g., recycling and composting infrastructure and services). Regional Districts in British Columbia are responsible for managing all Municipal Solid Waste within their regional boundaries. However, Regional Districts have no authority to regulate the manufacture, marketing and sale of products and packaging in the Municipal Solid Waste stream, or to impose taxes on products at the point of sale. In the current linear system, many of the costs associated with products and packaging fall to the hands of local governments and residents, in the form of recycling infrastructure and waste disposal services. As EPR for products is implemented at the provincial and federal levels, the linear approach will become obsolete.

Historically, local governments were responsible for dealing with waste produced by residents and businesses. In many cases, a local government's primary goal is to quickly and efficiently move the garbage away and dispose of it in a safe and environmentally responsible manner. In the past two to three decades, local government's responsibility has grown to include waste diversion measures such as recycling and organic waste management. During that same period, Product Stewardship (also called EPR) has evolved to ensure responsible waste management of environmentally hazardous materials and recycling of frequently disposed materials such as beverage containers.

Getting to Zero Waste will require a concerted effort and coordination between all levels of government (municipal, regional, provincial and federal) as well as industry, businesses and consumers. It will also require a dramatic shift in the way products and their associated packaging are designed, and societies preference for purchasing goods. Throw-away products will need to be replaced with products that are designed for reuse, repair, recyclability and decreased toxicity. Currently, the policies and infrastructure are not in place to achieve a zero waste society. The focus for the SCRCD is to prepare a Solid Waste Management Plan that enables to community to obtain as much of the Zero Waste framework as possible so that ultimately reaching the Zero Waste designation becomes an achievable goal.

By definition, the concept of zero waste is the exclusion of waste disposal. The 'Waste Hierarchy' presented here shows the first three Rs — Reduce, Reuse and Recycle — which form the foundation of a zero waste framework. The fourth R, Recover, implies recovering the embodied energy in a material by processing it in a chemical or thermal treatment technology. Materials that cannot be reduced, reused or recycled or come from a recovery facility are considered residuals. It is important to note that Recovery in some situations is considered a final disposal method, even though it is actually a succinct process with its own residual stream that requires disposal.



Understanding details of solid waste management systems are important for local governments, because it allows them to prioritize which products should be developed into EPR programs, the effects that certain products have on the solid waste system, and strategies for managing those materials. As mentioned below, local governments are the catalyst for establishing new EPR programs.

1.4 Roles Outside the Control of Local Government

Although EPR programs play an important role in a local solid waste management system, EPR programs are developed by provincial and/or federal governments. Developing programs take time and resources to consult with producers and consumers, to develop strategies for taking back the discards, and to prepare regulations for implementation. Though these activities are outside the control of local government, it is the role of local government and the public to advise senior levels of government which EPR programs should be developed and to explain why it is important.

The Canadian Council of Ministers of the Environment (CCME) have prepared a “Canada-Wide Action Plan for Extended Producer Responsibility”, which was published in 2009. This document provides a suggested roadmap for provinces to follow. In quoting from this document:

“In order to create a harmonized approach to EPR, the Canadian Council of Ministers of the Environment (CCME) has prepared a Canada-wide Action Plan for Extended Producer Responsibility with common coordinated policies and commitments for government action and common key elements for building producer responsibility through the adoption of EPR approaches to identified priority products.

The implementation of The Canada-Wide Action Plan for Extended Producers Responsibility will be done within the jurisdictional authority of each government.”

CCME suggests provincial adoption of a Canada-Wide Action Plan (CAP) for implementation and inclusion of the following Phase 1 initiatives during the first six years:

- *Packaging* –all packaging currently handled by municipalities or generated from the industrial, commercial and institutional sectors either as waste or through recycling programs. Quoted examples are beverage containers and other packaging materials, i.e., cardboard.
- *Printed Materials* – printed materials (newspapers, advertising flyers, magazines, directories etc.).
- *Mercury containing lamps* – including compact fluorescents and other lamps containing mercury such as linear lamps for general lighting,, high intensity discharge lamps, and lamps used in signage and decorative building and cove lighting.
- *Other mercury-containing products* – thermostats, thermometers, barometers, switches or other measuring devices.
- *Electronics and electrical equipment* – all products identified on the “common” list of CCME-recommended electronics.
- *Household hazardous and special wastes* – all products identified in Appendix F of the Canada-Wide Action Plan for Extended Producer Responsibility (Oct. 29, 2009).
- *Automotive products* – used crankcase oil, filters and containers, lead acid batteries, lamps, tires, refrigerants, anti-freeze, brake, transmission, other automotive fluids, and their containers.

During the first two years after adoption of CAP by the provinces, the CCME suggests defining the above materials in more detail, designing a phased implementation, and taking into consideration the materials already covered by existing provincial stewardship programs.

As a second Phase, jurisdictions are requested to commit to working towards incorporation into operational EPR programs within eight (8) years of the adoption of the CAP for each of the following product categories (of specific identified products and materials as further elaborated upon by CCME):

- construction materials;
- demolition materials;
- furniture;
- textiles and carpet; and
- appliances, including ozone-depleting substances (ODS).

Jurisdictions should, within two (2) years of the adoption of the CAP, publish a detailed list of products to be managed through EPR programs for each of the above, Phase 2, products.

BC is a leader in EPR programs and could increase that leadership by rapidly adopting the CCME initiative and implementing programs for those materials not already covered by existing programs. At the time of writing, the BC Government had no known position on the adoption of the CCME CAP.

2. Solid Waste Management Planning Process for Zero Waste

In British Columbia, Regional Districts are mandated by the Provincial *Environmental Management Act* (EMA) to develop Solid Waste Management Plans that encompass how each regional district plans to manage their solid wastes, including waste diversion and disposal activities. These plans are updated on a regular basis to ensure they reflect the current needs of the regional district, as well as current market conditions, technologies and regulations.

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- **Social and Environmental Sustainability** – establish a state in which future needs of the present generation are met without compromising the ability of future generations to meet their own needs. Through this principle, the Sunshine Coast Regional District Board (SCRD Board) identified a priority to manage the region's residual management system in an environmentally and socially responsible manner;
- **Financial Sustainability** – is the degree to which a government can maintain its existing financial obligations both in respect of its service commitments to the public and financial commitments to creditors, employees and others, without increasing the debt or tax burden relative to the economy in which it operates⁷; and
- **Greenhouse Gas Reduction** – integrate solid waste management planning and implementation activities with the Regional District's *Community Energy and Emissions Plan* (CEEP) which is committed to reducing greenhouse gas (GHG) emissions in the region. These two plans consider development of distinct targets, actions and policies that will reduce solid waste discards and GHG emissions.

2.1 Zero Waste Management Options for Local Government

The Recycling Council of British Columbia (RCBC) indicates that Zero Waste will be achieved when full EPR and organics composting programs are implemented⁸. However, until full EPR is implemented, achieving zero waste will require local governments to undertake ambitious planning processes that clearly define goals, specific target dates and plans that accelerate waste reduction. Options that RCBC has identified as short-term policy options for local governments to undertake until Zero Waste is achieved, include the following:

- *Organics Programs* – collection and processing of organic materials such as green waste, food waste and soiled paper.
- *Pay-as-You-Throw (PAYT) Systems* – residents are charged based on the amount they throw out.
- *Collection Frequency* – revise garbage collection schedules to encourage recycling and organics diversion, and discourage garbage collection.
- *Material Disposal Bans and Recycling Requirements* – established policies and requirements that prohibit disposal of recyclable materials, or materials that are managed by EPR programs.

⁷ Source: SCRD Public Sector Accounting Board Statement of Recommended Practice; Indicators of Financial Condition; SORP 4; May 2009

⁸ RCBC Background Paper, by Jordan Best, dated June 2009, entitled, "On the Road to Zero Waste: Priorities for Local Government".

- *C&D Waste Diversion Planning* – requirement for waste diversion plans from construction and demolition projects.
- *C&D Deconstruction Requirements* – utilization of deconstruction methods to reduce waste and find better markets for recycling.
- *Social Marketing and Education* – alternative education methods that promote a positive response to waste diversion.
- *Green Procurement and Internal Operations* – community policies that promote and retain services from companies that implement green philosophies.
- *Land Use Planning* – development of strategies and land use zoning that promote zero waste businesses and waste reduction infrastructure.
- *Drop-Off Locations* – facilities that allow residents and businesses to conveniently sort and drop off recyclable materials.

These options have been incorporated into this Plan as future solid waste initiatives that are discussed in greater detail in Section 5.

2.2 The Plan Review Process

The Plan review process was based on the *Guide for the Preparation of Regional Solid Waste Management Plans by Regional Districts*, prepared by the BC Ministry of Environment. The Plan's review process consists of the following three stages:

- Stage 1: Review of the existing waste management system;
- Stage 2: Analysis of potential waste management programs, policies and services aimed at reducing the amount of waste being disposed; and
- Stage 3: Development of a new Regional Solid Waste Management Plan.

A critical element of the plan review process is to ensure there are adequate provisions for stakeholder involvement and public consultation, throughout the three stages. The Regional District established a multi-stakeholder Working Group whose membership combined technical and public representation throughout the region. The purpose of the Working Group was to conduct the following:

- provide recommendations to the SCRD Infrastructure Services Committee regarding preferred options for solid waste management programs, policies and infrastructure in the SCRD;
- provide input and feedback on technical reports and other documents provided to the Working Group;
- liaise between their constituents, the SCRD, and the project consultant. This included providing feedback to the SCRD and project consultant, and increasing awareness of solid waste management issues amongst their constituency;
- participate in smaller ad-hoc committees dealing with specific solid waste related issues or tasks (as required); and
- provide advice and feedback on public consultation activities.

To date, the Working Group has reviewed the results of Stage 1, and developed an understanding of the existing waste management system as well as potential options for new solid waste programs and policies. In Stage 2, the Working Group and SCRD Infrastructure Services Committee reviewed and evaluated the options that were being proposed to improve waste management services on the Sunshine Coast. Following that process, the subject Draft Plan was prepared for review with the SCRD, public and other stakeholders.

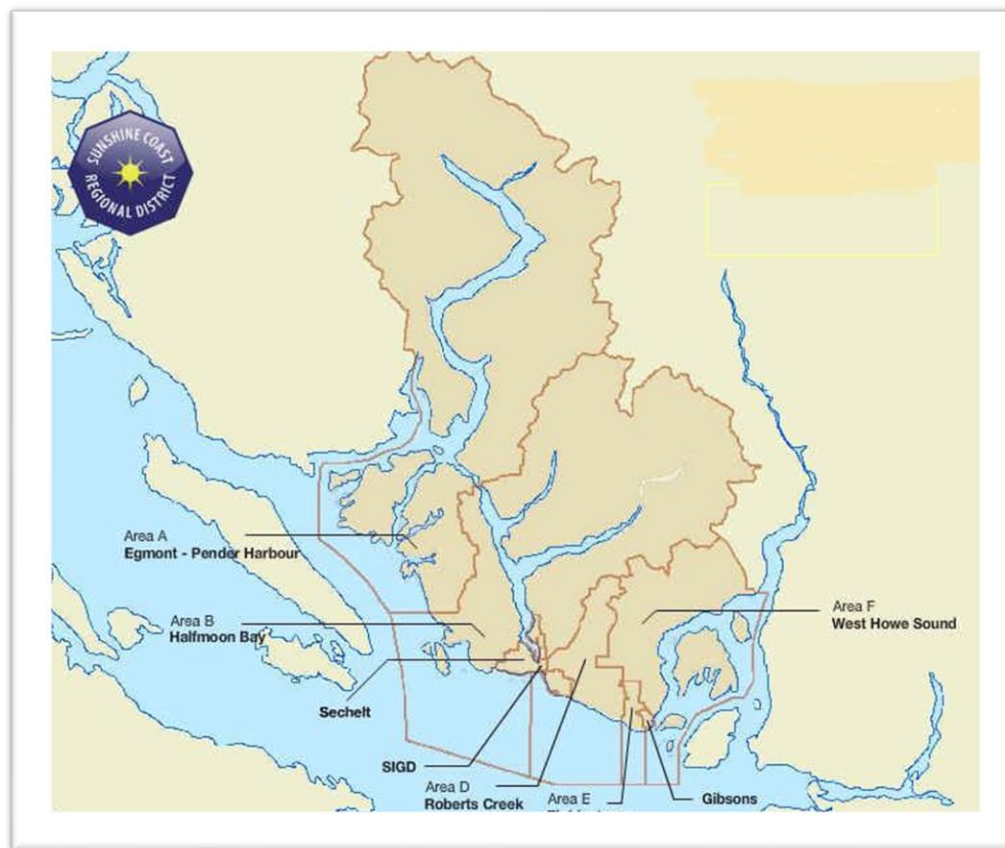
Stage 3 involved incorporating the feedback from the public and other stakeholders. Finalization of the Plan required adoption by the SCRD Board followed by submission to and approval by the BC Minister of Environment.

2.3 The SCRD Plan Area

The Zero Waste Solid Waste Management Plan encompasses the entire Sunshine Coast Regional District (SCRD) that covers an area of 3,778 km². Communities and settlements in the SCRD are primarily strung out along a long and linear corridor that runs along the southern coastline. The major population and service centers in the SCRD include Sechelt, Gibsons and to a lesser extent, Madeira Park in Pender Harbour. Figure 3 illustrates the boundaries of the following areas.

Sechelt Area	Gibsons Area	Madeira Park/Pender Harbour
District of Sechelt	Town of Gibsons	Electoral Area A
Sechelt Indian Government District (SIGD)	Electoral Area E – Elphinstone	
Electoral Area B – Halfmoon Bay	Electoral Area F – West Howe Sound	
Electoral Area D – Roberts Creek	Electoral Area D – Roberts Creek	

Figure 3. Boundaries of the Sunshine Coast Regional District



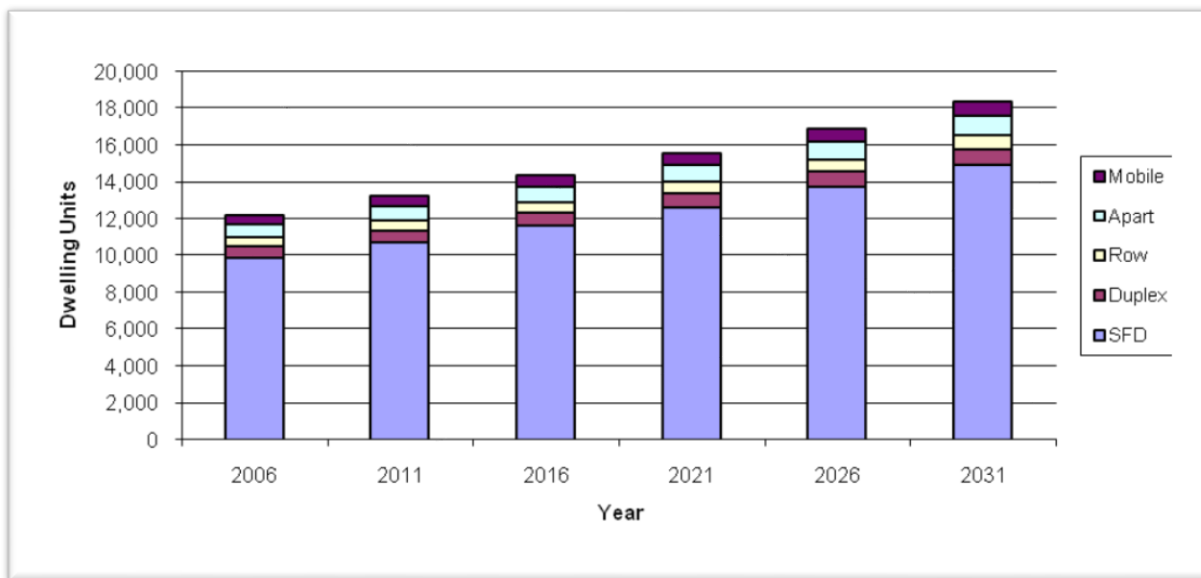
2.3.1 Population

The population in the SCRd is 29,551 (2009 BC Stats). The median age in 2006 was determined to be 48.5 years (2006 Census). The population is projected to grow by 1.5% to 2.0% annually. Approximately half of the population lives in the District of Sechelt and Town of Gibsons, and the population densities for those two municipalities are 212.9 and 966 people per square kilometre, respectively. With the exception of the two municipalities and Area E, the population density in the rest for the SCRd ranges from 1.4 to 23 people per square kilometre (2006 census).

2.3.2 Dwelling Types

The number of dwellings in the SCRd is 12,185 (based 2006 Census) with over 80% living in detached single family homes. Over the next twenty years, the number of dwellings is forecasted to grow by approximately 40%. Figure 4 below illustrates the forecasted growth in dwelling units by 2031⁹.

Figure 4. Dwelling Units Forecast



2.3.3 Economic Data

According to BC Statistics, the main economic activity (by labour force) in the region is forestry. There are several wood processing facilities, such as lumber mills, and a large pulp and paper mill in Port Mellon. Shell fish and fin fish farming is practiced in the area, and home based businesses are common. The Working Group associated with the ZWMP review process noted the prevalence of self-employment. The SCRd is also an established tourist destination.

The median annual household income in 2005 was \$59,850 (2006 Census) which is slightly below the provincial average of \$62,346. The largest occupations sectors in the Sunshine Coast are sales and service (23%), trades (19%), business and finance (13%), management (11%) and government and social services (8%).

⁹ 2009 Sunshine Coast Community Energy & Emissions Plan.

3. Guiding Principles and Goals

3.1 Guiding Principles

A guiding principle is a tool that supports or guides how decisions are made, or a statement of values or issues of importance. In the ZWMP process, guiding principles are included in the Plan as a way to highlight the underlying strategic vision and mission of the Plan.

The Working Group endorsed the following guiding principles:

1. *“Provide clear information on strategies and programs to reduce solid waste, according to the hierarchy of reduce, reuse, recycle, recovery, and residual management”*
2. *Zero Waste – is a goal that is both pragmatic and visionary, to guide people to emulate sustainable natural cycles, where all discarded materials are resources for others to use. Zero Waste means designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that may be a threat to planetary, human, animal or plant health.” (definition from the Zero Waste International Alliance)*
3. *The system must be financially affordable, and provide sufficient long-term disposal capacity.*
4. *Greenhouse Gas reduction must be an integral part of Plan implementation.*

3.2 Plan Goals

As part of implementing a Plan based on the guiding principles, the following Plan goals were determined:

- The solid waste management system must be environmentally sound, and ultimately, the SCRD will strive to achieve Zero Waste.
- The system must be financially affordable, and provide sufficient long-term disposal capacity. The SCRD will strive to divert as much waste as possible from disposal, within the available budget.
- The programs selected for the Plan should be financially self-sustaining, based on the principle of “user pay”. In terms of the Plan, this goal requires a system of cost recovery, whereby the more waste a generator produces, the greater the cost to that generator.
- The system must be responsive and flexible to the needs of the residents. Although the Plan provides the direction for the next five years and provides strategic planning for the next 20 years, it must incorporate elements of flexibility to allow it to respond to changing priorities and goals.
- The goals of the Plan must be consistent with the goals of the Community Energy and Emissions Plan (CEEP).

To ensure the Plan addresses the strategies and goals above, the Regional District established a multi-stakeholder Working Group that provided public and political direction for managing solid waste on the Sunshine Coast.

3.3 Board's Strategic Plan

A Strategic Plan is a directional document that looks at the long term future of an organization in the context of its changing environment, the needs and desires of its citizens, and its internal operation. The three overarching principles that will guide decisions within the SCRD are collaborative leadership, social and environmental sustainability, and financial sustainability.

Collaborative Leadership – is a process where two or more people or organizations work together on common goals by sharing knowledge, learning and building understanding.

Social and Environmental Sustainability – is the state in which future needs of the present generation are met without compromising the ability of future generations to meet their own needs.

Financial Sustainability – is the degree to which a government can maintain its existing financial obligations (both in respect of its service commitments to the public and financial commitments to creditors, employees and others) without increasing the debt or tax burden relative to the economy in which it operates.

In addition, the SCRD Board has clearly articulated goals, one of which is the **Goal to Achieve Zero Waste**.

This Solid Waste Management Plan has been designed to be consistent with the SCRD Board's Strategic Plan and Goals.

3.4 Community Energy and Emissions Plan

The Sunshine Coast Regional District, Town of Gibsons, District of Sechelt and Sechelt Indian Government District (SIGD) are committed to reducing greenhouse gas (GHG) emissions for the region as a whole. This can be achieved by the development of a region wide Community Energy and Emissions Plan (CEEP). In 2009, a corporate CEEP for Regional District facilities was completed. It identified current corporate emission levels and specific targets, actions and policies that would reduce GHG emissions. The emissions inventory shows that landfills currently contribute 7% of the GHG emissions on the Sunshine Coast. Through the updated ZWMP, the SCRD will be considering regional targets, actions and policies that would reduce GHG emissions that will become part of the region wide CEEP.

4. The Current Waste Management System

This section summarizes the current solid waste management system in the SCRD. This information provides a baseline for the future solid waste management program.

4.1 Waste Diversion Programs

The SCRD provides a wide variety of solid waste services from educational materials to the disposal system. The following discusses the waste diversion programs that are offered in the SCRD.

4.1.1 Education and Promotion

Education is one of the key aspects of a comprehensive solid waste management system. Successes in solid waste programs are typically due to well organized education and public outreach programs. In the SCRD, information regarding solid waste programs is available from SCRD and respective municipalities. The type of information available from the SCRD includes the following:

- Sunshine Coast Recycling Directory (public and privately operated facilities);
- Recycling Hotline operated by the Recycling Council of British Columbia;
- Listing of recycling and disposal facility locations and operation hours;
- Garbage collection and list of acceptable materials and limits;
- Reuse and Recycling services at Landfill sites;
- Extended Producer Programs (EPR) and “take back” locations;
- Landfill environmental programs;
- Drop off locations for yard and green waste;
- Signage at recycling depots and landfill sites; and
- Recycling program household surveys.

4.1.2 3 Rs (Reduce, Reuse and Recycle)

Reduce – The primary waste reduction program in place is the “One Can Program” for residential garbage collection. This program limits residential curbside garbage collection to one 77 litre can per week. Residents that require an extra garbage can pick up are able to purchase garbage tags for \$2.50 per can at various retail locations. Garbage cans that have these tags showing will be picked up on the designated garbage collection day. Education and outreach services are also provided to raise public awareness in support of waste reduction.

Reuse – The SCRD promotes reuse initiatives through their Recycling Directory and the share sheds at the Sechelt and Pender Harbour Landfills. Materials that are listed in the recycling directory include, but are not limited to, computers, furniture, clothing, building materials, books, appliances, and CD's/records.

Recycle – Recycling of paper products and metal, glass and plastic containers are collected at various depot locations in the SCRD. These facilities are publically and privately operated. These facilities are identified in the recycling directory as well as on the SCRD and Town of Gibsons' websites.

The District of Sechelt implemented an “Every-Other-Week” (EOW) curbside recycling collection service for residential customers in September 2006, through a contract with a private service provider. The service is delivered to approximately 3,400 single family residences that also receive municipal garbage collection. Residents of the Sechelt

Indian Government District have also implemented curbside collection of recyclables. Residents outside these areas have access to subscription-based curbside recycling collection services, provided by local companies.

Organic Waste – Yard and green waste diversion is offered through drop off facilities. Two of these facilities are at the landfill locations (Sechelt and Pender Harbour), and one is at the Gibsons Green Waste Facility. Options for diverting organic waste, such as fruit and vegetable scraps, are promoted through backyard composting. Composters are available at various hardware and garden supply in the SCRD.

4.1.3 Recycling Drop-Off Facilities

There are several locations in the SCRD where residents and businesses can drop off recyclable materials. These include two recycling depots (located in the District of Sechelt and the Town of Gibsons), that are operated in full or in part by the SCRD; two recovery/recycling depots that are located at the Sechelt Landfill and Pender Harbour Landfill; and various privately operated facilities that also offer hauling and collection services.

There are three yard and green waste drop off locations in the SCRD: Sechelt Landfill, Pender Harbour Landfill and Town of Gibsons Works Yard. This material is either composted, or used as a fuel at Howe Sound Pulp and Paper.

4.1.4 Product Stewardship Programs

Product Stewardship Programs are also called Extended Producer Responsibility (EPR) programs. EPR is a policy approach that makes the producers of a product responsible for managing the environmental impact of their product for the whole life cycle of that product, from selection of materials to design of product and to its end-of-life. This means that the producers and consumers have a shared financial responsibility for the products from production to final disposal, so that the cost of managing these materials is not borne by the general public (i.e., local government).

BC is a leader in developing and implementing EPR programs. A good example of this type of program is the used-oil management program. Producers provide a product take-back service through retailers, so that residents can return used oil, filters and containers for recycling. A list of EPR programs that are available can be found on the SCRD website and includes, but is not exclusive to, the following:

- beverage containers;
- passenger and truck tires;
- used oil, filters and containers;
- expired and discarded pharmaceuticals;
- lead-acid batteries;
- all batteries (under 5 kg);
- electronic waste (including televisions, computers and computer accessories, telephones and answering machines, home and vehicle audio and video systems, personal or portable audio and video systems); and
- paints, solvents, flammable liquids, pesticides and gasoline.

These programs have the primary purpose of removing harmful wastes from the waste stream and/or to control litter. Although the actual volumes removed are small, the environmental benefits are substantial.

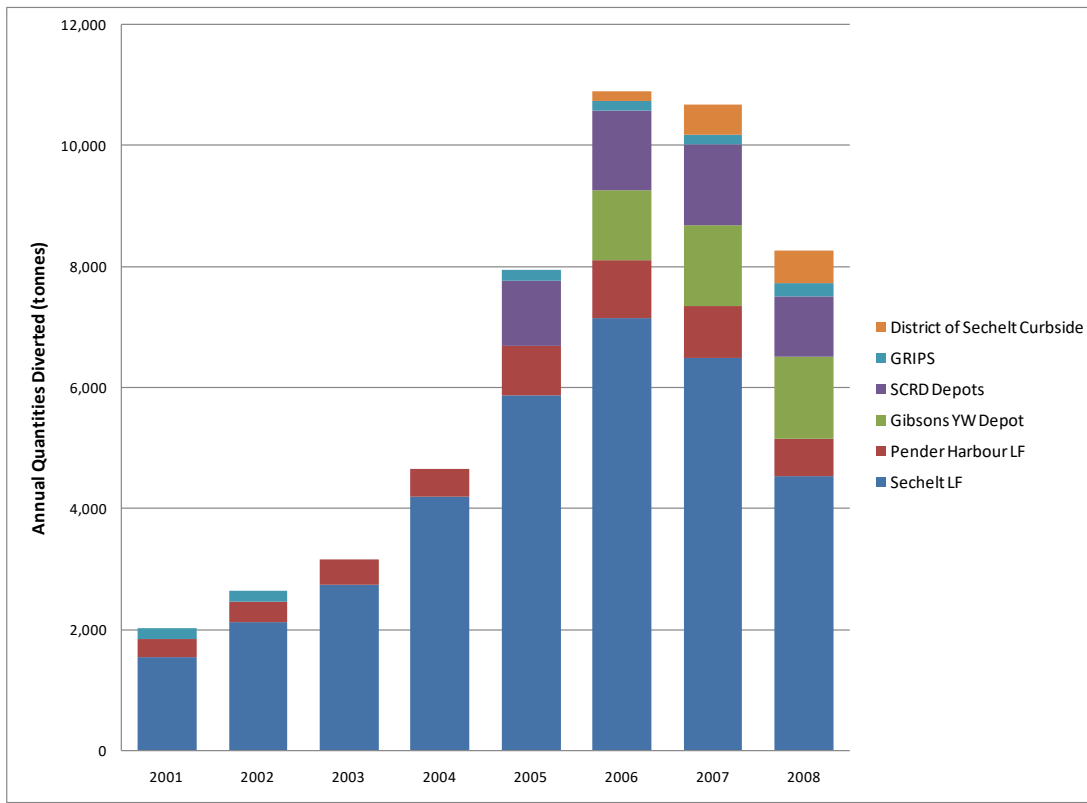
4.2 Waste Diversion Statistics

In 2009, 13,102 tonnes of materials was diverted from SCRD landfills. Diversion methods include recycling, composting, reuse and energy recovery. Table 1 lists the facilities and programs that contributed to the SCRD's waste diversion efforts, and the amount of materials diverted.

Table 1. 2009 Waste Diversion in the SCRD

Diversion Activity (2009)	Tonnes
Recycling and reuse at Pender Harbour Landfill <ul style="list-style-type: none"> • Gypsum • Wood • Yard and Green Waste • Recyclables (Blue Box materials) 	838
Recycling and reuse at Sechelt Landfill <ul style="list-style-type: none"> • Gypsum • Wood • Yard and Green Waste • Recyclables (Blue Box materials) 	4,104
Gibsons Green Waste drop-off	1,142
Recycling Depots <ul style="list-style-type: none"> • Sechelt • Gibsons 	973
GRIPS Recycling Depot <ul style="list-style-type: none"> • Paint • Recyclables (Blue Box materials) • Beverage Containers 	227
Sechelt and SIDG Curbside (08-09 data)	550
Construction and Demolition Waste (estimated amount used as fuel source)	4,255
Encorp <ul style="list-style-type: none"> • Beverage Containers Beverage containers • Electronics 	835 178
Total	13,102

Figure 5 depicts the waste diversion trends from the various programs within the SCRD. From 2001 to 2006 there was an upward annual trend in the amount of material diverted in the SCRD. The 2007 and 2008 figures show decreases that can be explained by concurrent decreases in the annual waste disposed caused by slow down in the economy and the building industry.

Figure 5. SCRD Annual Diversion 2001-2008

Private sector recycling activities are not reported to the SCRD due to business confidentiality issues from waste services companies. These recyclable materials, in addition to cardboard that are hauled back to central warehouses in Metro Vancouver from large retailers, represent a large quantity of recyclable materials that are not accounted for in the SCRD's solid waste management system. As a result, the SCRD is unable to gauge the level of recycling and waste diversion from Institutional, Commercial and Industrial (ICI) sources and cannot determine whether resources are required to implement waste diversion programs for businesses and institutions on the Sunshine Coast. Estimates that were made from comparable private waste recycling facilities from other coastal regional districts indicate that up to 15,000 tonnes of recyclables are unaccounted for.

Based on the reported quantity of waste diverted from landfill, the SCRD's diversion rate is calculated to be 50%.¹⁰ The SCRD's diversion rate is very good and must be considered one of the top regional districts in BC. Because there is little information about the quantities of commercial materials that are processed and shipped out of the SCRD, the true success of the SCRD current Solid Waste Management Plan cannot be realized.

It should be noted that most of the Construction and Demolition (C&D) materials from the SCRD are disposed at landfills and resource recovery facilities in Metro Vancouver and its neighbouring regional districts. These materials are collected and transported by the private sector, and the quantities are not reported to the SCRD. Much like recycling activities from the ICI sector, the SCRD is unable to gauge waste diversion efforts from this sector, and is unable to determine whether resources are required to enhance C&D waste diversion.

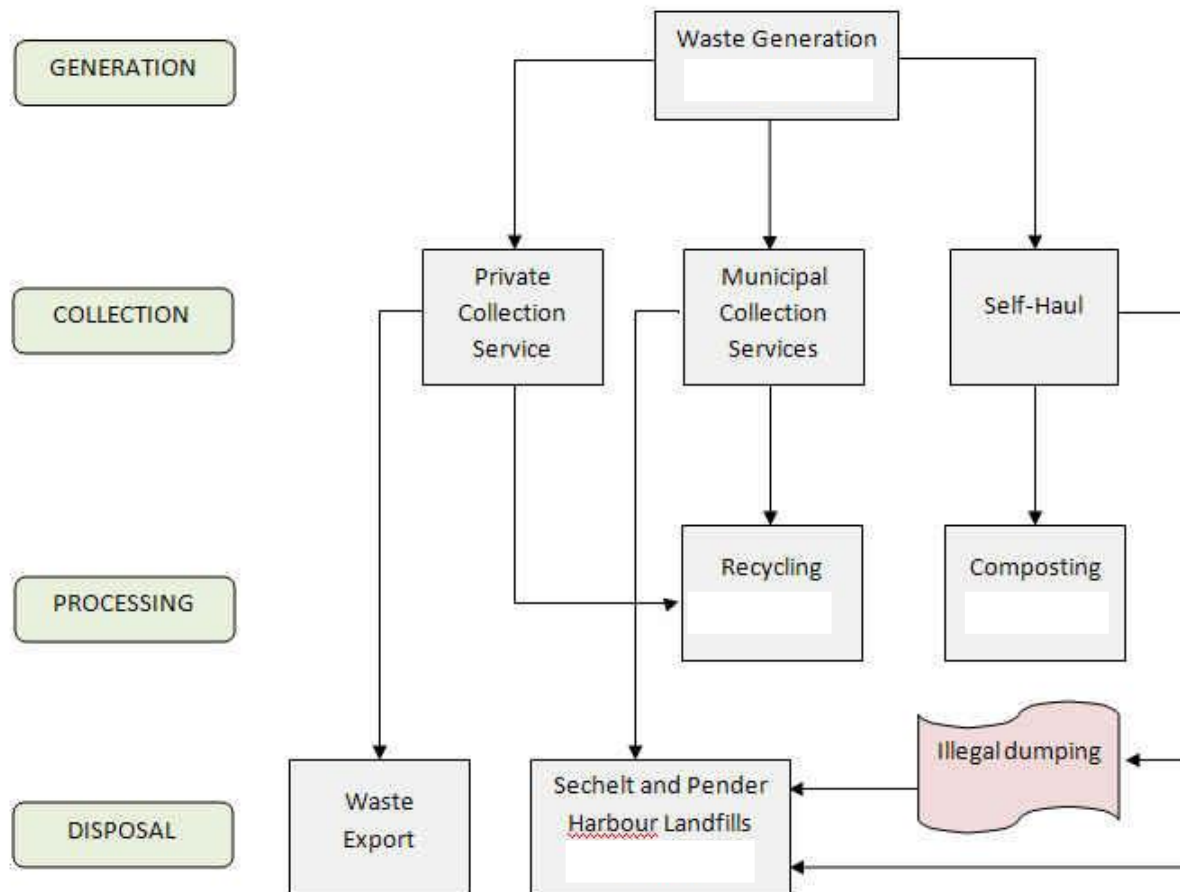
Obtaining this kind of information from the private sector for accurate reporting purposes, and for the development of better diversion programs, is one of the initiatives of this Plan.

¹⁰ Diversion rate is calculated as: $\text{diversion} / (\text{diversion} + \text{disposal}) \times 100\%$.

4.3 Waste Flows

Figure 6 shows how solid waste is generally managed in the SCRd, from the point of generation through to the various waste management options. As the waste is generated, waste and recyclables are generally collected either through municipal collection services, commercial collection services or hauled by the waste generator. Options for the waste and recyclables include disposal sites (Pender Harbour and Sechelt Landfills), recycling depots, yard and garden waste drop off facilities, and private sector material recovery facilities (MRF). From these points, the residual materials can be disposed of, used as fuel for energy recovery, or taken out of the region for recycling purposes.

Figure 6. SCRd Waste Flows in 2009



4.4 Waste Disposal

In 2009, a total of 13,045 tonnes of residential and commercial waste was disposed at SCRd landfills, 11,609 tonnes at the Sechelt Landfill and 1,436 tonnes at the Pender Harbour Landfill. Approximately 47% of the waste disposed came from residential sources, and 48% came from commercial and institutional sources. The remainder of the waste disposed (5%) came from C&D activity. Based on the available information, the per capita disposal rate in the SCRd was approximately 0.44 tonnes per capita.

The C&D waste disposed at the SCRD landfills is only a fraction of the C&D waste generated in the region. A significant portion of that waste is utilized as a refuse derived fuel at a local pulp and paper mill, or exported out of the region to be disposed of at private landfills in Metro Vancouver and its neighbouring regional districts. The amount of material that is exported out of the regional district is currently unreported and could represent as much as 50% of the waste disposed of at SCRD landfills. This information is necessary for calculating the overall diversion of solid waste generated in the region, and for determining whether resources are required to encourage further waste diversion.

The SCRD operates two landfills, the Sechelt Landfill and the Pender Harbour Landfill. The Sechelt Landfill receives the majority of the region's waste, approximately 11,000 tonnes per year, and has approximately 20 years of capacity remaining. The Pender Harbour Landfill primarily services Electoral Area A, and receives approximately 1,400 tonnes per year. The Pender Harbour Landfill is predicted to reach capacity in 2012 or 2013, and will be planned to be converted to a waste transfer station and resource recovery facility.

4.4.1 Garbage Collection

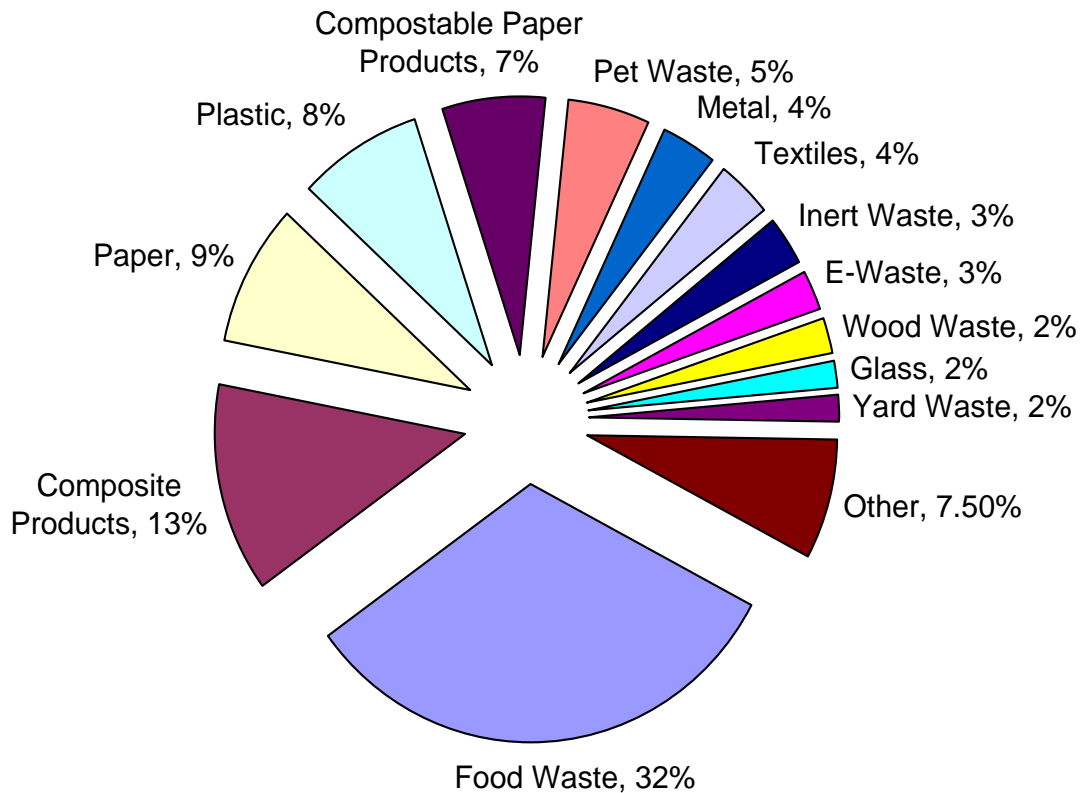
Curbside garbage collection is provided to most of the residents on the Sunshine Coast. SCRD provides residential garbage collection services to residents of Electoral Areas B, D, E and F within established collection service areas, while the three municipalities (Town of Gibsons, Sechelt Indian Government District and the District of Sechelt) provide residential garbage collection services within their respective jurisdictions. In Electoral Area A, curbside garbage collection service is provided by the private sector, since many residents have elected not to have curbside garbage collection. Most residents in Area A use the drop off facilities at the Pender Harbour Landfill. Other households in the SCRD that do not have curbside garbage collection typically live on unmaintained roads or in locations that are not accessible by collection vehicles. Garbage containers are provided for island residents on the mainland and co-located with ferry terminals or moorage facilities.

Garbage and recycling services from the commercial sector (stores, restaurants, offices, etc) and multi-family developments (condominiums) are provided by the private sector. Approximately half of the waste disposed of in our region comes from the commercial sector and multi-family dwellings.

4.5 Waste Composition

Characterizing the materials that are disposed of can be conducted through a waste composition study which is also called a waste audit. Waste composition studies involve sorting and weighing the various components of the waste stream (such as paper products, organic waste (food waste and yard waste), plastics, and metals) and provide a means to estimate how much material can be diverted from the disposal stream.

The SCRD has not conducted a waste composition study within the past 5 years. To estimate the type and amount of materials that may be diverted, waste composition studies from other jurisdictions that have similar demographics and programs were used. The waste composition for the Powell River Regional District (PRRD) was selected because it is similar to the SCRD. It is a coastal community with distinct urban and rural areas and similar economic profiles. The last waste composition study conducted in the PRRD was in 2008. The study focuses on the municipal portion of the waste stream. The waste composition for the PRRD is shown in Figure 7 and should be viewed as an example only.

Figure 7. Estimated Waste Composition by Weight (based on 2008 PRRD study)

In this example from the PRRD, the remaining recyclable materials that can be diverted using existing programs represent 22% of the waste stream and includes paper, approximately half of plastic, metal, e-waste and glass. Based on the assumptions above, recyclable materials represent nearly 2,900 tonnes of materials disposed.

Organic waste is the largest group of materials that can be diverted from the waste stream. Organic waste consists of food waste, compostable paper products, plant materials and yard waste, and makes up 41% of the waste disposed. The waste diversion study results indicate that residential organic waste and commercial organic waste represent nearly 5,400 tonnes of the waste disposed.

4.6 GHG Emissions

GHG emissions were estimated based on calculations that were made based on a report prepared by Ritchie, N. & Smith, C. (2009), entitled "Comparison of Greenhouse Gas Emissions from Waste-to-Energy Facilities and the Vancouver Landfill". The 2009 solid waste GHG emission for the SCRDC is 4,983 tonnes CO₂e, which is based on 0.382 tonne CO₂e per tonne of solid waste disposed.

4.7 Status of the 2005 Solid Waste Management Plan

The 2005 SWMP identified a series of focus areas, goals, strategies and tasks. Tasks that were implemented by local government for each urban area or electoral district are noted in the Stage 1 Report (Appendix B). Action items arising from the 2005 SWMP review Stage 1 report are included in this updated Solid Waste Management Plan.

4.8 Summary of Issues

The SCRD, together with its member municipalities, private sector and non-profit partners, have identified a broad range of desired services to businesses and residents in the region. The 2005 SWMP provides the Regional District with the regulatory authority to set a direction for solid waste management in the region. Aspects that the current SWMP does not address have been identified for consideration in the Plan Review process, include the following:

4.8.1 Enhanced Recycling and Waste Diversion

The 2005 Plan identifies the concept of Zero Waste as an important consideration for the Plan. By implementing this approach, the goal would be to ultimately eliminate all discharges to the environment. A waste composition estimate indicates that more than 60% of the waste stream includes materials that could be diverted using enhanced recycling mechanisms and new organic waste diversion programs. These programs have not been implemented in the SCRD as part of the existing SWMP, and represent the next greatest opportunity towards achieving zero waste. The new Plan will assess the feasibility of implementing these new programs.

4.8.2 Waste Stream Management and Control

The SCRD facilities accept a large portion of the waste generated within the region that is destined for disposal. However, there are solid waste streams under private sector control that are not accounted for in the SCRD. Because the SCRD does not handle these materials and the waste service providers are unwilling to divulge the amount of waste disposed of or recycled, the SCRD is unable to determine accurate disposal and recycling rates in the Regional District. To address this issue, a regulatory framework for all solid waste that is generated or imported into the Regional District is being considered as part of the Plan. The following identifies the issues that the proposed Plan addresses:

- **Position on Import or Export of Waste** – a clear position must be established on the need to prevent or regulate waste that is brought into or exported out of the region for processing or disposal.

Importation of waste for local business to run a viable operation is acceptable and should be included in the plan. Importation of waste for disposal will not be permitted.

The SCRD Board will establish formal policies to support this position.

- **Position on Regulating Processing or Disposal Practices** – a clear position must be established on the need to ensure that waste being handled through private facilities is managed and reported in accordance with the goals and objectives of the ZWMP. An approach outlining how this will be achieved is part of this Plan, see Section 5.1.5.

The SCRD Board will establish formal policies to support this position.

- **Position of Viewing Waste as a Resource** – a clear position must be established on when waste is considered a resource. This has implications for the free movement of resources in and out of the SCRD, and the potential for new economic activity in the Region when these resources are processed or utilized. This needs to be aligned with Provincial definitions in the future.

The SCRD Board will establish formal policies to support this position.

4.8.3 C&D Waste Management

A small amount of construction and demolition (C&D) waste is accepted at the SCRD landfills. The majority of C&D waste is exported out of the region by private sector waste handling companies. This waste is transported to landfills and processing facilities in Metro Vancouver and its neighbouring regional districts. The amount of material that is exported out of the regional district is currently not reported to the SCRD.

There are also recyclable materials that are exported out of the region without records to the SCRD. This includes materials collected from private sector haulers and large retailers that haul their cardboard back to central warehouses in Metro Vancouver. The amount of material that is exported out of the regional district is currently not reported to the SCRD.

C&D waste movement reporting is addressed in Section 5.1.5.

4.8.4 Illegal Dumping

Illegal dumping of waste is problematic in rural areas in the SCRD. In urban and suburban areas of the SCRD, illegal dumping of yard waste into empty lots, ditches and ravines is reportedly a common way to deal with an excess of organic waste. These practices frequently pave the way for other waste materials to become abandoned; and further, yard waste in ditches and ravines can choke riparian habitat or introduce pesticides and fertilizers into surface watercourses.

The Regional District maintains a modest budget to support the Good Samaritan Program, which funds the tipping fees for material voluntarily collected from illegal dumpsites and delivered to SCRD landfills. The Regional District has conducted clean-ups of illegal dumping sites in past years and has installed appropriate signage to deter dumping on an as requested basis, within approved budgets.

4.8.5 Managing Extended Producer Responsibility in BC

The SCRD supports Extended Producer Responsibility (EPR) as a policy approach that makes the producers responsible for managing the environmental impact of their product for the whole life cycle of the product, from selection of materials to design of product and to its end-of-life. This means that the producers and consumers have a shared financial responsibility for the products from production to final disposal, so that the cost of managing that waste is not borne by local government. This has significant implications for potential and existing solid waste services such as curbside recycling programs or eco-centres that may be contemplated in the ZWMP.

Provincially and nationally, EPR programs are growing and evolving. At the national level, the Canadian Council of Ministers of the Environment (CCME) is developing a framework for a Canada-wide EPR program, which would harmonize the principles for EPR in Canada.

Given that the timeframe for the proposed adjustments to the BC Recycling Regulation and the CCME Action Plan will overlap within the timeframe of the Plan, it will be necessary to consider how the transition to an expanded EPR platform would be addressed in the context of the Plan. For example, the resources and services proposed in the Plan should align with the EPR principles that producers and consumers share responsibility for processing and/or disposal of products at the end of their life, rather than making local government responsible. The SCRD needs to incorporate how EPR programs would be accommodated in the new ZWMP. This will require flexibility of the Plan to enable a transition from local recycling initiatives to EPR programs (Section 5.3.5), which may still be locally run, but are governed at a higher level.

4.8.6 Community Energy and Emissions Plan

It is important to recognize that the SCRD has committed to involving other planning processes and initiatives into the solid waste management process. One of these initiatives includes the development of a Community Energy and Emissions Plan (CEEP). It is anticipated that this plan will set targets for greenhouse gas (GHG) reduction over time for the region. The project has already compiled a baseline inventory of community GHG emissions, and approximately 5 – 10% of the total emissions come from solid waste management activities. Of this portion, about 90% relates to emissions from the Sechelt and Pender Harbour Landfills.

The SCRD's current plans for residuals management, and the future of the landfills, will address the majority of GHG emission-related issues. These include the closure of the Pender Harbour Landfill, and the installation of landfill gas capture infrastructure at the Sechelt Landfill.

It is recognized that future waste diversion opportunities will reduce GHG emissions from solid waste management activities. This is particularly evident when diverting organic waste from landfills and processing organic waste into compost. It is anticipated that the potential reductions in GHG emissions will be evaluated against Triple Bottom Line (TBL) criteria, and this information will be included in the Community Energy & Emissions Plan.

4.8.7 Financial Sustainability

A priority for the SCRD is to ensure future solid waste initiatives are financially sustainable, services are affordable, and services are based on user pay principles. Financial sustainability is defined in Section 2.

4.8.8 Pender Harbour Landfill Capacity and Facility Development

The Pender Harbour Landfill is nearing final capacity and plans are to convert this facility into a transfer station and resource recovery facility. The residual garbage that is received at this site will be transferred to the regional landfill in Sechelt for disposal. The SCRD Board has resolved to pursue enhanced recycling and resource recovery services in Pender Harbour, in order to minimize the volume of garbage going to disposal.

The SCRD Board established a Technical Design Team (TDT) comprised of stakeholders from the Pender Harbour community, as well as SCRD staff and representatives from the Solid Waste Management Plan Monitoring Advisory Committee and Solid Waste Management Plan Update Working Group. The TDT participated in an intensive 2 day design charette and produced a conceptual plan for a resource recovery facility in the Pender Harbour area, which has been used as a reference for future services (see Section 5.3.1).

4.8.9 Sechelt Landfill Design and Operations Plan Update

The Sechelt Landfill currently operates under a permit issued by the Ministry of Environment. The Ministry of Environment has indicated that it intends to convert this permit to an Operational Certificate, an alternate regulatory tool. The major impact of this decision is that the Sechelt Landfill will need to have a more detailed Design, Operations and Closure Plan developed. The Design, Operations and Closure plan will address the operational and environmental aspects of the landfill (now and into the future), and the specifics of the landfill gas collection system installation that is planned for the site.

This work represented a strong technical level of detail of the landfill, and was conducted as a separate contract by a third party consultant. The major conclusions, action items and financial implications from this third party study have been incorporated into the Residual Waste Management section of this plan (Section 5.4), and the study itself is provided as an appendix to the Plan.

5. Future Solid Waste and Resources Management System

The proposed solid waste initiatives will become the framework for the future solid waste and resources management system. The term “resources management” has been incorporated to reflect a paradigm shift away from managing waste and towards managing resources from discards, which is more consistent with a Zero Waste approach. These initiatives are consistent with the Recycling Council of BC’s recommended approaches, listed “On the Road to Zero Waste” and are based on issues identified in Section 4. The following are initiatives for the future solid waste and resources management plan.



Reduce Initiatives

1. Incentive Based Tipping Fees
2. Material Disposal Bans
3. Residential Waste Reduction Education
4. Grass Cycling and Backyard Composting
5. Waste Control System
6. Land Use Policies to Support Solid Waste Management Infrastructure
7. Evaluation Process for Recycling Opportunities
8. C&D Waste Diversion
9. Business Waste Diversion

Reuse Initiatives

10. Community Reuse & Repair Centres
11. Reuse Facilities at Landfills (Share Sheds)
12. Building Material Reuse Facilities
13. Deconstruction and Salvaging
14. Reuse Education (w/ CBSM strategies)
15. Community Swap Day Pilot Program

Recycle and Diversion Initiatives

16. Enhanced Drop-Off/Resource Recovery Facilities
17. Curbside Recycling
18. Curbside Food Scraps Collection
19. Yard Waste Composting
20. EPR Management Programs

Residual Management

21. Sechelt Landfill Upgrades
22. Pender Harbour Landfill Closure
23. EOW Discards Collection
24. Illegal Dumping Program

The following section discusses these components in greater detail.

Potential budget and staffing implications are presented in a separate report titled: **Solid Waste Management Plan – Preliminary Financial Implications Companion Document**. In this companion report, preliminary cost estimates are presented for planning purposes only. Actual costs may vary, and will be determined through detailed financial analysis and business casing prior to the commitment of funds. In some cases, costs can only be accurately determined through a competitive bid process. Actual funding decisions will be made during annual budget processes and tender awards, following detailed analysis and thorough political discussion.

5.1 Reduction Strategies

Comprehensive solid waste management plans require a robust set of policies and bylaws that support the objectives of the Plan. These plans provide a visionary framework that describes how solid waste would be managed in its respective regional district. Policies and bylaws are the rules and standards that make that framework become a reality. The policies and bylaws that are discussed below focus on reducing discarded materials.

5.1.1 Incentive-Based Tipping Fees

Tipping fees are the charges that are applied to discard materials being deposited into the landfills. Incentive based tipping fees are structured to provide financial incentives that discourage discarding waste into the landfills, provided there are more economical options to divert that material. For example, diverting yard and garden waste so that it can be composted is less costly than disposing of it in the landfill. Currently, the SCRD operates with the following tipping fee structure (Table 2) for materials accepted at its landfills.

Table 2. Current SCRD Incentive-Based Tipping Fee Structure as of December 2010¹¹

Material for Disposal	Tipping Fee
Municipal Solid Waste (i.e., household garbage):	\$100 per tonne
Recyclable Materials:	
Yard and Garden Waste:	
- Residential self haul loads less than five tonnes	NO CHARGE
- Commercial loads	\$45 per tonne
- Loads 5 tonnes or more	\$45 per tonne
Metal:	
- Scrap metal and white goods (appliances) without Freon	\$70 per tonne
- Propane tanks (\$2 up to 25 lbs, \$5 between 26 and 100 lbs) OR	\$70 per tonne
- Appliances with Freon (fridges, etc.) the greater of \$40 per unit OR	\$115 per tonne
- Vehicles with lubricants removed (Pender Harbour Landfill only)	\$115 per tonne
Tires:	
- Passenger (rim removed \$3, on rim \$8) OR	\$215 per tonne
- Medium Truck (rim removed \$18, on rim \$36) OR	\$315 per tonne
- OTR (rim removed \$240, on rim \$480) OR	\$665 per tonne
Paint & Product Care Products (Sechelt Landfill only)	NO CHARGE
Controlled Waste:	
Separated Construction & Demolition (C&D) Waste	\$95 per tonne
Dirt & Rocks	\$95 per tonne
Wood, Roofing, C&D (misc.)	\$140 per tonne
Gypsum	\$265 per tonne
Asphalt, Concrete	\$265 per tonne
Asbestos, Asbestos Cement	\$265 per tonne
Dead Animals	\$265 per tonne
All Non-Separated Waste:	Double the regular tipping fee PLUS an additional \$100 per hour for handling/separation by landfill personnel.

¹¹ Source: http://www.scrd.ca/index.php?page_id=541

ZWMP Action:

Incentive based tipping fees will be used to educate and encourage residents and businesses to utilize the new recycling options that are available for diverting waste.

This initiative primarily involves staff time to review tipping fee rates, assess new and current waste diversion options, evaluate customer habits and determine suitable financial incentives that would encourage a change in current waste discard behaviour. Upon receiving approval for new tipping fee structures (annually or as needed), staff would prepare and distribute educational material to customers, update information on the website, put ads in the local papers for several weeks, and update signs at solid waste facilities. It is estimated that 1 percent of the materials disposed would be diverted through this initiative.

Implementation by:	SCRD
Waste Diversion:	130 tonnes
GHG Implications:	-88 t CO ₂ e

5.1.2 Material Disposal Bans

Material disposal bans are restrictions that are imposed to prevent certain materials from being discarded into the regional landfill. These restrictions would be implemented when incentive-based tipping fees are not effective or if the material can significantly affect the landfill, like gypsum. Material disposal bans require a supporting bylaw that allows the regional district to impose penalties for noncompliance, or to refuse acceptance of banned materials. As a minimum, waste diversion options must be available at the disposal facility to minimize the potential of illegal dumping.

ZWMP Action:

The SCRd will implement disposal bans as appropriate for materials that have established diversion options in the region, and where financial incentives have failed.

The material bans will have varying degrees of penalties that will be consulted on with residential and commercial customers. As a minimum, waste diversion options must be available at the disposal facility to minimize the potential of illegal dumping. Materials that may be banned from disposal include:

- newspapers (ONP);
- cardboard;
- gypsum/drywall; and
- materials covered under EPR programs.

This initiative involves SCRd staff developing bylaws that limit or prohibit certain materials from being disposed at the landfill. Staff from the landfill would assist in enforcing disposal ban requirements. Varying degrees of penalties would be developed, for instance hard ban (strict prohibition) and soft ban (e.g., additional charges if banned materials exceed a certain percentage in a load) and would be informed by consultation with residential and commercial customers. Duties would be associated with incentive based tipping fee functions and should not require additional staff time. It is estimated that an additional 1 percent of the materials disposed of could be diverted through this initiative.

Implementation by:	SCRd
Waste Diversion:	130 tonnes
GHG Implications:	-88 t CO ₂ e

5.1.3 Residential Waste Reduction Education

The SCRD has one of the lowest waste discard limits in the Province, currently a one can limit with weekly collection. As new waste diversion programs are implemented (i.e., curbside recycling and organic collection programs), there is room for reducing the amount of discards accepted even further.

ZWMP Action:

The SCRD will enhance communication strategies to facilitate public uptake of waste diversion options and support a reduction of the waste discard limit by implementing bi-weekly garbage collection.

To ensure the community is responsive to this waste reduction initiative, SCRD staff will develop communication strategies and educational materials that identify waste diversion options, so that waste discard rates are reduced.

Implementation by:	SCRD
Waste Diversion:	Accounted in other waste diversion programs
GHG Implications:	See other programs

5.1.4 Grass-Cycling and Backyard Composting

Grass-cycling and backyard composting are options that reduce the generation of organic waste. Keeping organic waste (such as grass and food waste) out the landfill reduces discard rates, landfill gas generation and GHG emissions. Grass-cycling and backyard composting are considered one of the most sustainable methods for managing organic waste.

Grass-cycling involves leaving grass clippings on the lawn after the mower has mulched the grass. This returns nutrients and organic materials back into the soil, thereby reducing water consumption by retaining moisture in the lawn and underlying soil and reducing the need for fertilizers. Grass-cycling is relatively easy to adopt and can be an important part of waste reduction education.

Backyard composting or vermi-composting is a simple and cost effective approach to converting residential food and garden waste into organic soil. Vermi-composters or worm composters have a compact design that is well suited for small space, and is often used in apartments. The benefits of backyard or worm composting include reduction of waste discards, production of compost for garden use, and increased awareness of waste management issues in households.

ZWMP Action:

The SCRD will promote backyard composting, offer composting training courses, operate a compost demonstration garden and encourage grass-cycling.

This program involves preparing and printing educational materials, advertisements for promotions, and conducting backyard composting workshops. These workshops will encourage residents to manage organic materials such as grass and vegetable food waste on their property, thereby reducing organic waste materials that would need to be collected.

Implementation by:	SCRD
Waste Diversion:	No change
GHG Implications:	No change

5.1.5 Waste Stream Control and Monitoring

The Plan is required to document waste management practices from the residential, commercial (ICI) and construction and demolition (C&D) sectors. Understanding the quantity of materials diverted and discarded is important to measure the performance of zero waste initiatives.

Recyclable and discarded materials, primarily from residential sources, are collected through SCRD or municipal programs and are reported to the SCRD. The majority of the C&D waste and portions of the ICI waste are collected by private sector waste service providers, and quantities collected (recyclables and discards) are not reported to the SCRD. As a result, the SCRD is unable to measure whether zero waste practices are being implemented or the quantities being discarded is being reduced.

ZWMP Action:

The SCRD will implement a two phase approach to waste stream control and monitoring:

- 1. Voluntary reporting procedures**
- 2. Mandatory reporting legislation**

The voluntary approach involves developing a good understanding of the private sector activities, getting them involved in the process and supportive of the ZWMP. It will require developing procedures and formats for reporting quantities to the SCRD without extracting information that may be detrimental to the competitive nature of a business; documenting challenges and barriers to obtaining this information; consulting with waste haulers/service providers, businesses and contractors; and preparing and presenting educational materials.

Mandatory reporting by the private sector will require legislation, which will be developed if, after three years of voluntary efforts, the SCRD cannot obtain the information it needs to carry out its ZWMP mandate. This would involve research into forms of legislative control that has worked in other jurisdictions and could be suitable for the SCRD.

Implementation by:	SCRD
Waste Diversion:	No change
GHG Implications:	No change

5.1.6 Land Use Policies that Support Solid Waste Management Infrastructure

Developing land use policies that support solid waste management infrastructure are necessary to ensure facilities (public or private sector) can be sited in the SCRD. Traditional land use and zoning policies in some communities make it difficult to site operations, due to inappropriate zoning requirements. As a result, facilities that can provide additional diversion capabilities, such as composting facilities, cannot be sited in this region. The SCRD supports developing local processing capabilities as it results in a more reliable and resilient solid waste management system. Through land use planning and zoning policies, local governments can support the development of suitable facilities in appropriate locations that provide sufficient access to transportation routes, and that are relatively close the generators.

ZWMP Action:

SCRD will develop policies that support local solid waste management infrastructure.

Staff would work with member municipalities and consult with the public and stakeholders to identify criteria and possible locations for recycling, composting and future disposal facilities.

Implementation by:	SCRD
Waste Diversion:	No change
GHG Implications:	No change

5.1.7 Evaluation Process for Recycling Opportunities

The SCRd recognizes that future waste diversion options will present themselves, as technologies and opportunities become available. Some communities in BC have been successful in identifying opportunities and partnerships to recycle materials, such as mattresses, asphalt shingles, carpeting and textiles. The SCRd supports developing new recycling opportunities and will develop a policy framework and procedure that will evaluate recycling opportunities.

ZWMP Action:

Evaluate new recycling opportunities as they become available.

This initiative involves staff time to evaluate new recycling opportunities. This could involve consulting with stakeholders, hosting meetings, conducting assessments, and preparing and printing educational materials.

Implementation by:	SCRD
Waste Diversion:	No change
GHG Implications:	No change

5.1.8 Construction and Demolition Waste Diversion Programs

The construction and demolition (C&D) sector accounts for approximately 30% of the waste generated in the region. Case studies have shown that job site recycling can achieve waste diversion rates in the range of 70% to 90%¹². Requiring sizable construction projects to commit to diverting C&D materials as a condition of building/demolition/renovation permits is a practice that is conducted in many jurisdictions.

ZWMP Action:

The SCRd in cooperation with member municipalities will develop policies and bylaws that mandate minimum waste diversion rates for C&D projects of a certain size and require contractors to develop project specific waste management plans.

These plans would articulate how C&D materials from the project would be diverted and discarded. The plan could also be mandated through a fee that correlates to the size of the project. All or a portion of that fee could be refunded upon receipt of documentation that recycling targets have been achieved. Developing and implementing this process requires cooperation with municipal government planning departments and the construction/demolition industry.

This initiative involves developing strategies, policies and bylaws that would require the C&D sector to divert recyclable materials from demolition and construction projects. Through the building and demolition permit process, contractors can, as a minimum, be required to prepare waste management plans that identify how recyclables and residual materials would be managed. This will include reporting when materials are exported out of the region. If there is

¹² Metro Vancouver DLC Waste Management Tool Kit, Township of Langley Civic Centre Case Study.

sufficient process capacity in the region to process C&D materials, the SCRD can also mandate minimum diversion rate for projects of a certain size. This initiative will require staff to develop the bylaws and processes, consult with contractors to help them understand the new processes, review site specific waste management plans, inspect sites and evaluate waste diversion documentation.

This new initiative will work with contractors and monitor waste diversion practices on job sites. The SCRD may need to retain consultants to develop tools for estimating material quantities and formats for waste management plans. The SCRD should plan a series of meetings and workshops to help contractors understand the process.

Implementation by:	SCRD
Waste Diversion:	1300 tonnes
GHG Implications:	-387 t CO ₂ e

5.1.9 Business Waste Diversion Program

The ICI sector typically represents 30-40% of the waste stream. By developing an understanding of waste management practices for the ICI sector, the SCRD can prepare strategies that assist businesses in reducing their discard rate. Options such as toolkits and eco-networking programs can provide businesses with information and opportunities that reduce discards and manage waste responsibly. These options can include:

- tips on negotiating with suppliers on consumable products like cleaners, to allow for reusable or recyclable packaging;
- steps to undertake a preliminary waste audit to understand the types of wastes being generated and the cost savings achievable by reducing or avoiding these wastes;
- working with the BC Conservation Service and local Conservation Officer to promote bear-safe waste management practices for businesses, including the use of bear resistant containers for garbage and organic wastes; and
- continued use and reference to the web-based SCRD recycling directory with a focus on resources for businesses.

ZWMP Action:

Enhance business waste diversion and responsible management of business waste through education. This initiative works in conjunction with the incentive based tipping fees (Section 5.1.1)

To undertake this initiative, staff will work with the business community to monitor and evaluate solid waste discard and recycling practices, which includes documenting operations that divert recyclables out of the SCRD. Primary duties include collecting and documenting recycling/disposal information, assessing characteristics of materials discarded (waste composition study), developing policies and procedures for Municipal Solid Waste imports and exports, consulting with waste haulers/service providers, and preparing educational materials.

Implementation by:	SCRD
Waste Diversion:	1300 tonnes
GHG Implications:	-411 T CO ₂ e

5.2 Reuse Strategies

This section identifies waste reuse programs that would be offered to the community. Many of these programs are identified in the SCRD's recycling directory and contribute to 2% of current waste diversion efforts.

5.2.1 Community Reuse and Repair Centres

The SCRD promotes existing reuse and repair centres, and provides information about reuse opportunities available in the communities. Minimal effort is required from the SCRD, since most centres make their own arrangements to collect items or utilize existing service structures in place through non-profit groups such as the Recycling Council of BC.

ZWMP Action:

The SCRD will support reuse and repair centres by preparing promotional material of facilities and services that are available in the Regional District.

Implementation by:	SCRD
Waste Diversion:	No change
GHG Implications:	No change

5.2.2 Reuse Facilities at Landfills (Share Shed System)

The Share Sheds at the Sechelt and Pender Harbour landfills provide residents with a dedicated area to drop off or take reusable items. SCRD records show that the Sechelt Landfill Share Shed has relatively high traffic and results in substantial removal of items. Concerns have been raised regarding illegal dumping and dropping off materials that are not appropriate for reuse. From a social perspective, this service would continue to offer residents with opportunities to reuse materials and potentially create local economic opportunities for those who collect items from the share sheds as inputs into hobbies or repair businesses.

ZWMP Action:

The SCRD will continue to promote and operate the share sheds at the landfill sites by developing policies and educational material to identify materials that are appropriate for drop off and procedures for use of the facilities.

This initiative involves communicating with residents to encourage proper use of this facility and discourage illegal dumping of inappropriate materials and hazardous waste. Operations would be expanded to develop and prepare educational materials.

Implementation by:	SCRD
Waste Diversion:	No change
GHG Implications:	No change

5.2.3 Building Material Reuse Facilities

There are existing building materials reuse facilities in the SCRD (e.g., Habitat for Humanity Re-Store facility). These facilities accept and resell quality new and used building materials which reduces the amount of material discarded into the landfills.

ZWMP Action:

The SCRD will work with building reuse stores and service providers, and provide promotional support that identifies facilities and services.

The SCRD would also help establish salvaged materials collection centre(s) to enable deconstruction activities. This can include assistance in zoning property to support the collection and distribution of salvaged materials. This initiative involves ongoing promotion and reproduction of educational materials to encourage reuse of building materials and existing reuse businesses.

Implementation by:	SCRD
Waste Diversion:	No change
GHG Implications:	No change

5.2.4 Deconstruction and Salvaging Incentives

Deconstruction entails the dismantling of buildings (that are scheduled to be demolished) so that building materials can be recovered in a useable form. This approach diverts building materials that would otherwise be discarded to landfills. The SCRD can encourage deconstruction and salvaging by implementing financial incentives and faster permit processing periods. Through permitting fees, financial incentives could be applied when deconstruction and salvaging activities are implemented, versus demolition activities, to encourage source-separation, reuse and recycling of C& D Waste.

ZWMP Action:

The SCRD and member municipalities (who have jurisdiction for planning and permitting) will develop strategies and financial incentives to encourage deconstruction and C&D material salvaging.

Construction and demolition permitting is a shared responsibility between the SCRD and the member municipalities. The SCRD could, in conjunction with municipal and regional Building Permit and Planning Departments, consider this option in concert with compliance measures, to ensure that deconstruction permitted items do not end up in the landfills, but are directed to appropriate re-use and recycling facilities.

As part of the C&D diversion program, the SCRD will promote deconstruction and salvaging of materials from buildings that are scheduled to be demolished, as a means to reduce discarded materials and reuse materials. This can be a mandatory requirement or encouraged through incentives.

Generally, deconstruction will take place when the value of the material salvaged pays for some of the costs. In total, revenues minus costs are more favourable than landfill disposal costs. It is proposed to begin this program on the basis of incentives, using a combination of simplified and expedited permitting, education of demolition contractors, support for construction material recyclers, and a raised tipping fee for unsorted construction and demolition waste at the landfill.

This activity primarily involves staff to evaluate processes, work with municipalities and incorporate new approaches.

Implementation by:	SCRD
Waste Diversion:	Accounted in Section 5.1.8
GHG Implications:	See Section 5.1.8

5.2.5 Community Based Social Marketing to Enhance Reuse Initiatives

Education and outreach programs are the foundation of solid waste management plans. Research has shown that providing information alone is not always enough to change an individual's behaviour, and that greater success can be achieved using community-based social marketing (CBSM) principles. Programs that focus on CBSM involve four key steps to develop effective strategies for encouraging people to change their behaviour¹³:

- identify barriers and benefits associated with the proposed changes;
- develop a strategy that utilizes tools that have been shown to be effective in changing behaviour;
- pilot-test the strategy to refine prior to wide-scale implementation; and
- evaluate the strategy once it has been fully implemented across the community.

ZWMP Action:

The SCRD will apply CBSM techniques to develop strategies and pilot projects that will enhance reuse initiatives.

This includes preparing public outreach and education programs; information for brochures and web sites; utilizing information provided by environmental organizations, recycling organizations, stewardship agencies and community groups; and presenting programs that incorporate different strategies for different audiences.

This initiative involves developing and launching pilot projects that utilize CBSM strategies. Although the focus will be to enhance reuse initiatives, the results will also provide the SCRD with concepts that can be incorporated into developing reduction and recycling programs.

Implementation by:	SCRD
Waste Diversion:	130 tonnes
GHG Implications:	-88 t CO ₂ e

5.2.6 Community Swap Day Pilot Program

This is a pilot program that allows the community to reuse household goods. The SCRD's role is to show support through promotion and facilitate partnerships with community-based reuse organizations such as thrift shops and other non-profit agencies.

This pilot is based on a program that has been successfully implemented in the City of Nanaimo. Residents would participate by setting out reusable items at the curb, to allow others to visit neighbourhoods and collect items they would want. This would occur on an advertised day or weekend, when residents would be encouraged to place unwanted goods out on the curb in front of their homes for two consecutive days. Items such as bikes, furniture, hardware, office furniture, tools, clothing, garden tools, kitchen accessories, sporting goods and toys are suggested.

Residents are informed that any items not taken away must be removed from their boulevards by the evening of the second day, as they will not be collected as part of regular waste pick-up service. Residents are responsible to dispose of items not collected by "treasure hunters".

ZWMP Action:

Implement one pilot community swap day program and evaluate results.

¹³ Community Based Social Marketing Quick Reference Guide, by Doug McKenzie-Mohr, Ph.D., www.csbm.com

This program would be undertaken by existing staff and may require contractors to implement and deliver the program. Diversion potential is based on assumption if half of the households took part in this program and diverted an average of 10 kg of reusable materials that would equate to 60 tonnes.

Implementation by:	SCRD
Waste Diversion:	60 tonnes
GHG Implications:	-41 t CO ₂ e

5.3 Recycling

As part of its commitment to Zero Waste the SCRd developed a recycling service plan. It consists of region-wide access to resource recovery and recycling drop-off facilities, plus curbside collection for recyclables and food scraps from residents. The recycling programs discussed and proposed in this section address primarily resources that can be extracted from the residential sector, which consists of half the discards received at the landfills.

Resource recovery and recycling drop-off facilities will be provided to service the following areas:

- Sechelt Area (includes District of Sechelt, SIGD, and Electoral Areas B and D);
- Gibsons Area (includes Town of Gibsons and Electoral Areas D, E and F); and
- Pender Harbour Area (Electoral Area A).

These enhanced recycling drop-off facilities offer increased recycling opportunities with an emphasis on resource recovery. The new services offered for these facilities are discussed in greater detail in Section 5.3.1.

Curbside collection services will be expanded to include the pick-up of recyclable and food scraps/organics to the current collection of regular garbage as part of a pilot program, to assess the feasibility of expanding these services to all residents within the garbage collection area. These new programs should decrease the amount of regular garbage. To address decreased garbage quantities and to encourage residents to use the new collection programs, garbage collection is proposed to be reduced from weekly to every other week. Organic/food scraps collection is proposed to be conducted weekly and recyclables collection is proposed to be every other week. These two new services should divert as much as 60% of the residential materials that are currently discarded (assuming 85% of the residents participate and they are able to divert 70% of the materials they accumulate). The three collection services are discussed in greater detail in Section 5.3.3 (Food Scraps), Section 5.3.2 (Recyclables) and Section 5.4.3 (Discards Collection).

5.3.1 Enhanced Drop-Off and Resource Recovery Facilities (One Stop Shop)

There are three distinct service areas in the SCRd; Pender Harbour Area (Electoral Area A), Sechelt Area (incl. SIGD, Area B and part of Area D), and Gibsons Area (incl. Area E, F and part of D). The Plan calls for developing enhanced recycling and resource recovery facilities in each of these distinct areas.

ZWMP Action:

The SCRd will provide enhanced drop-off services for recyclables (e.g. resource recovery facilities) in the three distinct service areas. A request for proposals (RFP) process will be used to solicit competitive bids on this service from the private and not-for-profit sectors. This is a high priority initiative and should proceed during the initial implementation phase.

A facility will be developed in Pender Harbour at a location that is suitable to the community. Conceptual plans call for a “One Stop Shop” facility that will be a pilot for future facilities in the SCRD. Resource recovery capabilities of this facility are calling for expanded EPR program drop off areas, food and yard waste collection including transfer for processing, textile collection including transfer for processing, Styrofoam collection and processing, recycling of mattresses and bulky items, enhanced materials salvage and reuse, and storage/processing areas for local artisans and other markets for recovered materials.

The Sechelt and Gibsons resource recovery facilities will be new pilot facilities that will be developed while the Pender Harbour Resource Recovery facility is being constructed. In addition, the Gibsons facility will have added garbage collection and transfer services as well as reuse facilities similar to Share Sheds at landfills to service area residents.

The process for developing the resource recovery facilities will follow the recommendations from the Pender Harbour Resource Recovery Facility – Conceptual Plan Workshop (July 12-14, 2010). In 2011, the SCRD will conduct broad public consultation to involve the community in the design of the resource recovery facility. This process will include highly visual background information concerning the benefits and avoided cost of resource recovery, in order to foster community buy-in to the conceptual plan. Basic design concepts that were agreed upon by the Technical Design Team (TDT) for the Pender Harbour Resource Recovery Facility include the following:

- acceptance of a full range of recyclables and organics, and a design based on five material clusters (reuse and repair, organics, recycling, construction and demolition and regulated materials);
- reuse facilities similar to Share Sheds at landfills;
- vision as a thriving centre of the community;
- provide staffing that would provide a high level of assistance to users;
- situate the facility in a location that is easily accessible to area residents and businesses;
- provide a safe and user-friendly design;
- maintain a flow-through design that starts with diversion opportunities and ends with residual management;
- provide entrepreneurs and artisans with opportunities with utilize collected materials and opportunities to rent space for their operations;
- education and information intended to enhance public awareness about Zero Waste;
- “One-Stop Shop” concept that would be embraced where possible;
- formation of an advisory committee that oversees mandate and performance of the facility; and
- funding and administrative role to be played by the SCRD.

While the Pender Harbour Resource Recovery Facility is being constructed, the SCRD will undertake a similar process for developing two new pilot resource recovery facilities to be located in Sechelt and Gibsons. Similar to the Pender Harbour facility, the Sechelt and Gibsons facilities will be developed to meet the needs and desires of the community and residents who use the facilities.

All of these facilities will be staffed to ensure public safety, monitor odours and vectors, and minimize incidents of illegal dumping. Since it is foreseen that EPR materials will be collected at all facilities, staffing support from EPR stewards will be encouraged. This would help to ensure that the transition from a municipally funded recycling to an EPR funded recycling system will be smooth and effective. SCRD plans to issue one or more Request for Proposals for operation of the resource recovery facilities.

Implementation by:	SCRD
Waste Diversion:	260 tonnes
GHG Implications:	-176 t CO ₂ e

5.3.2 Curbside Recycling

The SCRd and Town of Gibsons have expressed a desire to examine curbside collection of recyclables. These services would be offered as an added cost to solid waste utility charges. The District of Sechelt and Sechelt Indian Government District already collect recyclables at the curb on a bi-weekly basis.

ZWMP Action:

Pilot curbside recyclable materials collection services for residents within the garbage collection areas in Electoral Areas B (Halfmoon Bay) and D (Roberts Creek) in order to evaluate the feasibility of a permanent service and potential future expansion to other areas. Continue to collaborate with municipalities on future collection services. Investigate opportunities to support the pilot through grant funding.

An every-other-week collection of recyclables would require curbside containers for the households. Based on the waste composition estimates, approximately 20% of discarded materials consist of recyclables. When examining potential diversion of the remaining recyclables in the discard stream, it was estimated that approximately half of the recyclables could be captured. This is based on an assumption that 85% of households participate and 70% of recyclables could be captured. This equates to 60% of the material that would otherwise be discarded.

It should also be noted that a curbside recycling program may divert material away from where it normally goes - which are the recycling depots. This appears to be the case in Sechelt. It is estimated that approximately two-thirds (67%) of the materials from the recycling depot could be collected through the curbside collection program. For this analysis, the quantity that may be redirected to the curbside collection from the depots waste was not included in calculating the revenues for the curbside collection program.

The SCRd plans to commence curbside collection within the five year planning timeframe. Ultimately, the proposed collection framework includes weekly organics collection and biweekly collection of recyclables / waste discards on an alternating basis. As above, the three scenarios were assessed: Scenario 1 involves piloting the program in Electoral Area B and D only. Scenario 2 involves piloting the program to a larger area which consists of electoral Area B, D, E and F. Scenario 3 looks at implementing the program to all households that have municipal garbage collection.

Implementing this program region wide could result in an additional diversion from the landfills (from 115 tonnes to 280 tonnes per year). It should be noted that the amount of recyclables collected would be significantly higher than the figures below because this program would divert materials that are normally dropped off at depots, to the curb. The waste diversion potential for the three scenarios is summarized in Table 3 below.

Table 3. Recycling Diversion and GHG

	Scenario 1	Scenario 2	Scenario 3
Extra Waste Diversion (tonnes/yr)	115	205	280
GHG Implications (t CO ₂ e)	-78	-139	-190

SCRD staff would be required to administer the collection contracts and manage revenues for curb-side collection of recyclables, as well as be responsible for any communications and outreach programs to ensure residents understand the program.

Implementation by:	SCRD (include Town of Gibsons for Scenario 3)
Waste diversion:	As per Table 3
GHG implications:	As per Table 3

5.3.3 Curbside Food Scraps Collection

The SCRD, Town of Gibsons and District of Sechelt have discussed curbside collection services for organic waste, including food waste. These services would be offered as an added cost to the resident's solid waste utility charges. It is anticipated that these local governments will undertake their own process to secure collection services, and that organic material processing would be coordinated by the SCRD, as noted in the previous sub-section.

With organics from food scraps collection, there is also the technical option of anaerobically digesting (AD) the material to recover gas/energy, and then to compost the residuals. The Plan includes the option of AD as an acceptable means of treating organic waste. The Plan also recommends the use of containers that are wildlife resistant for any future curbside organics collection programs in order to minimize litter, attractants and the potential for wildlife-human conflict.

ZWMP Action:

Pilot curbside organics collection services for residents within the garbage collection areas in Electoral Areas B (Halfmoon Bay) and D (Roberts Creek) in order to evaluate the feasibility of a permanent service and potential future expansion to other areas. Continue to collaborate with municipalities on future collection services. Investigate opportunities to support the pilot through grant funding.

The proposed collection framework includes weekly organics collection and biweekly collection of recyclables / waste discards on an alternating basis. Three scenarios were assessed. Scenario 1 involves piloting the program in Electoral Area B and D only. Scenario 2 involves piloting the program to a larger area which consists of electoral Area B, D, E and F. Scenario 3 looks at implementing the program to all households that have municipal garbage collection.

Food waste diversion program targets the 41% organic waste (food waste, soiled paper and yard waste) anticipated in the residential waste stream. It is expected that 80% of this organic waste can be captured using the proposed collection methods. That equates to an average diversion rate of approximately 105 kg/hh/yr. Implementing this program region wide (not including Pender Harbour) would divert nearly 1200 tonnes of waste and increase the regional diversion rate by approximately 5%. Diversion rates and GHG implications for the three scenarios are summarized in Table 4.

Table 4. Scenario Diversion and GHG

	Scenario 1	Scenario 2	Scenario 3
Waste Diversion (tonnes/yr)	325	600	1,200
GHG Implications (t CO ₂ e)	-52.5	-97	-194

SCRD would designate a staff member to initiate and administer contracts for curb-side collection of organic waste. The designated person would also be responsible for communications and outreach programs and would work with the yard/food waste processing capacity individual to ensure there is adequate processing capacity in the region.

Implementation by:	SCRD
Waste diversion:	As per Table 4
GHG implications:	As per Table 4

5.3.4 Yard Waste Composting

There are three yard waste drop-off facilities operating in the SCRd: Sechelt Landfill, Pender Harbour Landfill and Gibsons Public Works Yard (residential customers only). Yard waste is currently chipped and hauled to Howe Sound Pulp and Paper in Port Mellon, to be used as a fuel. The current processing cost for this option is \$14 per tonne. The SCRd plans to move towards composting rather than energy recovery.

ZWMP Action:

Continue to support and enhance composting operations through yard waste collection and contracts with private sector operators. Give preference to composting over energy recovery.

Establishing processing capacity for composting yard and green waste provides the SCRd with an opportunity to also compost food scraps and soiled paper in the future. The SCRd is focused on supporting local processing capacity for the long term through continued partnerships with the private sector. The annual processing cost for the composting of yard waste is \$45 per tonne and covered by an existing contract until 2012. After 2012 it is expected that a new contract will be developed and the processing cost will be approximately the same. The Plan assumes continued operation of yard waste drop off facilities at the three distinct areas, and the delivery of the yard waste to a composting facility.

Collecting materials for composting provides a reliable supply of feedstock and supports the private sector development of compost processing capacity. The SCRd is also considering raising landfill tipping fees or banning the disposal of yard and garden materials outright to further support composting.

An expanded yard waste composting capacity provides opportunities for composting food scraps and soiled paper, since the yard waste can act as a bulking agent. Co-composting yard materials and food scraps is being conducted with great success in many jurisdictions.

The SCRd will need to provide a high level of composting industry support. This includes:

- Working in close cooperation with the private sector to establish adequate processing capacity for food and yard waste composting, from residential and commercial sources.
- Providing long term contracts for feedstock supply to the private sector from SCRd controlled sources, and supporting the development of other feedstock sources from a range of collection mechanisms including municipal drop-off sites, residential self-haul, landscapers and private haulers.
- Buying and using compost for SCRd internal purposes, promoting the sale of compost to residents, business and municipalities for use in landscaped areas, parks, school playing fields or other locations.
- Working with municipalities to achieve favourable zoning for locating a composting facility, and providing a quality control function in the permitting of facilities to ensure they are likely to be in compliance with local and provincial regulations, such as the BC Organic Matter Recycling Regulation (OMRR).

Implementation by:	SCRD
Waste Diversion:	Recognized through existing programs
GHG Implications:	n/a

5.3.5 EPR Management Programs

In order to achieve Zero Waste, the SCRD will need to develop their future solid waste management system into one that supports EPR programs. The SCRD will support EPR programs and is committed to providing the following:

1. **Education Materials** – Work with stewards to ensure education material regarding EPR programs are current and readily available in the SCRD, and to assist them in delivering their programs.
2. **Implementation of Services** – The SCRD will collaborate with suitably qualified contractors who are able to safely collect, treat, recycle and/or dispose of EPR products appropriately. The SCRD would also consider establishing relationships with retailers of household chemicals, such as hardware and garden stores, to distribute information about collection events and drop off locations when targeted products are purchased.
3. **Material Disposal Bans** – The SCRD will develop bylaws that prohibit disposal of EPR products. This bylaw could apply at the landfill or at the point of curb-side collection for garbage.
4. **Zoning for EPR facilities** – The SCRD will work with stewards and plan for suitable EPR locations so that stewards can deliver their programs.
5. **Accessibility for SCRD facilities and Remote Areas** – The SCRD will develop partnerships that allow for service access to as much of the SCRD as possible, including remote areas. The SCRD will develop a framework for partnering with EPR stewards to ensure services are readily accessible to the public, and financial commitments are maintained.
6. **Planning for future EPR Programs** – The SCRD will develop terms of reference for establishing contractual relationships with EPR stewards. These terms of reference will be used as a starting point for negotiations with EPR stewards.
7. **Cost Recovery** – The SCRD will work with EPR stewards to develop a policy and framework that ensures the SCRD's involvement in EPR programs is reimbursed to the full extent possible.

ZWMP Action:

The SCRD will actively support and encourage EPR programs in the region, and work jointly with EPR stewards to the extent possible and practical.

This initiative involves staff working with EPR stewards to provide educational material on EPR programs, implement joint programs like “Round-up events”, partner for collection of EPR materials at depots and develop cost recovery agreements for SCRD services. Once programs and agreements are in place, the primary staff duties include collecting and documenting recycling/drop-off information, developing and initiating joint programs, consulting with waste haulers/service providers, and preparing educational materials. This position will also include identifying future EPR materials and lobbying senior government for new EPR programs. Diversion from landfills is estimated at less than 1% (~130 t/yr) of the materials disposed.

Implementation by:	SCRD
Waste Diversion:	130 tonnes
GHG Implications:	-130 t CO ₂ e

5.4 Residual Management

In the spirit of the zero waste strategy of this plan, whatever materials and resources cannot be reduced, reused or recycled, must be deposited in a responsible manner. The technology of choice for proper disposal is the landfill, which must be designed and operated in accordance with Ministry of Environment criteria and good operating practice. Materials deposited in a landfill may be reclaimed in the future if the need for these resources is greater than the costs to extract them.

In this Plan, the term "**residual management**" means the disposal in accordance with the Waste Management Act of what remains in the solid waste stream following reduction, reuse, recycling and recovery activities. This definition is taken directly from the Ministry of Environment's *Guide to the Preparation of Regional Solid Waste Management Plans by Regional Districts*, and will therefore be used in this section. The Residual Waste Management Plan addresses the long-term disposal needs of the region in ways that minimize social, environmental and financial impacts and risks. It is recognized that residual management will play less and less of a role as product stewardship and zero waste programs are implemented.

Two municipal solid waste landfills are operated by the SCRD. Both sites are staffed, have weigh scales, and electrified bear fences around the perimeter. A broad range of recycling, reuse and waste reduction programs are offered on-site. Alternative daily cover and compactors are used at both landfills to conserve landfill space. All operating and closed landfills are governed by the following legislation:

- Landfill Criteria for Municipal Solid Waste (June 1993);
- Guidelines for Environmental Monitoring and Municipal Solid Waste Landfills (January 1996);
- Environment Management Act (July 2004); and
- Landfill Gas Management Regulation (December 2008).

The following sections provide an overview of the actions and upgrades that will be undertaken at the two operating landfill sites, as well as the monitoring that will be undertaken at the two closed sites, and actions proposed to manage illegal dumping.

5.4.1 Sechelt Landfill

The Sechelt Landfill is located approximately 6.5 kilometres northeast of the village of Sechelt, at 4901 Dusty Road. The Site is located on Crown Land under License of Occupation No. 237204. The legal description of the Site is Block C, District Lot 7613, Group 1, New Westminster District. The Site property is bounded to the north, east and west by Sechelt Aggregates Ltd. (which is owned by the Heidelberg Cement Group). The lands bounding the Site to the south are owned by Northcote Properties of North Vancouver. All surrounding lands are currently used for either tree farming or gravel extraction.

The Site has been in operation since 1971 and occupies an area of approximately 9.5 hectares, with the limit of waste encompassing an area of approximately seven hectares. Current landfill side slope development varies, with slopes ranging from approximately 3 horizontal to 1 vertical (3H:1V) to approximately 1.5H:1V. The site has been developed as a natural attenuation landfill with no engineered liner or leachate collection system. The landfill is operated under Permit No. PR-02547 issued by the BC Ministry of Environment.

In 2009, XCG Consultants Ltd. Prepared an integrated landfill management plan for the Sechelt Landfill. The study is based on the guiding landfill legislation of the province and will bring the landfill to an environmentally desirable level of operations, maximize the life of the landfill, and identifies capital upgrades and costs until the landfill closes. Furthermore, it provides the necessary information to enable the Ministry of Environment to transition from a permit

based to an Operational Certificate (OC) based system. Overall, the XCG study, which is appended to this Plan, provides the following:

- Filling plan that integrates:
 - ✓ Surface water management;
 - ✓ Leachate control; and
 - ✓ Landfill gas capture.
- Optimization of available airspace and landfill capacity;
- Manual for proper operations of the facility;
- Estimate of capital expenditures; and
- Review and update of environmental monitoring programs.

Sechelt Landfill life is estimated to last until approximately 2030. This is based on an annual population growth rate of 1% and assumes the waste from Pender Harbour will be accepted in Sechelt starting in 2012, a discards disposal rate of 450kg per person per year (baseline), and phasing in of new commercial and residential waste diversion programs recommended in this plan by 2016. Under a business as usual (BAU) scenario, landfill life is estimated to last until approximately 2023. This is based on the waste from Pender Harbour being accepted in Sechelt starting in 2012 and a discards disposal rate of 450 kg per person, but assumes no new waste diversion programs are implemented. Landfill improvements and upgrades will take place in 12 stages, defined as “A” to “K” plus “final contours”. The “final contours” is the closure of the site. The stages are presented in

Table 5 below.

Implementation by: SCRD
 Waste diversion: N/A
 GHG implications: Discussed in section 5.4.5

Table 5. Sechelt Landfill Upgrade Stages

Stage	Upgrades, Capital Projects	Results
A 2010	Re-grade and fill eastern portion of landfill Construct leachate and storm water ponds and water management Temporary cover over filled area Gas extraction wells and gas management	Net additional 4,900 cu m of airspace Additional 4 months of landfill life
B 2011	Increase landfill gas production Reduce leachate production/interim cover tarps Final cover over northeastern part of site (progressive closure)	11,000 cu m of airspace, or 8 months of site life
C 2012	Continue filling in accordance with plan Promote positive drainage Decommission leachate interceptor	18,000 cu m of airspace, or 13 months of site life
D 2013	Continue filling plan Interim cover with laminated tarps (reduce leachate) Decommission leachate interceptor	20,000 cu m of airspace, or 14 months of site life
E 2014	Continued filling as per plan Storm water management plan expansion Laminated tarps for interim cover	24,000 cu m of airspace, or 17 months of site life
F 2016	Interim cover with laminated tarps	29,000 cu m of airspace, or 21 months of site life
G 2018	Interim cover	60,000 cu m of airspace, or 43 months of site life

Stage	Upgrades, Capital Projects	Results
H 2022	Interim cover, Some progressive final cover	41,000 cu m of airspace, or 29 months of site life
I 2024	Interim cover with tarps	40,000 cu m of airspace, or 28 months of site life
J 2026	Interim cover with tarps Landfill gas wells, supply and replace	30,000 cu m of airspace, or 21 months of site life
K 2028	Interim cover with tarps Landfill gas wells, supply and replace	26,000 cu m of airspace, or 18 months of site life
Final contours	Final closure to be completed after 2028 when landfill is full	
	TOTAL CAPITAL COSTS	

5.4.2 Pender Harbour Landfill

A 2008 study by Sperling Hansen Associates (SHA) concluded that the Pender Harbour Landfill, which will be full in about 2012, should be replaced by a compaction transfer station for residual waste. The residual waste would be transported and disposed at the Sechelt Landfill. This was found to be substantially less costly than expanding the landfill.

A subsequent study by SHA further concluded that GHG loading from landfill activities is lowest when all residuals are disposed in a single landfill which has some degree of landfill gas collection. A landfill gas collection efficiency of 50% was assumed by SHA for the Sechelt Landfill gas project.

The SCRD Board has set the direction that upon reaching capacity, the Pender Harbour Landfill will be closed and covered/capped in accordance with the Landfill Criteria for Municipal Solid Waste. The existing Pender Harbour recycling activities will remain fully operational, and only the residual material disposal component will be replaced with a transfer station. The suite of recycling and disposal opportunities for the local community will remain unchanged, except that the residuals will now be buried at the Sechelt Landfill instead of in Pender Harbour.

Closure of the Pender Harbour Landfill will incur closure costs and transfer construction costs in the first year. Thereafter, annual costs can be expected for transfer operations (indefinitely), and post closure care (until 2035). According to an SCRD Staff report on transfer station options, the expected annual operating cost for the Transfer Station will be offset by a reduction in landfill costs once the landfill is closed. After the Transfer Station costs are paid for there will be a net savings after five years.

Implementation by: SCRD
Waste diversion: N/A
GHG implications: Accounted for in Section 5.4.5

5.4.3 Discards Collection – EOW Collection Frequency

The SCRD provides weekly waste discards collection to customers residing within rural garbage collection areas (excludes municipalities, Band Lands and Electoral Area A). Opportunities to increase recycling rates include implementing true user pays pricing for garbage collection services (i.e. volume or weight based Pay-as-You-Throw), enforcing material collection and disposal bans (i.e., paper, cardboard, etc.) within the collection services and reduced collection frequencies. SCRD should consider a Pay-as-You-Throw option in future tenders for garbage collection services. Enforcement of material bans and reduced garbage collection frequency would be implemented once curb-side collection programs for recyclable materials and organics/food scraps are established. These options would reduce collection frequency from weekly to bi-weekly, and encourage residents to use their recyclables and food waste collection services.

ZWMP Action:

Reduce garbage collection frequency to Every-Other-Week once recycling and organics collection programs are implemented. Support with financial incentives and collection and disposal bans of recyclable materials, including organics. Consider a pay as you throw option in future tenders for garbage collection services.

This is an initiative that is aimed at prohibiting disposal of recyclable materials in the garbage collection system and encouraging residents to utilize the waste diversion services. It requires that diversion options are available so that a choice can be made. It takes into consideration reduced disposal service such as bi-weekly collection and smaller disposal quantities, and can be implemented once kitchen organics are collected.

Additional educational material will be required to ensure residents are aware of the changes in the collection program, and what materials are prohibited. The program should also include advertisements, a defined warning process, and staff visits for repeat offenses.

Implementation by:	SCRD
Waste Diversion:	130 tonnes
GHG Implications:	-88 t CO _{2e}

5.4.4 Illegal Dumping

Illegal dumping of waste is problematic in rural areas in the SCR D. In urban and suburban areas of the SCR D, illegal dumping of yard waste into empty lots, ditches and ravines is reportedly a common way to deal with an excess of organic waste. These practices frequently pave the way for others waste materials to become abandoned; and further, yard waste in ditches and ravines can choke riparian habitat or introduce pesticides and fertilizers into surface watercourses.

The Sunshine Coast Regional District maintains a modest budget to support the Good Samaritan Program, which funds the tipping fees for material voluntarily collected from illegal dumping sites that are delivered to SCR D landfills. The SCR D has conducted clean-ups of illegal dumping sites in past years and has installed appropriate signage to deter dumping on an as requested basis, within approved budgets.

Implementation by:	SCRD
Waste diversion:	N/A
GHG implications:	N/A

5.4.5 GHG implications of Landfilling

The vast majority of GHG produced by waste management in the SCR D is due to the production and escape of landfill gas. As mentioned in Section 4, the GHG emissions for disposed waste are estimated at 4,983 tonnes CO_{2e}. Of this, the majority is generated at the Sechelt Landfill, and about 1174 tonnes of CO_{2e} of the total would come from the waste disposed of at Pender Harbour Landfill. To a much lesser degree, some landfill gas will be generated when waste is transported.

From a regulatory perspective, the SCR D is not required to undertake landfill capture, since the peak methane emission was estimated to be about 855 tonnes per year, which is less than the BC MOE Landfill Gas Regulation trigger value of 1,000 tonnes per year (XCG Integrated Landfill Plan, 2010). Nevertheless, plans for the Sechelt landfill

includes gas collection, which is expected to reduce overall GHG by about 50% when fully implemented. This will be supported by the removal of a large portion of the organics from the landfill through the proposed organics program, which will lower the generation of methane in the future. Assuming conservatively that 50% reduction is achieved; this would result in a reduction of GHG of 2491.5 tonnes of CO_{2e} at the Sechelt Landfill.

Transportation of residuals from the Pender Harbour transfer station to the Sechelt Landfill will create additional GHG of 6.2 tonnes of CO_{2e} beginning in 2012. Therefore, the net reduction in GHG from the combined action of closing the Pender Harbour landfill and implementing landfill gas Collection at the Sechelt Landfill will be 2,485.3 tonnes of CO_{2e}.

5.4.6 Waste Export

The SCRD can export waste out of the region to an existing third-party waste disposal facility. This is an additional disposal option for the SCRD should the Sechelt Landfill reach capacity before a new long-term solid waste disposal option is approved and operational.

6. Summary of Plan Components

6.1 Detailed Tables

Diversion initiatives are presented in Table 6 below. This table shows the total diversion and GHG reduction potential for each initiative, as well as a suggested start-up priority for implementation.

Table 6. Summary of Diversion Initiatives

Solid Waste Initiative	Diversion Potential (tonnes)	Diversion Target (%)	GHG Impact (t CO ₂ e)	Start Up Priority* (within 5 year Plan)
Reduction Initiatives				
Incentive Based Tipping Fee	130	1%	-88	Mid
Material Disposal Bans	130	1%	-88	Mid
Residential Waste Reduction Education				Mid
Grass-cycling and Backyard Composting	On-going	On-going		Mid
Waste Stream Control System	n/a	n/a		Mid
Land Use Policies that Support Solid Waste Management Infrastructure	n/a	n/a		Lower
Evaluation Process for Recycling Opportunities	n/a	n/a		Lower
C&D Waste Diversion	1300	10%	-387	Lower
Business Waste Diversion	1300	10%	-411	Lowest
Reuse Initiatives				
Community Reuse & Repair Centres				Mid
Reuse Facilities at Landfills (Share Sheds)				Mid
Building Material Reuse Facilities				Mid
Deconstruction and Salvaging				Mid
Reuse Education (w/ CBSM)	130	1%	-88	Lower
Community Swap Day Pilot Program	60	0.5%	-41	Lowest
Recycling Initiatives				
Resource Recovery Centres	260	2%	-176	
Pender Harbour				High
Sechelt				High
Gibsons				High
Curbside Collection for Recyclables**	115 to 280	1 % to 2%	-78 to -162	Mid
Curbside Collection for Food Scraps**	375 to 1200	3% to 9%	-52.5 to -194	Lower
Processing Capacity for Yard Waste Composting				Lower
EPR Management Programs	130	1%	-130	Lower
Residuals Management Initiatives				
Sechelt Landfill Development & Gas Control				High
Pender Harbour Landfill Closure & Residuals Transfer Facility				Mid
EOW Garbage Collection (Linked with Collection and Disposal Bans)	130	1%	-88	Lower
Illegal Dumping Program Enhancements				Lower

* Priority order: High (soonest), Mid, Lower, Lowest (latest). Note that in this case priority is used to indicate timing of implementation rather than the suggested value of a given initiative. An initiative marked as having "high" priority is not necessarily recommended over an initiative given "medium" priority, rather this simply suggests that the former proceeds earlier than the latter. In many cases this is because certain initiatives must be in place to support subsequent initiatives (e.g. material disposal bans cannot be implemented until access to an appropriate diversion program is available for that material).

**Low end of range assumes curbside recycling and food scraps collection is implemented in pilot areas only, high end of range assumes that, following successful completion of a pilot program, curbside recycling and food scraps collection programs are implemented for all households within municipal and rural garbage collection areas.

6.2 Summaries

Data presented in this section is based on two possible scenarios (represented as a range in the tables below). The first scenario assumes that curbside recycling and food scraps collection programs are implemented in the pilot collection areas only (low end of the range), while the second assumes that, following successful completion of a pilot program, curbside programs are implemented for all households within municipal and rural garbage collection areas (high end of the range).

6.2.1 Waste Diversion Progress

The proposed ZWMP foresees the escalation of diversion from an already impressive 50% to as much as 69% when all programs are implemented, as shown in Table 7. This does not include additional EPR programs which have not yet been defined at the provincial level. However, EPR programs, if aggressively pursued, could help to achieve even higher diversion numbers. Reaching close to 70% diversion is a formidable target and would place the SCRD on the forefront of regional districts embracing and acting on the zero waste principle.

Table 7. Example of Potential Waste Diversion Progress*

Year	Diversion (%)
2010	50%
2011	50%
2012	52%
2013	56 - 60%
2014	60 - 64%
2015	63 - 67%
2016	65 - 69%

*Actual diversion progress may vary and will depend on the timing of implementation of Zero Waste initiatives.

6.2.2 GHG Reduction – Zero Waste Initiatives Only

Hand in hand with the diversion of resources from the landfill comes the reduction of greenhouse gas (GHG) emissions. The diversion programs planned are expected to reduce GHG by 1,486 tonnes of CO₂e per year by the end of the planning period. Add to this the GHG reduced at the landfill through methane extraction, then the total GHG reduction is in the range of 4,000 tonnes of CO₂e. See Table 8 for GHG reduction from diversion programs.

Table 8. Improvements in GHG Reduction from Zero Waste Initiatives*

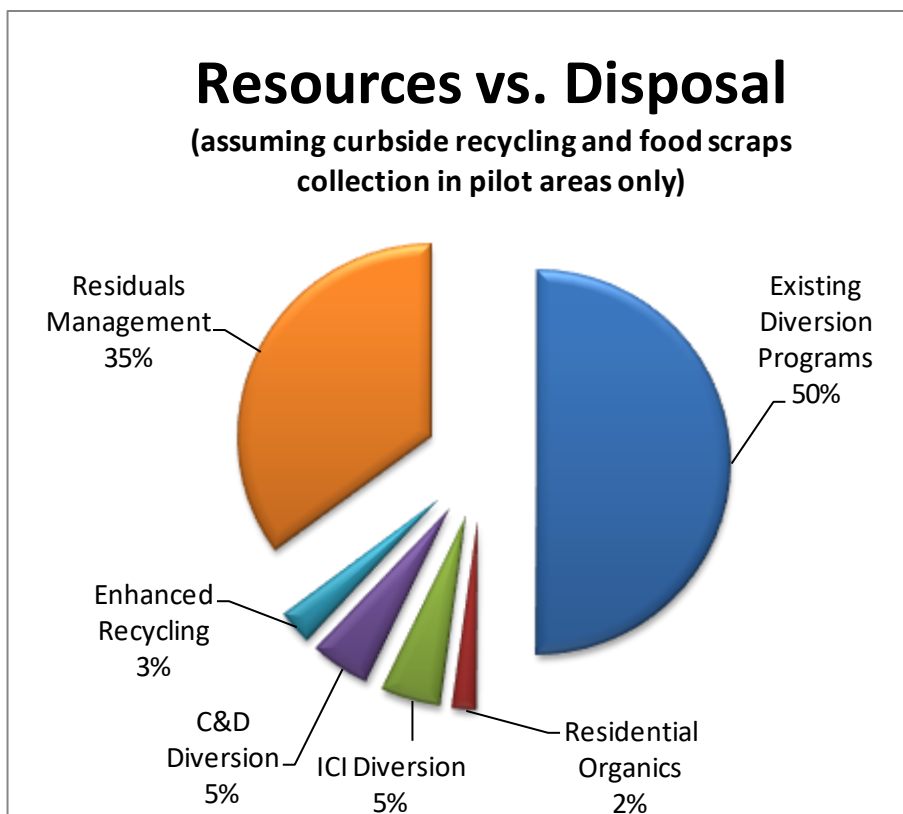
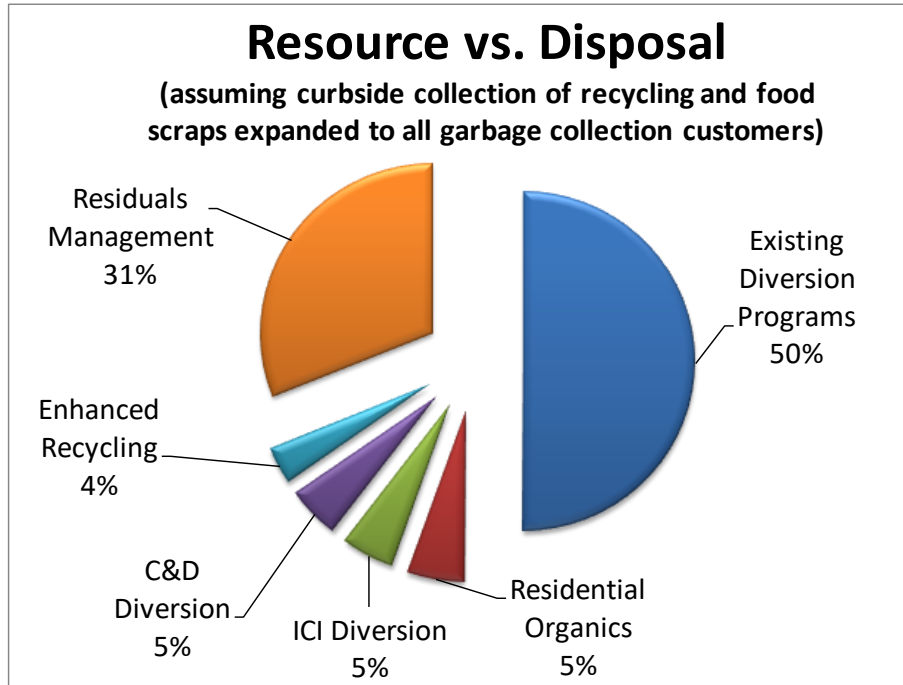
CO ₂ e Reduction through Waste Diversion Programs only	
Year	Tonnes CO ₂ e
2011	0
2012	430 – 542
2013	982 – 1148
2014	1284 – 1450
2015	1524 – 1690
2016	1627 – 1793

*Actual GHG reduction progress may vary and will depend on the timing of implementation of Zero Waste initiatives.

6.2.3 Resource vs. Disposal

Figure 8 below illustrates how the Zero Waste initiatives contribute to reducing disposal in the SCRD.

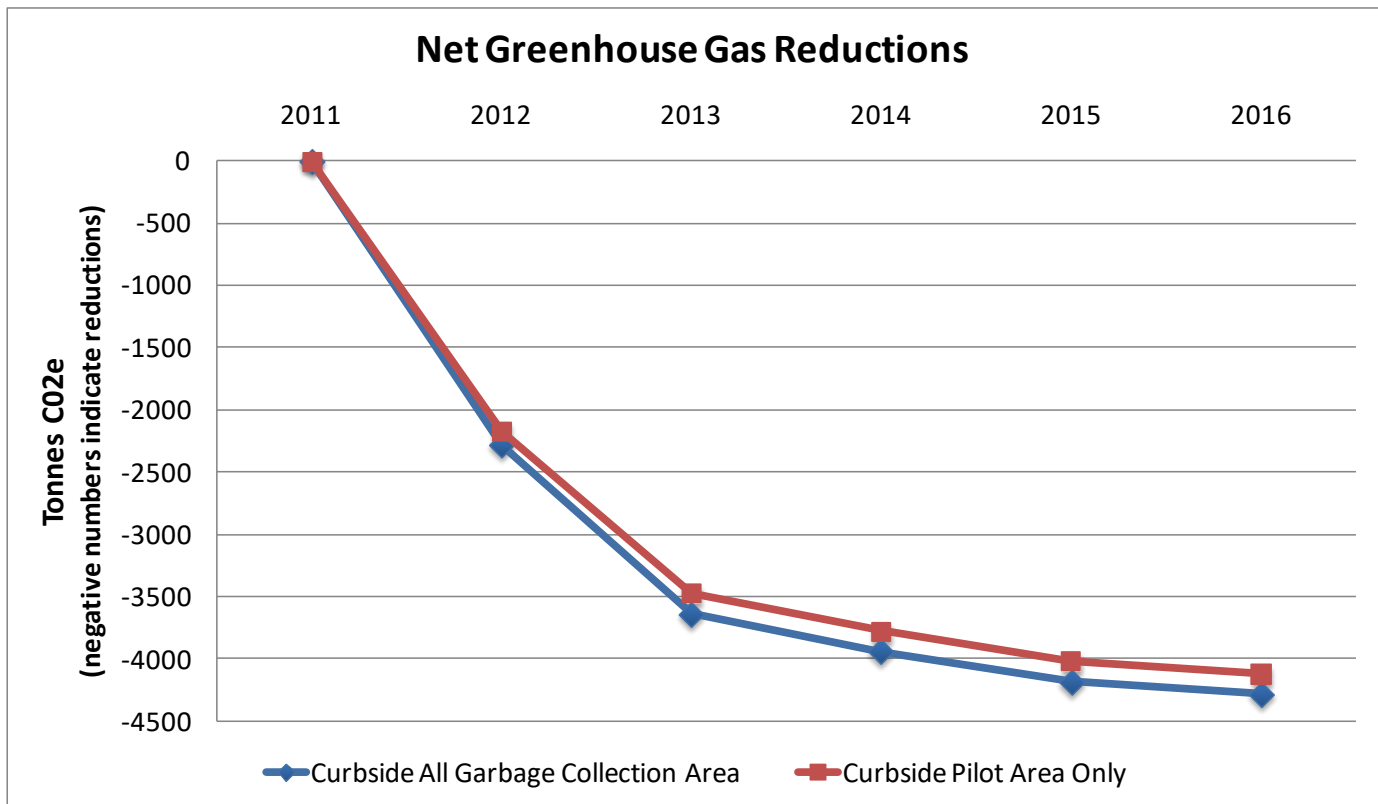
Figure 8. Zero Waste Initiatives that Lead to Reduced Disposal



6.2.4 Total GHG Reductions

In Figure 9 below, the decrease in net GHG emissions is demonstrated as waste diversion and landfill management programs are put into place. Major contributors of GHG reduction are organics management programs and landfill gas capture.

Figure 9. Net GHG Reductions from Waste Diversion and Landfill Management Programs



7.0 Plan Administration

7.1 Staffing Implications and Requirements

Administration of the Plan may require additional staffing. Preliminary estimates of additional staffing requirements are presented in the *Preliminary Financial Implications Companion Document – Draft* for planning purposes only.

7.2 Cost Recovery Mechanisms

Cost recovery mechanisms that will be utilized to fund the Plan's implementation include:

- Tipping fees. To the extent possible, tipping fees and differential/incentive tipping fees will be used to cover the cost of landfill operations, upgrades, closure and future capacity planning. Any remaining funds will be used to cover administration costs and the expansion of recycling programs. It is expected that tipping fees will have to rise to cover additional costs of diversion in two ways (applying the user-pay principle):
 - The costs of the programs themselves, and the staff required to implement them; and
 - Offsetting the reduced revenue from disposing fewer discards at the landfill. Less material disposed is desirable, but results in lower tipping revenue overall, so the material that is still placed needs to generate higher income.
- User fees. Where the programs provide tangible convenience to the user of the system, such as curbside collection of recyclables, organics and residuals, this cost will be recovered through user fees.
- Taxation. The principle of this ZWMP is user-pay, so taxation will be used where appropriate but not as a preferred option in all cases. Wherever possible, other forms of financing will be explored.
- Provincial and federal grants. Programs, such as the Green Municipal Enabling Fund will be evaluated for their ability to contribute to all of the initiatives that will be undertaken as part of this plan, and applications submitted accordingly.
- Revenues from sale of recyclable materials.
- Stewardship fees.

This ZWMP itself does not represent a final commitment of funds by the SCRD. Decisions related to the funding of the implementation of this ZWMP will be made through the annual budgeting process and following full consultation with member municipalities.

7.3 Role of Plan Monitoring Advisory Committee

The Working Group that provided strong guidance for the development of the ZWMP had finished its mandate by the time the Plan was approved by the SCRD Board. The Plan Monitoring Advisory Committee (PMAC) will continue to review implementation activities of the Plan. The composition of the PMAC will strive for a broad representation of interests in the region, including local government, First Nations, waste management industry, environmental groups and organizations, the business sector, residents at large and senior governments. The SCRD Board will allocate one member to the committee, who will provide direct liaison between the committee and the SCRD Board in an advisory capacity. It is suggested that some members of the current committee may be appointed to provide their input on PMAC membership, due to their detailed knowledge of the Plan and to support continuity.

The role of the PMAC is to provide an independent review of Plan implementation. Committee members will:

- become familiar with the ZWMP and its guiding principles (if they are new to the process);
- achieve an understanding of the solid waste system in the SCRD;
- develop methodologies for monitoring of Plan implementation and performance;

- report annually on the effectiveness of the ZWMP achieving its objectives; and
- make recommendations on how to increase the effectiveness of the Plan or the solid waste management system.

Three meetings per year are proposed as a minimum. At the Committee's discretion, there can be additional meetings held, and presentations and workshops organized as required within budgetary constraints. In addition to encouraging local government participation on the PMAC, SCRD staff will work directly with municipal staff to coordinate the implementation of programs approved in this ZWMP.

7.4 Plan Flexibility

Major changes to the ZWMP require an amendment. The criteria for defining a major change are outlined in the Guide for the Preparation of Solid Waste Management Plans by Regional Districts, published by the BC MOE. For brevity, these criteria are not repeated here.

Costs are provided in the *Preliminary Financial Implications Companion Document – Draft* and are estimates based on information known at this time, and may not reflect the actual costs at the time of implementation. As a result, programs and infrastructure may undergo further assessment, including a review of costs and continued community support, by local government staff prior to implementation.

The schedule for the ZWMP will be flexible enough to reflect variability in priorities and available funding at the SCRD and its member municipalities. Flexibility is also warranted when implementing components of the Plan, directly or through private firms and /or non-profit organizations. Adequate time will be allowed for a public proposal and/or tendering process, when required.

Notwithstanding the above, the contents of this ZWMP are subject to legal requirements, and as a result, guidance and direction from the approving agency (MOE) will be sought to confirm appropriate levels of flexibility on a case by case basis.

Appendix A

Glossary / Acronym List

Appendix A Glossary / Acronym List

Term	Definition/Description
AC	Advisory Committee
Aseptic Containers	Juice boxes, dairy and dairy substitute containers, soup boxes, etc.
Biomass	Wood based material that is used as a fuel.
C&D Waste	Construction and demolition (C&D) materials consist of the waste generated during the construction, renovation, and demolition of buildings, roads, and bridges. C&D materials often contain bulky, heavy materials, such as concrete, wood, metals, glass, and salvaged building components.
CAP	Canada-wide Action Plan – for Extended Producers Responsibility that was adopted by CCME
Carpet	Carpet, rugs
CBSM	Consumer Based Social Marketing
CCME	Canadian Council of Ministers of the Environment
CEEP	Community Energy and Emissions Plan that was developed by the SCRD.
Clean wood waste	<p>Uncontaminated wood or wood products, from which hardware, fittings and attachments, unless they are predominantly wood or cellulose, have been removed (e.g., clean wooden shakes and shingles, lumber, wooden siding, posts, beams or logs from log home construction, fence posts and rails, wooden decking, millwork and cabinetry). Clean wood waste excludes:</p> <ul style="list-style-type: none"> any engineered or chemically treated wood products, such as products with added glues or those treated for insect or rot control (oriented strand board, plywood, medium density fibre board, wood laminates or wood treated with chromated copper arsenate, ammoniacal copper arsenate, pentachlorophenol or creosote); upholstered articles; painted or varnished wood articles or wood with physical contaminants, such as plaster, metal, or plastic; and any wood articles to which a rigid surface treatment is affixed or adhered. <p>Clean wood waste also excludes other materials found in the construction and demolition waste stream such as gypsum or drywall, fibreglass, asphalt or fibreglass roofing shingles, metals or plastics.</p>
CO₂ e	Carbon Dioxide equivalent – is a distinct measure for describing global warming and amount of greenhouse gas as a functional equivalent amount or concentration of carbon dioxide (CO ₂).
Collection	The process of picking up wastes from residences, businesses, or a collection point, loading them into a vehicle, and transporting them to a processing, transfer, or disposal site.
Composite materials	<p>Packaging (Dog food bags, food packaging such as cylindrical cardboard and metal tubes)</p> <p>Household Goods (children's toys)</p> <p>Diapers, Sanitary products</p> <p>Bulky Items (luggage, sporting goods)</p>
Composting	Biodegradation of organic wastes using bacteria in the presence of oxygen. This requires that the waste be exposed to air, either via turning or by forcing air through pipes that pass through the material.
Compostable Paper Products	Compostable packaging, coffee cups, paper bags, kleenex, paper towel.
Consumer Based Social Marketing (CBSM)	Community-based social marketing is an approach that has been identified as being particularly effective in fostering change. This approach consists of a number of tools that works together to promote sustainable behaviour.
Curbside Collection	Collection system whereby materials are collected at the curb in front of resident's homes.
Dirty wood waste	Treated wood, painted wood.
Discards	Materials that are discarded and sent for disposal.
Disposal	Waste that is sent to landfill
Diversion	Waste that is generated but that is handled through recycling or reuse instead of being disposed.
E-waste	<p>Electronic waste</p> <p>Includes items covered by stewardship programs (such as televisions, CRT Monitors) and items not covered by stewardship programs (such as microwaves and small appliances).</p>
RCBC	Recycling Council of British Columbia

Term	Definition/Description
Encorp	Not for profit organization that administers collection programs for EPR materials such as beverage containers and e-waste.
Environmental Management Act (EMA)	Environmental legislation for the Province of British Columbia
EPR	Extended Producer Responsibility
Extended Producer Responsibility (EPR)	An environmental policy approach in which a producer's responsibility (physical and/or financial) for a product is extended to the post-consumer stage of a product's life cycle. There are two key features of EPR policy: (1) the shifting of responsibility (physically and/or economically, fully or partially) upstream to the producer and away from local governments, and (2) to provide incentives to producers to take environmental considerations into the design of the product.
Fines	Cigarette butts, bottle caps, bits and pieces, etc.
FTE	Full Time Equivalent that has relevance to staff requirements
Glass	Beverage containers (deposit and non-deposit bearing containers) Glass food containers (jars) Non-container glass (broken glass, picture frames etc)
Green Waste	Green vegetative materials such as grass clippings, leaves, branches and plant materials.
GHG	Greenhouse Gas
Greenhouse Gas	Is a gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect.
GRIPS	Garbage and Recycling in Pender Society
Gypsum	Drywall
HHW	Household Hazardous Waste Includes items covered by stewardship programs (such as CFLs, paint, solvents, used oil and containers, batteries) and items not covered by stewardship programs.
ICI waste	Waste generated by institutions (such as schools), commercial establishments (such as stores, restaurants) and industrial establishments (light manufacturing).
Inert Waste	Dirt, rocks, ash
Landfill	The final disposal location of solid waste that operates by placing discards in a controlled fashion intended to be permanent.
Leachate	Liquid (which may be partly produced by decomposition of organic matter) that has seeped through a landfill or a compost pile and has accumulated bacteria and other possibly harmful dissolved or suspended materials. If uncontrolled, leachate can contaminate both groundwater and surface water.
Material Recovery Facility (MRF)	A facility for separating commingled recyclables by manual or mechanical means. Some MRFs are designed to separate recyclables from mixed MSW. MRFs then bale and market the recovered materials.
Metal	Beverage containers(deposit and non-deposit bearing containers) Metal food containers (cans) Household metal (keys, nails, hangers etc) Non-household metal (siding, pipes)
MPP	Mixed paper products
MSW	Municipal solid waste Includes predominantly household and commercial waste. MSW generally excludes hazardous wastes. In the PRRD, MSW is distinct from construction and demolition waste (see C&D waste).
Municipal Solid Waste (MSW)	all solid waste generated except industrial and agricultural wastes. It includes construction and demolition debris and other special wastes that may enter the municipal waste stream.
OCC	Old corrugated cardboard
ODS	Ozone Depleting Substances
OMRR	Organic Matter Recycling Regulation
One-Stop Shop	Phrase describing where all solid waste diversion activities can be conducted in one location.
ONP	Old newsprint (including flyers)
Other	Items not covered in the categories above
Organics	Materials that are organic in nature including food waste, yard waste (grass clippings, yard trimmings) and woody materials.

Term	Definition/Description
Organic Matter Recycling Regulation (OMRR)	Regulation developed in accordance with British Columbia's Environmental Management Act that mandates requirements for accepting, processing and managing organic materials such as food waste, yard waste, biosolids and soil.
Packaging	an enclosure that is used to protecting products for distribution, storage, sale, and use.
PAYT	Pay As You Throw – a financial concept for paying disposal fees based on the quantity one throws out for disposal.
Pet Waste	Dog waste, cat litter box waste
Plastics #1-7	#1 PET: soda bottles and water bottles #2 HDPE: milk bottles, detergent bottles and grocery/trash/retail bags #3 PVC: loose-leaf binders and plastic pipes #4 LDPE: dry cleaning bags, produce bags and squeezable bottles #5 PP: medicine bottles, aerosol caps, drinking straws and food containers (such as yogurt, ketchup bottles and yogurt tubs) #6 PS: compact disc jackets, packaging Styrofoam peanuts and plastic tableware #7 Other: reusable water bottles, certain kinds of food containers, plastic consumer goods
Product Stewardship	A term used in British Columbia to describe a government strategy to place the responsibility for end of life product management on the producer and consumers of a product and not the general taxpayer or local government.
Reduction	Waste that is prevented from being generated. This may be achieved through changes in consumption habits or changes in the way products are sold.
Residential waste	Waste generated by households
Resource Recovery Facility	A facility that is equipped to extract and utilize materials from the waste stream.
SIGD	Sechelt Indian Government District
Single stream recycling	Recycling approach where recyclable materials are collected in one bin and sorted at a Material Recovery Facility.
SCRD	Sunshine Coast Regional District
SHA	Sperling Hansen Associates
Textiles	Clothing, rags, cloth material
Transfer station	A major facility at which waste from collection vehicles is consolidated into loads that are transported by larger trucks or other means to more distant final disposal facilities, typically landfills.
Waste	(also known as rubbish, trash, refuse, garbage, or junk) is unwanted or unusable materials.
Waste management hierarchy	A concept that refers to the 5Rs of waste management: reduce, reuse, recycle, recover, residuals management. The hierarchy places greater emphasis on up-stream waste management activities, such as reduce and reuse.
Waste reduction	All means of reducing the amount of waste that is produced initially and that must be collected by solid waste authorities. This ranges from legislation and product design to local programs designed to keep recyclables and compostables out of the final waste stream.
Waste-to-energy (WTE) facility	A facility that uses solid waste materials (processed or raw) to produce energy. WTE plants include incinerators that produce steam for district heating or industrial use, and/or generate electricity. They also include facilities that convert landfill gas to electricity.
Yard waste	Leaves, grass clippings, prunings, and other natural organic matter discarded from yards and gardens
Zero Waste	Is a design principle for the 21 st Century. It includes recycling but goes beyond recycling by taking a system-wide approach to the vast flow of resources and waste through human society.
Zero Waste International Alliance	Organization that promotes positive alternatives to landfill and incineration and to raise community awareness of the social and economic benefits to be gained when waste is regarded as a resource base upon which can be built both employment and business opportunity.

Appendix B

Stage 1 – Review of Existing Waste Management System