Photo credit: Town of PCSP

GOING CIRCULAR IN PORTUGAL COVE–ST. PHILIP'S.

Building Strong, Healthy, and Resilient Municipalities through Zero Waste and Circularity

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An initiative of

PLANEET CONSULTING
For A Planet Without Waste

in partnership with

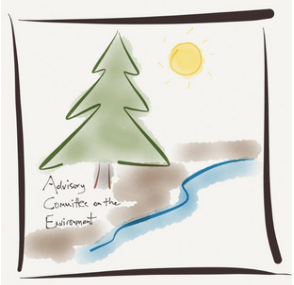
cna
College of the North Atlantic

Portugal Cove
St. Philip's

with the support of

Municipalities
Newfoundland and Labrador

Chamber of
COMMERCE
Portugal Cove - St.Philip's



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We'd like to thank…

This project is presented by Planeet Consulting in partnership with the College of the North Atlantic (CNA) and the Town of Portugal Cove-St. Philip's (PCSP). The project team was led by Viviana Ramírez Luna (Planeet) and supported by Steering Committee members Ashley Nguyen and Ovishek Dey Emon from CNA; Julie Pomeroy (Heritage and Environment Coordinator with PCSP), Jeff Lawlor and Alexander Templeman (former PCSP employees); Kathleen Parewick and Chris Adams (Municipalities of Newfoundland and Labrador staff), Michael Murray (Advisory Committee on the Environment, ACE) and Rebecca LeDrew (project collaborator).

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Thank you to other collaborators, including Sophie Wells (businesses and organizations database), Tatiana Pizarro-Ramírez (map design), Mary Jane O'Donnell and Nikhilesh Paliath (waste audit), and interviewees and survey respondents.

We are very excited about our journey. We hope that we'll continue working together towards a circular PCSP that will lead the way in our province.

Introduction

The Town of PCSP has a population of 8,415 (Statistics Canada, 2022) and is located 10-15 minutes from St. John's, the St. John's International Airport, and all major retail centres. Its vision is to be a sustainable and complete community, with access to connected and safe neighbourhoods, natural open spaces, agricultural lands, soaring coastlines, and increased economic opportunities (Town of Portugal Cove-St. Philip's, About our town. 2022).

In 2019, PCSP joined the Partners for Climate Protection Program (PCP), a collaboration with the Federation of Canadian Municipalities (FCM) and ICLEI – Local Governments for Sustainability (ICLEI Canada) to facilitate and aid communities across Canada in their climate adaptation and migration efforts.

As part of the program, the town completed two of the five milestones, including a baseline greenhouse gas inventory and reduction targets for municipal operations and

the community. The town is now drafting its Climate Mitigation Action Plan (Town of Portugal Cove-St. Philip's, Climate Change. 2022).

The project "Going Circular in Portugal Cove-St. Philip's" builds on the Town's Climate Mitigation Action Plan and on the awareness that our resources are finite, our throwaway culture is causing almost half of greenhouse emissions, and the need to rethink our lifestyles. This awareness is making mainstream the paradigms of zero waste, circular economy, and circular society defined as follows:

> *Zero Waste is 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.*

> *The circular economy is a systems solution framework that tackles global challenges like climate change, biodiversity loss, waste, and pollution. It's based on three principles, driven by design: eliminate waste and pollution, circulate products and materials (at their highest value), and regenerate nature. Ellen MacArthur Foundation*

> *The idea of a Circular Society aims to establish a participatory, communitarian, solidary and circular consumption and production system. Its mantra is: economic actions serve consistently and exclusively for social well-being within planetary boundaries. Obsolescence Research Group*

This project brings these concepts together through what we've called "R" Services. These services include Repair, Reuse, Refill, Recycling, Return, and Rot (composting) and help **prevent and reduce** waste, **connect** people, and **move** PCSP towards circularity.

We surveyed households (Part 1 of the document), interviewed individuals from businesses and organizations (Part 2), and performed a waste audit of the Town Hall (Part 3). The results have provided a snapshot of what "R" services exist, the extent, and the different paths we can take towards circularity.

Project Goals

1. Identify existing and potential "R" Services in PCSP such as Repair, Reuse, Refill, Recycling, Return, and Rot (composting).

2. Identify opportunities for and challenges to scaling up existing "R" Services and implementing new ones that can bring social, economic, and environmental benefits to PCSP.

3. Assess how PCSP Town Hall can be the "collaborator, convener, catalyst" for circularity in the community and the province.

Overarching Themes

The three parts that comprise this report take different approaches to circularity in PCSP. Whether the focus is quantitative, qualitative, or a combination of the two, the chapters are united by the following overarching themes:

1. While all "R" services exist in PCSP to some extent, the lack of knowledge or understanding of such services presents a considerable barrier to participation (e.g. composting and recycling). There must be an effort to raise awareness, understand the motivations and barriers that residents face, and design strategies to increase the use of "R" services and move towards circularity.
2. Moving towards circularity can build on existing programming, socio-cultural values, material resources, and community spaces.
3. A successful circular plan will seek to build a zero-waste culture that extends from the home to the workplace. Such a culture would make circularity both desirable and accessible to the people of PCSP, who would then be motivated to participate in it through personal volition rather than external pressure.
4. A successful circular agenda for PCSP will start small. Small-scale initiatives are more successful when targeted to particular contexts. The town can seek to expand the initiatives by building on lessons learned.
5. A circular plan for PCSP will connect with the town's Climate Mitigation Action Plan and the Strategic Agriculture Plan for the Killick Coast. These two initiatives can mutually reinforce one another while helping create a more coherent, wide-reaching agenda.

PART 1. Household Surveys

By Viviana Ramírez Luna

Executive Summary

We conducted a survey to learn about households' experiences, expectations, and recommendations related to Repair, Reuse, Refill, Recycling, Return, and Rot/composting ("R" services).

The survey received 34 responses, a small sample, likely consisting of people interested in environmental issues and therefore not representative of the PCSP population. Nonetheless, we've learned valuable lessons.

The survey showed that all "R" services are happening to some extent in the community, and respondents would like to see them become formalized. Recycling is the most known "R" service. The main motivations to use "R" services include reducing waste, helping the environment, and feeling happy. The main barrier was a lack of knowledge of "R" services. Other less frequent but critical barriers were inconveniences (too far, too few, too much work).

Most respondents said they would use the services if they were more accessible. They suggested platforms (e.g. app or website) to connect existing service providers with potential users, financial support for expanding locations/staff, and social entrepreneurship programs focused on "R" services.

We recommend the following areas to frame the next steps:

1. The low-hanging fruit. Using existing resources to boost "R" services, e.g., the Live Local | Portugal Cove website and the Environmental Fair to organize a "Repair, Reuse, and Recycling Fair."

2. Systematic research. Going beyond knowledge-based campaigns to examine barriers and motivations regarding "R" services, starting with recycling and composting.

3. Supporting startups. Establishing partnerships with local institutions to stimulate business ideas and create startups.

4. The Town's green purchasing. Working closely with Municipalities of Newfoundland and Labrador (MNL) through their new procurement program to evaluate services using a circular lens.

5. The long-term vision. A circular vision must embrace all the above actions. This vision involves integrating all "R" services into the Town's Climate Mitigation Action Plan, outlining long-term goals, and devising indicators to measure progress.

Methods

Steering Committee

The Steering Committee met online for the first time on September 22nd, 2021. It included staff of Municipalities of Newfoundland and Labrador (MNL), PCSP (Chamber of Commerce and Town staff), the Advisory Committee on the Environment (ACE), and CNA. They provided guidance through meetings and some one-on-one conversations, suggested contacts in the community, liaised with the Communications Team, and reviewed drafts.

Survey

Between October 23 and November 24, we posted a survey on the Town's website and promoted it through social media, targeting people living or working in PCSP. The goal was to learn about peoples' experience with existing "R" services in PCSP, what they'd like to see in the future, and recommendations to make that happen.

For the survey, we defined an "R" service as any commercial or community service that helps prevent and reduce waste, connects people, and moves PCSP towards circularity. These include Repair, Reuse, Refill, Recycling/upcycling, Return, and Rot (composting).

Social media posts

Between October 23 and November 17, we ran weekly posts featuring two per each "R" service. The first post included the definition, and the second asked a question and provided examples of local businesses that offer the service (See Appendix 1A for an example of a post).

Site visits

To get familiar with the community and the places mentioned by survey participants and interviewees, we drove around PCSP and visited Murray's Grounds Café, the Cohousing NL land, and Sharpe's General Store & Gas Bar.

Limitations

The main limitation of the survey is the small sample and the likelihood that respondents are interested in environmental issues already. This means that the results are not representative of the population of PCSP. Nonetheless, there is valuable information to be learned from the survey. For instance, what "R" services occur in the community already, participants' perceptions of these services, and steps to expand those services to reach those who aren't interested in the environment but whose participation is vital to moving towards a sustainable, circular community.

Results and Discussion

Demographics

Given the small sample and the bias related to the type of people who answered the survey, demographics are included for reference only. We didn't attempt to find any correlations between participants' demographics and their answers.

Residency

The survey received 34 responses, out of which 30 live in PCSP and four work in PCSP but live in other communities (Figure 1). We included all entries in the analysis.

Gender

Of the 34 respondents, 21 (61.8%) identified as female, 7 (20.6%) as male, and 6 (17.6%) preferred not to say (Figure 2).

Age

Just over 40% of respondents are between 35 and 44 years old, followed by 45-54 years old (23.5%) and 25-34 years old (17.6%). Five respondents (14.7%) are 55 and older, and one person (2.9%) preferred not to say (Figure 3).

Household income

Half of the respondents (17) have a total household income of over $100,000. Five (14.7%) have an income between $75,000 and $99,000; and three (8.8%) between $50,000 and $74,000. Nine respondents (26.5%) preferred not to say (Figure 4).

Figure 1. Map of the Town of Portugal Cove-St. Philip's (red border) and surrounding communities showing the location of the survey respondents living inside (n=30) and outside (n=4) of PCSP, including Logy Bay, St. John's, Paradise, and Mount Pearl. Map created by TPR and AVRL with Google Earth. Scale 6,000 m.

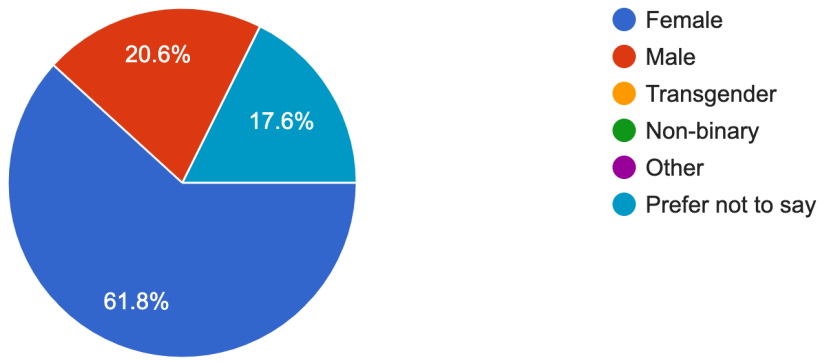

Figure 2. Respondents' gender. 61.8% identified as female, 20.6% as male, and 17.6% preferred not to say.

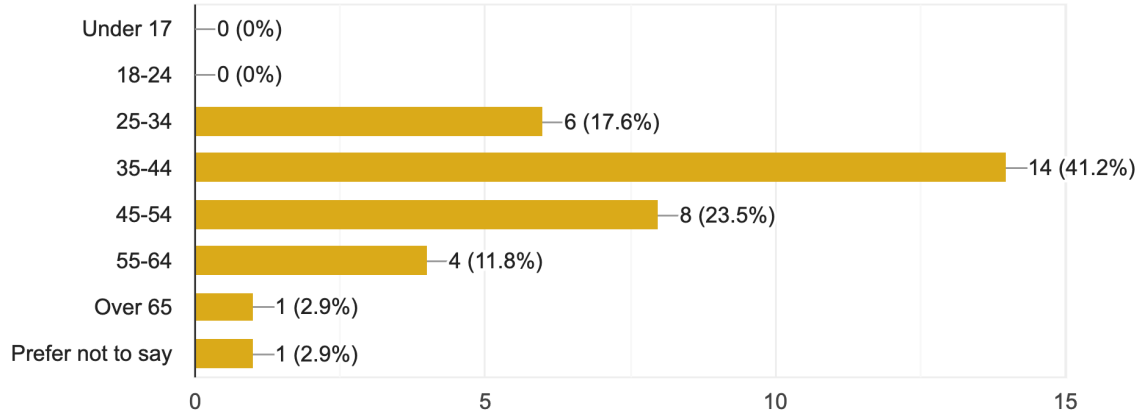

Figure 3. Respondents age. 82.3% are between 25 and 54 years old, 14.7% are 55 and older, and 2.9% preferred not to say.

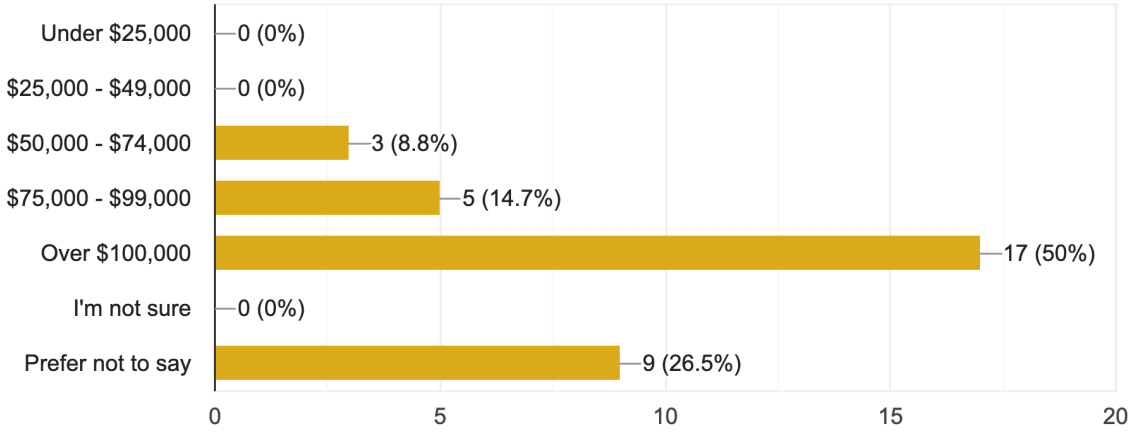

Figure 4. Total household income. Half of the respondents (17) have a total household income of over $100,000, and eight (23.5%) have an income under $100,000. Nine respondents (26.5%) preferred not to say.

Existing & Potential "R" Services

What do you know about "R" services in PCSP?

Recycling in PCSP is the most known "R" service among respondents (30 or 88.2%). While the other "R" services aren't widely known, a small number of people are familiar with at least one of them (Figure 5).

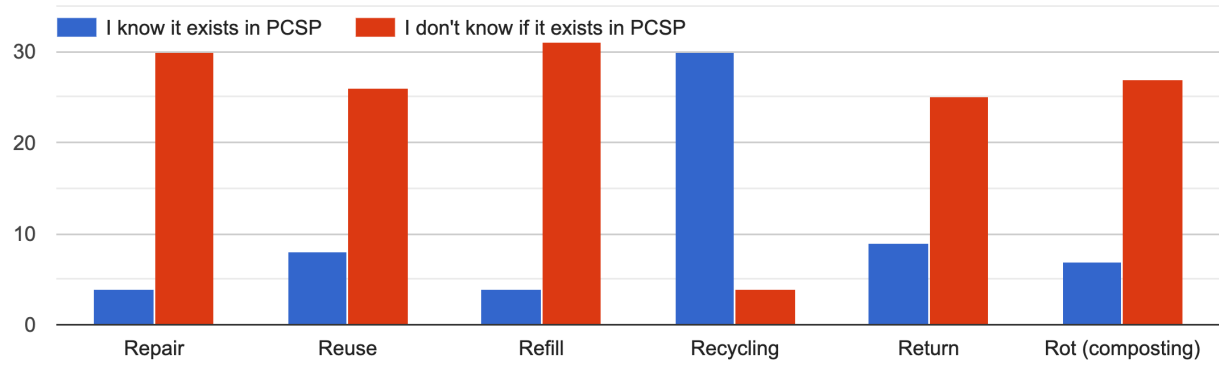

Figure 5. Existing "R" services in PCSP. Recycling is the most known "R" service among respondents (88.2%). A small number of people are familiar with at least one of the other services.

These findings match a survey conducted in 2020 by the Multi-Material Stewardship Board (MMSB) across the province, which also found that curbside recycling was one of the most known services among respondents (77%)—recycling has been widely promoted since 2005 in different municipalities. The MMSB survey looked at knowledge, attitudes and behaviours regarding waste management and recycling (MMSB, 2020).

Here are some other examples of existing "R" services in PCSP that respondents provided:

Refill

- Water jug refill station at Sharpe's.

Reuse

- Clothing swaps organized by community members in PCSP and St. John's (mostly pre-COVID)
- Sports equipment exchange organized by the Town a couple of years ago.

Return

- Beer bottles to local convenience stores.

Recycling

- Gathering and processing containers by the St. Philips Men's Group—although we couldn't confirm this information.
- Bins for clothing donation and beverage containers outside Sharpe's convenience store (Figure 6). Two different people mentioned these collection bins.

Figure 6. Sharpe's General Store & Gas Bar (on 899 Thorburn Rd). Three respondents listed the store for its "R" services, including Refill (water jug station), Return (beer bottle), and Recycling (beverage containers and clothing). Funding from beverage containers goes to St. Philip's Anglican Church. Photos by AVRL.

What "R" services would you like to see in PCSP?

Respondents provided various ideas:

Repair

- Repairing and upcycling mall/shops

Reuse

- Second-hand stores
- Material swaps (clothing, sports equipment, craft, art, and construction supplies) in community spaces (rec centre, church, school gymnasium, etc.)
- Lending Libraries - tools, baby clothes, yard equipment
- Flea market
- Fix it - Trade it - Reuse it Market

Recycle

- Glass
- Heavy plastic items
- Recycling at Beachy Cove Elementary
- Drop off areas around town for recyclables and non-recyclables

Return/reuse

- Return and cleaning facility for glass containers to sell back to businesses for reuse

Rot (compost)

- Pick up service
- Collection with garbage and recycling collection
- Community compost in a local farm through their existing customers who pick up vegetables, neighbours or partnerships with local businesses to compost certain types of food waste
- Drop off locations for organics. The Town could use the compost in community gardens
- Composting bins for public use

Other

- Online platforms to see different providers and services
- Banning single-use non-biodegradable food containers
- Measuring the impact as one step towards growing impact

[A monthly clothing swap would be] a wonderful way to get out and interact with other members of our [community] as well as exchange and recycle clothing and many other things such as children's items other people may need. Respondent # 25

How often do you use the "R" services you know of in PCSP?

As mentioned above, recycling is the "R" service most people are familiar with; 24 of 30 who know about it often use it, six people use it occasionally, three don't know it exists and would use it if it existed in PCSP, and one person doesn't understand how it works (Figure 7).

The most common response for all the other "R" services was "I would use it if it existed in PCSP" (people **unfamiliar** with them), followed by "I use it occasionally" (people **familiar** with them) (Figure 7).

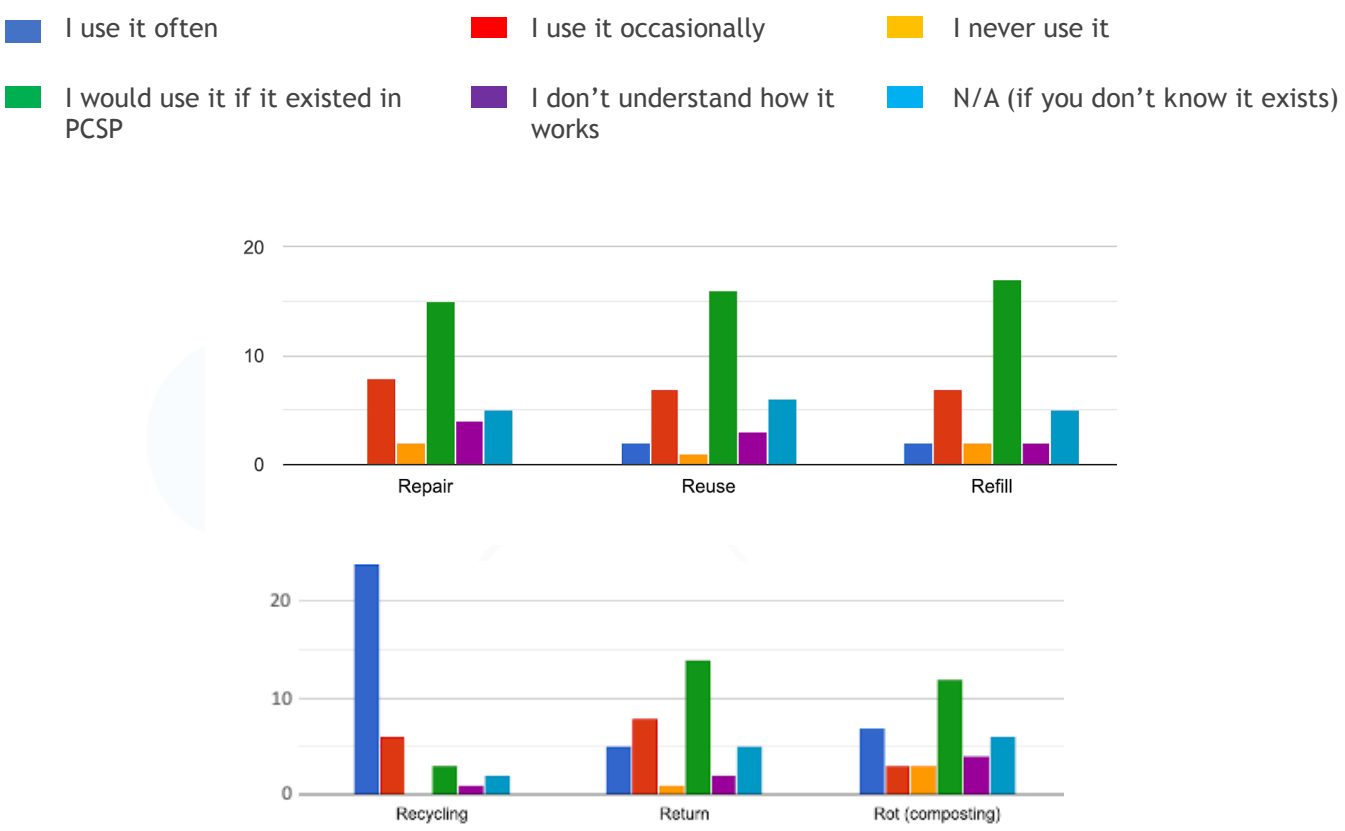

Figure 7. How often do people use "R" services? Recycling is the most known service in PCSP, and it is also the most used. Similarly, most people don't know other services and would use them if they existed in PCSP. Those who do know about other services use them occasionally.

Relationship between knowledge and use of "R" services in PCSP

We found some confounding answers from some participants regarding their knowledge of and use of some "R" services. For instance:

Some people answered that they **don't know** if a particular service exists in PCSP (e.g. composting or repair) and that they **do use** it often, occasionally, or never, or don't understand how it works.

Some people answered they **know** a particular service exists in PCSP (e.g. reuse), would use it **if it existed** in PCSP, but don't understand how it works.

At first, these responses seem contradictory. However, by examining the same participants' responses in other parts of the survey, we identified the following possible explanations:

- Respondents don't know about the services in PCSP but use them either in their properties (like composting) or in the communities where services do exist (like repair in St. John's).

- Respondents don't know about the services in PCSP and don't intend to use them because it's confusing (like recycling) or it's too much work (like composting).

- Responses could also show us the gap between awareness and actions, i.e. people are aware of the environmental benefit but don't act, a widespread trait in behavioural studies. Examining motivations and barriers is vital to address the gap and advance towards desired environmental behaviours.

Opportunities and challenges

Why have you used the "R" services?
Among those who have used "R" services, the main reasons why they do are (between 19 and 29 responses):

1. Help them reduce waste
2. Allow them to help the environment
3. Make them happy

Other reasons with 12 or fewer answers:

4. Help them save money
5. Help them align with progressive trends
6. Creates jobs
7. Allow them to socialize with the employees and other people

Respondents also said:

8. Help them find a purpose for items with high embedded energy that they cannot send to landfill
9. Saves a trip into St. John's

A 2020 study in British Columbia conducted with 1520 participants found a set of seven groups characterized by specific motivations for "lighter living." They defined it as "happy, healthy everyday living in ways that allow everyone to thrive fairly within sustainable ecological footprints" (OneEarth / Share Reuse Repair Initiative, 2021).

The study found that the **well-being of the planet or the society** was the primary motivation for only two of the seven groups and a partial inspiration for one group that makes choices based on rational thought (e.g. "reducing waste just makes sense"). While style, technology, practicality, luxury, and savings were the primary motivation for the remaining groups.

While our study is smaller in terms of the timeframe and the number of participants, there is a similarity in that motivations for most respondents to use "R" services in PCSP are a combination of planet wellbeing, rational choices, and pleasure.

This perspective also aligns with the limitation in our survey that people who participated are already interested in environmental choices. Learning from the BC study, we must ask two questions when carrying out initiatives to mainstream "R" services in PCSP:

- How do we reach people who aren't motivated by the planet's wellbeing but by other factors like style, technology, practicality, luxury, and savings?
- How do we ensure that enabling conditions exist (e.g. policies, incentives, peer support, market goods, and services) to promote and scale-up "R" services in PCSP?

Other responses in our survey indicate that some respondents use some of the services (e.g. recycling) but don't use others (e.g. repair or composting) because it's too much work. Even though both are environmental actions, they differ in the effort involved, barriers to overcome, and motivations. This also coincides with the BC study, which found that the same person may have various reasons for decisions in different contexts or occasions (OneEarth / Share Reuse Repair Initiative, 2021).

Why haven't you used the "R" services?

Among those who haven't used "R" services, the main reason is that **they don't know about the services** (between 14 and 17 responses for each service, except Recycling).

Other reasons with four or fewer answers for each service include:

- The locations are too few and far from their homes.
- It's too much work
- They haven't needed the services (some respondents include people living outside PCSP)

I would also like to see "R" services available on both … St. Philips and Portugal Cove sides as this community is quite spread out … getting to Portugal Cove is quite a distance and not particularly accessible for residents on the St. Philip side (and vice versa). Respondent # 8

While lack of knowledge is the main reason for not using "R" services, it's essential to pay attention to the barriers related to inconvenience. One of the respondents said: *"Composting can work if someone collects it, makes it easy. This is harder than it sounds."* Respondent # 18

The 2020 MMSB provincial survey found that among those who don't compost, 28% cited inconvenience, and 19% said it would be too much work. Of all survey respondents, 44% said they believed it is extremely or very important that a curbside organics program be introduced in their area.

Residents in the St. John's CMA, which includes PCSP, showed high interest in a curbside organics program (MMSB, 2020). This is an opportunity for the Town to consider implementing this type of program or supporting the development of a social enterprise. In St. John's, the Social Justice Coop leads the Georgestown Community Composting program, which provides the infrastructure to 26 households for organics diversion. While there's no cost for participants, the short-term goal of this pilot project is to learn what it takes to run the program successfully and what opportunities and challenges are as a business. What problems are participants facing that the composting program can solve for them? Are participants willing to pay for the solution? How much? How can they be motivated?

Regarding recycling, MMSB found that according to those who recycle less than half of their materials, 20% said recycling is too inconvenient. An MMSB waste audit conducted in PCSP in 2016 found that residents recycled just over 6% in 2015 and recommended a combination of education, rewards, and enforcement to help bring diversion rates closer to 21% (MMSB, 2016).

Making services convenient and easy for people is also a common finding in behavioural studies (McKenzie-Mohr, D. 2013). Knowledge is not enough, so **it's critical to go beyond information-based campaigns**. The "Conclusion and Next Steps" section includes an overview of Community-Based Social Marketing (CBSM), which draws from the idea that "initiatives to promote behaviour change are often most effective when they are carried out at the community level" (p. X,

McKenzie-Mohr, D. 2013). Further, those initiatives should also be based on research and piloted at a small scale before expanding.

Last but not least, some PCSP residents indicated that they hadn't needed some services like repair, refill, or composting. This raises the question of whether they don't need it (they do it themselves) or don't see the need to use it, which can be related to the perception of their discards as waste instead of useful material. If they view their discards as "waste," the discards simply go to the garbage bin because there's no need to give them a second life. If they view their discards as "materials," then they are more likely to see a demand for "R" services. This may be one area that could benefit from an information campaign (although our research indicates that it is a lower priority than other initiatives).

The demand for "R" services can be stimulated through strategies that address barriers and motivations and ensure that enabling conditions exist, e.g. policies, incentives, peer support, market goods, and services. Depending on the "R" service type, providers can be new in PCSP or create a connection with St. John's providers. For instance, if it's found that the lack of drop-off sites is a barrier to beverage container recycling, one potential solution is to create a series of collection points across PCSP. The containers can be collected by a person or organization (e.g. the church) and brought to a Green Depot in St. John's.

How likely are you to use one or more of the "R" services if they were more accessible?

Most respondents (63.6%[1]) indicated that they were **very likely** to use "R" services if they were more accessible. Two people chose 1 (not likely); one of them lives outside PCSP, and the other added that recycling must be made easy because it "already has too many parameters" (Figure 8).

I would love to have one online portal where I can access the information about the types of services offered! Having a central location to see different providers and services would help people know what is out there and make it easier/less time-consuming to discover. Respondent # 34.

[1] This question was answered by 33 not by the total 34 respondents.

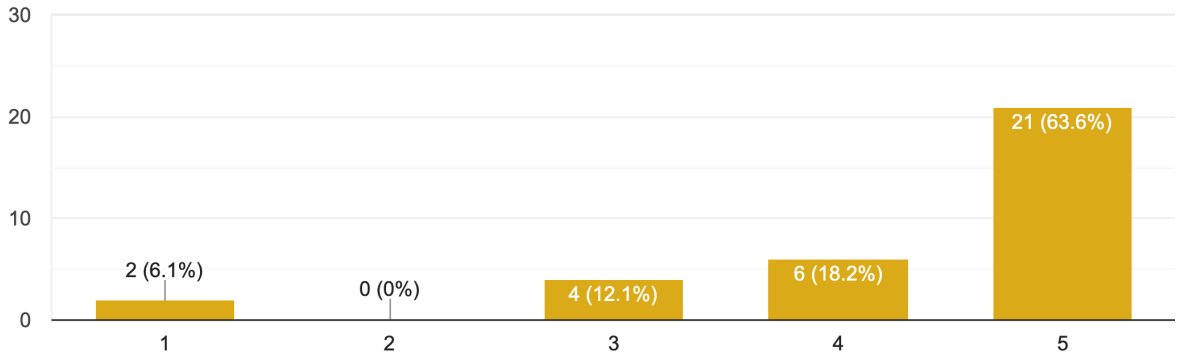

Figure 8. How likely are respondents to use "R" services if they were more accessible. Out of 33 respondents (not the total of 34), 21 (63.6%) are very likely to use "R" services. Two respondents aren't likely to use them. One of them lives outside PCSP, and the other refers to recycling and the need to make it easy.

What would be necessary for making these "R" services more accessible?

The top three options (18 or more responses each) that would make the "R" services more accessible include:

- Platforms (e.g. app or website) to connect existing service providers with potential users (64.7%)
- Financial support for expanding their locations/staff or offer collection (58.8%)
- Social entrepreneurship programs focused on "R" services (52.9%)

Followed by:

- Government purchase programs that give preference to providers of "R" services (38.2%)
- Tax breaks to make services more affordable (32.4%)
- Access to training to improve the quality of their services (20.6%)

Respondents also suggested:

- Make recycling easy. It already has too many parameters
- "Town is going to have to 'step up'"
- Community engagement to establish and market local providers of these services
- Decrease garbage pickup frequency and increase recycling pickups

Conclusion and Recommendations

The Town of Portugal Cove-St. Philip's is not starting from scratch! All "R" services are happening to some extent in the community, and respondents would like to see them happen more formally.

The Town's leadership, the community champions, the local and regional network, and the local, regional, and global momentum around circularity are the community's greatest strengths.

Based on the survey and literature review, we suggest the following areas and the next steps:

1. The low-hanging fruit. Using existing resources to boost "R" services.

    a. Including existing "R" services on the Live Local | Portugal Cove website. For instance, Sharpe's Refill (water jug station), Return (beer bottle), and Recycling (beverage containers and clothing) services

    b. Drawing from the experience with the Environmental Fair to organize a "Repair, Reuse, and Recycling Fair"

    c. Using spaces already identified as community spaces to host events that promote "R" services. These spaces include the school, churches, Sharpe's, etc.

2. Systematic research. Going beyond knowledge-based campaigns to examine barriers and motivations regarding "R" services. Research would first focus on recycling and composting (because it is what people are most familiar with) and use Community-Based Research Marketing (CBRM). This approach would help
    a. define specific individual behaviours that would produce the desired environmental outcome
    b. identify what's stopping individuals from engaging in that behaviour (barriers) and what would motivate them to do it (benefits)
    c. develop strategies to effect behaviour change based on the identified barriers and motivations
    d. pilot two or three strategies for evaluation before carrying out a plan broadly
    e. scale implementation extensively to collect data before and after implementation to measure the long-term impact of the strategies

3. Supporting startups. Establishing partnerships with local institutions to stimulate business ideas and create startups
    a. MUN's Genesis innovation hub, NL Organization of Women Entrepreneurs (NLOWE), and the Centre for Social Enterprise
    b. Organizing events like the annual "Hacking Mount Pearl," a weekend-long event that brings together entrepreneurs, business professionals, designers, developers, and innovators to tackle specific challenges. The 2020 edition focused on waste management.

4. Town's green purchasing. Working closely with Municipalities of Newfoundland and Labrador (MNL) through their new membership service with Canoe Procurement Group of Canada, which provides MNL members with access to competitively priced goods and services. This is an excellent opportunity to evaluate services using a circular lens.

5. The long-term vision. A circular vision must frame all the above actions, integrate all "R" services into the Town's Climate Mitigation Action Plan (besides composting and recycling) and outline long-term goals and indicators to measure progress. Furthermore, there is an excellent opportunity to connect the town's plan with the ongoing Strategic Agriculture Plan for the Killick Coast, which is building a regional framework for waste management. The next section, Part 2., touches on key aspects of the Strategic Agriculture Plan that pertain to PCSP's path to circularity.

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Appendix 1A. Survey Questions

The survey "Going Circular in Portugal Cove-St. Philip's" was built with Google Forms. Below are the questions in text form.

Section 1. Introduction.

Thank you in advance for your participation! All the information you provide will be anonymous and confidential.

Please continue only if you LIVE or WORK in Portugal Cove-St. Philip's (PCSP).

By filling out this survey, you'll help us learn about your experience with existing Circular ("R") services in PCSP, what you'd like to see in the future, and recommendations to make that happen. We'll be getting together, virtually, to discuss the results and plan the Circular future of PCSP!

DEFINITION: For this survey, Circular or "R" is any commercial or community service that helps prevent and reduce waste, connects people, and moves PCPS towards Circularity. Typical examples include Repair, Reuse, Refill, Recycling/upcycling, Return, and Rot (composting).

This survey is part of the project "Building Strong, Healthy, and Resilient Municipalities Through Zero Waste and Circularity" by the Town of Portugal Cove - St. Philip's, the College of North Atlantic (CNA), and Planeet (Zero Waste) Consulting.

Your questions and feedback are welcome! Please don't hesitate to contact Viviana at viviana@planeet.consulting

Section 2. Definitions and examples of Circular "R" services.

Please read these definitions/examples before answering the questions

* Repair: getting clothes, electronics, furniture, etc., repaired by someone else for free or for a fee. Not doing it yourself.

* Reuse: participating in clothing swaps, buying in second-hand clothing stores, becoming a member of a tool library, upcycling (refashioning a piece of cloth, furniture, food packaging), etc. Not doing it yourself. Reuse also includes deconstructing (taking apart unwanted buildings for their salvage value, rather than demolishing them without regard to the value of their component parts).

* Refill: bringing your own containers for refills at coffee shops, food or health stores, etc.

* Recycling: getting paper, plastic, electronics, or clothing, etc., recycled by private or public organizations.

* Return: bringing back packaging, bottles, or bags, etc., to the stores where you bought the products.

* Rot: composting organics by a business or community service. Not in your backyard.

Questions

1. Please indicate the statement that best describes your knowledge of each one of the "R" services in PCSP. Each “R” service was listed and matched with the options below:

- I know it exists in PCSP
- I don’t know it exists in PCSP

2. If possible, could you please add the type of service you know of in PCSP and the contact information of the person who provides it? We'd like to reach out to them and learn more about what they do and what opportunities and challenges they see for the expansion of the service. Thank you!

3. Please indicate the statement that best describes your participation in each one of the "R" services in PCSP. If you don't know it exists, please choose N/A. Each “R” service was listed and matched with the options below:

- I use it often
- I use it occasionally

- I never use it
- I would use it if it existed in PCSP
- I don't understand how it works
- N/A

4. If you HAVE been used any of the "R" services, please indicate why. Check all that apply.

- Helps me reduce waste
- Helps me save money
- Helps me align myself with progressive trends
- Gives me the opportunity to socialize with the employees and other people
- Gives me the opportunity to help the environment
- Creates jobs
- Makes me happy
- I haven't used any
- Other

5. For what purpose have you used these "R" services. Check all that apply.

- For home/personal use
- For office needs
- For education purposes at my school, organization, or neighbourhood
- I haven't used any
- Other

6. Please describe below any other "R" service that you have used in PCSP and is not reflected in this survey. Please enter N/A if you don't have any further comments.

7. If you haven't used any of the "R" services, please indicate why. Check all that apply. If you have used them you can check N/A. Each "R" service was listed and matched with the options below:

- Locations are too few and far from my house
- Service is too expensive
- It's too much work
- I haven't heard of it
- I haven't needed it
- N/A

8. How likely are you to use one or more of the "R" services if they were more accessible? Scale 1 (Not likely) to 5 (Very likely)

9. What would be necessary for making these "R" services accessible to everyone in PCSP

- Financial support for expanding their locations/staff or offer collection
- Tax breaks to make services more affordable
- Access to training to improve the quality of their services
- Platforms (e.g. app or website) to connect existing service providers with potential users
- Government purchase programs that give preference to providers of Circular "R" services
- Social entrepreneurship programs focused on Circular "R" services
- Other

10. Please describe below any other "R" service that you know of in other places in Canada or the world and you'd like to see in PCSP. Please enter N/A if you don't have any further comments.

Section 3. A little bit about yourself

The following questions help us understand if there's any relationship between respondents' background and their answers. Remember that all information is anonymous and confidential.

1. What's your postal code?

2. What's your age?

- Under 17
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- Over 65
- Prefer not to say

3. What gender best describes you?

- Female
- Male
- Transgender
- Non-binary

- Other
- Prefer not to say

4. What is your total household income?

- Under $25,000
- $25,000 - $49,000
- $50,000 - $74,000
- $75,000 - $99,000
- Over $100,000
- I'm not sure
- Prefer not to say

Thank you for completing the survey! Please feel free to share any other comments or concerns you may have regarding Circular "R" services in PCSP. If you'd like to follow up, please contact Viviana at viviana@planeet.consulting.

Appendix 1B. Example of a social media post

Text: **Repair**. What do you do when your computer, dining table, or coat zipper breaks? Do you know where you can go to get it fixed in PCSP? **Reuse**. What do you do with used clothing, tools, or furniture? Do you know where you can donate, swap, or upcycle them in PCSP? **Logos of participating organizations (top, left to right)**: Advisory Committee on the Environment (ACE), PCSP Chamber of Commerce, Municipalities of Newfoundland and Labrador (MNL), and Town of Portugal Cove-St. Philip's (PCSP). **Bottom, left to right:** College of the North Atlantic (CNA) and Planeet Consulting.

PART 2. Business and Organizations Interviews

By Rebecca LeDrew and Viviana Ramírez-Luna

Executive Summary

Conversations with 14 individuals involved in sustainability/circular initiatives in Portugal Cove-St. Philip's (PCSP) allowed us to delve deeper into their motivations and concerns. The four most salient themes of these semi-structured interviews were "R" services, the role of socio-cultural values, composting, and agriculture. We reflect on how these themes could be combined as part of an overall place-based rural circular plan that emphasizes the role of agriculture. To make such a strategy workable, it will be necessary to strengthen ties within the community and beyond and create hubs of circular learning and facilitation. Any initiatives will have to be very mindful of questions of scale. What works in one context will not necessarily work in another. Fortunately, implementing a circular plan at a small scale allows greater freedom to troubleshoot and see more readily what strategies are working. Thus, a successful circular agenda in PCSP will offer lessons to the town itself and to other communities who may wish to adapt some of the successful approaches to their particular localities.

Methods

During late September and early October 2021, we searched the Town's website for businesses and organizations located in PCSP. We also contacted people in our network living or working in PCSP. Our goals were to learn from people who 1) were already practicing or planning waste reduction, 2) could provide business and technical support to expand or create "R" services, and 3) could provide a picture of waste reduction in PCSP.

We created a list of 21 organizations, out of which eight were in the agricultural sector. Other sectors included health and wellness, food/beverage, waste management, professional services, country club, governmental and non-governmental organizations, business support, and education institutions.

From that list, we interviewed 14 people from 10 organizations between October 5th and November 16th. Organizations included Co-housing NL, Windy Heights Farm, Seed to Spoon, Murray's Gardens, Town of Portugal Cove-St. Philip's (PCSP), Advisory Committee on the Environment (ACE), Abydoz (a local wastewater technology firm), College of North Atlantic (CNA), NL Organization of Women Entrepreneurs (NLOWE),

and Municipalities of Newfoundland and Labrador (MNL). Interviews lasted between 30 and 90 minutes.

The interviews asked about familiarity with the circularity concept, organization profile, and perspectives on barriers and opportunities for circularity in PCSP. We transcribed and coded the interviews and identified various topics that impact how resources are managed locally and provincially (e.g. policy, education, procurement, generational shifts, etc.). Given the rural and the strong agricultural nature of PCSP, and the evidence in other jurisdictions of how this sector can boost circularity, half of this report is focused on agriculture and composting. The other two themes provide an overview of "R" Services and their related socio-cultural values.

Limitations

Interviews didn't include other sectors in PCSP like construction, and within the food sector, interviews focused on farms, leaving out other stakeholders like retailers (convenience stores) or food establishments. While there's more to the picture of waste reduction in PCSP, we learned about what's already happening and what participants perceive as opportunities and challenges to building a circular municipal region.

Results

The qualitative, semi-structured interviews conducted with individuals involved at various levels with sustainability initiatives in PCSP allowed for a more in-depth discussion of the participants' observations, concerns and suggestions for building a circular municipal region. Thinking at a more holistic, community-level, the participants understand the unique advantages and challenges of the municipality. For circularity to work to the benefit of all residents, circular services must be accessible and desirable to the residents and address any existing challenges and concerns. As one interviewee stated, **circularity is bigger than the individual and that one individual does not comprise the circle, it is a circle of other people**.

The salient themes of the interviews may be grouped into four broad categories: existing and potential "R" services, socio-cultural values, composting, and agriculture (specifically small-scale and circular). This section begins with a summary of these key themes as elucidated in the interviews, followed by some contextual and academic literature, and concludes with suggested next steps.

These results reflect what we learned during the discussions last year. Any changes in PCSP since then aren't included here.

"R" Services

Throughout the interviews, the participants could not name any substantial "R" Services in PCSP beyond recycling and the new community composting initiative. However, the participants could list existing, albeit somewhat limited, "R" Services in St. John's, such as various repair shops, clothing swaps, and flea markets—which seemed to be largely a phenomenon of the past. Proximity to these services may not be an issue for those with cars, but for seniors, disabled people or others with limited or no access to transportation, these services are likely to remain out of reach. The closest option for those in PCSP appears to be Sharpe's General Store, which offers a clothing drop-off box and a beverage container collection.

Participants also observed the limitations of the recycling and waste collection program. One participant had to argue with garbage collectors to accept her small bag of household waste, as they only accept standard-sized black garbage bags. Another interviewee remarked that recycling bags tend to blow into the road, ditch, and get torn up by passing vehicles. Her husband works in St. John's near the Green Depot, so he usually brings the recycling and drops it off in person. She observed that more people would use curbside recycling if it were better organized and accessible. However, a more significant issue for her is the lack of trust in the recycling industry, given the evidence showing how recyclables end up in landfills. The town also does not collect leaf litter, to the frustration of one of the participants and her friends. Another less obvious policy hurdle comes in the form of Department of Health regulations that make using reusable containers at cafes challenging due to stringent hygiene rules.

However, the interviewees were hopeful as they proposed various solutions, such as farms as drop-off centres for organics, electronic and bulk items destined for repair, repair cafes and flea markets, and separate bagless bins for curbside waste, recycling and compost.

One of the most promising possibilities is the Cohousing NL project, which is still developing. Its mission is "to create a sustainable and affordable cohousing community in rural Newfoundland" (Cohousing NL, 2021). The project follows the three principles of circularity, i.e. reducing waste and pollution, keeping products and materials in use, and regenerating nature. It does that by emphasizing knowledge and resource sharing (e.g. common spaces, tools, programming that brings people together), upcycling (e.g. potentially 30% of cohousing units plan to have upcycled kitchens), growing, preserving and foraging for food, and incorporating a circular wastewater treatment. This project is an example of circular living, which is attracting people and creating spaces to envision what sustainable living looks like. With the right support, this project can become a model for developers and policymakers in PCSP and beyond.

Socio-cultural Values

One of the most important connecting threads in the interviews is the question of socio-cultural values. There seems to be a positive attitude towards sustainability initiatives in PCSP. An interviewee characterized the community as progressive and supportive. Judging as well by the environmentally-conscious business and social enterprise owners we contacted, PCSP seems to draw in individuals who would like to start sustainable businesses, particularly those with an agricultural focus.

Still, PCSP is one small area battling against much larger societal forces. As some interviewees mentioned, repairing was simply a part of life when they were kids. But those generations who would rescue and repair discarded appliances and other household items are aging, and these practices are going out of fashion. There are other logistical hurdles, such as replacing glass soft drink bottles with plastic ones. In the 1950s and 1960s, glass bottles were washed and refilled. With rising labour costs and the cheapness and availability of plastic, reusable glass options have become less desirable.

Circularity may offer a way through such attitudinal roadblocks. If, as one interviewee remarked, moving away from rampant waste generation will require a "massive shift" and a "cultural change," circularity may just be the kind of "transformative idea" that will potentially shift the paradigm if it can gain traction. According to one interviewee, while circularity is not the perfect solution, it is a vast improvement from the status quo. Once you understand the facts underpinning the need for a shift towards circularity or other sustainability models, "you can't look away." This is certainly the hope of the Co-housing initiative, where circularity is their "selling point" and where all participants will be expected to have some knowledge of the concept and practices. One challenge is that what they can achieve is dependent on their financial means.

Circular values may also receive a boost from past values and the infusion of new people and new ideas. One of the participants mentioned that her twelve-year-old daughter and her friends enjoyed thrifting. She said that second-hand shopping is seen as cool by the younger generation and does not bear the social stigma it once did. Additionally, newcomers to PCSP may bring with them new approaches. Immigrants from various countries may introduce new practices unknown, particularly in farming. Similarly, young people seeking to start small-scale organic farms may introduce (or reintroduce) sustainable agricultural practices.

Composting

Composting is a vital "R" service that links to the final theme of agriculture and offers businesses and households the opportunity to make meaningful connections

within the overall web of circularity. Composting merits closer examination, as the council is already piloting community composting programs, local farms have long been centres for composting, and a local waste management company offers innovative ways to treat wastewater sludge that yields a product that can be used for different purposes. Given the nature of the information we gathered, this section focuses on the composting of organics. The Conclusions and Next Steps section recommends that wastewater treatment be kept as an option to recover and use by-products, reducing waste and costs.

The town council has demonstrated its commitment to implementing a community composting program with communal bins distributed at various locations in the town. In the past, they purchased compost bins at $40 each and then sold them to households for the same price. The normal practice is to sell them at three or four times that price to make a profit for the council. In contrast, the PCSP council was so interested in promoting composting that they chose instead to break even. According to one staff, economics is not a major driving factor in their push for waste diversion. While the council does budget for environmentally-friendly initiatives, they do not attach a dollar value to them, and their rationale is ecological rather than economic.

Michael Murray of Murray's Garden Centre is a long-time proponent of composting, but he is also aware of the potential pitfalls and limitations of the practice. While he stated that the word composting "rolls off the tongue," the practice is not widespread, and its science is not well understood. He has spent his life studying composting on a pan-Canadian level. He has found that people are not nearly as educated or active as citizens in countries like the Netherlands, Germany, and Denmark. The lack of understanding of the rules and regulations of composting is evidenced by other Canadian jurisdictions, which mandated composting but found that many residents were putting contaminants in their bins. When implementing wide-scale composting, Murray observed that the government is not doing enough and deciding between a carrot or stick approach can be challenging. Perhaps a motivating factor could be sharing a portion of tipping fees with composters.

Michael Murray's example of his and his family's composting practices shows a deep commitment to the environment and the family's legacy through the farm, which has belonged to them since 1815. Murray's farm has a nearly 40-year-old compost pile that has brought their meadow from low to high fertility. Now, he is expanding the farm's legacy by opening up the oldest settlers' house to a Syrian family who is bringing their interest in farming to the business. The heritage farm and business are now receiving new energy and expertise by introducing newcomers with their heritage knowledge and practices.

Promoting community composting by emphasizing the historical nature of farming and self-sustainability may prove an attractive strategy. Windy Heights and

Seed to Spoon, two organics farms, are excellent examples of the direct link between composting and sustainable agriculture. They compost to build up their soil, using materials from their farms and other food sources like restaurants in St. John's. The compost helps keep the soil healthy and reduces some of their expenses for input. However, finding the financial balance can be a struggle, considering the costs and time spent collecting food waste.

Seed to Spoon is interested in becoming a community composting site through their existing customers—who pick up vegetables—neighbours or partnerships with local businesses to compost certain types of food waste. Collecting organics from areas as close as possible to farms would reduce transportations costs and environmental impacts of transportation, e.g. gas emissions.

Farms as community composting sites may also be a strategy to connect with residents interested in contributing to healthy and sustainable community agriculture that can feed their town. Showing the contribution that composting makes to local agriculture can also be an incentive for those who aren't interested in composting or those who don't understand its value.

The importance of composting and otherwise cycling waste materials back into the land is a key component of circular agriculture, which is the final thematic thread yielded by these interviews.

Agriculture

The final theme that connects many of the interviews and the one that appears to have the greatest potential for expansion and innovation within a circular framework is agriculture. Through our interviews, we spoke to several owners of enterprises that are either farms or have strong agricultural aspects, are currently operating in a sustainable framework or have aspirations to do so. All of them are familiar with circular practices.

While PCSP is only 10 minutes from St. John's, as one of the informants observed, "it doesn't feel like it when you're in the middle of [the municipality]." The rural nature of the community serves as a draw for those interested in agriculture. Some residents who grew up in the area love and value the natural environment and want it to conserve its character.

Windy Heights is an example of circular ethos. They ensure that whatever they bring onto the farm gets used to the fullest extent possible. This practice extends to maintaining the longevity of farm equipment or supplies, the full nose-to-tail use of any animals they kill and their continued enrichment of the soil. Their goal is to keep their operations as local as possible. As Anita, the owner, said, "we try to keep it

close; we try to connect with people." While it is impossible to keep everything strictly local, they "understand there are efficiencies and synergies to be had if we keep those cycles close as much as possible." The farm follows the principles of regenerative agriculture whereby whatever they use and process, they try to bring back into the land as much as possible. For example, they feed organic waste to pigs, who turn it into manure. This waste includes the boxes out of which they grow organic mushrooms, and the manure produced allows them to grow more mushrooms, a beneficial crop to the environment.

Co-housing is another example of circularity as they will implement regenerative agricultural practices. While they may not be able to produce the kinds of yields seen in conventional farming, their first step is to build up the currently depleted soil for several years, at which point there may be a cost-saving as they will no longer need to make inputs to the soil. The situation in which they find themselves highlights what the informant identifies as the "long trajectory of income vs. what's good for the environment." Their project may not be able to solve those contradictions fully, but as a pilot project, they have the opportunity to become an influence on other municipalities. If PCSP supports the project, the informant believes it could provide an incentive for others to move there. As there are already existing organic farms, she mused, "what if we became Newfoundland's organic farming hub?"

The idea of a hub also has broader applications within circularity. Establishing nodes or hubs of activity and circular service provisioning may help mobilize a local circular plan in a way that is practical and sustainable over the long term. While the municipality of PCSP and its population may be relatively small and rural, they can further leverage their proximity to St. John's to share services, establish networks for exchanging materials, knowledge and technology, and further grow their market for organic produce.

PCSP strengths include its location, the regenerative practices in the farms we contacted and their relationships with customers, and the environmental stewardship of many of the residents. These strengths can help distinguish the municipality as an attractive case study for what is possible within the province as other communities and regions seek to implement their circular agendas.

Context

The case of PCSP offers a unique opportunity to explore the possibilities for place-based development in rural Newfoundland. This is particularly true of the community's potential for circular/regenerative agriculture. Such an approach draws on the unique character and resources of PCSP and maximizes them to create solutions that are practicable and correctly scaled to the locality. According to Daniels, Baldacchino and Vodden (2015), the place-based development framework

demonstrates "sensitivity to existing assets and challenges experienced in a place" and that the "resources nested in place" may offer a "'competitive'" advantage to these places. Moreover, there is a considerable history of communities that have been able to "defend their 'local' places while simultaneously reinventing them." An emphasis on place and locality has much to offer in the context of rural development strategies.

The vision of rural development engages with the "unique store of cultural capital" found in rural spaces to develop it in ways that emphasize sustainability across the "interdependent" spheres of economy, environment and society (Mahon et al., 2018; van der Ploeg et al., 2008; Marsden, 2003; Sonnino et al., 2008). In this new rural development framework, development takes the form of multiple location-specific strategies, each with its particular history and context.

The agri-food sector presents a new locus of circular experimentation while bringing circularity into conversation with rurality. According to Kristensen et al. (2016:750), while still an emerging topic, circular food systems represent one of many "alternative food networks" that are "perceived as nexuses around which new attitudes, demands and practices are being articulated and performed." Currently, modern agriculture largely employs the take-make-dispose model employed by other industries, demanding a constant input of finite raw materials while producing an output of waste and pollution (Zucchella and Previtali, 2019).

Given the current unsustainability of food production, circular principles have been proposed as potential solutions. **An ideal circular food sector would involve reducing food waste, re-using food, utilizing food waste by-products, nutrient recycling, and dietary changes towards more diverse and sustainable choices** (Jurgilevich et al., 2016). Circular food systems are increasingly gaining attention from various businesses, institutions and organizations. Unlike other alternative food networks, a circular agrifood emphasizes collaboration and partnerships. It offers localized models of food and agriculture that are prioritized but not dogmatically enforced when other approaches are more feasible (Kristensen et al., 2016: 751).

Regenerative agriculture is an approach that strongly overlaps with circularity and may already be gaining traction in PCSP. Our interviews show that the agricultural interviewees are deeply concerned with enriching the soil. Improving soil quality is a core component of regenerative agriculture, as defined by Rhodes (2017). Once soil health is improved, it "symbiotically enhances the quality of water, vegetation and land" (2017:105). Food production at a local level has been demonstrated to improve soil quality. Local food production may become the dominant model in the future as efforts to reduce fossil fuel consumption and access fresh food intensify. Yet this local approach will not truly be sustainable unless there is a strong emphasis on

regeneration. In the case of agriculture, regenerative practices could include the cycling of waste by-products back into the soil for crop production (Rhodes, 2017).

Building a sustainable, circular food system in Newfoundland is one possible solution to the much-publicized problem of limited access to a healthy and reliable food supply. Despite the "rich cultural history of food subsistence activities," the province's attempts at large-scale, industrial food production have been hampered by challenges of geography and climate. Farms have continually gone out of business due to the difficulty in establishing production that operates at cost-effective economies of scale (Keske, 2018:5). While there have been success stories of both up and coming and multigenerational farms, over the past decade, the province has lost farms at a higher rate than the rest of the country, and surviving industries like dairy and poultry rely on government subsidies (Keske, 2018). As a result, approximately 90% of the province's food is imported.

As of March 2022, the PCSP Chamber of Commerce is leading the development of the Strategic Agriculture Plan for the Killick Coast. The Plan attempts to address some of the shortcomings of the region's agricultural sector by assessing its existing strengths, weaknesses, opportunities, threats, and gaps. During Phase One (Strategic Directions), the Planning Committee developed four key strategies: Enterprise Expansion, Competitiveness, Identity and Healthy Lifestyle, and Enabling through Policy. Responsible Waste Management is one of the goals under the strategy Identity and Healthy Lifestyle. It has been framed within a Circular Food System based on contributions from Planeet Consulting.

Learning from Guelph-Wellington's Our Food Future project (Our circular future, 2022), the Killick Coast Plan includes the following five initiatives over five years:

1. Assessing the food environment. Where the food comes from (retail, institutional programs, etc.) and what happens from its origins to its destination.
2. Create a circular food security and health action plan based on the results from the food environment assessment. The plan will promote nutritious food through knowledge and skills for healthy eating and by tackling economic and physical access to food considering the impact of COVID-19
3. Establish a circular food economy innovation hub. Fostering collaboration and co-creation of solutions to the challenges at various points within the value chain (from field to fork)
4. Foster new food economy skills and training. Developing and promoting food skills education on circular components such as food loss, unavoidable and avoidable food waste, and composting linking the built environment (households, businesses, institutions, etc.) and farms.

5. Increase circularity in municipal waste systems to drive innovation along the food value chain. Conducting a material flow analysis to pinpoint where to reduce food loss and waste and design opportunities for appropriate reuse.

The realization of the Killick Coast Plan is the opportunity for PCSP to holistically support the businesses and circular initiatives we've described in this section, connect with regional waste reduction initiatives and with St. John's as the main urban centre in our province. The Plan also provides opportunities to foster trust between actors and give citizens of PCSP and elsewhere a greater sense of how their actions can contribute to a sustainable, local food supply.

The Plan opens the door to circular experimentation and innovation at a highly local level. Developing small-scale experiments to influence local, national and policy developments allows for simultaneous bottom-up and top-down developments (Jurgilevich et al., 2016).

Conclusion and Recommendations

Considering PCSP as a hub of circular innovation and knowledge sharing for the province opens up exciting opportunities. Small-scale experimentation at a highly localized level offers more freedom to operate outside the boundaries of conventional policy agendas, make mistakes and correct course, and share the lessons with larger municipalities and smaller, more isolated communities.

Following the four themes, we suggest the following:

1. "R" Services
    a. Strengthening ties between PCSP and St. John's, particularly in service provisioning, e.g. joint St. John's-PCSP clothing swaps, repair cafes, or knowledge sharing workshops
    b. Using farms as community spaces to host farmers' markets to promote "R" services like composting, repairing, swapping clothing, recycling beverage containers (serving as a drop-off site), etc.

2. Socio-cultural values
    a. Design campaigns that mobilize community pride and a sense of historicity in promoting circularity, making explicit ties between historical values of reuse and repair and modern circularity and traditional agricultural practices.

3. Composting
    a. Promoting community composting to link the built environment (households, businesses, institutions, etc.) with farms to reduce waste and as a critical part of local agriculture and food production.
    b. Considering innovative ways to treat wastewater sludge to help reduce waste, recover resources, and lower costs.

4. Agriculture
    a. Building a circular vision by connecting the circular components of the Killick Coast Strategic Agriculture Plan and the Town's Climate Mitigation Action Plan. As mentioned in the previous section, all the recommended actions in this report must be framed within a circular vision with long-term goals and indicators to measure progress.

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Appendix 2A. Interview Questions

The questions guided the conversation. Depending on the conversation, some questions were added while others were removed.

About you.
Where do you live?
For how long you've been working in/with PCSP?
Do you use any local services for personal use?

About your organization.
What are the central goals of your organization?
What are your responsibilities in the organization?
What does circularity mean to your organization?

Your experience with circularity.
Is your organization involved in any circular initiative?
If so, what circular initiatives are those?
Why did you start (or get involved in) those initiatives?

How do those initiatives work?
Who is included in this initiative (other NGOs, clients, academics, policymakers)?
How are other organizations involved in this initiative?
What types of collaborative relationships has your organization made in this process?
If not, why not.
What are the barriers?
What would you like to see?
What do we need to develop circularity in PCSP (business models, technologies, education, essential stakeholders)?
What are the central challenges in fostering circular thinking and collaboration?

PART 3. Zero Waste Audit

By Viviana Ramírez Luna with support from
Mary Jean O'Donnell (MJ Waste Solutions Inc),
Ovishek Dey Emon (Industrial Engineering Technology Co-op CNA)
Nikhilesh Paliath (Zero Waste Action Team, Social Justice Coop)

Executive Summary

As part of the Zero Waste audit, our team analyzed 92.24 lb of material, 24.46 lb of which was landfilled material (black bags) and 67.78 lb was recycled material.

Waste was generated for four days (October 25-28, 2021) and recycled materials for approximately 15 business days (October 11-28, 2021). The total amounts of material were standardized to days so that we could compare them and calculate zero-waste metrics, get insights from the data, and draw some lessons.

Below is a summary of the zero waste metrics calculated for the Town Hall:

Town Hall Metrics	%	Metrics of an optimal resource management program	Metric definition (materials specific to the Town Hall)
Current diversion rate	37.3	Above 90%	Materials successfully diverted from landfill (paper, cardboard, and refundables) against total landfilled material.
Potential diversion rate	70.04		Materials that could have been successfully diverted away from disposal had no contamination occurred or no items mistakenly placed into the garbage bin (organics, recyclables, hazardous materials, electronics).
Capture rate	0 - 94.22		Individual material stream that could have been diverted (organics, other recyclables, hazardous, and electronics) and material successfully diverted from landfill (paper, cardboard, and refundables)
Contamination rate	2.17	Below 10%	Items mistakenly placed into the recycling bin (non-refundables, organics, and non-recyclables).

Extrapolating the waste audit results to one year and assuming no changes over time, the Town Hall could be **generating 0.88 t CO2e/year**. If all the materials were captured through recycling and composting, the Town Hall could **save 1.4 tons of CO2e/year**.

We provided the following recommendations to ensure the highest and best use of materials:

- Replacing compostable (paper towels/napkins, paper plates, wooden cutlery) and non-recyclable items (coffee cups, plastic cutlery, coffee pods) with reusables.
- Composting, which is expected to start soon.
- Adding a bin to capture materials that are being thrown away, including recyclable plastics (takeout containers, food packaging, and coffee lids), hazardous materials (batteries and bulbs) and electronics (a sports timer in good condition).
- Going paperless in some operations and double-sided printing when printing is needed.
- Expanding the centralized material collection located in the kitchen by adding plastics, hazardous materials, and electronics collection. The centralized system would replace desk bins, help increase diversion rates, and help reduce costs associated with garbage bags and the time spent by custodial employees.
- Framing all these actions within a process of building a zero-waste culture tied into the Climate Mitigation Action Plan.

Introduction

This section documents the Zero Waste Audit, which involves the assessment of all recycled and solid waste material generated by employees at the Town Hall—the core operational area—and a list of recommendations to further reduce waste.

Objectives

- Track the volume of waste destined for composting, recycling, and landfill by generation point.
- Review current formal and informal environmental policies of The Town Hall.
- Provide recommendations on waste reduction following the zero-waste principle of highest and best use.

Facility Profile

Address

1119 Thorburn Road,
Portugal Cove - St. Philip's
NL A1M 1T6

Number of Employees

At the time of the study, there were 20 full-time employees at the facility.

Environmental Guidelines

The Town Hall has informal policies for:

- Composting
- Recycling paper, beverage containers, ink cartridges and toners, and hazardous materials (e.g. batteries)
- No printing and double-sided printing

Methods

Guidelines

The Zero Waste Composition Study follows Zero Waste Canada guidelines, which is based on the zero-waste principle of highest and best use, defined as

> Creating and keeping materials and products for use as high on the zero waste hierarchy as possible and in the useful loop as long as possible. Keeping materials from being downcycled where the number of future uses or options are limited (Zero Waste Rating System, TRUE, 2020)

The hierarchy (Figure 9) illustrates what "highest and best use" means. The top three (Rethink/Redesign, Reduce, and Reuse) are prioritized in the hierarchy because they represent the least wasteful and best use of resources for the long-term health of people and our planet.

The Zero Waste hierarchy encourages investment at the top of the triangle, and it's designed for all audiences, from policy-makers to industry to individuals. It aims to provide more depth to the internationally recognized 3Rs (Reduce, Reuse, Recycle) (Zero Waste International Alliance, 2018).

The Recommendations section in this report is framed within the 4 R's (Rethink/Redesign, Reduce, Reuse, Recycle), Compost, Material Recovery (e.g. what can be salvaged from the mixed waste), and Residuals Management (e.g. what is still left in the waste bin, why, and how we can avoid it in the future).

The bottom concept in the hierarchy, "Unacceptable," is not applicable since there are no incinerators in our region.

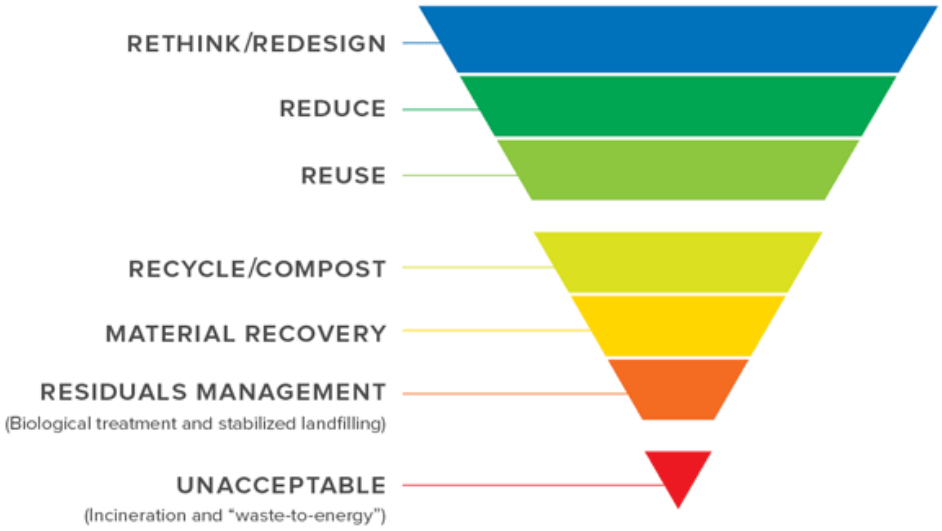


Figure 9. Zero Waste Hierarchy of Highest and Best Use. Source: Zero Waste International Alliance

Material Analysis

The material analyzed during this study includes all recycled material and solid waste material generated by employees at the Town Hall, the core operational area. Due to an error in the process, recycling bins weren't empty at the start of the audit period, which resulted in different generation periods.

Recycled materials were generated during approximately 15 business days (October 11-28, 2021) and the waste during four days (October 25-28, 2021). To account for the difference, the total amounts of recycled and landfilled material were converted to days. While this is not ideal, it allows us to calculate zero waste metrics and draw some lessons.

The staff labelled the bags and set them aside in the facility. Planeet's CEO transported the material to the office in St. John's and processed them on two separate days with her team, Ovishek Dey Emon and Nikhilesh Paliath.

All the black bags were processed on November 2nd at the Farmer's Market and the blue bags on November 9th at Planeet's office. At all times, the team took precautions to keep all the materials intact. Planeet properly disposed of all landfilled and recycled materials at the Robin Hood Bay facility.

All recyclables and residual waste were tracked by generation point (detailed below), sorted, and weighed. Materials from washrooms were weighed but not sorted due to sanitary reasons.

Acceptance Criteria at the Robin Hood Bay facility for materials generated at the PCSP Town Hall.

Once recyclables and waste are removed from the building, they go directly to the recycling and garbage truck and then to Robin Hood Bay, which has the following acceptance criteria (detailed in the City's Curbside Collection Program):

PAPER

- ❏ Corrugated cardboard
- ❏ Boxboard
- ❏ Mixed Paper (newspapers, magazines, books, flyers, computer paper)
- ❏ Egg Cartons
- ❏ Take-out drink trays
- ❏ Paper towel and toilet paper rolls

CONTAINERS

- ❏ Aluminum trays and cans
- ❏ Milk and juice cartons
- ❏ Plastic
  - ❏ Trays, tubs, and food containers
  - ❏ Cleaning product and toiletries containers
  - ❏ Drink bottles with caps
- ❏ Tetra pack containers
- ❏ Steel cans

OTHER VOLUNTARY PROGRAMS[2]

- ❏ Backyard composting
- ❏ Beverage containers return for a deposit
- ❏ Metal recycling
- ❏ Electronic recycling
- ❏ Yard waste
- ❏ Christmas trees
- ❏ Household Hazardous Waste (paint, oils, batteries, propane tanks, aerosol cans)

WASTE

All other materials not included above, such as:

[2] Residents are encouraged to compost organics in their backyards, recycle materials for which infrastructure exists, and dispose of hazardous materials properly. There are no bans and, therefore, no enforcement.

- ❏ Glass (except for beverage containers for which a deposit was paid)
- ❏ Styrofoam food packaging
- ❏ Soft plastic packaging

Points of Generation and Level of Source Separation

Planeet identified three points of material generation at the facility: kitchen, office, and washroom. All the bags from the offices were labelled with the employee's job title. Our team pooled all the bags into black and blue bags to keep employees' anonymity. Below are the generation points with their corresponding level of source separation.

Point of Generation	Level of Source Separation
Kitchen area	Cardboard, Beverage Containers, Waste
Office	Paper, Beverage Containers, Waste
Washroom	Waste

Figure 10. Points of generation. Kitchen area – Waste, Refundables (beverage containers), and Cardboard

Results

Material Composition

Our team audited 92.24 lb, 24.46 lb of which was landfilled material (black bags) and 67.78 lb was recycled material (blue bags, including 1.21 lb of contaminants). We excluded newspaper (3.1 lb), calendars (2 lb), and Uline catalogues (6.8 lb) from the

paper recycling bag. The high volume of these materials (11.9 lb in total) seems to result from a "cleaning day," which isn't likely a daily task and, therefore, doesn't reflect regular operations.

Audited landfilled material was generated for four days. To calculate one weeks' (five days) worth of material, we divided the sample weight (24.46 lb) generated by four days and multiplied by five days.

One weeks' worth of waste = (24.46 lb / 4 days) * 5 days
= 30.58 lb

Recycled materials were generated for three weeks.[3] To calculate one weeks' worth of recycled material (five days), we divided the sample weight (54.66 lb, excluding 1.21 of contaminants) generated by 15 days (five business days * three weeks) and multiplied by five days.

One weeks' worth of recyclables = (54.66 lb / 15 days) * 5 days
= 18.22 lb

The tables and graphs below provide a breakdown of the material generated at the Town Hall with adjusted values to one weeks' worth of landfilled (30.58 lb) and recycled (18.22 lb) material.

Table 1. Landfilled material (black bags) including compostables, recyclables, and disposables. Total material generated was 30.58 lb. Organics were the most represented (38.3% of the total landfilled material), within which food scraps were the highest contributor (22.4%).

LANDFILLED MATERIAL		
Material Stream	**Weight Disposed (lb)**	**Percentage Disposed**
Food scraps	6.86	22.4%
Paper towels, napkins	2.78	9.1%
Paper plates	1.94	6.3%
Wooden cutlery	0.11	0.4%
Organics	**11.70**	**38.3%**
Moulded pulp (coffee trays, packaging)	0.25	0.8%
Office paper	1.74	5.7%
Boxboard (printer cartridge case, cereal boxes, tissue box)	0.33	1.1%
Paper/Cardboard	**2.31**	**7.6%**
Aluminium cans	0.03	0.1%

[3] Alex Templeman, personal communication.

LANDFILLED MATERIAL		
Material Stream	Weight Disposed (lb)	Percentage Disposed
Refundables (Beverage Containers)	**0.03**	**0.1%**
Plastic food containers (shells)	0.91	3.0%
Food packaging (dressings, cheese, etc.)	0.47	1.5%
Coffee lids	0.41	1.4%
Recyclable Plastics	**1.79**	**5.9%**
Coffee cups	1.87	6.1%
Plastic film, ziplock bags, pouches	0.19	0.6%
Food plastic packaging	0.63	2.1%
Plastic cutlery	0.44	1.4%
Coffee pods, creamers	2.29	7.5%
Assorted plastic	0.66	2.2%
Stationery items (markers)	0.06	0.2%
Reusable bag	0.12	0.4%
Garbage bags	1.26	4.1%
Non-Recyclable Items	**7.53**	**24.6%**
Batteries, light bulbs	0.06	0.2%
Hazardous waste	**0.06**	**0.2%**
Sports timer	0.11	0.4%
Electronics	**0.11**	**0.4%**
Synthetic cloth, wipes, rags	0.80	2.6%
Bathroom waste	6.25	20.4%
Miscellaneous	**7.05**	**23.1%**
TOTAL DISPOSED	**30.58**	**100.0%**

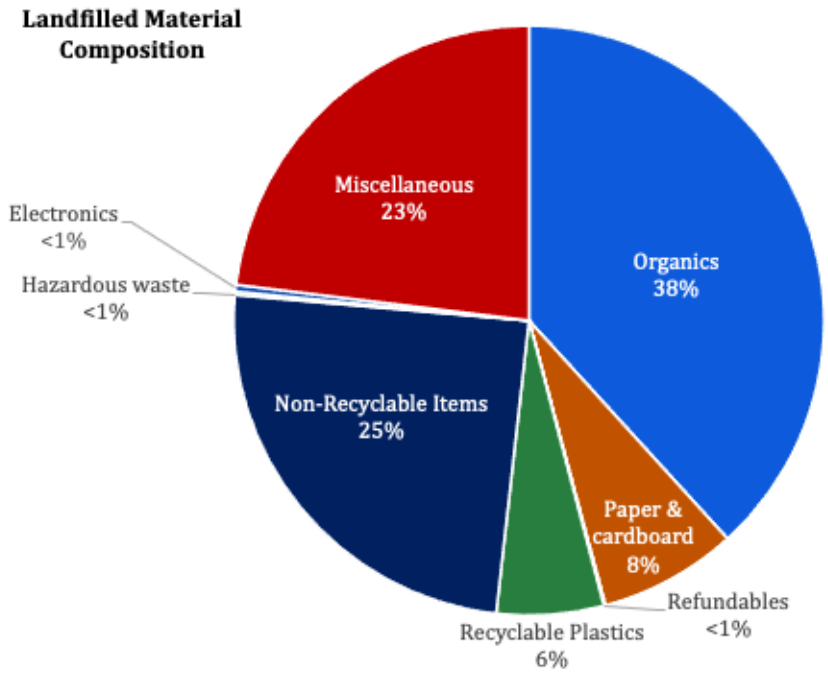


Figure 11. Landfilled material (black bags) including compostables, recyclables, and disposables. Total material generated was 30.58 lb.

Table 2. Recycled materials (blue bags) including paper, cardboard, refundables (beverage containers), and contaminants. Paper has the highest percentage within recyclables with 82.05% and contamination is only 2.17%. Total material generated was 18.22 lb.

DIVERTED MATERIAL		
Material Stream	Weight diverted (lb)	Percentage diverted
Paper (most of it was used one side only)	15.28	82.05%
Corrugated cardboard	0.79	4.26%
Boxboard (printer cartridge cases/cereal boxes/tissue box)	0.43	2.29%
Paper/Cardboard	**16.50**	**88.60%**
PET (#1) beverage bottles	0.93	4.98%
Aluminium cans	0.62	3.31%
Glass bottle	0.18	0.95%
Bottle caps	0.03	0.18%
Beverage Containers	**1.75**	**9.41%**
HDPE (#2) plastic container	0.03	0.14%
Contamination in Beverage Containers	**0.03**	**0.14%**
Organics (paper towels/napkins, muffin cups)	0.04	0.21%
PET (#1) beverage bottles	0.04	0.23%
Steel cans	0.08	0.43%
Plastic food containers	0.01	0.07%

DIVERTED MATERIAL		
Material Stream	Weight diverted (lb)	Percentage diverted
Coffee lids	0.003	0.02%
Plastic film, ziplock bags, pouches	0.04	0.20%
Food plastic packaging	0.02	0.11%
Assorted Plastic	0.10	0.55%
Synthetic cloth, wipes, rags	0.00	0.02%
Contamination in Paper/Cardboard	**0.34**	**1.84%**
TOTAL PAPER + CONTAINERS	**18.25**	**98.01%**
TOTAL CONTAMINATION	**0.37**	**1.99%**
TOTAL DIVERTED + CONTAMINANTS	**18.62**	**100.00%**

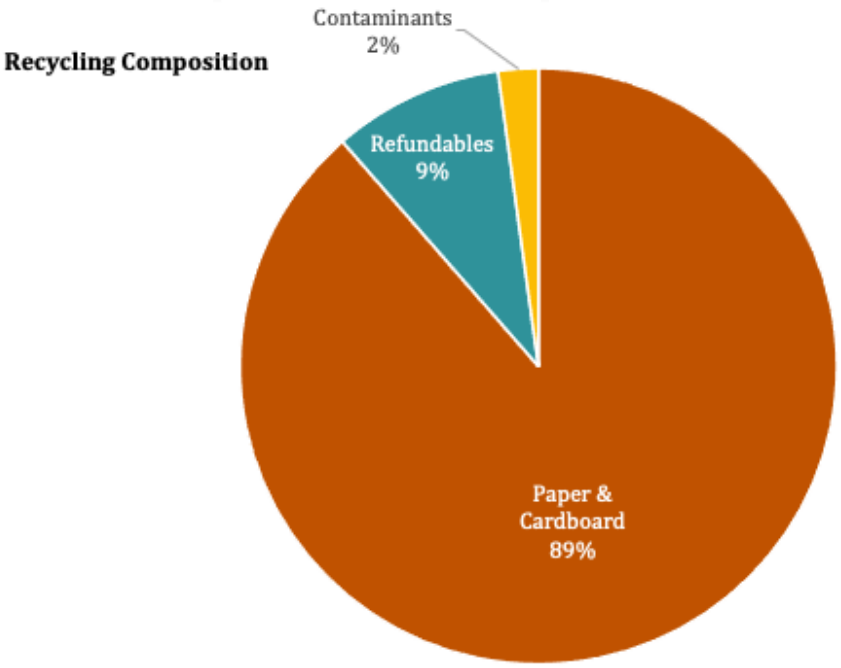


Figure 12. Recycled materials (blue bags), including paper, cardboard, refundables (beverage containers), and contaminants. Total material generated was 18.62 lb.

Zero Waste Metrics

Contamination rate

The Contamination Rate is the proportion of **divertible material** (recyclable and compostable) which is **"contaminated"** by the presence of a separate material belonging to a distinct material stream. Contamination rates further indicate the effectiveness of a facility's source separation program.

Reducing contamination rates as close as possible to zero is essential in ensuring a facility's overall source separation efforts are valued further downstream. An optimal resource management program should have a **below 10%** contamination rate.

The values in the table and pie chart above indicate that the contamination rate during the audit at Town Hall is minimal (**2%**). It mostly occurs in the paper stream generated at individual offices.

Diversion Rate

The Diversion Rate is the proportion of material diverted from the landfill against the total material generated at the facility.

Current Diversion

The values below reflect the Town Hall's current performance, where **37.38%** of materials were successfully diverted away from the landfill via recycling (13%). An **optimal** resource management program should be **above the 90%** diversion rate.

Table 3. Diversion Rate. Combined waste, recycled materials, and contaminants. An **optimal** resource management program should be **above the 90%** diversion rate.

CURRENT DIVERSION RATE		
Material Stream	**Weight Disposed of (lb)**	**Percentage of total**
Recycled materials (excluding contaminants)	18.25	37.4%
Landfilled materials	30.57	62.6%
Total material generated	48.83	100.0%
DIVERSION RATE	**37.38%**	

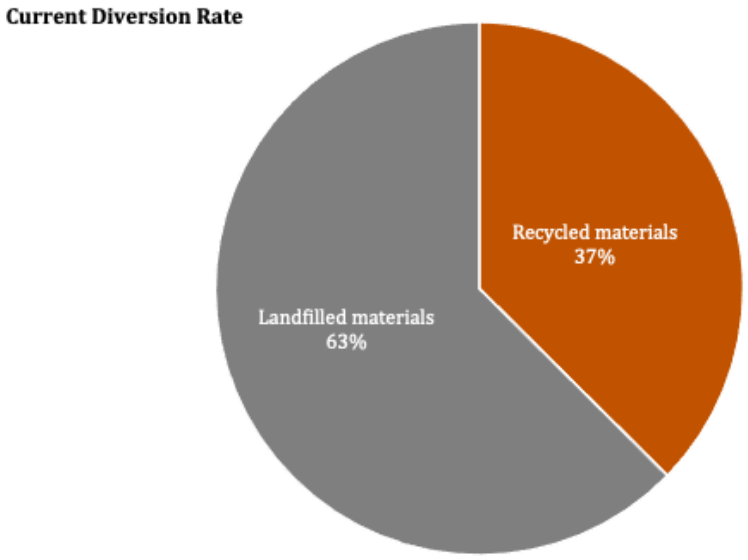
Potential Diversion

The values below reflect The Town's potential performance, where **70.04%** of materials generated could have been successfully diverted away from disposal via composting (23.85%), paper/cardboard (38.24%) and plastics (3.82%) recycling, and

refundables (3.78%). We also include the diversion of hazardous materials (batteries, 0.11%) and electronics (0.23%) through proper disposal.

Table 4. Potential Diversion Rate. What has and could be diverted in all waste streams and compared with Current Diversion. An **optimal** resource management program should be **above the 90%** diversion rate.

POTENTIAL DIVERSION RATE				
Material Stream	Potential diversion (Weight diverted + divertible (lb))	Percentage of total	Current Diversion (Weight diverted lb)	Percentage of total
Organics	11.74	23.85%	0.00	0.00%
Paper & cardboard	18.81	38.24%	16.50	33.54%
Recyclable Plastics	1.88	3.82%	0.00	0.00%
Refundables	1.86	3.78%	1.75	3.56%
Hazardous waste	0.06	0.11%	0.00	0.00%
Electronics	0.11	0.23%	0.00	0.00%
Residual waste	14.74	29.96%	30.94	62.89%
Total Generated	**49.20**	**100.00%**	**49.19**	**100.00%**



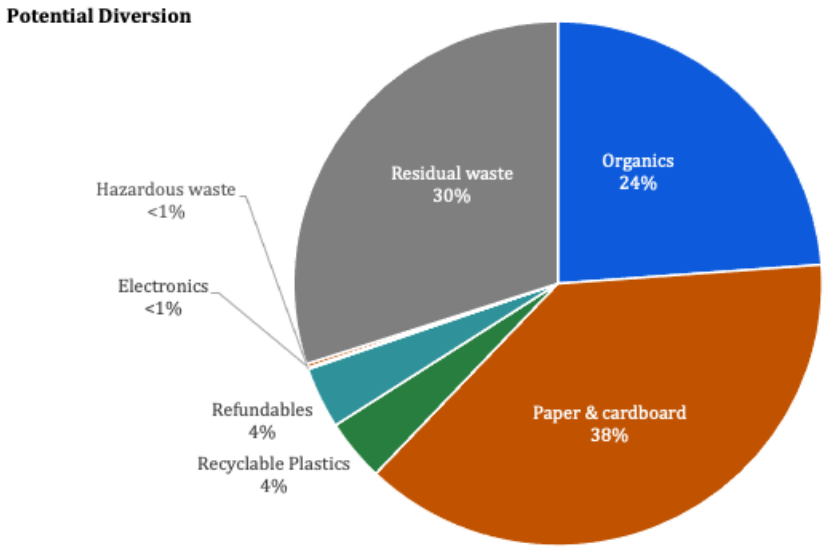


Figure 13. Current (top) and Potential (bottom) Diversion Rate. What has and could be diverted. By capturing all recyclables, compostables and disposing hazardous correctly, the diversion rate can go from 37% to 70%.

Capture Rate

The Capture Rate refers to the amount of recyclable or compostable material that is successfully captured within the facility's existing programs. An optimal resource management program should be **above** the **90%** capture rate.

The values below indicate that the Town Hall successfully captured **87.70%** of paper and cardboard and 94.22% of refundables. There are opportunities for organics, hazardous waste, and electronics.

Table 5. Capture Rate. Amount of recyclable or compostable material successfully captured within the facility's existing programs. An optimal resource management program should be **above** the **90%** capture rate.

CAPTURE RATE			
Material Stream	**Weight diverted (lb)**	**Weight Divertible (lb)**	**Capture rate (%)**
Paper & cardboard	16.50	2.31	87.70%
Refundables	1.75	0.11	94.22%
Organics	0	11.74	0.00%
Recyclable Plastics	0	1.88	0.00%
Hazardous waste	0	0.06	0.00%
Electronics	0	0.11	0.00%

Greenhouse Gases Emissions

According to Environmental Protection Agency's Greenhouse Gases Equivalencies Calculator, one ton of recycled mixed materials (e.g., paper, metals, plastics), **saves 2.89 metric tons** of carbon dioxide equivalent (t CO2e) emissions, compared with a baseline in which the materials are landfilled.

Extrapolating the waste audit results to one year and assuming no changes over time, the Town Hall could be **generating 0.88 t CO2e/year**. Emissions from landfilled materials (2.18 t CO2e) are greater than emissions saved through recycling (1.3 t CO2e) and composting (0) (Table 6, Figure 14a).

Table 6. Current GHG Emissions. Without any changes over time, the Town Hall could be **generating 0.88 tons of CO2e/year**.

Material stream	One week (waste audit timeframe)		Year (247 working days)*	
	lb	metric tons (t)	metric tons (t)	t CO2e (x2.89 metric tons)
Landfilled	30.58	0.015	0.755	2.183
Recycled	18.22	0.009	0.450	1.301
Composted	0	0.000	0.000	0.000
			Current CO2e savings/year	1.301
			Current Net CO2 savings/year	0.882

* Number of working days in 2022 = 260 - 13 holidays = 247 days. Number of holidays as in the town's garbage schedule 2022

On the other hand, if all the materials were captured through recycling and composting, the Town Hall could **save 1.4 tons of CO2e/year**. Emissions from landfilled materials (1.05 t CO2e) would be lower than emissions saved through recycling (1.62 t CO2e) and composting (0.84 t CO2e). (Table 7, Figure 14b)

Table 7. Potential GHG Emissions. By capturing all recyclables and compostables, the Town Hall could save **1.4 tons of CO2e/year**.

Material stream	One week (waste audit timeframe)		Year (247 working days)*	
	lb	metric tons (t)	metric tons (t)	t CO2e (x2.89 metric tons)
Landfilled	14.74	0.007	0.364	1.052
Recycled	22.72	0.011	0.561	1.622
Composted	11.74	0.006	0.290	0.838
			Potential CO2e savings/year	2.460
			Potential Net CO2 savings/year	1.407

* Number of working days in 2022 = 260 - 13 holidays = 247 days. Number of holidays as in the [town's garbage schedule 2022]

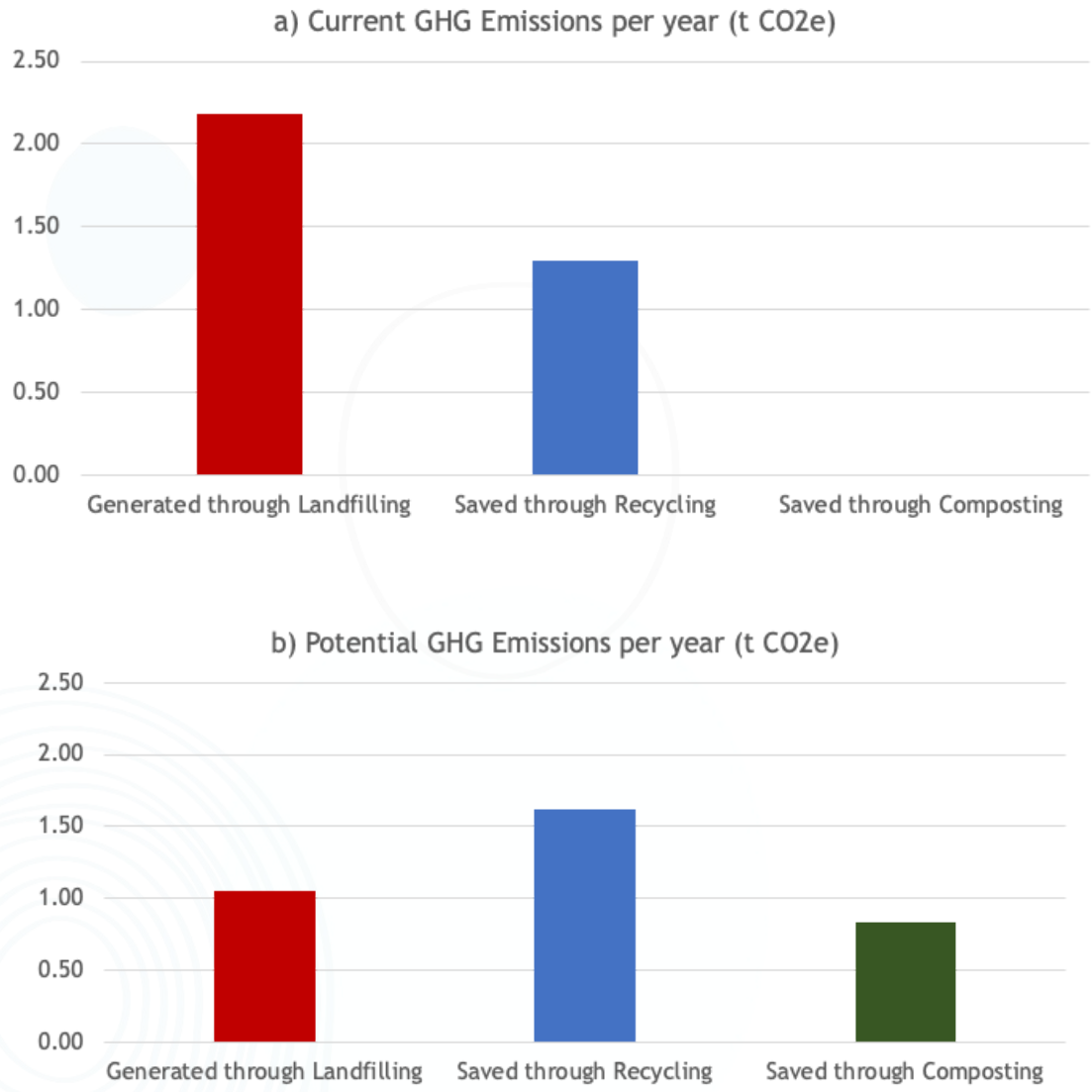


Figure 14. Current (a) and Potential (b) GHG Emissions. In the current scenario, emissions from landfilled materials (2.18 t CO2e) are greater than emissions saved through recycling (1.3 t CO2e) and composting (0). In the potential scenario, if all recyclables and compostables were captured, emissions from landfilled materials (1.05 t CO2e) would be lower than emissions saved through recycling (1.62 t CO2e) and composting (0.84 t CO2e). The Net CO2 savings/year could go from 0.88 to 1.41 t CO2e. See tables 6 and 7 for calculations.

Recommendations

We have identified the following opportunities for intervention toward zero waste at the Town Hall. The following are ways to reduce waste by applying the principle of the highest and best use of materials.

Reusables

Almost 16% of organics found in black bags were made up of paper towels/napkins (9.1%), paper plates (6.3%) and wooden cutlery (0.4%). While these items can be composted, from the zero-waste perspective, it is always preferable to avoid waste in the first place by replacing them with reusables. It can also help reduce costs by avoiding purchases of single-use items. As we've learned, reusables aren't vectors of the COVID-19 virus, so they're safe to use. However, anyone who is concerned about cross-contamination could label their reusables with their name.

Other landfilled, non-recyclable items that can be replaced with reusables include coffee cups (6.1% of landfilled material) and plastic cutlery (1.4%). Replacing the K-Cup machine will reduce the number of coffee pods (roughly 7.5%) and reduce costs since they're more expensive than buying coffee bags. While there will be an initial investment, savings come in the long run.

Composting

Food scraps represent 22.4% of total landfilled material, and currently, none of it is being diverted. Since the Town has already acquired composting bins, organics diversion is expected to start soon. To ensure a high-quality compost is produced, we recommend that the Town Hall staff post notices near the compost bins that detail which materials are appropriate and inappropriate for composting. We also recommend that a staff person or two be appointed "compost champion." This person or team would be responsible for learning the best practices for composting and would be the contact for questions from other staff members.

Recyclables Capture Rate

We found very high capture rates for paper/cardboard and refundables and low contamination rates. This means that staff are doing a great job putting these materials in the correct bins. Conversations and reminders about best practices can help increase the recycling of these materials. To further increase the number of recyclables captured, we recommend an additional bin for recyclable plastics found in black bags like food containers, food packaging, and coffee lids.

Reducing paper as much as possible

We found that most paper sheets were used on one side only. We recommend reviewing the printer settings to ensure that it's set to double-sided by default. From

the zero-waste perspective, using paper can be avoided by going paperless in some operations. We recommend a review of operations that currently use paper so that only strictly necessary printing and paper use takes place. This is another opportunity to reduce costs by avoiding the purchase of paper and reducing the use of ink.

Hazardous and electronics

The number of hazardous materials (batteries and bulbs) and electronics (a sports timer in good condition) found in the black bags were minimal (0.6%). However, hazardous items in the landfill pose risks and recycling electronics is critical for recovering materials. We recommend formalizing the collection of these materials by adding a bin and raising awareness among staff. Signage that indicates the types of materials appropriate for this bin and the reasons for their separation (resource recovery and contamination reduction) would help.

Removing garbage bins in individual offices to expand the centralized recycling station in the kitchen.

The current waste and recycling collection system at the Town Hall is a prevalent one, i.e. each desk has two bins – a small black bin for trash and a blue bin for paper, plus central bins for paper, waste, and bottles. However, there is evidence that diversion rates increase when desk bins are removed and replaced by centralized material collection.

Great Forest, a waste management consulting firm, conducted a pilot project with a large financial services firm to quantify the success of a centralized system across five floors of one of their commercial buildings in NYC. They found that recyclables in trash bins dropped by 75 percent and that the correct use of trash bins increased by 25%.

> *This centralized system works because it makes people get up (literally) and think about what they are throwing away. With deskside bins, busy employees were not paying as much attention to which bins they were discarding items into.* Great Forest.

Centralized stations can also help save money by reducing the use of garbage bags and the time spent by custodial employees emptying deskside trash, recycling, and existing central containers. The current custodial employee can become part of a sustainability team to further zero waste goals at the Town Hall.

Creating a Zero-Waste culture at Town Hall facilities

To achieve and maintain zero-waste goals in the long-term, it's vital to develop a strong culture of sustainability among the Town's employees. The Climate Mitigation

Action Plan is a great starting point since it already includes the reduction of carbon emissions through better waste management at the Town's facilities.

Like any sustainability enterprise, the zero-waste journey is a process that requires leadership, continuous collaboration, data sharing, and engagement. Some specific actions towards creating a zero-waste culture include (adapted from Planeet's blog Leadership: Steering The Journey To Zero Waste):

- Creating Green Teams involving employees from different departments. In zero-waste certified facilities, Green Teams have helped:
  - Change the company culture and create awareness as well as increase employee participation
  - Root out and solve waste issues associated with suppliers in a holistic way
  - Create accountability, engagement, and commitment that helped the facility reach and maintain its zero-waste goal

- Engaging employees at work and home
  - Zero-waste training and updates on goals and new best practices
  - Employee Sustainability Agreements that outline employee commitments at home and at work and also encourage them to contribute their own ideas
  - Reuse and recycling programs that allow employees to bring materials from home and also take home unused materials for repurposing projects
  - Celebration of environmental events such as Earth Day, during which employees pledge to further zero-waste goals at work and home

- Communicating Beyond the Walls
  - Internal communication with staff directly involved with waste management, which actively provides feedback on zero-waste practices
  - External communication with suppliers and partners to encourage them to embrace zero-waste principles
  - Extending zero-waste practices to public events, e.g. at the PCSP Environmental Fair, to communicate the Town's commitments and engage individuals, businesses, and organizations

One essential piece that glues these initiatives together and makes the zero-waste journey sustainable over time is **leadership from those who are responsible for making the primary decisions within the organization.** This means embracing the zero-waste goals and committing to motivating action across the organization—inside and outside its walls.

Conclusion

We performed a Zero Waste Audit of recycled material and solid waste material generated by employees at the Town Hall for 5 days in October (see Material Composition section for details on timeframe). Results show that the Town Hall had a 37.3% diversion rate compared to a potential diversion rate of 70%. The facility recorded a capture rate of 0% for its composting and recyclable plastic stream, 87.7% for its paper stream, and 94.22% for its refundable (beverage containers) stream. The contamination rate was minimum (2.17%) and occurred mostly in the paper recycling stream.

With very small changes, the Town Hall can reduce its waste by capturing all recyclables and compostables and disposing of hazardous correctly. Such small changes will increase savings in greenhouse emissions from 0.88 to 1.41 t CO2e in a year.

We provided the following recommendations to ensure the highest and best use of materials:

- Replacing compostable (paper towels/napkins, paper plates, wooden cutlery) and non-recyclable items (coffee cups, plastic cutlery, coffee pods) with reusables
- Composting, which is expected to start soon
- Adding a bin to capture materials that are being thrown away, including recyclable plastics (food containers, food packaging, and coffee lids), hazardous materials (batteries and bulbs) and electronics (a sports timer in good condition)
- Going paperless in some operations and double-printing when printing is needed
- Expanding the centralized material collection located in the kitchen by adding plastics, hazardous materials, and electronics collection. The centralized system would replace desk bins, help increase diversion rates, and help reduce costs associated with garbage bags and the time spent by custodial employees
- Framing all these actions within a process of building a zero-waste culture, which ties into the Climate Mitigation Action Plan

Building a sustainability culture doesn't happen overnight. However, every step counts and PCSP is already on its way. Implementing zero-waste initiatives at the facility level, engaging staff across the organization, and learning their motivations and barriers can provide some insights into what it would be like for PCSP to instil a culture of sustainability and circularity at the community level.

As suggested in the other sections of this report, implementing pilot projects and collecting data systematically allow greater freedom to troubleshoot and see what is or isn't working before implementing more broadly. The Town can be a "collaborator, convener, catalyst" for zero waste and circularity in the community and the province by doing and learning.

Appendix 3A. Some photos of the zero waste audit.

Some photos of the zero waste audit performed for PCSP Town Hall in November 2021. Photos by Nikhilesh Paliath.

Newspapers and Uline catalogues excluded from the audit as they seemed to result from a cleaning day.

Landfilled material.

K-cups in landfilled material. They could be replaced with a conventional coffee maker.

Plastic cutlery in landfilled material. They could be replaced with reusable cutlery.

Food scraps in landfilled material. They could be composted.

Sports timer in landfilled material. It could be fixed or recycled if it's not repairable.

Non-recyclable food packaging, mostly from candies, found in paper bins. Unpackaged candies can be purchased at Bulk Barn in reusable containers brought from home as this program has resumed at the store.