



SQUAMISH ZERO WASTE ACTION PLAN

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Prepared by:

WCS engagement
+ planning

ECOINSPIRE

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Acronyms

CAN – Squamish Climate Action Network
CCAP – Community Climate Action Plan
DoS – District of Squamish
DBIA – Downtown Business Improvement Association
ENGO – Environmental Non-Governmental Organization
EPR – Extended Producer Responsibility
ICI – Industrial, Commercial and Institutional
OCP – Official Community Plan
PPP – Printed Paper and Packaging
SLRD – Squamish-Lillooet Regional District
WTE – Waste to Energy
ZWAP – Zero Waste Action Plan

Acknowledgements

The District of Squamish (DoS) is appreciative of the Zero Waste Stakeholder Committee, whose expertise was instrumental in the development of the plan. The Committee was comprised of the following members:

Cody Abercrombie	Squamish Welcome Centre
David Daniels	Phase One Dismantling & Removal Services
Denise Imbeau	GFL Environmental
Dr. Halia Valladares	Quest University Canada
Eden Imbeau	GFL Environmental
Emma Cox	Squamish Food Bank
Gino Matino	Solterra Development Corp.
Jaye-Jay Berggren	Sea to Sky Soils
Jenna Stoner	District of Squamish Council
Jennifer Mooney	WeFill Mobile Market & Refillery
Jess Freese	Sunwolf Riverside Resort & Fergie's Cafe
Joshua Kearns	Sea to Sky Gondola
Jules Litster	Squamish CAN
Kathryn Swanson	Got Cans
Lucy Wood	Sea to Sky Gondola
MariaJesus Muñoz	Squamish Welcome Centre
Mark Robichaud	Diamond Head Development
Pascal Marcotte	Squamish Helping Hands
Peter Poburan	Squamish Resident
Shanda Dosanjh	Squamish ReBuild
Valerie Nagy	Pearl's Value & Vintage

The DoS also acknowledges and thanks all of the residents and businesses who participated in the survey, interviews and pop-up conversations to provide their feedback and insight.

Introduction

Squamish is rapidly growing and landfill space is quickly diminishing. In 2021 (Census), the population of the District of Squamish (DoS) was 23,819 and it is expected to increase to approximately 30,000 by 2031 (with a growth rate of over 3% per year over the next 20+ years).¹ To address these growing needs and to provide the next steps for moving towards zero waste, the DoS has updated its 2016 Zero Waste Strategy.

To inform the development of the new Zero Waste Action Plan, Squamish's current reality was assessed to summarize baseline performance and the current zero waste system and to gauge progress made since the last Zero Waste Strategy was approved. The DoS has enacted many best practice policies and systems to move towards zero waste and is continuing this leadership in addressing consumption and reducing waste. Additionally, the DoS is in the unique position of owning its own landfill, and waste diversion can be targeted at the place of separation as well as at the Squamish Landfill.

The following sections outline the current waste generation and the forecasted waste generation using per capita generation rates. Per capita measures of waste disposal provide a way of examining changes in disposal while accounting for the effects of population changes. It is assumed that the growth in the amount of waste being sent for disposal can be attributed to population growth and not necessarily to an increase in the intensity of waste production per capita.

Definitions

Zero Waste

Zero Waste is defined as:

"The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health."

Zero Waste International Alliance, 2018

This definition can be further explained by these statements:

"Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use."

Zero Waste means designing and managing products and processes to systematically avoid and eliminate 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 are a threat to planetary, human, animal or plant health."

Squamish uses this definition of Zero Waste as the guiding principle by which the goals and desired outcomes are articulated, and the strategies and actions are identified.

¹ The Squamish OCP (2018) indicates that under a high growth scenario, Squamish could see approximately 24,000 new residents by 2036 with an associated housing need for 9,600 new units.

Zero Waste Hierarchy

The Zero Waste hierarchy describes a progression of policies and strategies to support the Zero Waste system, from the highest and best to the lowest use of materials. It is designed to be applicable to all audiences, from policy-makers to industry and the individual. It aims to provide more depth to the internationally recognized 3Rs (Reduce, Reuse, Recycle); to encourage policy, activity and investment at the top of the hierarchy; and to provide a guide for those who wish to develop systems or products that move us closer to Zero Waste. It enhances the Zero Waste definition by providing guidance for planning and a way to evaluate proposed solutions. Descriptions of each level of the hierarchy can be seen at Zero Waste Canada.

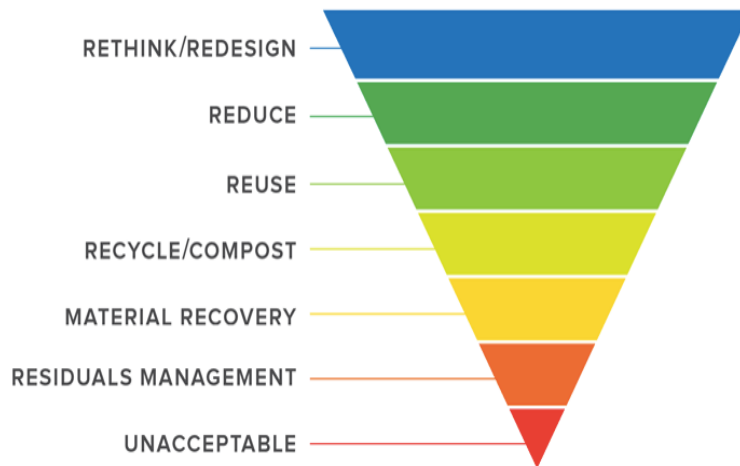


Figure 1. Zero Waste Hierarchy [Zero Waste International Alliance]

Circular Economy

The Circular Economy is an economic system aimed at eliminating waste and promoting the continual use of resources. The 'take-make-consume-throw away' pattern is linear. Circularity is more than waste management. It is addressing the need for consideration of the circular process to occur from cradle to grave, from the ideation of a product through its full useful life, and into its next use or stage. This approach focuses on waste reduction, resource optimization and efficiency, by planning for the ongoing use of materials.

Although there are a variety of frameworks to reference, it is generally agreed that the core elements of the Circular Economy are: prioritizing regenerative resources, stretching the lifetime of products, and using waste as a resource, as illustrated in Figure 2.

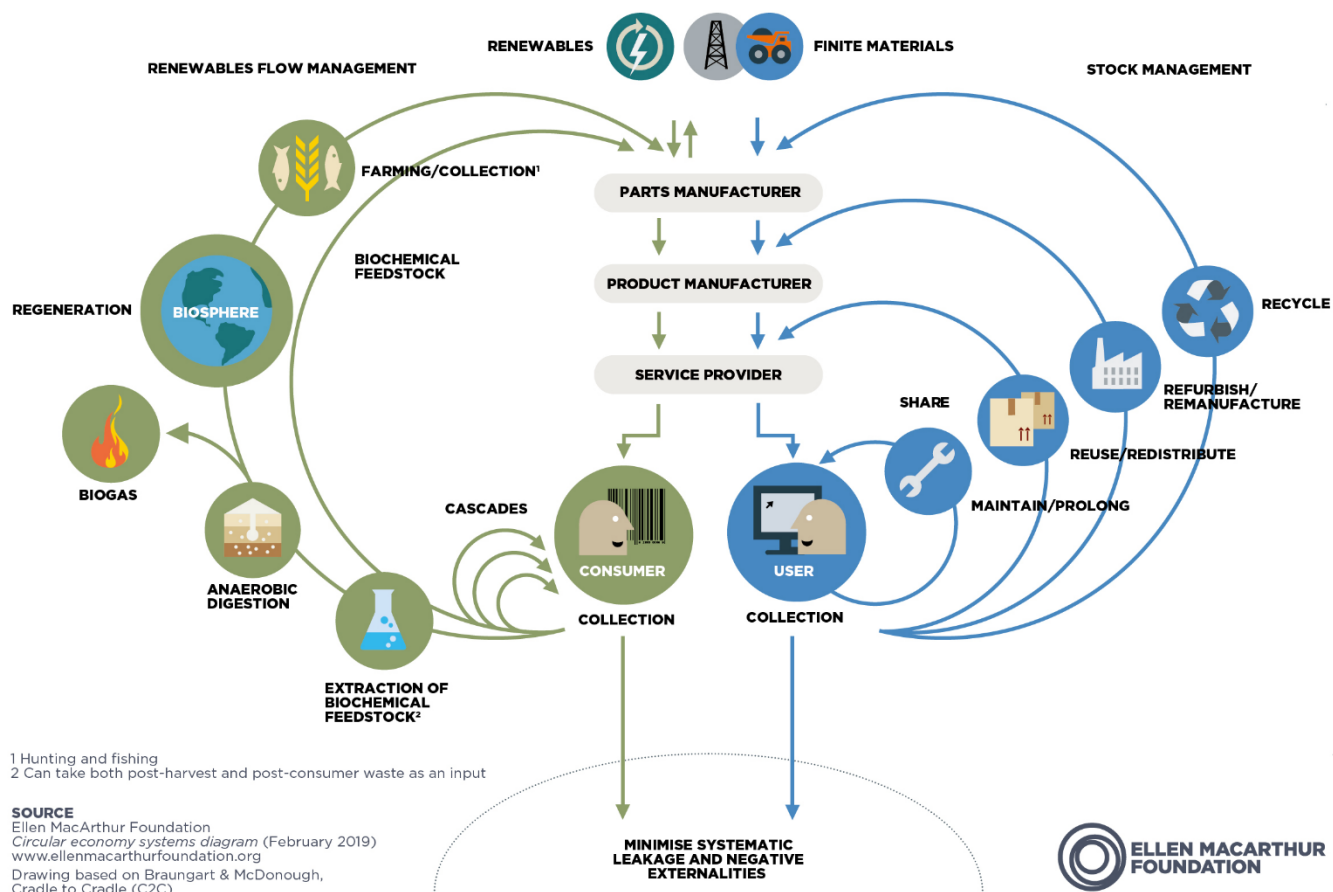


Figure 2. Circular Economy Butterfly Diagram [Ellen MacArthur Foundation]

Baseline Performance & Solid Waste Trends

The information below shows the current situation of waste generation and management using the most recent information from tonnage collected from hauler, the landfill scale and extended producer responsibility programs (EPR), in addition to data from the 2022 waste composition study.

Waste Generation

Per capita waste generation tracked over time is shown in Figure 3. In 2021, 507 kg of waste was generated per capita. Progress has been made in overall waste reduction since the adoption of the Zero Waste Strategy; however, more work is needed to achieve the targets set by the province and the DoS Council.

Squamish Waste Produced

per capita per year on average (in kgs)

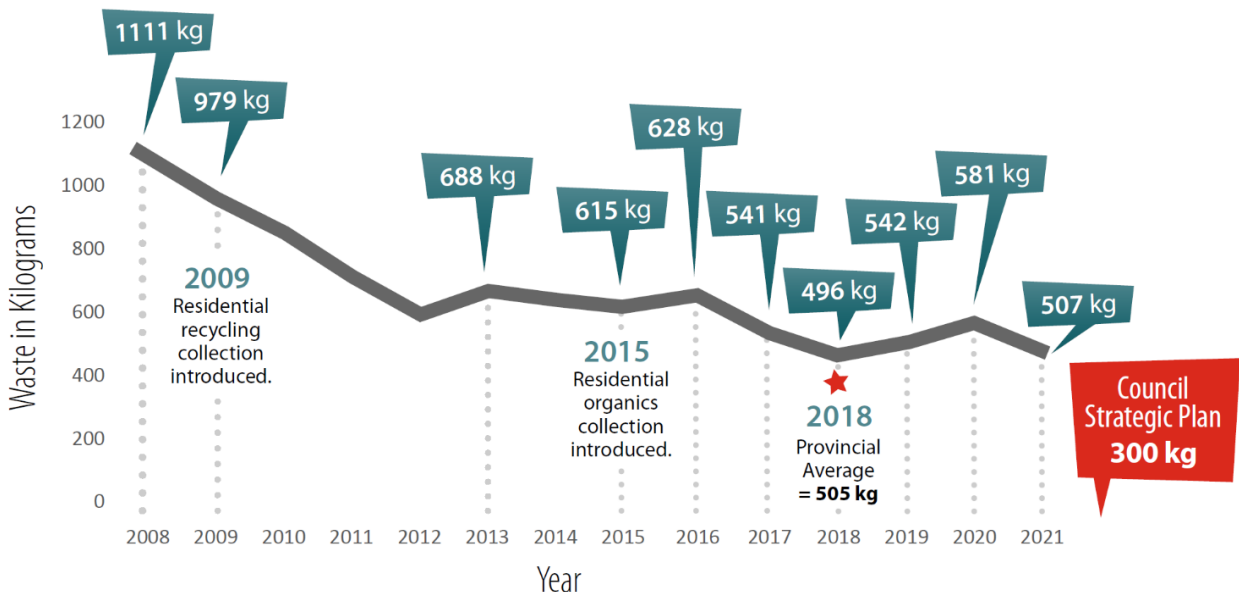


Figure 3. Squamish Waste Produced, Garbage per Capita per Year (District of Squamish, 2022)

The waste in Squamish is generated by different sectors (residential - both single family and multi-family homes; industrial, commercial and institutional; and construction and demolition) that have different types of services and may need different strategies to addresss their waste. Figure 4 below shows these generations (as estimates) for 2022. Note that the way that waste is categorized at the landfill does not exactly match the sectors typically used for waste planning. In the DoS, both the curbside and commercial waste categories include multi-family complexes (townhomes/duplexes and apartment buildings). Commercial also includes construction waste that is hauled by a waste hauler. Additionally, the exact source of residential waste is uncertain, and could come from single or multi-family homes. The “other” category includes mixed waste, invasive species, and community clean-ups.

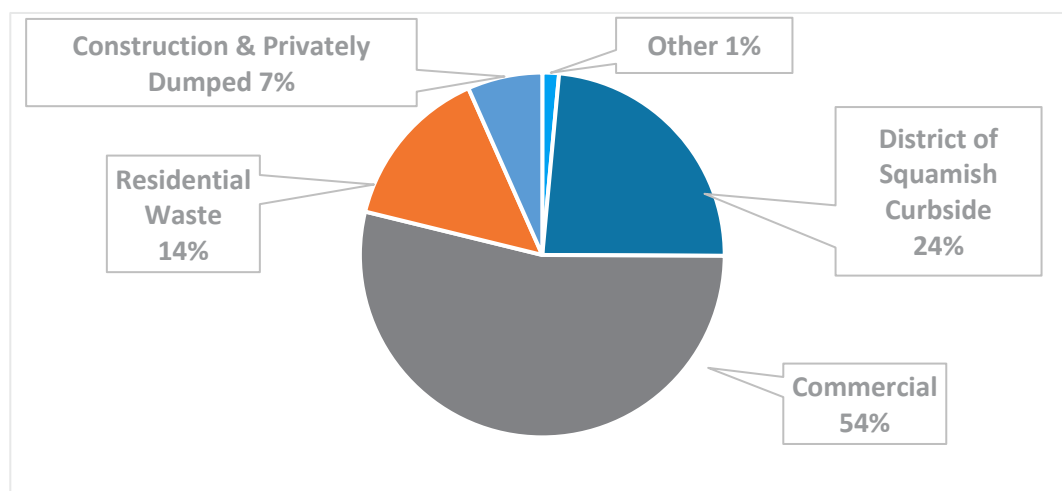


Figure 4. Waste Generation by Sector Based on Landfill Scale Weights (2022)

Waste Composition

Material is diverted from the Squamish Landfill through recycling and organics collection for residential curbside, multi-family residences collection and drop-off, in ICI settings and through the Landfill Transfer Station Recycle Depot. Extended Producer Responsibility programs (EPR) also provide depot drop-off and return-to-retail collection programs for specific products in addition to being responsible for the residential packaging and paper recycling collected through the curbside recycling program (see Table 1). Figure 5 below shows both the amount of waste disposed per capita in the single family, multi-family, and ICI sectors and estimated proportion of materials based on waste composition studies. A decrease in organics (which includes wood waste) disposed can be seen with the new policies and systems that Squamish has implemented but despite those initiatives, organics still remain the largest component of waste (27%).² Due to the small number of samples, changes between years need to be interpreted as snapshots versus being representative of the whole sector.

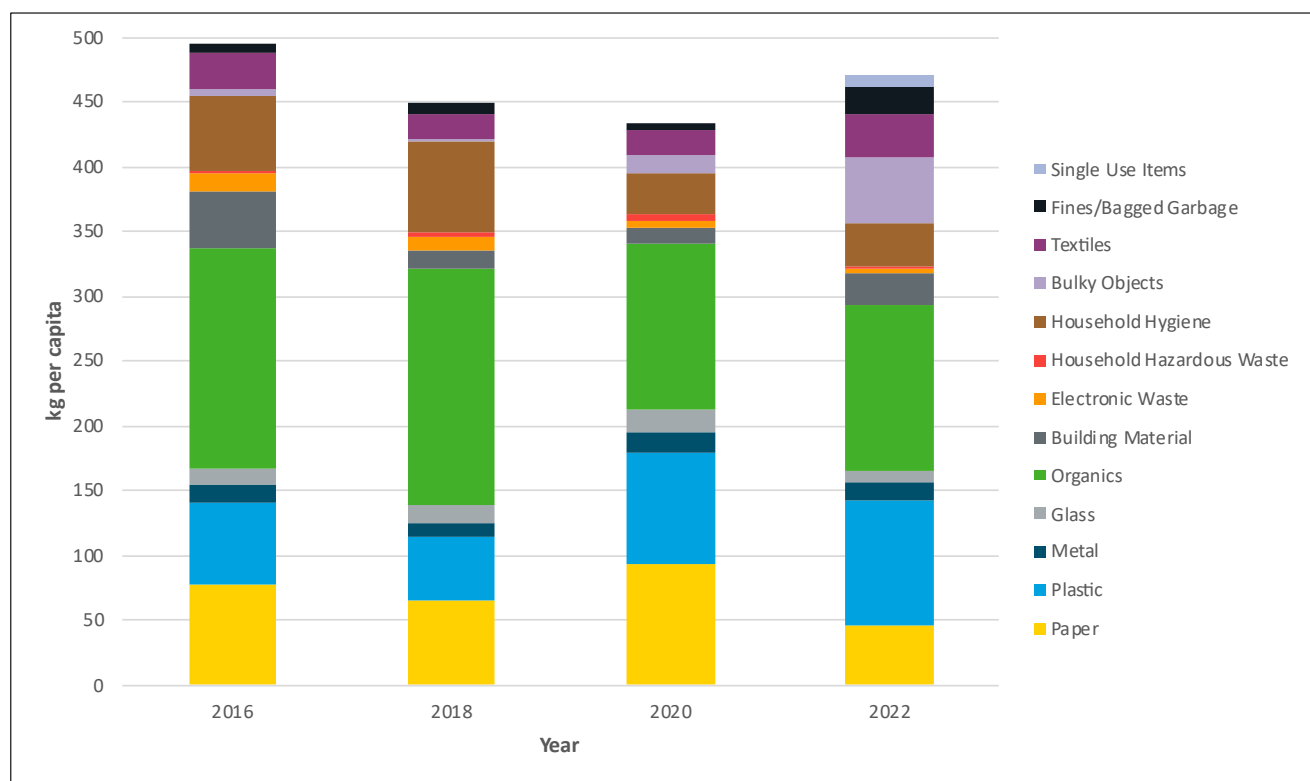


Figure 5. Waste Composition for Single Family, Multi-Family, and ICI Sectors (based on data from Tetra Tech and GFL)

Figure 6 shows the composition of the material going to landfill. The 2022 waste composition analysis shows a significant amount of compostable and recyclable material in the waste going to landfill; it is estimated that more than two-thirds of the materials could have been diverted from landfill.

² Figure 5 shows a lower amount of total waste in 2020 due to challenges determining the source of some of the waste. In 2022 a new category for single use items was added and sorted for residential waste only. A change in the process resulted in more waste categorized as bagged.

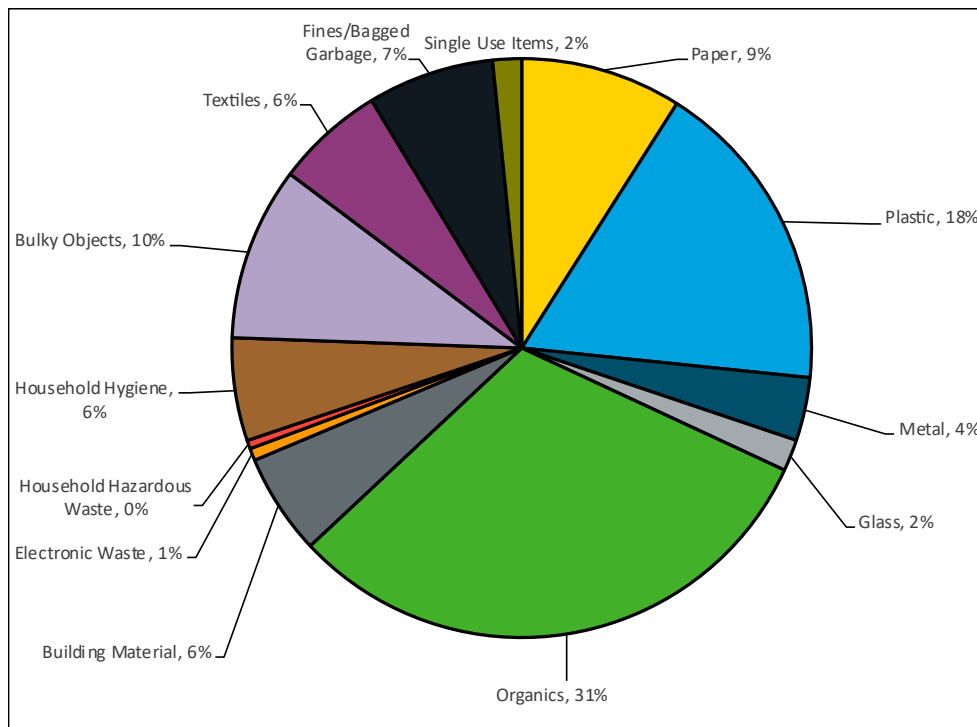


Figure 6. Waste Composition Across Sectors (Tetra Tech, 2022)

Figure 7 shows the amount of waste disposed per capita in the C&D sector and estimated proportion of materials. Most of the waste from the C&D sector is wood (classified as organics). Note that C&D waste samples are highly variable and heterogenous.

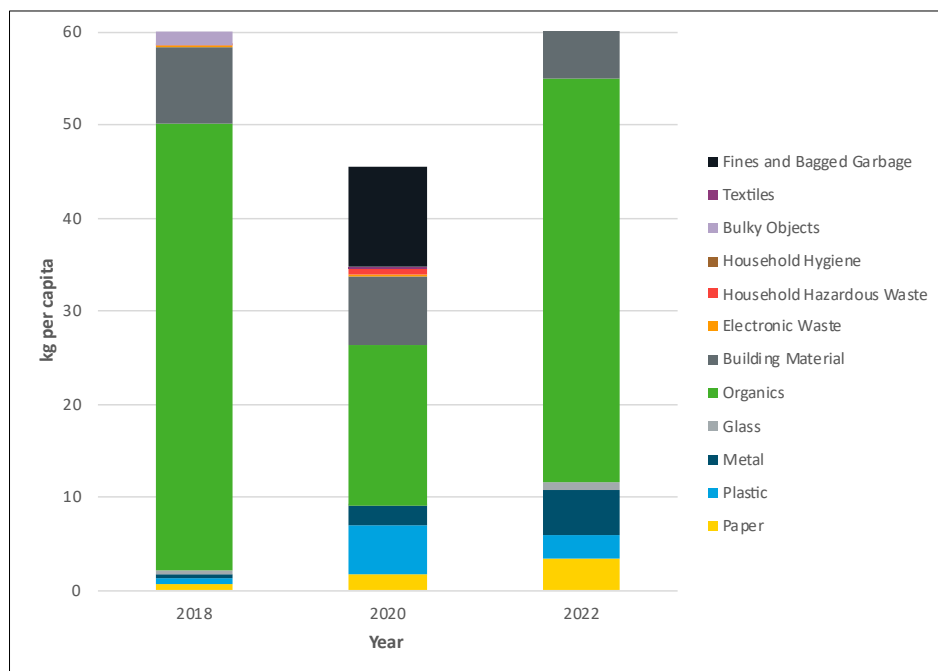


Figure 7. Waste Composition for the C&D Sector (based on data from Tetra Tech and GFL)

Waste Diversion

Further work has been done to quantify the amount of material that has been diverted through recycling collection, organics collection, EPR programs and drop-off. The latest comprehensive recycling estimate is for 2021, which shows a diversion rate of 56% (Figure 8) when including the wood sent to co-generation.

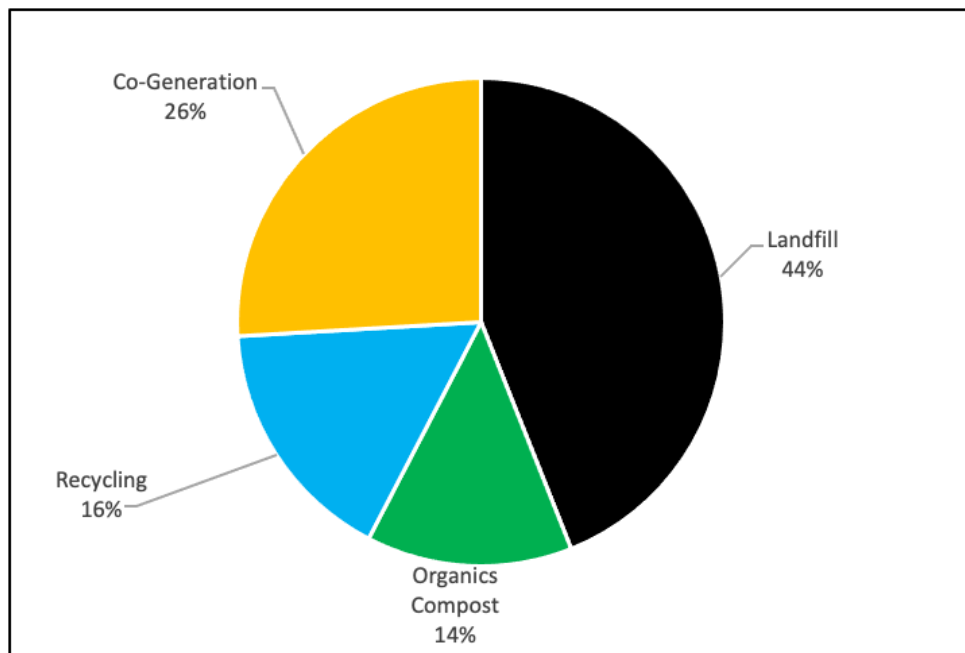


Figure 8. Estimated 2021 Waste Diversion (based on data from GFL and product stewards)

GHG Emissions

2017 GHG emissions within Squamish boundaries are shown below by sector in Figure 9. The key sources of downstream emissions from waste are the methane formed when organics are landfilled and to a much smaller degree, the transportation of waste and organics. While the footprint of materials by consumption would be much larger, this shows that even just the downstream emissions of waste within Squamish are significant, making up the third largest source (or the largest if using a 20-year global warming potential lens, as methane is a much more powerful GHG over the shorter term). Since 2017 many actions have been taken to reduce the GHG footprint of waste and more actions have been identified for implementation, such as the construction of the active landfill gas collection and flare system (2021).

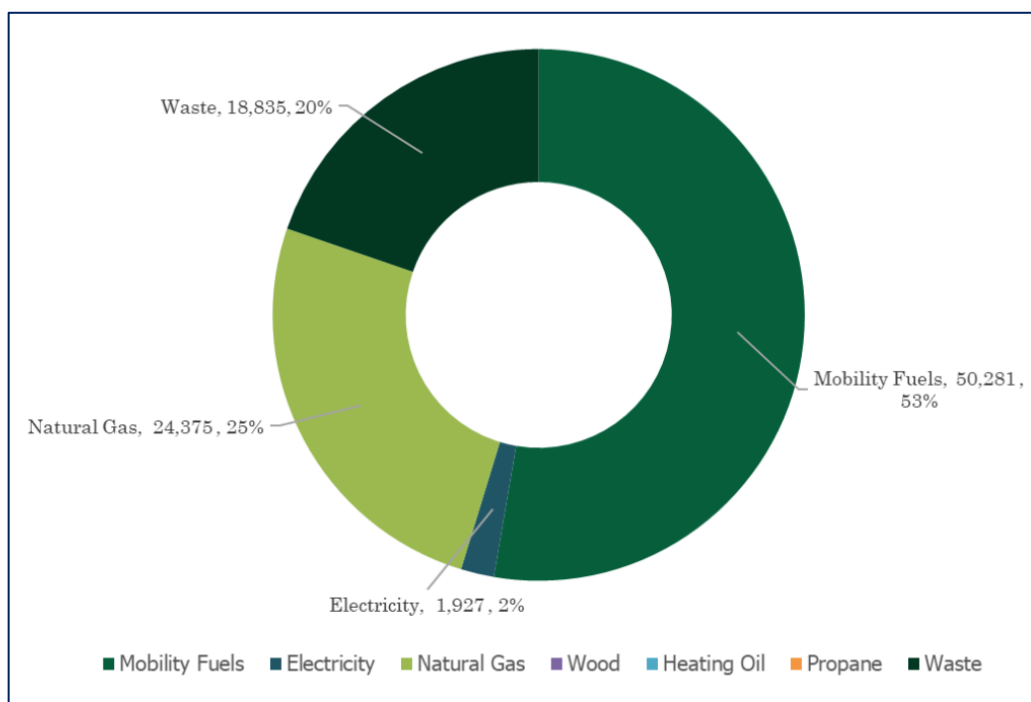


Figure 9. GHG Emissions within Squamish boundaries (Community Climate Action Plan, 2020)

Current System Overview

Facilities and Infrastructure

Zero waste infrastructure that currently exists in the municipality includes the following:

- Curbside collection of organics, recycling and waste from single family residential homes and some multi-family complexes
- Squamish Landfill & Recycle Depot (see Figure 10)
- EPR – Squamish currently has drop off locations for all existing EPR programs
- EPR – Squamish has partnered with Recycle BC to provide curbside packaging and printed paper recycling service for residents and there are two Recycle BC collection sites
- Reuse, refill and repair stores for a variety of products
- Rental options
- Private businesses offering deconstruction and wood reselling
- Two in-region composting facilities
- Cheekeye Recycling Yard for sorting and stockpiling recycling materials prior to transport. This is a 15-acre site located adjacent to the DoS landfill where wood waste and drywall are stockpiled.

EPR Program Category	Service in Squamish
Beverage containers	yes
Cell phone and batteries	yes
Electronic equipment and devices	yes
Large appliances	yes
Outdoor power equipment	yes
Small appliances, tools, sports and hobby equipment	yes
Lead Acid Batteries	yes
Packaging and paper products	yes
Smoke and CO alarms	yes
Lamps and lighting equipment	yes
Paint and HHW	yes
Solvents, gasoline, pesticides and flammable liquids	yes
Pharmaceuticals	yes
Tires	yes
Used oil and antifreeze	yes
Thermostats	Yes

Table 1. EPR Programs and Service in Squamish



Figure 10. Landfill & Recycle Depot Layout for Materials Collected

Programs and Services

The DoS contracts and oversees residential curbside collection; provides information and resources for multi-family and ICI sector; conducts direct community engagement activities through a Zero Waste Workshop series, Pitch-In Week and other waste reduction support efforts; partners with community organizations to offer additional programs and services; and maintains and enforces several waste management and waste reduction-related bylaws. See Tools and Resources section below.

Curbside Collection

- The DoS contracts GFL to offer biweekly collection of garbage, recycling and organics to single family homes and townhome complexes. Organics are collected weekly during late April – October and then collection returns to every second week for the remainder of the year.
- Totes must be kept locked and stored inside (if possible) to prevent wildlife from accessing them.
- A variety of sizes for garbage totes are offered at different fee levels but there is no fee for the recycling and organics totes. The DoS has kept the small garbage tote (35 gal) at a significantly lower price than the larger alternatives in an effort to increase diversion.
- The DoS has partnered with Recycle BC for the residential recycling service for packaging and printed

paper. As with the majority of Recycle BC communities, film plastics, styrofoam and glass can be brought to depots for recycling.

- Residents can download a curbside collection app or sign up for collection schedule and electronic reminders. Regular communications campaigns about diversion or wildlife management are pushed out to residents through the app as well.

Multi-family and ICI Sectors

- Multi-family homes that do not receive curbside service and the ICI sector are required to have contracted services for garbage, recycling and organics; use clear bags for garbage; and ensure good waste separation, signage and provide regular education to residents and tenants.
- Businesses are engaged by staff to ensure tools and resources are available and that they are moving towards bylaw compliance.
- New developments that are over three units are required to comply with the Technical Waste Room Guidelines, which help architects and developers ensure there is enough space in the waste rooms to fit the collection containers required to separate materials. They are also no longer allowed to be a part of the residential curbside collection program and must contract directly with a hauler.

Events & Temporary Use of a Site

- All applicants for events or temporary uses of space (such as filming) are required to provide a level of source-separation for their participants, staff, etc. A waste management plan is required to be completed when booking an event, and depending on the size of the event the DoS will be involved in ensuring that a high level of diversion is achieved and vendors are engaged.

Community Engagement & Education

- Zero Waste Workshop Series, an annual series of workshops and events that promote the top tiers of the waste hierarchy, are offered. A contractor is retained to execute the majority of the events, with the support of the DoS. Events can include: Repair Cafes, ReUse-It Fair, DIY Cleaning, Clothing Swaps, Holiday Crafts, and more.
- Community clean-up events are often supported by the DoS, which supplies collection materials and a tipping fee waiver for all registered clean-up events. Examples include: Shoreline Clean-Up and Pitch-In Week.
- Curbside Tune-Up, an annual audit of recycling totes throughout the community, provides direct feedback to residents on the level of contamination in their totes.
- Squamish Lillooet Regional District (SLRD)-sponsored education. The DoS financially supports the SLRD to offer in-school Zero Waste Education Workshops throughout the region.
- Dreamrider Productions has been brought to elementary schools in Squamish by the DoS to present their Zero Hero theatrical production at assemblies.
- The annual Waste Reduction Week (now the Circular Economy Month) has been proclaimed by Council, and events and education are targeted. For example, every two years, the DoS and GFL co-publish a 4-page, colour *What Goes Where Guide* in the Squamish Chief newspaper for residents.

- Annual ads about the opportunities to divert construction waste are sponsored in the Squamish Contractor's Guidebook.
- DoS staff have presented about waste reduction and diversion opportunities at a variety of external events, hosted by other organizations.
- The DoS has participated in the provincial Love Food Hate Waste program for several years.
- A package for new homeowners has been developed for new residents to become familiar with the solid waste system and diversion opportunities.
- An effort to reach non-English speaking residents has been initiated with the translation of the *What Goes Where Guide* into Punjabi. Staff continue to look to increase means of communicating with those residents who are harder to reach/engage with.
- The DoS has created a full-time, permanent position of Sustainability Outreach Coordinator, who is responsible for educating, engaging and assisting in the enforcement of bylaws for solid waste.

Partnering with Community Organizations

- The Squamish Climate Action Network (CAN) maintains a Zero Waste Action Team (ZWAT) that meets regularly. The DoS is committed to supporting this group and having a liaison at the meetings.
- The local Food Recovery Group is supported by the DoS to ensure that any regulations or waste reduction actions support and not hinder their work at keeping food waste out of the garbage.
- Support has been provided to organizations such as Under One Roof and the Rotary Club in their waste reduction efforts, including supporting the Kids Bike Swap.
- The Farmers' Market's efforts at increasing their diversion and recycling stations has been supported in the past.
- Over the years support has been provided to Squamish ReBuild, such as by providing promotion or signage assistance.

Circular Cities and Regions Initiative

- Squamish was selected to be one of the 2022/2023 cohort of communities for circular economy knowledge sharing and action planning.

Advocacy

- The DoS is committed to participating in all consultations and advocacy opportunities (that are feasible) to support increased diversion opportunities, continued improvement and better educational support, through EPR, provincial or federal consultation.

Supporting Documents

Bylaws

Bylaw	Description
Solid Waste Utility and Disposal Bylaw No. 2870 (2021, 2017, 2012)	<p>This bylaw was most recently updated in 2021 and includes several tactics to reduce and divert materials: multi-stream separation (garbage, recycling, organics) for serviced and unserved properties (residential and commercial); a commercial and communal waste room clear bag requirement (no more than 10% waste allowed in opaque bags, not including pet waste and diapers); higher fees for waste contaminated with more than 5% recyclables or organic material; no night-before set out for locked or unlocked curbside totes; and landfill material bans for organic, recyclable, EPR, and other hazardous products and materials.</p> <p>Bans also include construction and demolition materials such as wood waste, metal and drywall, cardboard, and plastic overwrap; tipping fees are lower for wood waste than for garbage. Recycling is free for separated metal, cardboard, and overwrap. A fine of up to \$500 for not separating materials onsite applies to construction sites. Gypsum and drywall are to be handled as hazardous waste and disposed of per DoS requirements.</p>
Demolition Waste Diversion Bylaw No. 2813 (2021)	<p>Under this bylaw a refundable fee of \$2 per square foot of building area is paid with a permit application. The fee is fully refunded when 80% or more of divertible material is diverted by volume and it is partially refunded if 40% of the divertible material is dealt with in accordance with the bylaw. Divertible items are to be removed to a recycling or composting facility while reused materials sold or donated get twice the diversion credit. Records including receipts, photos, and other items as requested at the time of the permit being issued are to be maintained and a Demolition Waste Diversion Report is to be completed.</p>
Single Use Item Reduction Bylaw, No. 2881 (2022, 2019)	<p>The following items are not permitted to be distributed or sold at check out: plastic check out bags³, plastic utensils, polystyrene foam takeout containers, plastic stir sticks, and plastic straws. Bags, straws, and polystyrene foam containers can be sold for use in a customer's home or business.</p> <p>The bylaw includes a fee scale to encourage the use of reusable bags while also reducing the consumption of all single-use bags by charging \$0.75 per recycled-content paper bag or \$2.75 per reusable bag. Exemptions are in place for businesses to provide an accessible straw to accommodate disabilities or medical reasons and on request by a person.</p> <p>Fines issued to non-complying businesses are to be not less than \$5,000</p>

³ The DoS's Bylaw No. 2881, 2022, bans the provision of compostable plastic check out bags. A check out bag may not be provided to a customer unless the customer requests it and the bag is a recycled paper bag or a reusable bag.

	and not more than \$10,000. Bylaw enforcement commenced in August 2022. Provincial consultation on single use item restriction is underway and may influence municipal powers over time.
Sewer Use Bylaw No. 2474 (2016)	This bylaw has been updated to restrict use of food waste disposers in both residential dwellings and food service operations. Grease and oil interceptors must be installed and maintained at food service operations.
Wildlife Attractant Bylaw No 2781 (2020)	<p>This bylaw includes solid waste wildlife proof enclosure requirements as part of a comprehensive effort to eliminate the root cause of human-wildlife conflicts. No refuse that is a wildlife attractant may be stored, deposited or placed on any parcel or highway in the DoS. Exemptions include collection contractor wildlife resistant containers (used per Solid Waste Bylaw requirements), commercial refuse containers meeting Schedule A bylaw criteria specific to lids, latches, and stability), or a Wildlife Proof Enclosure designed and constructed in accordance with Schedule B criteria. Recent bylaw adjustments for Wildlife Proof Enclosures allow for more flexibility and Bylaw officer discretion during the enforcement process.</p> <p>Fines issued for non-compliance with the bylaw are to be not less than \$5,00 and not more than \$50,000.</p>

Plans and Reports

Title and Year	Description
Council Strategic Action Plan (2019-2022)	<p>This plan outlines what the Council wished to focus on for 2019-2022. The four focus areas are: the planet and our environment, housing affordability and diversity, the economy and local jobs, and neighbourhood connectivity and public spaces. Under the Planet and Our Environment, the goal related to waste is to “increase the diversion rate of waste from landfill to 80% and reduce per capita landfill waste to 300 kg by 2021.” Other aspects focus on additional ways to address climate change.</p> <p><i>This Plan and focus areas will change with the new Council, elected in October 2022.</i></p>
Official Community Plan Bylaw 2500 (OCP) (2017)	<p>The 2017 OCP includes objectives relevant to zero waste including developing a corporate social responsibility policy (8.2e -notes procurement and waste reduction), managing attractants to minimize human-wildlife conflicts (10.13b), restrictions on open air burning of yard waste (10.18c), preventing the use and spread of invasive species and hazardous materials (10.19d), reducing GHG emissions within Squamish to 80% below 2007 levels by 2050 (19.3a -including reducing emissions from operating the landfill), encouraging green building design including reduced waste generation (19.6a), addressing wood waste from forestry (23.2 b/c) and supporting zero waste with regards to food including food recovery (26.10c), solid waste storage must allow for source separation (36.7, 42.11).</p> <p>The Solid Waste sections (21.9 and 21.10) have objectives to promote</p>

	waste management and a culture of waste minimization, and to lower the solid waste disposal rate to 350 kg/person/year by 2020. This section has policies to move towards zero waste, develop landfill bans, extend recycling and organics services and education, manage the landfill, renew the Zero Waste Strategy every five years and to develop specifications for waste storage areas for new development. Specifics on solid waste storage are in section 36.7 and elsewhere.
Emerging Sector Roadmap and Action Plan (2020)	This Roadmap and Action Plan looks at key areas to support to develop emerging sectors in ways that meet the Council's Strategic Goals. A key target theme relevant to zero waste is the green economy, and "innovative construction, wood products and forestry" is a key sub-sector in the DoS's Green Economy strategy.
Community Climate Action Plan (CCAP) (2020)	This action plan, designed to guide Squamish toward a low carbon future, has six big moves with the first being to "Close the loop on waste: divert organics, capture landfill gas, reduce waste" which has associated targets of 75% improvement in landfill gas capture and 50% reduction in organics going to landfill by 2030 (then 75% by 2040 and 90% by 2050 and 100% landfill gas capture or equivalent). The plan focuses on Scope 1 and 2 emissions but not those of Scope 3 (emissions that occur outside of Squamish as a result of activities within Squamish, such as those associated with the consumption and transportation of products) and acknowledges that further adjustments may be needed to fully consider life cycle assessments.
Circular Economy Roadmap (2021)	This plan was developed to help Squamish move towards its climate goals while changing from a linear material use system to a circular one. It has two key focus areas: developing the foundations for circularity and exploring three key thematic areas (built environment, textiles and food/organics). An update is planned for 2023 and is a collaborative effort between Economic Development and Sustainability.
Sea to Sky Food Recovery Strategy and Action Plan (2021)	<p>This assessment was undertaken to understand how to better maximize the recovery and distribution of surplus food, and to minimize food waste in the Sea to Sky region. The goals of the assessment and plan development were to determine what type and amount of surplus food exists, distribution model needs, and best practices to support poverty reduction, increase food access, reduce food waste, and increase food recovery and redistribution organizational capacity.</p> <p>Five strategies with recommended actions and leads identified were developed: 1. secure additional recovered food donations to meet food bank needs; 2 remove barriers to accessing food programs; 3. work with remote communities on food recovery and redistribution as desired/requested; 4. reduce and divert food waste that cannot be donated to food banks/programs; 4. build overall capacity related to food waste and recovery.</p>
Squamish Deconstruction & Demolition Report	This report was commissioned to examine the flow of building materials in the region, review best practices and investigate market opportunities for deconstruction materials. Wood represented the largest opportunity by

(2020)	volume.
Squamish Landfill Annual Operations & Monitoring Report (2020, 2021)	<p>The DoS is in a unique position as a municipality to own and oversee an operations contract for a landfill. In 2020 and 2021, the total amount material landfilled was 12,489 and 12,283 tonnes respectively. To extend the life of the landfill, a vertical expansion project was completed in 2020 including a landfill gas system with a candlestick flare. Landfill capacity is expected to be reached by 2029 based on 2021 assumptions.</p> <p>In accordance with Provincial requirements, the DoS completes and reports on environmental monitoring related to leachate to surface and ground water and landfill gas. While leachate is produced, the sampled surface water and groundwater locations do not show any discernable leachate-related impacts at this time. Leachate being released from the older unlined landfill phase is being monitored and landfill closure taking place is anticipated to mitigate leachate release.</p>
Squamish-Lillooet Regional District Solid Waste & Resource Management Plan (2016)	<p>The Regional District Plan, required by the provincial government, provides guidance for all aspects of solid waste and resource management. The Squamish Landfill operates under this plan and the plan also provides for a direction of zero waste and collaboration in the region on actions. The targets are for 350 kg/person/year by 2020 and that 75% of the population is actively engaged in organic waste diversion. A communications plan supports many of these actions and offers another area for municipalities and the regional district to collaborate.</p>

Gap Analysis

A gap analysis was undertaken to look at what exists, what is needed, and strengths, weaknesses, opportunities and threats. This helped to understand the positive and negative factors that can affect the path to zero waste and the implementation of the actions.

In general, Squamish residents care about the environment, and there are supportive policies and bylaws, good infrastructure, circular economy businesses and organizations, information available to residents and businesses, leadership on zero waste and circular economy, and events to encourage zero waste. However, weaknesses identified include not maximizing the use of existing infrastructure, some gaps in infrastructure, the lack of a corporate procurement policy that incorporates zero waste, insufficient education for new residents, and gaps in EPR programs. Opportunities exist with the new directions that the federal and provincial governments are taking on plastics and circular economy and a global move towards smarter use of resources. Threats include a rapidly filling landfill slated to close in 2028/29, a growing population to educate, and a global marketplace of products that may not align with local systems.

Numerous gaps were identified and categorized by priority area, which were used to inform the development of the action plan. Details are in Appendix A.

Future System

Projections

Two scenarios were developed for future waste projections. In both scenarios, population growth rates projected in the Squamish OCP were used to estimate the population of Squamish.⁴ The scenarios are described as follows:

1. Business As Usual: No new actions on reducing and diverting waste, disposal per capita remains the same as 2018. Waste disposed increases with population growth rate to approximately 18,500 tonnes per year in 2040 at 496 kg/capita/year.
2. Targets Met: Targets are met and progress towards the targets is linear. Waste disposed decreases over time to approximately 1,900 tonnes per year in 2040 at 50 kg/capita/year.

Figure 11 shows projections for both these scenarios for total tonnes of waste while Figure 12 shows the tonnes per capita.

⁴ The Squamish OCP (page 30) notes that “Adjusting for Squamish’s historically higher growth rate over the regional average, the community could see a higher projected growth trajectory, potentially reaching 30,000 by 2031 and 34,000 by 2036.” Continuing that trajectory would have up to 37,200 people Squamish by 2040.

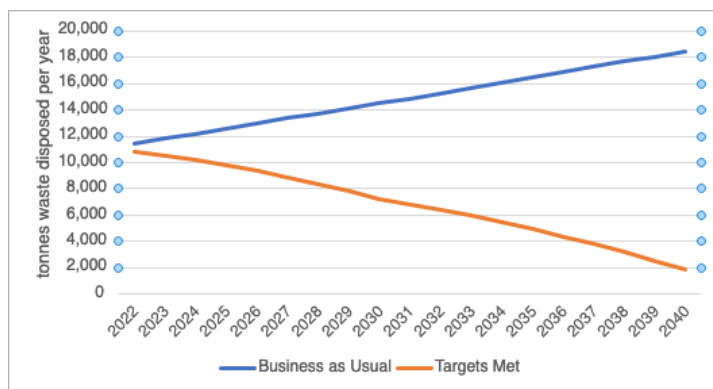


Figure 11 Total Tonnes of Waste for Both Scenarios

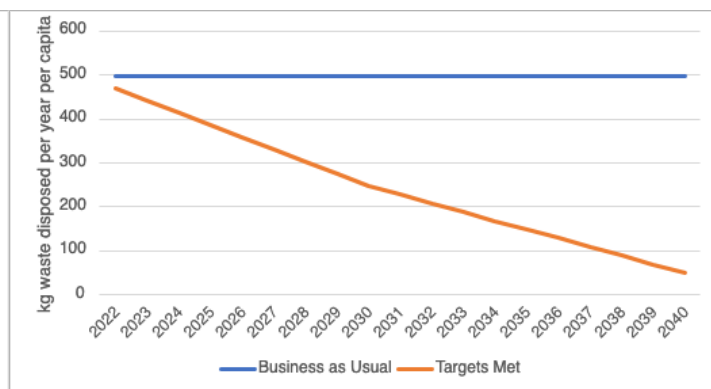


Figure 12 Tonnes Per Capita of Waste for Both Scenarios

Targets and Indicators

Squamish strives to continuously improve in its efforts towards zero waste. In addition to continuous improvement, three specific zero waste targets have been identified, based on the waste trends, the baseline performance and the suite of actions. They align with Squamish's Climate Change Action Plan and those of leading communities. These targets, including interim targets, are meant to be stretching, yet realistic and achievable.

Targets

The three targets set for this Action Plan are annual levels of waste per capita, discards generated per capita and organics in waste per capita. The baseline year is 2018 (to match the modelling for the CCAP) and the targets are noted as a percentage of the 2018 levels.

Waste per capita

This target is calculated by dividing the total amount of waste disposed to landfill, waste to energy (WTE) or incineration in a year by the population of Squamish.

Target: to reach 90% less waste by 2040 (i.e., 50 kg/capita).

Interim target: 248 kg by 2030 (reflecting approximately 50% less).

Context: In 2018, 10,727 tonnes of waste were disposed at the landfill or 496 kg/capita.

Discards generated per capita⁵

In addition to the waste disposed, other materials are diverted to recycling or composting. All materials used have a footprint, so this target aims to reduce the total amount of materials used (i.e., the discards generated).

Target: to reach 50% less materials used by 2040 (i.e., 603 kg/capita).

Interim target: 25% less (904 kg) by 2030.

Context: In 2018, 25,616 tonnes of discards were generated or 1,185 kg/capita.

Organics in waste per capita

Organics in the landfill create a greenhouse gas, methane. This target matches the one set out in the Climate Change

⁵ For this target, reuse will not be included due to data limitations.

Action Plan.

Target: to reach 0% organics disposed to landfill, WTE or incineration by 2040

Interim target: 50% less (120 kg) by 2030.

Context: In 2018, 5,142 tonnes of organics went to landfill or 240 kg/capita.

While targets set for total amounts rather than per capita levels are stronger and align with the reality of finite planetary capacity, given the growth forecast for Squamish in the next decade and the unpredictability of its timing, per capita targets were set for this time period.

Indicators

Data collection on indicators is essential to monitoring progress towards Zero Waste. The DoS monitors a number of indicators related to waste and diversion, which are included in this Action Plan. Reporting and communicating this data with all partners and the community is an important part of implementation of the Action Plan and a dashboard is being created to facilitate data tracking and reporting out.

In addition to the data tracked for the targets, the following metrics will be assessed as to whether they can be tracked to monitor progress:

1. Growth in number of share, repair and reuse assets
2. Growth in zero waste/circular economy (ZW/CE) green jobs and green businesses
3. Funding and investment available for ZW/CE initiatives
4. GHG reductions associated with solid waste and consumption
5. Edible food waste recovered and redistributed
6. Contamination levels of recycling and compost
7. Landfill waste composition
8. Diversion rates (for the whole community and by sector)
9. Total waste disposed (for the whole community and by sector)
10. Total discards generated (for the whole community and by sector)

Zero Waste Action Plan

The Zero Waste Action Plan is organized by high level strategies, and specific actions. Strategies are high level courses of direction that guide specific actions and initiatives, while the actions are suggested activities within a strategy. There may be additional or different actions identified once the plan is implemented, as there is a lot of new activity, research and policy occurring in the zero waste and circular economy realm at the federal, provincial, local government, non-profit and society levels.

The strategies and actions are organized by four material types, as well as an overarching cross-material category. Each material category includes a set of desired outcomes that describe the ideal state if zero waste is achieved with regards to that material type. The strategies and actions address the desired outcomes as well as move towards the top of the Zero Waste hierarchy (i.e., rethink and reduce) and a circular economy. The desired outcomes and strategies are noted below (where possible in the order of the hierarchy), and the complete list of strategies and related potential actions is provided in Appendix B. Note that the desired outcomes describe a desired state that can only be achieved by implementing strategies and actions at all levels of government and in all sectors, not just within the District's jurisdiction. Further details on the estimated level of impact, partnerships, resource requirements and timing provided in Appendix C.

Strategies have letters after them denoting the type of strategy:

E = Education, communication and community-based social marketing programs

P = Programs, initiatives and projects

I = Infrastructure improvements

A = Advocacy strategies

B = Bylaws + regulations

All Materials

Desired Outcomes

- The volume of all waste, materials, related GHG emissions and ecological footprint is reduced.
- More sustainable materials and packaging are used (i.e., those that are less harmful to our health and environment, more local, more durable and reusable, and are recyclable or compostable).
- Local businesses, residents and visitors are educated and knowledgeable about waste volumes and material flows and demonstrate a strong ethic of responsibility and stewardship toward resources and materials and are supported in their efforts to reduce waste.
- Squamish is a hub of innovative circular economy organizations working in partnerships, residents understand, value and support the circular economy, and the necessary infrastructure, processes and regulations are available.
- Substances and chemicals that are harmful to our health and/or the environment cease to be used or are managed in a way that they do not escape into nature.
- No wildlife is destroyed due to conflict from residential or commercial garbage.
- There is no illegal dumping or littering.

- Producers take full responsibility for their products and packaging at end of life.
- Senior governments fulfill their roles in moving towards Zero Waste and Circular Economy.

Strategies

1. Develop and implement a DoS corporate zero waste policy and program; set up foundational systems. (P)
2. Monitor and report on zero waste metrics regularly, quarterly where possible. (P)
3. Develop and implement the regulatory requirements to support zero waste. (B)
4. Educate on waste reduction/zero waste and support a cultural shift towards reduced consumption, making educational initiatives fun and experience-based, using a community-based social marketing behaviour change approach. (E)
5. Support and grow local circular economy and sharing economy initiatives. (P)
6. Engage and support the ICI sector to implement zero waste solutions. (P, E)
7. Increase usage of existing curbside, multifamily recycling areas, landfill and depot diversion options. (E)
8. Enhance existing waste diversion options. (I)
9. Advocate for zero waste initiatives. (A)

Food and Organics

Desired Outcomes

- The volume of pre- and post-consumer wasted food and other organics plus their associated GHGs are minimized, surplus food is recovered, and all food scraps are composted.
- Businesses and individuals have the understanding, capacity, commitment and networks to avoid wasting food in the first place and support surplus food rescue.
- The necessary infrastructure, processes and regulations support moving towards zero wasted food and all remaining food or organic waste being composted.
- Yard trimmings or foliage is left in place, are mulched or are composted.

Strategies

1. Implement campaigns to encourage reduced food waste. (E, A)
2. Increase food recovery efforts in grocery stores and restaurants. (E)
3. Support community organization food rescue and redistribution efforts. (P)
4. Encourage reduction in yard trimmings generated and in waste. (E)
5. Increase source separation of organics to avoid disposal. (E, P)
6. Keep compost high quality with reduced contamination. (E, A)
7. Create local demand for finished compost. (P, E)
8. Evaluate the long-term needs for local organics processing infrastructure. (I)

Built Environment Materials

Desired Outcomes

- Buildings are built with disassembly and deconstruction in mind, and deconstruction allows for recycling, recovery, reuse and composting of all materials.
- More sustainable building materials and packaging (i.e., those that are less toxic, more natural, renewable, faster growing, more local, more durable and reusable, and recyclable or compostable) are used.
- The construction and demolition sector has the capacity, commitment and networks to make the best use and reuse of materials and supplies.
- The necessary infrastructure and regulations support the construction and demolition sector to move towards Zero Waste.
- The volume of building materials, packaging waste and associated GHGs are minimized.

Strategies

1. Reduce embodied carbon in buildings. (P)
2. Increase reuse and recycling of building materials and deconstruction requirements. (E, P)
3. Develop the infrastructure necessary to facilitate greater reuse and recycling of built environment materials. (I)
4. Maximize diversion of materials that can be recycled elsewhere. (P)
5. Advocate that senior governments include policies to manage built environment materials in legislation. (A)
6. Implement bylaws to reduce construction waste. (B)

Packaging and Single-Use Items

Desired outcomes

- The volume of packaging and single-use items is minimized.
- There is a preference for unpackaged or items packaged in reusable formats.
- Squamish residents, businesses and visitors understand long-term impacts of single use items and unnecessary packaging.
- The necessary infrastructure, processes and regulations support packaging avoidance, reuse, refill, and bulk options.
- More sustainable materials and packaging (i.e., those that are less toxic, more natural, renewable, faster growing, more local, more durable and reusable, and recyclable or compostable) are used.
- Squamish residents and the business sector have the capacity, commitment and networks to minimize packaging and single-use items and ensure proper end of life for packaging.

Strategies

1. Implement education and behaviour shift campaigns to reduce packaging and single-use items. (E)

2. Require retail businesses to be responsible for the education of their customers. (E, B)
3. Implement regulations to reduce packaging and single-use items in businesses and households. (B)
4. Incentivize zero-waste and package-free businesses and the use of refillable options. (E, P)
5. Phase out unwanted mail. (A, B)
6. Ensure all buildings have access to packaging and paper recycling. (I)
7. Seed and support local reuse programs for cups, takeout ware and food packaging. (P)
8. Evaluate feasibility of residential glass collection. (P)
9. Advance and support zero waste initiatives for events. (E, I)
10. Encourage the province to include ICI packaging and printed paper in EPR regulation. (A)
11. Advocate for senior level government initiatives. (A)

Durable Goods and Non-food Consumables

Desired Outcomes

- Consumption is reduced, and there is a preference for services over goods, reusables over single-use products, and high-quality goods that last.
- The volume of waste from durable goods and non-food consumables, related ecological impacts and related GHGs, is minimized and products are designed to be more durable and repairable.
- The necessary infrastructure, processes and regulations support reuse, repair, recycling and recovery.
- Businesses and individuals have the understanding, capacity, commitment and networks to reduce waste of durable goods and non-food consumables.
- More sustainable materials (i.e., those that are less toxic, more natural, renewable, faster growing, more local, more durable and reusable, and recyclable or compostable) are used.
- Lower volumes of hazardous products are used, those with higher hazard levels are banned from market and non-hazardous alternates are selected instead.
- Residents and businesses choose local businesses and drive circular economy initiatives.

Strategies

1. Educate on smart purchasing and reduced consumption. (E)
2. Increase use of lending libraries, rental and other sharing systems. (I, P)
3. Encourage and support reuse and repair of goods and materials. (P, A)
4. Create solutions for reducing textile waste. (P)
5. Explore options to divert to reuse or to recycle materials that are not currently regulated (such as couches and chairs). (P)
6. Advocate to senior governments to support improved EPR and other policies to extend the lives of durable goods. (A)
7. Identify ways to support and promote new EPR programs as they roll out. (P)
8. Advocate for a shift to the use of less toxic materials and the proper end of life management of hazardous materials. (A)
9. Encourage and support solutions for reducing single-use hygiene products and pet waste. (E, P)

Planning for EPR changes

While there are strategies and actions relating to EPR in this plan, this section provides more details on where the DoS can intersect with these programs.

The Province of BC released its five-year plan for EPR in 2021, which includes actions such as regulating mattresses, batteries for electric vehicles and more forms of household hazardous waste. It also committed to developing a strategy for ICI packaging and printed paper. In addition, the Province is analyzing accessibility to EPR programs with an eye to creating a standard.

The federal government is pursuing a series of changes related to its Zero Plastic Waste Strategy including creating a plastics registry that could be used to enhance existing and develop new EPR programs.

As more EPR programs are mandated across North America, it is expected that there will be an increased focus on raising the bar in BC for programs and further expansions of regulated products. Larger producers may increasingly make changes to their systems in advance of regulation through participation in collaborations such as the Canadian Plastics Pact, the Ellen MacArthur Foundation's Plastics Pact Network and others.

The DoS can strive to ensure the best possible outcomes for Squamish through these actions:

Advocate to regulate products and improve the quality of EPR programs

- Encourage the province (and possibly the federal government) to regulate new products and improve the quality of existing programs. Share Squamish data with these senior levels of government to highlight the impact on Squamish.
- Participate in as many consultations as possible offered by federal and provincial government and EPR programs, to advocate for the best systems for Squamish. Participate in any working groups created at the provincial level.
- Share data and direction with neighbouring municipalities and the SLRD so that the SLRD can advocate a regional level.
- Follow the upcoming provincial project (2022/23) that will analyze accessibility and share Squamish's experience to lobby for change in how programs measure and deliver accessibility.
- For mattresses, encourage a robust pick-up program to assist people for whom transport is a barrier.
- Request Recycle BC to provide more depots in a community, including ensuring accessibility by sustainable modes of transportation (access to bus stops, walkability, etc.).
- Ask programs to provide a minimum number of hours/days the site is open.
- Ask Encorp to revise the bottle depot contract so that another site (e.g., an Express & Go) can be opened within the DoS's jurisdiction and ensure this type of contract does not limit other EPR programs.

Examine the local options

- Determine if existing hazardous household waste collection sites can be expanded to collect the enhanced suite of products and also check if there will be any additional safety or zoning features required. Where needed, work to address issues that can be resolved by the DoS.

- Pay attention to which programs will be mandated next and then evaluate if it makes sense to offer collection as a service to the program at the Squamish Landfill and Recycle Depot. Determine what other locations may make sense and work with partners to see if they can offer services.
- Assist local EPR and recycling partners with land use and business license issues and other issues that may present barriers to establishing collection or processing sites.
- Assess the feasibility of establishing another depot site in Squamish that might increase accessibility.
- Consider running pilot programs for products that are not yet regulated to seed collection and recycling systems, divert more materials and highlight the need for regulation.
- Where suitable local collection options exist, add the products to the list of materials banned from the landfill with significant surcharges.

Gather data

- Help to measure the impacts and identify gaps for EPR.
- Continue to invite EPR programs to enhance their participation in the regular waste composition studies. Work with the provincial government to secure EPR program participation.
- Gather data or make estimates for what it costs the DoS to provide services for EPR programs and note if there is a shortfall between costs and revenue from the programs.

Raise awareness

- It is recommended to work with product stewards to host collection events as a tool to raise awareness of where these materials can already be brought in the community. Consider doing this when a new program launches to garner more attention to these new options.
- Incorporate the information on the new program into existing DoS tools like the What Goes Where Guide, website and others. Encourage partners to do the same.

ICI Packaging and Paper Products (PPP)

In addition to the above, expanding EPR programs to include the ICI sector for packaging and paper product category will be substantially different from the development of previous programs. While there are too many unknowns to fully assess how the DoS should proceed and what options will exist, understanding the key goals and desired direction for Squamish will allow the DoS to prepare for most possibilities. Being prepared is also advantageous for consultations and possible contracts; as with the residential program, it was the local governments that were prepared who were able to secure the services more quickly. The DoS can also help to disseminate information to the local ICI sector so that they are aware of upcoming changes and opportunities to engage, and to ensure the ICI sector participates in the development of the ICI printed paper and packaging EPR program.

Measurement and Evaluation

Ongoing monitoring of progress against desired outcomes and targets is important to understand what has been effective and where more effort is needed.

A dashboard is being created to facilitate data tracking and reporting out against goals related to reducing overall material generation, garbage reduction, and other key metrics. Tracking tonnage and waste composition will allow

the DoS to monitor and measure results more specifically from program and policy changes, measure against ambitious interim and aspirational targets, and share progress with the community and relevant parties.

Relationship of Zero Waste Action Plan to Other Plans

Several other plans were reviewed in developing this Zero Waste Action Plan and efforts were made to align with those plans. In addition, work is currently happening on planning for embodied carbon in the built environment and the ZWAP factors in the hierarchy and direction of that work. Appendix D describes the relationship between the Zero Waste Action Plan to other DoS Plans.

Tools and Resources

A list of tools and resources available to support zero waste and circular economy initiatives can be found in Appendix E.

Appendix A. SWOT & Gaps

The table below maps out the key strengths, weaknesses, opportunities and threats. Gaps categorized by priority area are below the table.

SWOT

Strengths	Weaknesses
<ul style="list-style-type: none"> Progressive community interested in circular economy (linked with reputation as outdoor recreation hub and investment in supporting the green economy) Policies that support Zero Waste, including Squamish's OCP, the Squamish-Lillooet Regional District Solid Waste and Resource Management Plan, Strategic Plan, ZW Strategy, Climate Action Plan, Circular Economy Roadmap, etc. The Curbside Tune-Ups have been run for four years, giving direct feedback to residents on contamination issues. The DoS has been working with the food recovery group in Squamish for over 5 years, supporting where feasible Several reuse, repair and refill businesses like Pearl's, Wefill, Squamish ReBuild, and Bo & Ko, etc. Strong consumer to consumer reseller market predominantly through Facebook marketplace. Bylaws are in place to reduce waste, charging more for more waste that contains recyclables including to address construction and demolition waste, or for larger size residential curbside garbage totes. Bylaws harmonized to minimize human-wildlife conflict. Solid Waste Bylaw has been updated so that residents may be fined for excess and repeated contamination of their recycling totes 	<ul style="list-style-type: none"> Not all residents and businesses are using the existing diversion options fully, including curbside, landfill and depots; significant amount of glass found in curbside collection EPR programs awareness may be low and some collection options may have limited hours or be distant from the centre Lack of composting collection infrastructure downtown Not all actions from the plans (Zero Waste Strategy, Climate Change, Circular Economy) have been completed yet Procurement policy does not include many Zero Waste aspects Unclear if Recycle BC is fully delivering on its Multifamily Building obligations (i.e., if financial incentives are in place to support collection) Website has information gaps around upstream resources for waste avoidance, reuse and repair Results from various tools and initiatives are not (yet) fully showcased A lot of new residents moving to Squamish from other jurisdictions who don't know/understand the system No reuse location for large items to be sold/donated through (it is either Facebook Marketplace or the landfill) High rental rates cause space limitations and uncertainty for reuse/repair stores Landowners, property managers, and stratas are not following the education components of the Solid Waste Utility

<ul style="list-style-type: none"> • Website and online tools and resources are robust and filtered relevant to audience • Other education and communication efforts by the DoS, Squamish CAN and AWARE • Zero Waste infrastructure available including residential organics and recycling curbside collection, diversion options at the landfill and options for all EPR programs • Several annual zero waste/circular economy events have been occurring for years (ReUse It Fair (10+ years), Repair Cafes, Zero Waste Workshop Series) • Squamish is a Bear Smart Community • Squamish has been selected to be in the next cohort of the Circular Cities and Regions Initiative (CCRI) peer to peer network for circular economy knowledge sharing and action planning • Squamish has multiple goods/materials transportation options (port, rail, road) • The SLRD offers a way for regional coordination and cooperation towards shared goals • Tipping fees are aligned with Whistler and are set to drive diversion • Curbside coaching for recycling has been effective • Economic Development department is interested in working on Circular Economy 	<p>Bylaw</p> <ul style="list-style-type: none"> • No EPR programs yet for carpet, bulky textile, furniture, C&D materials and vehicles • Some items require significant financial subsidization by the DoS to be offered for recycling (mattresses, Styrofoam) • Recycle BC program is confusing – what can go in the curbside collection versus depot drop-off • DoS has no authority over the hours of the Recycle BC depots, and Recycle BC is unwilling to support another depot opening in Squamish • The ENCORP bottle depot has a contract where no other sites are able to open up in the municipality, so there is no possibility for a Drop & Go ENCORP seacan within the DoS • Needs to be systems that do not rely on online information only
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Opportunities	Threats
<ul style="list-style-type: none"> • Federal/provincial legislation on plastics • Provincial direction on continued single use reduction initiatives • Increasing public awareness and concern for plastic use, single-use items and waste • Provincial Circular Economy strategy to be developed • Examples from other communities (e.g., Metro Vancouver communications) • Reuse and durable product sharing/service movements • Increasing wood reuse and recycling with more wood becoming available from deconstruction policies • Landfill closure and expansion creates a continued sense of urgency to drive zero waste initiatives • Provincial direction to expand EPR to regulate mattresses and hazardous waste categories in the Recycling Regulation and examine ICI packaging and printed paper • Worldwide innovation and collaboration on decreasing material consumption and waste by governments, non-profits and businesses • Looming recession and increase in costs of goods may drive conservation and decreased consumption • Proximity to Metro Vancouver makes it easy(ier) for companies to come to Squamish and provide services 	<ul style="list-style-type: none"> • Increase in online purchases with less local, provincial and federal oversight potentially leading to an increased environmental footprint • Squamish population growth with more part time and commuter residents may make it challenging to get core messaging and program compliance from those less engaged in the community • Landfill closure (estimated for 2028/9) will require alternate disposal option and potential cost increase implications • Lack of requirement for higher performance for EPR programs • People may be overwhelmed by recent geopolitical or health events and may not care as much about zero waste or community betterment • Items sold in stores or purchased online not aligned with what can be recycled locally • Corporations may be guided by policy and rules from head offices that do not align with the Squamish direction (for example reducing food waste through reduced ordering in grocery stores)

Gaps

Overall

Education and social marketing

1. In general, many people are not aware of the existing systems for waste reduction and diversion
2. Awareness of collection systems doesn't translate to program compliance - using systems to optimize capture and minimize contamination
3. Renters may not be aware of their waste options
4. Difficult to reach new residents
5. Visitors often do not sort their waste
6. Residents may not be aware of the smaller bin options for waste
7. Lack of diversion options for those living in vehicles
8. Lack of ongoing technical assistance to businesses and institutions; staff need education
9. Single-family, multi-family and ICI are not getting recyclables and compostables out of the waste
10. Lack of support for norms around upstream solutions – refuse, rethink, reuse, repair
11. Accurate consumption-based GHG tracking is lacking and not available to promote upstream solutions
12. The awareness of the link between local landfill (space limitations) and the need to reduce waste is weak
13. Existing zero waste and circular economy business and institution success stories are not currently being leveraged to establish community norms
14. There is little recognition and benefits to businesses and organizations that excel at zero waste and circular economy efforts
15. Funding gaps exist for strengthening education, monitoring
16. All education and outreach information is only available in English (except for one piece being developed)
17. Education about reuse is not integrated in schools
18. Accessibility and convenience for key groups (e.g., single parents, seniors) is lacking
19. Community feedback to inform if actions are making a difference is lacking

Programs, initiatives and projects

20. Some locations for diversion are limited and hard to access due to location or hours
21. Lack of one stop dropping location for most materials, along with informational resources to assist in repair, etc.
22. Lacking an ongoing working group to support the implementation of the Zero Waste and Circular Economy activities
23. In-person programming for zero waste and circular economy is not re-integrated into the District recreation programming post-COVID (e.g., children's toy sale)
24. The District is working on, but has not yet fully implemented, key steps such as waste reduction oversight, monitoring and measurement, and to implement sustainable purchasing
25. A consistent progressive escalation approach to enforcement of bylaws to optimize capture and reduce cross contamination isn't present
26. Businesses and local partners that could help accelerate change are not engaged yet

27. Community-member led reduction programs are not currently being supported with funding

Bylaws + regulations

- 28. Strong policies for business are needed but these policies need to be clear and well-integrated
- 29. Enforcement of existing policy can be stronger
- 30. Not using all the tools available such as licensing requirements to support three stream recycling compliance, or businesses and construction work permit approvals that ensure solid waste management plans
- 31. Monitoring and measuring results more specifically from program and policy changes, and against ambitious interim and aspirational targets using dashboard could be better
- 32. Funding gaps exist for strengthening education, monitoring and enforcement

Infrastructure requirements

- 33. Curbside technology systems are not fully utilized such as RFID monitoring with image capture to monitor and reduce cross-contamination to optimize diversion efforts
- 34. Municipality only offers residents the opportunity to change the size of the garbage totes once a year
- 35. Commercial/Industrial space is limited in the community, so maker space/lending libraries/etc. are competing for space with for-profit businesses
- 36. There is not adequate space for all diversion options in waste rooms in existing buildings
- 37. No central one stop drop facility
- 38. There is no diversion on the streetscapes (recycling or organics)

Food and Organics

Education and social marketing

- 39. Inconsistent regular communications/educational campaigns about food waste
- 40. Communications could be improved to decrease organics to landfill (including compostable paper)

Programs, initiatives and projects

- 41. Partnerships with consumer facing food retailers to actively promote food waste prevention could be enhanced
- 42. Partnerships to support food recovery organizations with their storage infrastructure and other logistics could be enhanced as well as ensuring local food exchange systems are present
- 43. Technical assistance and active monitoring with enforcement for ICI sector program compliance could be more consistent
- 44. Customized waste prevention technical assistance solutions that reinforce cost savings are lacking

Built Environment Materials

Education and social marketing

- 45. Squamish Rebuild is underutilized; this may be due to a lack knowledge about the services, value or other
- 46. There is a general lack of knowledge of the opportunity to reuse building materials

Programs, initiatives and projects

- 47. Systems are lacking for the effective reuse and recycling of wood for residents (especially the wood that comes to the Landfill Transfer Station for recycling)
- 48. Squamish ReBuild requires bigger space to be financially effective – struggling significantly right now

Bylaws + regulations

- 49. Regulations are missing that target embodied emissions through a Net zero emissions building approach
- 50. The demolition bylaw is a start, but there is opportunity for it to be more robust and effective, including its enforcement

Infrastructure requirements

- 51. Space is lacking for the reusable building materials program

Packaging and Single Use Items

Education and social marketing

- 52. People not aware of how to recycle glass
- 53. Lack of enhanced campaign to promote using reusable containers and avoiding compostable bags
- 54. Confusion around Recycle BC Curbside collection versus drop-off

Programs, initiatives and projects

- 55. There are not systems in place currently to identify diversion success during collection such as clear bag requirements for residential (plus ongoing collection day audits)

Bylaws + regulations

- 56. Bylaws and regulations for single use items can still be improved over time to reduce exemptions for example require dine-in at food retailers to be done with reusable foodservice ware, etc.
- 57. Waste hauler (including for C&D materials) data collection isn't formalized, and requirements are not consistent

Durable Goods and Non-Food Consumables

Programs, initiatives and projects

- 58. Information and systems to decrease household hygiene and pet waste in waste are lacking
- 59. There are very few lending libraries and other sharing economy programs
- 60. The Sea to Sky Community Services Lending Toy Library is limited in use and space, and could use support
- 61. Lack of programs for reuse and especially repair in the community
- 62. Limited collection and recycling access for certain products such as textiles, bike tires, furniture or other

Bylaws + regulations

- 63. Regulations that consider pet waste disposal bans do not exist presently
- 64. EPR programs are lacking for the full suite of durable goods

Appendix B. Strategies and Actions

This appendix includes potential actions and initiatives that could be implemented within each strategy. It is intended to give direction for how to implement the strategy but also be flexible to allow for additional or altered actions at the time of implementation.

All Materials	
Strategy	Actions
AM1. Develop and implement a DoS corporate zero waste policy and program and set up foundational systems (P)	<ul style="list-style-type: none"> • Adopt internationally accepted definitions for Zero Waste and Circular Economy, and the Zero Waste Hierarchy. • Create a Zero Waste Committee or working group to support the implementation of the ZWAP. • Incorporate zero waste aspects into job descriptions, employee performance reviews, leadership values, etc. across the organization. Use a competitive factor to change behaviour and build the internal network of leaders/champions. • Create a Zero Waste Manager position to actively support performance monitoring and plan advancement. • Align zero waste goals with UN Sustainable Development Goals and ecological footprint. • Integrate zero waste into procurement policy by building on work done by other organizations, factoring in asset management, creating a template zero waste procurement standard and training, and factor in local economy loops. Enhance the impact by sharing this work locally and with other local governments such as through the BC Social Procurement Initiative. • Partner with SLRD and RMOW to share resources and learn from experiences regarding corporate solid waste; work to ensure signage is consistent across the region. • If external disposal capacity is needed, ensure contracts are set up to encourage waste reduction, not guaranteed waste levels.
AM2. Monitor and report on zero waste metrics (P)	<ul style="list-style-type: none"> • Use 'live' tracking for solid waste data. • Integrate metrics into OCP Dashboard. • Identify which metrics could be tracked regularly to monitor progress. • Report back regularly to community on progress towards targets and indicators. • Track and report on consumption-based greenhouse gas (GHG) emissions. • Gather data on waste being exported from Squamish.

	<ul style="list-style-type: none"> • Review targets every five years.
AM3. Develop and implement the regulatory requirements to support zero waste (B)	<ul style="list-style-type: none"> • Encourage zoning and permitting for Zero Waste businesses, systems and infrastructure while not permitting harmful infrastructure (like new bottled water plants, virgin plastics plants, etc.). • Evaluate a landfill surcharge to fund additional waste reduction programming. • Require zero waste management plans for businesses, events, film sites and construction work permits; consider reduced business license fees. • Consider bulk collection requirements specific to themed events (e.g., bike tire recycling at biking events). • Add three stream recycling and composting compliance to annual business licensing requirements. • Mandate film production companies to comply with the source-separation requirements for temporary uses. • Following technical assistance and warnings, increase enforcement including issuing fines at point of generation for bylaw violations related to cross contamination. • Increase enforcement for single family and multifamily (MF) homes; engage property managers and stratas to reinforce bylaw compliance. • License waste haulers and formalize data requirements from all waste haulers (including for C&D materials). Ensure bylaws and intent are followed (e.g., reinforce that source separated materials stay separated even when not using the Squamish landfill). • Extend disposal bans where materials can be recycled or cannot be recycled but can be replaced. • Create a surcharge for unsecured loads at the landfill.
AM4. Educate on waste reduction/zero waste and support a cultural shift towards reduced consumption, making educational initiatives fun and experience-based and using a community-based social marketing behaviour change approach (E)	<ul style="list-style-type: none"> • Support or provide consistent zero waste initiatives such as the Reuse Fair, Repair Cafes and build on those. • Educate on the connections between consumption, ecological footprint, climate change, and social impacts through hosting talks or movie nights and discussions. • Develop a communications campaign to encourage lower consumption / one planet living and the multiple problems it addresses. • Work with partners such as the library, Squamish CAN, Squamish Environment Society, Quest University, Immigrant Services Society, etc. to conduct educational events such as movie screenings, book clubs, public talks, etc. • Translate materials into different languages. • Develop and communicate visitor-focused educational materials and messages (collaborate with Tourism Squamish). • Create an onboarding program that rewards new (and maybe also existing) residents to attend training on waste diversion, reducing consumption, wildlife safety (e.g., Bear Aware) – reward with a recreation pass or some kind of incentive.

	<ul style="list-style-type: none"> • Integrate circular economy/waste reduction initiatives into the DoS's annual programming, through the Brennan Park Recreation Centre, the Activity 55, or other means. • Better promote the Waste Wizard app (or the equivalent). • Develop communications campaigns and incentive/reward/recognition programs that encourage behaviour changes that support rethink/redesign, reduce and reuse for both citizens and businesses (e.g., virtual badges for waste reduction efforts). • Recruit a team of volunteers/paid Zero Waste ambassadors to deliver community engagement and workplace-based initiatives, community event outreach, campaign, and online tools. • Communicate about the landfill closure and its impact (including the financial impacts) and link it to zero waste/circular economy initiatives/opportunities. • Support or develop a school-based zero waste education program to reach all grade 1-12 students including facility tours (e.g., DreamRider Productions, AWARE). • Create a small grant funding program to support community-led reduction, reuse, recycling or circular economy programs/projects (e.g., neighbourhood grants in partnership with economic development). • Partner with post-secondary institutions (e.g., Quest University or Capilano University), or organizations such as Squamish CAN and others to build capacity, relationships and co-create projects (consider older youth specific programs). • Review, update and distribute sector zero waste guides. • Promote reusable container use at schools for lunches brought from home. • Adopt One Earth Lighter Living actions program in Squamish. • Roll-out educational programs dedicated to multifamily homes with centralized collection, (e.g., customized blue recycling bags, pop-up). Provide kitchen catchers for stratas, and the information for them to distribute. • Create a zero waste package and training session for daycares, partner with organizations such as Sea to Sky Community Centre. • Collaborate with the 55+/Senior advocacy team about education opportunities.
AM5. Support and grow local circular economy and sharing economy initiatives (P)	<ul style="list-style-type: none"> • Create a database and map of zero waste assets and highlight local organizations where services can be accessed. This includes reuse, repair, sharing, rental, and recycling option as well as those that are online. Include this in a centralized hub of resources for reducing waste. • Develop events and communications to highlight local organizations that champion zero waste and circularity (similar to the Slow Food Cycle). • Identify key priority areas for additional work where partners such as government, non-profit, academia and business can collaborate. • Work with partners to create a Circular Economy network locally (and possibly regionally).

	<ul style="list-style-type: none"> • Provide community granting or similar support to organizations that champion zero waste and circularity in Squamish. • Reduce barriers for groups to host zero waste/circular economy related events at DoS facilities and parks (e.g. room rental fees).
AM6. Engage and support the ICI sector and organizations to implement zero waste solutions (P, E)	<ul style="list-style-type: none"> • Create audit templates for different types of businesses. • Review, update and distribute sector zero waste guides. • Support businesses with development and implementation of their zero waste audits and plans. Conduct technical assistance and training, e.g., site visits, procurement review, walk-through audits, bin area assessment for front and back of house, access to colour-coded containers, distribution of displays and signs and awareness of reuse, repair and drop off options to increase rates of recycling and/or composting; make use of local groups e.g., Downtown Business Improvement Association, Chamber of Commerce, local volunteers. • Develop a standard hauling contract and educate businesses, stratas and institutions on how to work with hauling services towards zero waste. • Encourage compactor or bin monitoring systems to ensure efficient and effective collection, i.e., appropriate collection frequency and right sized containers. • Require education and diversion opportunities within all accommodation providers. Ensure short-term rental businesses also integrate zero waste requirements and practices. • Conduct audits and enforce three stream collection requirements. • Create an ICI equivalent of curbside tune-ups. • Encourage or require service providers to provide customers with data on weights or volumes and contamination. • Run an industrial symbiosis program for Squamish focused on materials exchange. • Create a business certification program, potentially in partnership with the Chamber of Commerce. • Share success stories of businesses, institutions and organizations.
AM7. Increase usage of existing curbside, multifamily recycling areas, landfill and depot diversion options (E)	<ul style="list-style-type: none"> • Partner with EPR programs to host a collection event as a way to raise awareness of what products and packaging can be collected. • Share information with EPR programs of their items in the waste stream and ask them to take actions to increase awareness among Squamish residents and businesses and address barriers (such as tires on rims, limited hours, distant locations). • Develop systems to identify and share information with new residents (homeowners and renters) and businesses.

	<ul style="list-style-type: none"> • Further increase pricing differential for small to large waste bins and determine how to offer different volumes of organics and recycling collection to match needs. • Develop communications and program compliance options for those living in vehicles. • Use curbside cameras and monitoring using tote tagging to reduce cross-contamination; continue to optimize contract-required monitoring and reporting. • Fully implement clear bag requirements for MF and ICI sectors. Follow up with ongoing collection day audits (for bags and materials). Evaluate outcomes and extend clear bag requirement to residential sector. • Develop a system to monitor the material that is illegally dumped (quantity and type). • Work with the SLRD to combat illegal dumping. • Continue to support clean ups (Pitch In Days, Shoreline or Lake Clean ups, community clean ups, etc.) for litter and illegal dumping and gather data on types and amounts of materials collected to provide feedback. • Develop an easy-to-use process that encourages and supports community clean-ups (online registration, gloves, tipping fee waiver, etc.). • When doing waste composition audits, conduct an analysis of which residual discards could have been prevented, reused, recycled or require redesign. • Extend waste room technical guidelines to cover existing buildings and develop tools for owners to mitigate small space challenges (such as being allowed to use an additional parking spot). • Augment staff capacity at depots to serve as zero waste coaches. • Encourage EPR programs to pick up the recyclables from residents who don't own vehicles (particularly for bulky items)
AM8. Enhance existing waste diversion options (I)	<ul style="list-style-type: none"> • Provide more accessible locations for waste diversion (such as in-town drop-off of bike tires and depots accessible by transit) with hours suited to the public needs. • Create one stop dropping, by providing as many options at recycling centres as possible, and add services to share information, assist in repair, etc. • Provide bins in key gathering spots that offer three streams of collection (organics, recycling and waste) with standard signage and colours. Ensure recycling is paid for by the EPR programs where possible. Encourage similar systems on private land such as golf courses. • Refocus disposal and landfill operations to prioritize minimizing waste and reusing and recycling materials over disposal, e.g., a waste prescreen area at the landfill to allow for redirecting and salvaging of material (including wood) for resale, reuse, repair or recycling (possibly with a community partner). • Evaluate if there is adequate space to support a Reuse Hub at the Landfill or elsewhere. • Develop a central zero waste facility that offers reuse, sharing, information and one stop dropping

AM9. Advocate for strong zero waste initiatives (A)	<ul style="list-style-type: none"> • Engage with the development of the provincial Circular Economy Strategy. • Collaborate with Squamish Nation, other communities and governments to advocate on zero waste policies and programs. • Request that the Province empower local governments to enact bylaws that move towards zero waste (and sustainability) without needing provincial approval. • Request that the province require higher performance from EPR programs and enact other tools to encourage better-designed products and packaging, recycled content requirements and an emphasis on reusable products (e.g., refilling of glass bottles). • Advocate for the provincial circular economy strategy to emphasize reuse. • Advocate against visible EPR fees. • Work with the province and EPR programs to have EPR programs participate in waste composition audits. • Advocate for a comprehensive review of what kinds of materials cannot yet be recycled and develop a strategy to address them (phase out, EPR, advocate to manufacturers, raise issue with senior governments) • Participate in consultations offered by governments, extended producer responsibility (EPR) programs and others (e.g., right to repair)
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Food and Organics

Strategy	Actions
FO1. Implement campaigns to encourage reduced food waste (E, A)	<ul style="list-style-type: none"> • Implement behaviour change campaigns, outreach initiatives and programs such as the Love Food Hate Waste campaign and school education programs, e.g., from the Food Matters Action Kit. • Run workshops on reducing food waste with partner organizations (e.g., canning workshops or recovered food workshops). • Advocate to the provincial government to support free food waste prevention education resources such as Love Food Hate Waste. • Provide waste prevention technical assistance to businesses and organizations to reduce wasted food.
FO2. Increase and support food recovery and redistribution efforts in the community, grocery stores and restaurants (E, P)	<ul style="list-style-type: none"> • Educate on how to reduce food waste before composting. • Support recommendations from the 2021 Sea to Sky Food Recovery Plan including ongoing surplus food tracking, removing access barriers to food programs, and building capacity. • Support the food recovery network within the community and region, and better understand local sources of surplus food and how to redistribute. Develop a local online marketplace (e.g., Resource Exchange) • Develop/support a small-scale commissary kitchen with community partners. • Require businesses to donate to food recovery group in some manner.

FO3. Encourage reduction in yard trimmings generated and in waste (E)	<ul style="list-style-type: none"> • Encourage lawn replacement and xeriscaping with 'a right plant, right place' focus. • Develop a communications campaign that encourages grass or trimmings cycling. • Encourage Bear Smart backyard composting for yard waste and provide hands-on workshops. • Potentially subsidize composters for yard waste only.
FO4. Increase source separation of organics to avoid disposal in landfill (E, P)	<ul style="list-style-type: none"> • Increase community education to improve source separation. • Continue to distribute kitchen catchers and educational materials. • Develop a vegetable oil collection system for use in biodiesel. • Work with events and film productions to minimize and divert organics. • Assess developing a system for collecting and processing pet waste.
FO5. Ensure high quality of compost (E, A)	<ul style="list-style-type: none"> • Reduce use of invasive species by encouraging the Province to ban their sale and import, discouraging local use, and educating on proper disposal. • Continue discouraging compostable plastic bags in the residential curbside organics collection. • Discourage use of food service ware-related compostable plastics; provide education around plastics that claim to be compostable. • Advocate to get rid of stickers on produce. • Encourage keeping feedstocks separate in composting processes (e.g., keep biosolids separate). • Audit organics collection for contamination from waste or recyclables.
FO6. Create local demand for finished compost (P, E)	<ul style="list-style-type: none"> • To close the loop, purchase compost, soil and soil amendments from local organics processors for DoS contracts. • Encourage local projects, businesses and residents to use local soil and amendments.
FO7. Evaluate the long-term needs for local organics processing infrastructure (I)	<ul style="list-style-type: none"> • Determine what exists, current volumes and future volumes. • Evaluate if bear-smart backyard composting and other local small-scale options can minimize infrastructure needs and costs.

Built Environment Materials

Strategy	Actions
BEM1. Reduce embodied carbon in buildings (P)	<ul style="list-style-type: none"> • Support the Squamish plan to reduce embodied carbon in buildings (under development) which is based on the following hierarchy (from the World Business Council on Sustainable Development): <ul style="list-style-type: none"> ○ Support build nothing: the moving of homes and buildings and adaptive reuse ○ Support build less: vertical infill and caps on home size

	<ul style="list-style-type: none"> ○ Build cleverly and efficiently <ul style="list-style-type: none"> ○ Develop systems for reporting embodied carbon and phase in reporting requirements ○ Develop policies for embodied carbon rezoning and low embodied carbon density bonus ○ Limit exterior landscaping concrete use ○ Reduce or eliminate parking requirements ○ Minimize waste: diversion, recycling targets, disposal bans for key materials, deconstruction bylaw ○ Provide financial incentives: permit rebates and revitalization tax incentives ○ Lead by example through corporate green building policy, procurement and advocacy.
BEM2. Increase reuse and recycling of building materials and deconstruction requirements (E, P)	<ul style="list-style-type: none"> ● Develop a program and campaign with local organizations to have more residents and businesses separate out materials and source reused materials. ● Integrate reused materials into DoS builds and highlight these examples as well as those completed by other organizations. ● Develop an awards/recognition program for CHBA/builders. ● Support local deconstruction workshops/training ● Understand supply and demand and map out the needs and opportunities for wood reuse. ● Increase requirements as feasible (by building type, age, or material type). ● Share local success stories through the industry-communication channels. ● Collaborate closely with internal departments (e.g., Building Department) to identify opportunities and challenges. ● Understand labour force skills requirements to support circular practices. ● Work with education industry partners to support the development of circular economy training.
BEM3. Develop the infrastructure necessary to facilitate greater reuse and recycling of built environment materials (I)	<ul style="list-style-type: none"> ● Create a one-stop drop-off shop for built environment materials. ● Establish salvaging system at landfill for reuse/repurpose. Start with wood materials. ● Determine space needs and possible locations, and partner to provide suitable space. ● Create a C&D hub with local organizations. Determine space needs and possible locations, and partner to provide suitable space. Use online platforms as well.
BEM4. Maximize diversion of materials that can be recycled elsewhere (P)	<ul style="list-style-type: none"> ● Develop programs to divert more asphalt and gypsum, and complement with landfill disposal bans, high tipping fees and penalties. ● Incorporate recycled asphalt into procurement contracts.
BEM5. Advocate that senior government include policies to manage built environment materials in legislation (A)	<ul style="list-style-type: none"> ● Encourage the province to include built environment materials in the EPR regulation. ● Promote product size standardization. ● Advocate for a decrease in packaging materials used in the construction industry.

BEM6. Implement bylaws to reduce construction waste (B)	<ul style="list-style-type: none"> • Update and implement additional disposal bans as more diversion options are provided; actively monitor and enforce. • Monitor deconstruction bylaw impacts and adjust as needed. Escalate requirements over time and enforce the bylaw. • Increase requirements for reuse and recycling as feasible (by building type, age, or material type).
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Packaging and Single-Use Items

Strategy	Actions
PS1. Implement education and behaviour shift campaigns to reduce packaging and single-use items (E)	<ul style="list-style-type: none"> • Develop a toolkit for consumers and businesses to understand preferred options. • Share information and tools on new systems that become available with consumers and businesses. • Link with the community zero waste asset map noted under “Support Circular Economy”. • Promote buying packaging free items (farmers market, bulk, coops, refilleries, etc.). • Ensure local food services are aware of provincial public health policy that supports reusables. • Educate on best options for compostable and recyclable materials as well as concerns (such as biodegradable, PFAS, etc.). • Encourage workplaces to provide reusable food service ware in lunchrooms. • Work with food services to ensure that all condiments, napkins, etc. are upon request only. • Work with universities and schools to use reusables. • Incentivize restaurants to completely remove single use packaging (establish reward program which can be extended from business owner to customers). • Support campaigns such as a reusable cup punch-card, etc.
PS2. Require retail businesses to be responsible for education of their customers (E, B)	<ul style="list-style-type: none"> • Work with retailers to have them educate their customers on what their packaging is made of and where it can go at the end of its useful life. • Encourage having suitable bins available to their customers for non-reusable items.
PS3. Implement regulations to reduce packaging and single-use items in businesses and households (B)	<ul style="list-style-type: none"> • Monitor changes in federal and provincial policy and work to align with or exceed direction. • Extend the Single Use Item bylaw to include additional items such as single use cups. • Work with retailers to stop providing compostable bags. • Reduce exemptions to existing Single Use Item bylaw, e.g., require reusable food service ware be provided to patrons eating in the establishment. • Ban sales of bottled water on municipal property and facilities.

	<ul style="list-style-type: none"> • Prevent use of plastic packaging at farmers market and fruit stands.
PS4. Incentivize zero-waste and package-free businesses and the use of refillable options (E, P)	<ul style="list-style-type: none"> • Incentivize package-free businesses to establish themselves in Squamish. • Encourage zero waste grocery options and refilleries (such as refilling, bulk, bring your own containers). This can include promoting these options and removing barriers for producers and retailers: work on developing a year-round market space, pop-up spaces in municipal buildings or virtual platform for locally grown produce and work on removing barriers for zero waste retailers. • Encourage patrons to select packaging free and refill options. • Encourage funders, such as Community Futures Howe Sound, to support new zero waste business start-ups
PS5. Phase out unwanted mail (A, B)	<ul style="list-style-type: none"> • Provide tools and information so Canada Post knows when unaddressed ad mail is not wanted, e.g., red dot campaign. • Encourage residents to cancel unwanted addressed ad mail. • Implement a bylaw to prevent distribution of directories, door hangers and flyers on windshields.
PS6. Ensure all buildings have access to packaging and paper recycling (I)	<ul style="list-style-type: none"> • Work with Recycle BC to determine which buildings are without source-separation service.
PS7. Seed and support local reuse programs for cups, takeout-ware and food packaging (P)	<ul style="list-style-type: none"> • Conduct research, convene interested participating businesses, seek funding and run a pilot. • Lead by example by prioritizing reusables at municipal facilities, get DoS staff on board as early adopters. • Encourage businesses to provide discounts to customers to use own take-out containers. • Encourage residents to reuse packaging where possible. • Develop a circular economy initiative to work with local food producers to use reusable packaging. • Highlight existing programs to increase their use.
PS8. Evaluate feasibility of curbside glass collection (P)	<ul style="list-style-type: none"> • Assess the costs of implementing curbside glass collection and potential benefits and diversion. • Work with the province and Recycle BC to ensure the producers pay for the collection.
PS9. Advance and support zero waste initiatives for events (E, I)	<ul style="list-style-type: none"> • Require reusables at events. • Work with organizations, such as Squamish CAN and others, to provide zero waste services. • Purchase a portable dishwasher, potable water station and community supply of reusables that can be rented out for events (or support an organization doing this). • Work with event planners to ensure that all free samples or schwag is chosen by the customer or in a gift card format.

PS10. Encourage the province to include ICI packaging and printed paper in EPR regulation (A)	<ul style="list-style-type: none"> • Gather and share data on the impact of ICI packaging and printed paper locally. • Advocate for inclusion on <i>Recycling Regulation</i>.
PS11. Advocate for senior level government initiatives (A)	<ul style="list-style-type: none"> • Advocate for policy shifts related to banning single use items, supporting reusables use and infrastructure, improving labelling, requiring recycled content in products, reduced toxics and other relevant initiatives.

Durable Goods & Non-Food Consumables

Strategy	Actions
DG1. Educate on smart purchasing/reduced consumption (E)	<ul style="list-style-type: none"> • Start local campaigns. Build from Metro Vancouver's Think Thrice, Make Memories, Not Garbage and Super Habits campaigns (E). • Develop a smart consumption checklist using the hierarchy: <ol style="list-style-type: none"> 1. Do I need that good? 2. Can I borrow that good 3. Can I reuse a good 4. If I need a new item –is it made of renewable and non-toxic materials, can I fix it, can I share it, can it be recycled at end of life? • Provide informational resources to help consumers choose items that are reusable, recyclable, local, low-carbon, etc. Educate on and inform about sharing services, business models, and initiatives (clothes sharing, car sharing, gear sharing).
DG2. Increase use of lending libraries, rental and other sharing systems (I, P)	<ul style="list-style-type: none"> • Identify land that can be used to support the development of neighbourhood or site-specific sharing systems run by groups/non-profits (e.g., tool libraries, waterfront watercraft sharing or clubs etc.). • Work with existing lending libraries (ex. toy library at Sea to Sky Community Centre) and organizations to develop more resources in Squamish (for tools, kitchen items, toys or other needs identified by the community). Identify barriers to and opportunities for growth.
DG3. Encourage and support reuse and repair of goods and materials (P, A)	<ul style="list-style-type: none"> • Develop a local Buy Nothing neighbourhood-based network. • Bolster, promote and enhance existing reuse centres and consider creating a new one if there are significant gaps (e.g., ReTuna Mall in Sweden). • Examine feasibility of neighbourhood share sheds. • Encourage the reuse of technology, such as through the Hot Spot program. • Support repair café events or create a permanent repair hub.

	<ul style="list-style-type: none"> • Work to provide an online information hub for where to get items repaired locally and DIY repair options; partner with groups focusing on this area. • Advocate that EPR programs provide reuse, repair, refurbishment, etc. as part of their programs and support local initiatives.
DG4. Create solutions for reducing textile waste (P)	<ul style="list-style-type: none"> • Research textile recycling options and increase the local capacity. • Gather data on local volumes and share this with the province. • Determine if a local program is suitable until regulated by province. • Educate on options for textiles that are not reusable. • Support the formation of a Squamish textile business collaborative. • Increase local textile recycling capacity.
DG5. Explore options to recycle materials not currently regulated such as couches and chairs (P)	<ul style="list-style-type: none"> • Support local innovation by entrepreneurs and/or link to Lower Mainland initiatives for recycling and upcycling components where appropriate. • Assess collecting cushions only and send them for recycling with the mattress program. • Assess the feasibility of breaking down couches and chairs and recycling the components separately.
DG6. Advocate to senior governments for longer lasting durable goods and phasing out forms of single uses items (A)	<ul style="list-style-type: none"> • Ask for improved EPR programs and other policies to extend the lives of durable goods. • Encourage the province to include carpets, textiles, vehicles, sports equipment, safety equipment, books, furniture and other durable goods in EPR regulation. • Advocate to senior governments for Right to Repair legislation. • Advocate to the provincial government for repair components in EPR programs. • Ask for restrictions on non-packaging single use items (e.g., balloons).
DG7. Identify ways to support and promote new EPR programs as they roll out (P, A)	<ul style="list-style-type: none"> • Ensure zoning enables, and is not a barrier, for new program locations. • Evaluate if new programs should be pursued for collection at existing depots to maximize one stop dropping. • Integrate new products into existing communications/educational tools. • Encourage programs for large items to offer pick up service directly from residents. • Support EPR adoption and processing solutions for hygiene products.
DG8. Advocate for a shift to the use of less toxic materials and the proper end of life management of hazardous materials (A)	<ul style="list-style-type: none"> • Advocate for federal and provincial policy to phase out hazardous materials or restrict their use. • Create local communications resources that educates residents about hazardous materials.

<p>DG9. Create solutions for reducing single-use hygiene products and pet waste (E, P)</p>	<ul style="list-style-type: none"> • Work with businesses to ensure affordable alternatives to single use products are available locally and actively promoted. • Explore partnership with school education programs to provide reusable menstrual supplies (e.g., period underwear, pads) for youth. • Run workshops on making reusable diapers and menstruation supplies. • Run workshops on reusable diapers, and related items. • Develop a campaign on reusable hygiene products such as menstruation supplies and diapers, potentially in partnership with Metro Vancouver. • Evaluate feasibility of developing a system for collecting and processing pet waste.
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Appendix C. Strategy Planning Details

This resource table outlines potential impact, potential partners, resource requirements, and timing by strategy. Factors outlined in the resource table are described below.

- **Potential Impact** – notes which strategies are considered foundational (necessary to move initiatives forward but not linked to tonnage reductions) and which are significant (can change the amount of waste but not specifically quantifiable). Based on the 2020 Waste Composition Audit, where possible, waste composition percentages are noted overall or specific to sector to show the waste diversion potential associated with a specific initiative. It is assumed that material reduction / waste avoidance initiatives will also have an associated reduction in carbon and ecological footprints.
- **Potential Partners** – identifies specific community organizations, local businesses, haulers, associations, institutions, and other levels government to engage and leverage collaborations with, which is key to moving strategies forward. Where DoS departments (aside from Sustainability and Economic Development) may be engaged, some are suggested here. It is also assumed that education and behaviour change initiatives will need communications-related DoS staff resources.
- **Resource Requirements** – notes labour and equipment resources needed for each strategy. DoS staff working on solid waste and circular economy are assumed to be central to strategy implementation.
- **Timing** – provides a way to prioritize and plan for implementation. The timing is about when to start the strategy implementation as short term (S) 2022-23, medium term (M) 2024-25 or long term (L) 2026-27 within the five-year timeframe of the plan. The work on a strategy may continue after that initial phase. Many of these are intended to continue over the term of the plan or beyond as ongoing initiatives.

This table can serve as an assessment framework for ongoing tracking and prioritization.

All Materials				
Strategy	Potential Impact	Potential Partners	Resource Requirements	Timing
AM1. Develop and implement a DoS corporate zero waste policy and program and set up foundational systems	Foundational	DoS -multiple departments including Procurement, HR, Facility operations	Staff time, bins, signage	S
AM.2 Monitor and report on zero waste metrics regularly, monthly where possible	Foundational	Data from contractors, waste haulers, EPR programs, SLRD, community groups	Staff time	S

AM.3 Develop and implement the regulatory requirements to support zero waste	Significant	DoS staff including bylaw, planning, building, licensing; GFL and other contractors	Staff time	S
AM.4 Educate on waste reduction/zero waste and support a cultural shift towards reduced consumption, making educational initiatives fun and experience-based and using a community-based social marketing behaviour change approach	Significant	DoS, Squamish CAN, Library, Quest, Tourism Squamish, SLRD, SD 48, AWARE and others	Staff time, grants to partners, communications collateral	S-M
AM.5 Support and grow local circular economy and sharing economy initiatives	Foundational	Community partners, government partners,	Staff time	S-M
AM.6 Engage and support the ICI sector to implement zero waste solutions	Significant (up to 30% of waste could be diverted)	Partners-Downtown Business Improvement Association, Chamber of Commerce, local volunteers	Staff time, audit tools	S
AM.7 Increase usage of existing curbside, multifamily recycling areas, landfill and depot diversion options	Significant (up to 16% of waste could be diverted)	Bylaw, GFL and haulers, EPR programs, Welcome Centre, SLRD, community groups	Staff time	S
AM.8 Enhance existing waste diversion options	Foundational	Bylaw, EPR programs, GFL and service providers	Staff time, possible central ZW hub, streetscape bins, salvage centre at landfill	S-M
AM.9 Advocate for zero waste initiatives	Foundational	Squamish Nation, other communities, local governments, ENGOS, Provincial and Federal governments	Staff time as needed	S

Food and Organics

Strategy	Potential Impact	Potential Partners	Resource Requirements	Timing
FO.1 Implement campaigns to encourage reduced food waste	10-15% of waste is avoidable (wasted food), also can reduce food scraps going to compost	SD 48, Province, community partners, external non-profit or local governments	Staff time, resource materials	M
FO.2 Increase and support food recovery and redistribution efforts in the community, grocery stores and restaurants	See FO.1	Food retail sector, food recovery network Community partners - Hot Spot, food recovery network	Staff time Support small scale commissary	S
FO.3 Encourage reduction in yard trimmings generated and in waste	Yard trimming make up under 1.5% of waste, but could reduce organics going to compost	Landscapers, garden stores, Sea to Sky Invasive Species Council	Staff time	L
FO.4 Increase source separation of organics to avoid disposal in landfill or incinerator	Over 20% of the waste stream is food scrap and yard trimmings	Community partners	Staff time, kitchen catchers	S
FO.5 Keep compost high quality with reduced contamination	Foundational	Processors, Invasive Species Council, Foodservice sector, biodiesel users, Province	Staff time	S
FO.6 Create local demand for finished compost	Foundational	Procurement, other Procurement departments	Staff time	M
FO.7 Evaluate the long-term needs for local organics processing infrastructure	Foundational	Regional partners	Staff time	L

Built Environment Materials

Strategy	Potential Impact	Potential Partners	Resource Requirements	Timing
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BEM.1 Reduce embodied carbon in buildings	Can reduce total discard generation; wood makes up almost 30% of C&D waste with other building materials almost 15%	Building department, Planning department, Procurement; regional partners, Province, building sector	Staff time	S-M
BEM.2 Increase reuse and recycling of building materials and deconstruction requirements	See BEM.1	Squamish Rebuild, Building and Procurement departments, other community businesses and partners	Staff time	S
BEM.3 Develop the infrastructure necessary to facilitate greater reuse and recycling of built environment materials	See BEM.1	Squamish ReBuild, the Good Wood Recycle Lumber Society, community partners	Staff time, infrastructure	S
BEM.4 Maximize diversion of materials that can be recycled elsewhere	See BEM.1	Procurement	Staff time, processors	M
BEM.5 Advocate that senior governments include policies to manage built environment materials in legislation	Foundational	Province, Federal	Staff time	S
BEM.6 Implement bylaws to reduce construction waste	Foundational	Building sector like Canadian Home Builders Associations	Staff time	L

Packaging and Single-Use Items

Strategy	Potential Impact	Potential Partners	Resource Requirements	Timing
PS.1 Implement education and behaviour shift campaigns to reduce packaging and single-use items	Single use items (bags, cups, straws, utensils and takeout containers) make up 5% of the waste. An additional 10-15% of the waste is packaging. Significant opportunities for reduction as well.	Procurement, Facility Operations; Quest, SD 48, food service sector, local businesses, Chamber, DBIA	Staff time, toolkit	S

PS.2 Require retail businesses to be responsible for education of their customers	See PS.1	Chamber, DBIA, retailers	Staff time	M
PS.3 Implement regulations to reduce packaging and single-use items in businesses and households	See PS.1	Procurement, Facilities Operations, Planning, Farmers Market	Staff time	M
PS.4 Incentivize zero-waste and package-free business and the use of refillable options	See PS.1	Planning, Chamber, DBIA, Squamish CAN, Howe Sound Community Futures, community groups	Staff time	M
PS.5 Phase out unwanted mail	Recyclable paper is up to 7.4% of waste from multifamily homes and 3.5% of single family. Mail would be a portion of this and unwanted mail elimination would reduce material generation	Canada Post, stratas, property managers, community groups	Staff time	M
PS.6 Ensure all buildings have access to packaging and paper recycling	See PS.1	Bylaw, working group, stratas, property managers, haulers, Recycle BC	Staff time	S
PS.7 Seed and support local reuse programs for cups, takeout ware and food packaging	See PS.1	Facility operations, Chamber, DBIA, food producers	Staff time	S-M
PS.8 Evaluate feasibility of residential glass collection	Refundable and recyclable glass makes up 2.7 - 3.3% of waste from single family and multifamily homes	Recycle BC, Province, stratas, property managers, haulers	Staff time, possible cost if not funded by Recycle BC	M
PS.9 Advance and support zero waste initiatives for events	Foundational	Permitting, Squamish CAN, event planners	Staff time, portable dishwasher, reusables supply	M
PS.10 Encourage the province to include ICI packaging and printed paper in EPR regulation	Foundational	Province, other communities	Staff time	S

PS.11 Advocate for senior level government initiatives	Foundational	Federal government, Province, other communities	Staff time	S
Durable Goods & Non-Food Consumables				
Strategy	Potential Impact	Partners	Resource Requirements	Timing
DG.1 Educate on smart purchasing/reduced consumption	Significant over a longer time period, especially for reducing material throughput	Metro Vancouver, Squamish CAN, community groups	Staff time	S-L
DG.2 Increase use of lending libraries, rental and other sharing systems	See DG.1	Library, Squamish CAN, other community partners	Staff time, supplies, for libraries, land for sharing hubs	M
DG.3 Encourage and support reuse and repair of goods and materials	See DG.1	Community partners like Pearl's and other reuse stores, Hot Spot, Squamish CAN, EPR programs	Staff time, reuse centre support	S-L
DG.4 Create solutions for reducing textile waste	Textiles are ~5% of residential waste	Community partners, Province, Chamber	Staff time	M
DG.5 Explore options to recycle materials not currently regulated such as couches and chairs	See DG.1	Chamber, Squamish ReBuild, others	Staff time	S
DG.6 Advocate to senior governments to support improved EPR and other policies to extend the lives of durable goods	See DG.1	Province, Federal Government, EPR programs, ENGOs, other local governments	Staff time	S
DG.7 Identify ways to support and promote new EPR programs as they roll out (such as for mattresses and expanded hazardous waste)	This can address some of the items that cannot currently be recycled and are the most problematic such as mattresses	Planning, EPR programs	Staff time	M

DG.8 Advocate for a shift to the use of less toxic materials and the proper end of life management of hazardous materials	Hazardous waste is ~3% of single-family residential waste but its impacts are disproportionately large	Province, Federal Government, EPR programs, ENGOs, other local governments	Staff time	S-M
DG.9 Create solutions for reducing single-use hygiene products and pet waste	Household hygiene is ~13% of single-family residential waste and most could be avoided	Metro Vancouver, SD 48, other communities, local businesses, community groups	Staff time	L

Appendix D. Relationship of Zero Waste Action Plan to Other Plans

Title and Year	Intersection
Council Strategic Action Plan (2019)	The Council plan aims to increase the diversion rate of waste from landfill to 80% and reduce per capita landfill waste to 300 kg by 2021. There is also a focus on climate change. The ZWAP follows this direction and sets new targets.
Official Community Plan, Bylaw 2500 (2017)	<p>The ZWAP builds on the focus on waste reduction and climate change with new targets and an emphasis on embodied carbon as well as direct emissions from the waste system. The ZWAP plans to meet the objectives in the OCP to promote waste management and a culture of waste minimization, and to lower the solid waste disposal rate. The ZWAP incorporates the OCP policies to move towards zero waste, develop landfill bans, extend recycling and organics services and education, and manage the landfill.</p> <p>ZWAP has specific actions that align with the OCP relating to:</p> <ol style="list-style-type: none"> 1. developing a corporate social responsibility policy including procurement and waste reduction 2. managing attractants to minimize human-wildlife conflicts 3. preventing the use and spread of invasive species and hazardous materials 4. reducing GHG emissions within Squamish (including reducing emissions from operating the landfill) 5. encouraging green building design including reduced waste generation 6. supporting zero waste with regards to food including food recovery 7. ensuring solid waste storage allows for source separation
Emerging Sector Roadmap and Action Plan (2020)	A key target theme relevant to zero waste is the green economy, and relevant core and enabling sectors are education and wood products. The ZWAP aims to incorporate circular economy (which should be inherently green) and also identifies wood as an area for further systems development. Partnering with educational institutions is included as well.

Title and Year	Intersection
Community Climate Action Plan (2020)	The first Big Move to “Close the loop on waste: divert organics, capture landfill gas, reduce waste,” which has associated targets of 75% improvement in landfill gas capture and 50% reduction in organics going to landfill by 2030 is mirrored in the ZWAP, with the same target for organics reduction to landfill. The ZWAP considers direct emissions in Squamish and builds on the acknowledgement in the CCAP of embodied carbon.
Circular Economy Roadmap (2021)	The foundation for further circular economy work is well underway and the research done for built environment, textiles and food and organics will help implement many of the actions in the ZWAP and are part of three of the four priority areas. Other areas are identified in ZWAP that will aid the discussion for the 2023 update of the Circular Economy Roadmap as the ZWAP and Circular Economy plans should work together.
Sea to Sky Food Recovery Strategy and Action Plan (2021)	ZWAP has several strategies that align with three of the five priorities from this Sea to Sky plan: to increase recovered food, reduce and divert food waste that cannot be donated to food banks/programs and build overall capacity related to food waste and recovery.
Squamish-Lillooet Regional District Solid Waste & Resource Management Plan (2016)	ZWAP aligns with this plan and also sets the stage for the upcoming update of the SLRD plan.

Appendix E. Tools and Resources

The DoS offers an extensive list of online tools and resources across sectors.

Title and Year	Description
Garbage and Waste Diversion Website	<p>The DoS's comprehensive website includes four primary areas:</p> <ol style="list-style-type: none"> 1. Zero waste (including lifestyle tips, easy to grasp metrics, and Zero Waste Strategy); 2. Curbside collection (including what's collected, fee information and links to collection schedule and electronic reminders); 3. Waste diversion (emphasizes waste prevention hierarchy then lists several resources including what's collected at Squamish Rebuild); and 4. Landfill (lists hours, materials and fee list including what can be recycled at the adjacent depot) links filled with key messages and user-friendly handouts. <p>Other side panel headings include:</p> <ol style="list-style-type: none"> 1. ICI with relevant bylaw updates, what's in ICI waste, a support and resources list including links to what goes in an organics bin, how to reduce food waste, and food donation, and FAQs), 2. Construction and Demolition as an ICI subheader with relevant bylaw summaries, gypsum/drywall disposal specifications, and resource list; 3. Multi-family housing with relevant bylaw changes listed and support and resources list; 4. Pitch-In Week (spring cleaning volunteer week), and 5. Reducing single-use items (with background, bylaw overview, and FAQs).
Organics and Recycling Guide for Construction and Demolition Recycling Guide	<p>This guide provides an overview of the who, what, when, why, and how for optimizing construction and demolition (C&D) waste prevention and recycling. The <i>how</i> steps include reviewing current waste systems, identifying ways to reduce waste, rethinking construction waste, preparing those involved for updated systems, and monitor and continually engage. It concludes with bylaw compliance and best practices check lists.</p>
Organics and Recycling Guide for General	<p>This guide provides an overview of the who, what, when, why, and how for optimizing general business and organization waste prevention and recycling. The <i>how</i> steps include reviewing current waste systems, identifying ways to reduce waste, rethinking food waste, preparing those involved for updated systems,</p>

Title and Year	Description
Businesses and Organizations	reviewing waste collection and storage spaces, navigating barriers and finalizing implementation plans, launching, monitoring and continually engaging. It concludes with bylaw compliance and best practices checklists.
Organics and Recycling Guide for Property Managers	This guide provides an overview of the who, what, when, why, and how for property managers to optimize multi-family home waste prevention and recycling. The <i>how</i> steps include get to know your hauler, prepare residents, prepare your space, reviewing current waste systems, go live, and engage, monitor and improve.
Organics and Recycling Guide for Food Businesses and Organizations	This guide provides an overview of the who, what, when, why, and how for optimizing food business and organization waste prevention and recycling. The <i>how</i> steps include reviewing current waste systems, identifying ways to reduce waste, rethinking food waste, preparing those involved for updated systems, review waste collection and storage spaces, navigate barriers and finalize launch plans, and launch, monitor and continually engage. It concludes with bylaw compliance and best practices checklists.
What Goes Where Guide	This printable, pdf multi-page guide has useful tips and information for sorting materials at home for residents with curbside collection (it is colour coded: garbage - grey, recycling – blue, and organics – green) and includes materials that can be taken to depots or returned to retail. It includes: a visual depiction of what’s still in the garbage that could be composted or recycled; tote management tips for maintaining, resizing, replacing, and reducing odour; detailed icons showing what is collected by material stream; and a detailed table for where to take items not accepted in curbside programs. There is a reminder that the where to take what list is subject to change and to check online for updates. The DoS is in the process of translating this to Punjabi.
Let’s Talk Trash – Sorting Guide for Multi-Family Homes, Businesses and Institutions	This colour-coded guide breaks down where to take food scraps, garbage, and common recyclable items such as paper, cardboard, containers, plastic film, polystyrene, and other flexible packaging. The guide provides reminders for how to collect items, how the materials are used, and the end result.
Technical Guidelines for Waste Rooms	This comprehensive guide is intended to help developers, owners, and architects plan for communal waste rooms in new commercial, industrial, and multi-unit developments per DoS Development Permit Area and Solid Waste Utility Bylaw requirements. Sites are required to have adequate space for multi-stream collection, to be accessible by tenants and removal vehicles, and to reduce wildlife conflicts.
Waste Diversion Tool (Excel)	This waste audit calculator is provided to Squamish businesses to manage and track their waste. The intent is to use the data compiled to set goals and develop a work plan based on the most common divertible items in the garbage (to increase diversion) and the most common non-divertible material found in the garbage (to investigate waste avoidance/purchasing change opportunities).

Title and Year	Description
Zero Waste Events Guide	This downloadable pdf shows how to create a zero-waste event and comply with bylaws on keeping organics and recyclables out of landfill, avoiding wildlife attractants, and reducing single use items. Pre-event tips include setting waste reduction goals, reducing potential material use through prioritizing reusable items, bulk buying (e.g., condiments, drinks), setting recommendations and requirements with vendors related to procurement and managing surplus, conducting training, and determining zero waste station needs. Information on challenges related to biodegradable and compostable plastics are noted. Event implementation recommendations include visually showing waste diversion efforts, discouraging litter, volunteer monitoring, and using bear smart practices to avoid attractants. Post-event ideas include conducting a final waste audit to determine diversion rate, donating surplus food, debriefing with collaborators, appreciating and celebrating successes, and building off lessons learned.
RV Disposal and Recycling	This handout lists requirements for recycling RV components prior to them being accepted at the landfill. These steps are required based on the Solid Waste Utility Bylaw, which bans recyclable and hazardous materials, plus items more than 100 kilograms, exceeding 3500 cm ² or taller than 2.5 metres, or fabricated objects exceeding 1.2 metres in width or thickness, and 2.5 metres in length or 3 m ³ in volume. Recycling steps include removing items such as tires, engine, metal frame and siding, AC unit, appliances, glass, oil and other liquids, or other recyclable elements. Fluids are to be drained, remaining base is to be crushed, and then the RV can be brought to the landfill as garbage.
Bi-annual waste composition studies	The DoS conducts bi-annual waste composition studies on curbside collection, multi-family homes, ICI, construction and streetscapes.