

# MANAGING WASTE TOGETHER:

*Our community's commitment to rethinking waste*

Strathcona County's Waste Management Roadmap • March 2021 • DRAFT



ENVIRONMENTAL  
BROADVIEW

“THERE IS NO SUCH THING AS  
'AWAY'. WHEN WE THROW ANYTHING  
AWAY IT MUST GO SOMEWHERE.

--ANNIE LEONARD”

101 Broadview Road  
WASTE SERVICE  
UNION

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A row of black recycling bins is lined up on a concrete sidewalk. In the background, there are houses with brown roofs and green trees under a blue sky with white clouds. A white text box is overlaid on the image, containing a quote.

“TOGETHER WE VALUE WASTE AS A  
RESOURCE AND ARE COMMITTED TO  
RETHINKING OUR PRACTICES IN ORDER  
TO MAKE STRATHCONA COUNTY THE  
MOST LIVABLE COMMUNITY IN CANADA.”



## ACKNOWLEDGEMENTS

Strathcona County recognizes that we meet on the traditional travelling routes and gathering places of these Treaty Six nations—Blackfoot, Cree, Dene, Gros Ventres, Métis, Nakota Sioux and Saulteaux.

Strathcona County proudly recognizes that a portion of the land we live on is called Amiskwaciy, Cree for “The Beaver Hills”.

Our indigenous people were joined by settlers and pioneers, building together this great community of Strathcona County.



Thank you to the residents of Strathcona County who were trailblazers in 2008 when the Green Routine was first introduced; your commitment and contributions to the program have resulted in waste materials being valued as a resource. As we embark on the next phase of waste management, we appreciate the level of public engagement that informed this roadmap and the enthusiasm to continue being leaders as we evolve.



It is important to note that there were a number of contributions made in developing this roadmap from the County public engagement and communication professionals, internal support from subject matter experts and the consulting services of Marcomm Works Inc.

Thank you for your guidance and support.

# MANAGING WASTE TOGETHER

*Our community's commitment to rethinking waste*

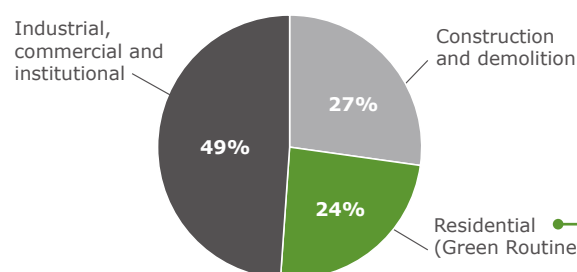


## EXECUTIVE SUMMARY

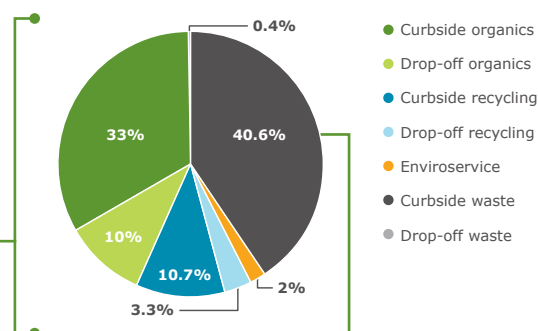
Strathcona County's Waste Management Roadmap outlines the community's values and desired outcomes specific to waste management practices. It is intended to reflect the interests of the whole community and all aspects of the waste system by integrating best practices, guiding principles and new advancements for high level decision making now and into the future. This guiding document is informed by and intended for all waste generators in Strathcona County.

## WHERE ARE WE NOW?

### Overall waste generation in Strathcona County



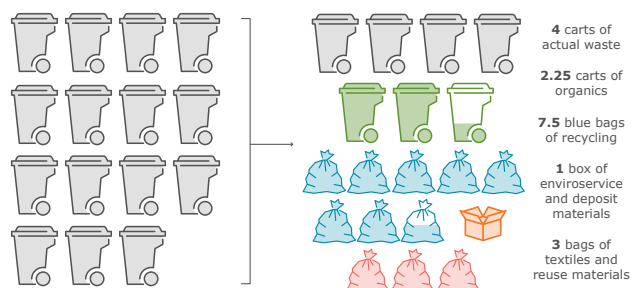
### Residential program



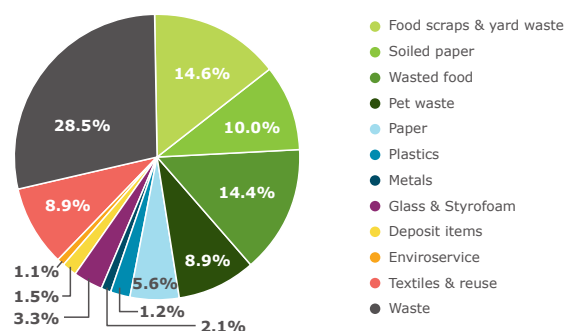
## WHAT ARE WE THROWING AWAY?

### In 2019, 15 waste carts were audited:

The carts were an average of 82% full, and contained (by volume):



### Overall in 2019, black cart waste was (by weight):



## VALUES AND PHILOSOPHIES

We are in this **together**;  
everyone has a role to play.

...

Refocus on the **waste hierarchy**:

**Rethink** our use and design of materials  
and move towards a closed loop model;

**Reduce** the amount of waste we generate;

**Reuse** what we can;

**Recycle** and compost into new materials;

**Recover** the remaining resources  
to reinvest back into the economy; and

**Residual** disposal of actual waste—safely.

...

Easy, **convenient** and understandable.

...

**Equity** and **flexibility** with positive  
incentives that creates accountability.

...

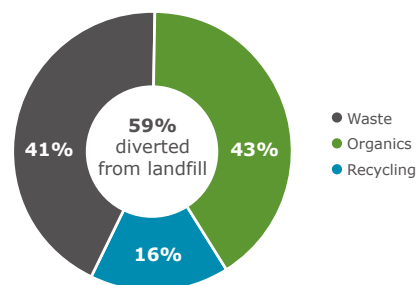
Move towards a **circular economy**.

...

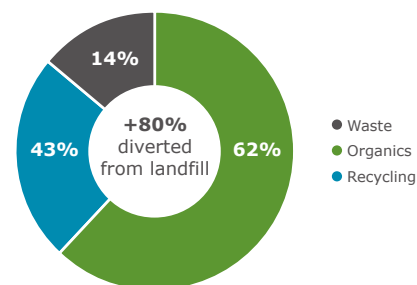
Be a **forward-thinking** community that has  
**leading practices** in waste management.

## WHERE WE COULD GO

Current diversion

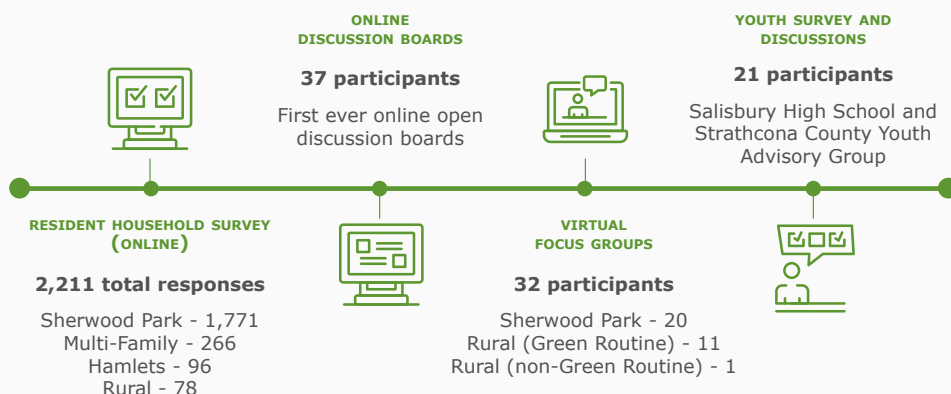


Potential diversion



## HOW WE LISTENED

Throughout the development of the Waste Management Roadmap, participants from across the County provided feedback, engaged in dialogue and accessed information about waste through a variety of public engagement activities.



## HOW WHAT WE HEARD IS MOVING US TO WHERE WE NEED TO GO

### WORKING TOGETHER

Waste is generated by everyone, so we must acknowledge, engage on and increase awareness about the role that everyone plays.



### THEMES

### BEYOND THE CURB

Waste generated within a community goes beyond the residential sector. County residents want the greater community to be more involved in formal waste diversion practices.



### PLASTICS SOLUTIONS

Plastic has become part of our daily lives, and many of these plastics are used only once and trashed. Recognition is increasing for the need to have better solutions in place to reduce plastics overall.



### PROCESSING MATERIALS

Processing plays an important yet mostly hidden role when managing waste in a community. Processing must be a deliberate focus of a program to ensure materials avoid landfilling.



### CONVENIENCE IS KEY

Ease and accessibility have a big impact on participation and performance in successful waste management strategies.



## ASSESSING BEHAVIOURS



Behaviour change is a consideration when developing waste management programs. Changes in behaviour not only affect waste diversion, but can also empower residents.

## WASTE MATTERS

With a long list of items that are typically disposed of, understanding what goes where, why it's important to sort and what happens to the materials after collection is key to encouraging participation and connecting outcomes. Residents are eager for more education and information.



## TOOLS FOR CHANGE

Waste characterization audits have confirmed that there is room for improvement in waste diversion, and that not all households are fully participating in the program. Financial incentives, positive reinforcement and compliance tools are all opportunities to increase rates of utilization.



## TRACKING SUCCESS

Strathcona County has a vision to be Canada's most livable community. The County should strive to remain a leader in waste management and look to improve results for the entire community.



## NEXT STEPS

This Roadmap outlines the community's values and desired outcomes specific to waste management practices. It is intended to reflect the entire community and all aspects of the waste system by integrating best practices and new advancements.

Strathcona County will use this Roadmap to guide new strategies and initiatives over the next 10 years. Action items will be developed in an implementation plan that will have short, medium and long-term planning focuses.

***Together we value waste as a resource and are committed to rethinking our practices to make Strathcona County the most livable community in Canada.***

A pair of hands is shown from the wrists down, holding a circular object that features a watercolor-style illustration of the Earth. The illustration uses shades of blue, green, and white to represent oceans, landmasses, and clouds. In the center of the circle is a white rectangular box containing a quote. The hands are positioned symmetrically on either side of the circle, with the thumbs pointing towards the center. The background is a plain, light color.

“LET’S RETHINK HOW WE MANAGE OUR  
WASTE FOR A HEALTHIER COMMUNITY.”



## INTRODUCTION

A waste management system is complex, encompassing areas such as environmental protection, climate resiliency, waste reduction, reuse and recycling, collection of waste, management of materials, government regulation, public education and performance monitoring. In addition, the waste a community generates crosses a number of sectors—residential, commercial, institutional, construction and demolition, and industrial—which amplifies the complexity of addressing the entire system.

A successful waste strategy will review the entire system, reflect the interests of the whole community, and express the philosophies and guiding principles for high level decision making now and into the future.

### **Initiation, importance and intention of a Waste Management Roadmap for Strathcona County**

Waste management and diversion programs in Strathcona County have evolved from simple garbage collection to a complex system of residential services. This includes collecting source separated materials (organics, recycling, yard waste and large items) at the household to a centralized collection of household hazardous waste, electronics, separated recycling for glass and polystyrene as well as a range of other items collected at the community's recycle stations.

Strathcona County continues to be a leader in diversion with respect to reuse and recycling services and initiatives offered in the community, however the primary focus has traditionally been on the residential sector. Participation in the curbside and community diversion programs have been successful since the inception of the Green Routine program in 2008. With the program's diversion rate remaining between 58% – 61% consistently over the last decade, there is opportunity

to explore innovative ways to reduce the amount of waste we send to landfill.

Furthermore, the waste management industry has seen some fluctuations in terms of market changes, processing capacity and regulatory developments. There is growing momentum and focus on the fact that the true cost of waste is not simply the cost of discarding materials; it encompasses the inefficient use of natural resources, the unnecessary use of energy, land and water, the flawed design of products, the disposal of single-use materials, the processing of waste and wasted labour.

**IT'S TIME TO SHIFT THE WAY WE SEE WASTE FROM SOMETHING THAT IS BURIED IN THE GROUND TO A VALUABLE RESOURCE THAT CAN HELP PROTECT OUR ENVIRONMENT, ENHANCE OUR ECONOMY AND CONNECT OUR COMMUNITY.**

Over the last decade, there has also been shifts in the community's profile. Population has increased, demographics have evolved, economy has diversified and service expectations have changed.

These are important considerations when developing the Waste Management Roadmap.

Strathcona County's unique and sustainable waste collection program has become a model for many other communities in Alberta, but it's time to continue to look forward and explore the next chapter. The intent of developing a waste management roadmap in 2021 is to set a clear direction for reducing waste across the community over the next 10 years. In keeping with the County's Strategic Plan, which encourages long-term thinking, and looking at the whole and seeing the connection, it is suggested that the County embarks on this process to develop a blueprint for the community's waste management system. This new Waste Management Roadmap represents an evolution of the 2008 Green Routine diversion plan and what we will strive to achieve as a community together over the next decade.

### **What is a roadmap?**

*A roadmap is a strategic plan that defines desired outcomes, and includes a path to achieving them. It also serves as a communication tool, a high-level document that helps articulate the strategic thinking—the why—behind both goal and the plan for getting there.*

## **Corporate strategic alignment**

Strathcona County's overarching Strategic Plan provides guidance for governance, community development, infrastructure, and program and service delivery. The plan identifies—for the community, residents and others—the County's long-term planning. The Strategic Plan outlines a vision for the County as a whole: "to become Canada's most livable community." In taking a holistic approach to the delivery of waste management

services and programs, this roadmap will advance goals within the County's Strategic Plan.

Most notably, Strathcona County's strategic plan addresses waste management through its fourth goal, recognizing that the promotion and protection of the natural environment is integrated into every aspect of civic life, guiding decisions and public policy. Strathcona County manages its land, air, water, energy, material use, biological diversity and parks to ensure its citizens live in a healthy ecosystem. Being good stewards of the community's land and natural resources is a shared responsibility. With this mandate to be effective stewards of the environment, **the County seeks to use best practices when approaching waste management.**

The roadmap has linkages with several of the County's strategic goals:



### **Goal 4**

Ensure effective stewardship of water, land, air and energy resources



### **Goal 2**

Manage, invest and plan for sustainable municipal infrastructure



### **Goal 6**

Provide facilities and services that are available and accessible to residents



### **Goal 5**

Foster collaboration through regional, community and government partnerships

## **Connecting to Strathcona County's Environmental Framework**

Through the Environmental Framework (EF), developed in 2009 and updated in 2021, the County and community have acknowledged the importance of caring about an environmentally healthy and sustainable community. The County

notes that it is important to develop in a manner that meets the needs of the present without compromising the ability of future generations to meet their own needs, while striking a balance between economic prosperity, social responsibility and environmental stewardship.

The Waste Management Roadmap links well with the guiding principles in the EF for land, air, energy, water and material use. An update to the Framework is currently underway, which will allow for a realignment to this Roadmap.

## Process, purpose and inputs

To develop the Roadmap, it is important to understand and integrate several inputs that influence waste management within Strathcona County. Many aspects were examined and thoughtful consideration given for how these inputs interact and how they might evolve over the next 10 years.

The Roadmap sets the foundation for how the community will progress towards further reductions from landfill, and shape future decisions and investments related to waste management in Strathcona County.



*Steps of Waste Management Roadmap Development*

# REFLECT

## FOUNDATION

### Waste management established principles

In developing this Roadmap, several essential building blocks have been identified to help support and guide the process, public engagement and strategic outcomes. These principles establish a good foundation for Strathcona County's Waste Management Roadmap.

<b>WASTE AND MUNICIPAL SOLID WASTE</b>	<p>The word “waste” generally refers to any material, non-hazardous or hazardous, that has no further use, and which requires management through recycling, composting, processing or disposal. Municipal solid waste (MSW) refers to recyclables and compostable materials, as well as garbage from an entire community, including homes, businesses, institutions, and construction and demolition sites.<sup>5</sup></p>
<b>WASTE HIERARCHY</b>	<p>Sustainable waste management strategies must use a hierarchical lens with a primary focus on waste prevention (3Rs). The Roadmap places a commitment on prioritizing the waste hierarchy to promote the importance of resource conservation and to reduce environmental impact.</p> <ul style="list-style-type: none"> <li>● <b>Rethink</b> our current use and design of materials and move towards a closed loop model</li> <li>● <b>Reduce</b> the amount of waste we generate</li> <li>● <b>Reuse</b> what we can</li> <li>● <b>Recycle</b> and compost into new materials</li> <li>● <b>Recover</b> the remaining resources to reinvest back into the economy</li> <li>● <b>Residual</b> disposal of actual waste—safely</li> </ul> <div data-bbox="1063 1396 1393 1680"> </div> <p><i>Expanded waste hierarchy</i></p>

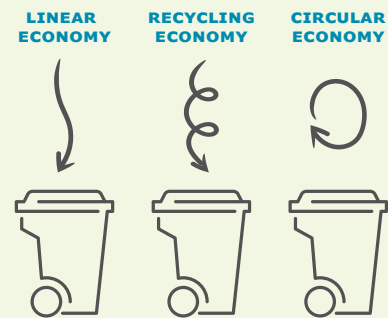
<p><b>SHARED RESPONSIBILITY</b></p>	<p>Waste management is multifaceted—it includes several components such as behaviour change, material separation, collection, transport, treatment and disposal, from diverse stakeholders that contribute to waste generation in a community. As a result, a community integrated approach to waste management should call for a shared responsibility and a collaborative, sustainable approach for everyone to do their part when managing waste.</p> <p>In summary, an integrated waste system is one that recognizes;</p> <ul style="list-style-type: none"> <li>• the different elements of the waste system as a whole from generation to disposal;</li> <li>• a range of options on various scales to diverse stakeholders (e.g. household, neighbourhoods, businesses, county) which includes inputs from all stakeholders and interest groups in the design of a system that is acceptable and feasible; and</li> <li>• interactions between the waste system and other systems, such as socioeconomic and regulatory systems.</li> </ul>
<p><b>ZERO WASTE</b></p>	<p>Zero Waste is a visionary principle that guides systems to manage resources and eliminates waste, instead of simply managing them.</p> <p>From the <b>Zero Waste International Alliance:</b></p> <p><i>"Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.</i></p> <p><i>Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health."</i></p>
<p><b>USER PAY PRINCIPLES AND PAY AS YOU THROW</b></p>	<p>The user pay principle is linked to the concept of the polluter pays principle and the concept that all waste generators should be responsible for their waste. It is an approach where users of a service, good or natural resource pay the true costs for what they use.<sup>33</sup> In waste, this means users are charged by the amount of garbage they put out for collection. This is comparable to other utility systems where consumers pay based on what they consume. The idea is to create equity in a system while discouraging disposal, and reward behaviours that focus on waste prevention, recycling and composting. For more information see Appendix G.</p>

## CIRCULAR ECONOMY

The current linear economic growth model reflected in Canada and Alberta, as well as other countries around the world, is based on extracting raw materials to make products that are used for a short period of time and then disposed. This is referred to as a linear, or “take, make, waste”, economy. There is now a consensus that resources are finite, and that society needs to experience a paradigm shift. The availability of non-renewable resources is waning, greenhouse gases are increasing, and the health of the planet and its inhabitants are suffering. Transitioning from a linear to a circular economy provides more options not only for environmental preservation, but also economic development.<sup>14</sup>

A circular economy keeps products and materials circulating within the economy at their highest utility and value for as long as possible. It fosters innovation and better design, waste prevention strategies, recycling, remanufacturing and innovative business models.

For more information on the circular economy see Appendix E.



*Economic waste systems*

## EXTENDED PRODUCER RESPONSIBILITY

Extended producer responsibility (EPR) is an environmental and economic policy approach in which producers of products and packaging bear responsibility for ensuring those products and packages are properly managed at the end of their life-cycle.<sup>1</sup> Assigning such responsibility can provide incentives to prevent waste at the source, promote product design for the environment and support the achievement of public recycling and materials management goals.<sup>18</sup> When fully implemented, EPR shifts the costs and operational responsibilities for managing recycling systems from local governments to producers and taxpayers. For more information see Appendix F.



### Climate Connection

Solid waste management can have exacerbating effects on the climate. Extraction and use of resources, methane released from landfills and transportation related to collection of waste materials all contribute to greenhouse gases being released into our atmosphere.<sup>1</sup>

## Adapting to and addressing shared global challenges through responsible waste management

Globally, waste management has undergone a transformation, and municipalities are recognizing the need to improve and modernize. Beneficial, sustainable waste management solutions are needed to conserve materials and resources, protect valuable land and water from disposal sites and pollution, as well as create socioeconomic opportunities that increase the quality of life for a community.

Investing and participating in responsible waste management creates many advantages and allows for adaptations to a changing industry:

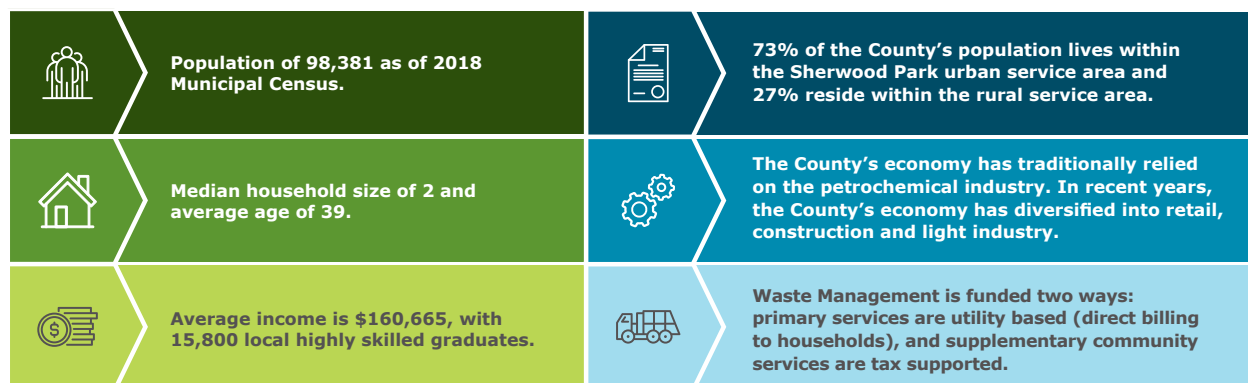
- **Environmental:** Climate change and resource depletion are problems that will intensify over time. When waste is minimized, recycled and composted, or disposed of in a safe, ethical, and responsible manner, it helps reduce the negative impacts on the environment.
  - ◇ Reduce demands on finite natural resources and the associated environmental impacts of the extraction, harvesting and processing of those resources to make new products and packaging.
  - ◇ Lessens the need for landfill space and cuts pollution to water, air and land.
  - ◇ Minimize greenhouse gas emissions associated with waste collection, transportation and treatment.
- **Social:** Improved waste management connects communities, creates social inclusion, and activates contribution towards a common societal goal.
  - ◇ Consistent and integrated waste programs across a community will empower and unite multiple stakeholders towards a common goal.
- ◇ Waste management practices are often an attainable, impactful step; they are accessible and comprehensible actions that citizens can take to support the environment. Citizens actively engaged in waste minimization efforts contribute to a better quality of life for themselves, their community and future generations.
- ◇ Opportunities exist for partnerships and collaborations with diverse groups, organizations and other levels of government to tackle a common issue that impacts the success of our community.
- **Economic:** Sustainable waste management has immense economic potential when properly facilitated and leveraged by public and private entities.
  - ◇ Encourages economic development through the creation of jobs, partnerships and training opportunities. Recycling and composting create four jobs for every one job created in waste disposal industries.<sup>18</sup>
  - ◇ Opportunities exist to focus on building a circular economy with a focus on diversification and waste prevention ventures.
  - ◇ External and future costs of collection, transport and landfilling of wastes is not captured in current systems. Putting proper systems in to place today will mitigate future cost implications.
  - ◇ With the right regulatory approaches, expenditures by municipal waste programs can be reduced and costs can be born by those that produce and generate waste.

# REVIEW

## CURRENT STATE IN STRATHCONA COUNTY

### County profile

The community profile is an important consideration for the development of the Waste Management Roadmap. Strathcona County has a rich cultural and economic history, with strong agricultural roots, a robust petrochemical sector and is situated within a world-renowned natural biosphere.



*Strathcona County 2020 demographics*

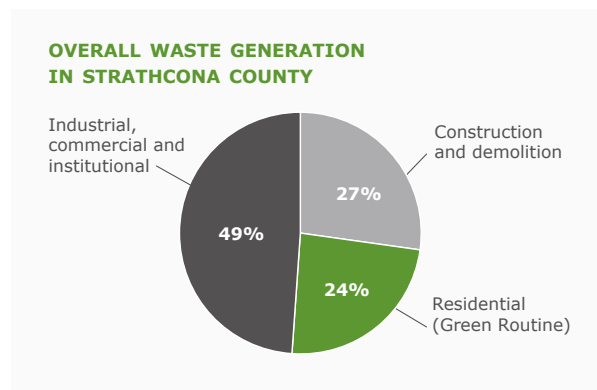
### Municipal role & overview of community waste generation

Under Alberta's Municipal Government Act, Strathcona County's responsibility is to provide services that are necessary or desirable for all or part of the municipality, while fostering the well-being of the environment. Strathcona County provides regulatory leadership and services for residential and centralized waste programs; however, these programs currently only reach a portion of the community's waste generators.

Waste generated within a municipality goes beyond the residential sector. Figure 3.1 demonstrates that waste from commercial and institutional locations, such as businesses, schools and hospitals, as well as from the construction and demolition sector, make up approximately three quarters of the waste generated within the County.

As residents move throughout Strathcona County for work, play, learning, shopping and gathering, a large portion of the community's waste falls outside of the Green Routine program.

Many municipalities are now looking to have more direct public engagement and requirements for the Industrial, Commercial and Institutional (ICI) sectors, and Construction and Demolition (C&D) sectors when it comes to managing waste.



**Figure 3.1** | *Strathcona County waste generation*

## Current service levels

Strathcona County is a specialized municipality within the Edmonton Metropolitan Region. Its population of 98,381 is distributed between a large urban centre and a significant rural area. As a result, the needs of residents in various parts of the community are quite different, which holds true for waste collection services.

The focus of Strathcona County's waste management programs has been to provide convenient, economical and effective residential waste diversion opportunities, while increasing community awareness about waste and reduction.

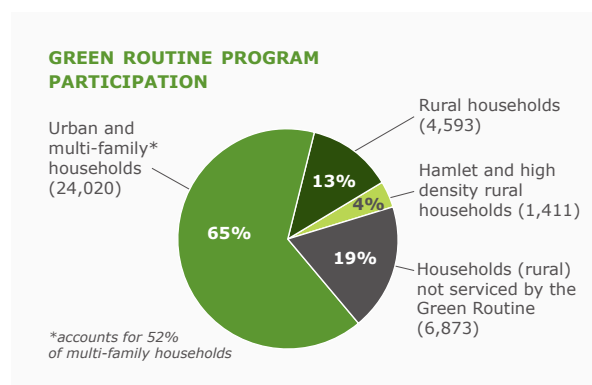
## Green Routine household services

The Green Routine program began in 2008 and introduced multi-stream collection services to urban and rural households that included automated collection of organics and waste, along with manual collection of recycling and special materials. Figure 3.2 shows program participation by location of household within Strathcona County. Collection services are mandatory to those households living

in Strathcona County's nine hamlets, whereas rural households have the option to subscribe. Services provided to households are charged directly to the users of the system through utility rates. Multi-family residences can also subscribe to County or private services, however must have minimum recycling services in place.

## Households participating in the Green Routine program

- We are one of the only municipalities in Alberta that offers direct collection services to rural households.
- Utility rates for household organics, recycling and waste collection services have remained fixed since 2015. Over the last 6 years, Strathcona County has provided an efficient level of service and maintained rates at \$25.45 per month for urban and hamlet households and \$23.45 per month for typical rural households.



**Figure 3.2** | *Program participation*

## Community services: enviroservice and recycling stations

The community brings large volumes of recycling, brush and yard waste, household hazardous waste and specialized materials to Strathcona County's centralized recycling station. This is supported by rural stations that offer services for basic household recycle materials. Reuse programs with a focus on waste prevention, such as the

HodgePodge Lodge, textile and shoe bins and free mulch are also available. While the majority of users are residents, there is a growing use by the commercial sector. Community recycle stations and the enviroservice program are tax supported services.

## Outreach and partnerships—beyond the curb

The success of waste reduction programs relies on good communication, outreach and partnerships within the community. Strathcona County is known to be a leader in this regard; creating consistency throughout the community and educating on responsible waste management helps ensure these behaviours become part of residents' routine.

Initiatives, campaigns and educational programs that support services and strengthen an understanding and commitment to waste management:

- Modeling the way with waste diversion programs in County buildings and facilities
- Zero waste solutions for community events
- Creating community conversations with

Trashfests, workshops and farmer markets

- Green Routine @ School—educational programs connected to curriculum
- Partnership with local school boards for joint procurement and consistent diversion programs
- Support for multi-family diversion programs
- Green Routine online and mobile app

## Waste Management Bylaw

The Waste Management Bylaw 39-2014 regulates and controls the handling, collection and disposal of waste, organics and recyclables in Strathcona County. The Waste Management Bylaw addresses the following topics:

- Collection/removal of waste and recyclables
- Placement of waste and recycling containers
- Preparation for collection
- Weight, volume and size standards
- Materials accepted
- Multi-family waste and recyclables management

## COMMUNITY RECYCLING



### RURAL & URBAN

Broadview  
Enviroservice Station,  
Ardrossan Recycle  
Station and monthly  
events at South  
Cooking Lake



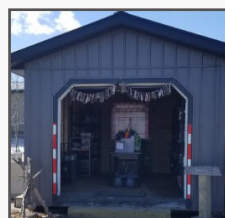
### ENVIROSERVICE

A dedicated building  
for household  
hazardous waste  
(HHW), electronics,  
paint, oil, batteries,  
tires and other  
materials that require  
special recycling  
or disposal



### MONITOR & EDUCATE

Manned sites  
ensure staff support  
for assisting and  
educating users on  
proper separation  
of materials and  
diversion initiatives



### REUSE

Special building  
at Broadview  
Enviroservice Station  
for materials that  
can be reused



### CONVENIENT

Our recycle stations  
provide efficient, easy  
and safe access for  
disposing of items,  
including glass  
and Styrofoam

*Community recycling services*

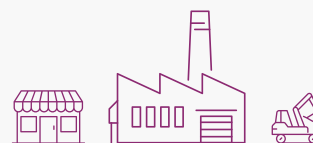
# HOW DOES OUR WASTE SYSTEM WORK?

## Step 1:

Waste collection from residential and institutional sources.



RESIDENTIAL AND INSTITUTIONAL



INDUSTRIAL, COMMERCIAL, CONSTRUCTION AND DEMOLITION

**WASTE:** biweekly

**RECYCLING:** weekly

**ORGANICS:** biweekly winter, weekly summer

Recycling, organics and hazardous wastes are also collected at community recycle stations and the Broadview Enviroservice Station.

These sectors fall outside the scope of the County's current waste management program.



BROADVIEW



RECYCLE STATIONS



CURBSIDE



## Step 2:

Taken to a local transfer station for transport efficiencies.



## Step 3:

Bulked for long haul transport to various processing sites.



ENVIROSERVICE MATERIALS RECYCLING PROCESSORS



REGIONAL MATERIAL RECOVERY FACILITY



FARM-BASED OR REGIONAL COMPOST PROCESSOR



REGIONAL LANDFILL

# REVIEW

## PROGRAM PERFORMANCE AND PARTICIPATION

To understand where we need to go, we need to understand where we are at. A portion of that is evaluating program performance and participation. Effective monitoring and measurement help identify strengths and weaknesses, areas for improvement and sets benchmarks for historical data. The data collected by the County is from a number of different sources including:

- actual tonnages collected and transported;
- specific material identification through waste characterization studies;
- contamination rates through audits; and
- set out rates from collection technology.

This has been supplemented with participation information provided by participants in a 2020 online survey.

### How are we doing?

When Strathcona County initiated the Green Routine residential program in 2008, it was leading the way in terms of residential services and diversion from landfill. Although participation in the curbside and community diversion programs has been successful, the County's overall program diversion rate has been relatively stagnant with no significant increase since the inception of the Green Routine program. On average the program has achieved a 58%—61% diversion rate over the last decade\* and has been unable to achieve the originally stated target of 70% diversion that was set to be achieved by 2018.

With diversion rates remaining relatively plateaued, Strathcona County continues to look for opportunities to improve participation and diversion from landfill. In analyzing the overall program performance, figure 4.1 indicates that the greatest opportunity for targeting improvement is exploring the waste stream (black cart) at curbside, as this accounts for 40% of overall waste generated.

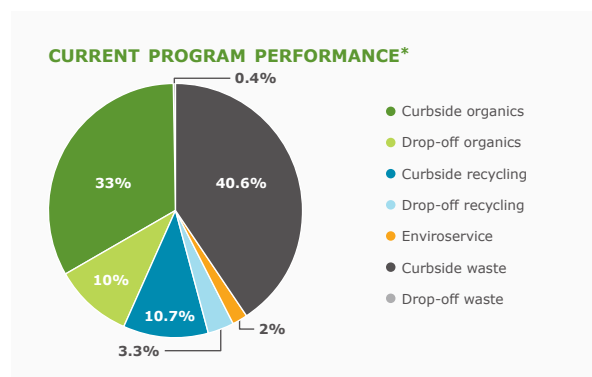


Figure 4.1 | Current program breakdown

### Curbside performance

It is important to note that industry shifts in 2018 resulted in changes to the program. Green Routine 2.0 was launched with modifications to the recycling stream; as a result some materials were redirected to the black cart. It was also observed that participation declined in diversion programs

\* Excludes data from 2020, as COVID-19 resulted in distorted data as a result of impacts to household and community behaviours, and adjustments to service delivery.

due to confusion with the changes and lack of confidence in the recycling system. Organics fluctuations can be attributed more to seasonal growing variations that results in higher yard waste and grass removal.

### Waste audits and characterization

Examining our waste streams purposefully provides insight into participation levels, household behaviours and areas where progress can be made. Waste characterizations audits have been added as a performance management tool that methodically analyzes each individual stream. Overall, audits from 2017 & 2019 have demonstrated that there is still a significant amount of divertible materials that are still found in the waste (black cart) stream.

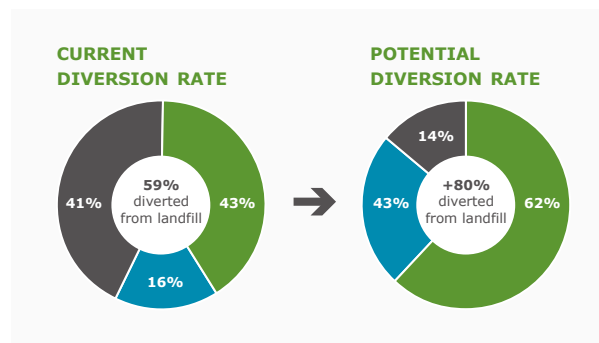


Figure 4.2 | Program potential

Figures 4.1 and 4.2 demonstrate what potential exists for further sorting of materials that are being placed in the black cart.

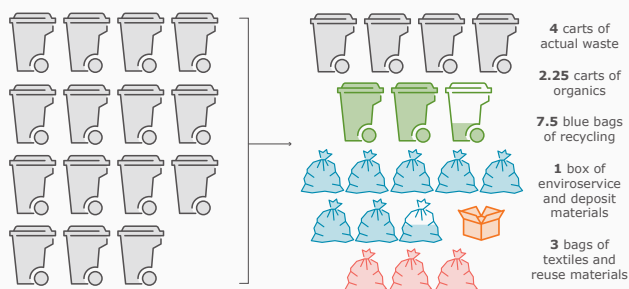
### Figure 4.3 demonstrates what was discovered from analyzing the green cart and blue bag streams:

- Good compliance with the green cart. Households **that choose** to participate are making the effort.
- Small amounts of contamination can mostly be attributed to plastic packaging for food items or bags used as liners.
- Occasional misuse of organics cart for waste.
- Wasted food is an area for improvement.
- Higher amounts of non-recyclable items found in the recycling stream, which is attributed to changes, confusion and complacency.
- Focus on materials that could be taken to the depot (glass, polystyrene) and confusion with some flexible plastic packaging (clamshells, single-use items).

## WASTE STREAM CHARACTERIZATION

### In 2019, 15 waste carts were audited:

The carts were an average of 82% full, and contained (by volume):



### Overall in 2019, County waste was (by weight):

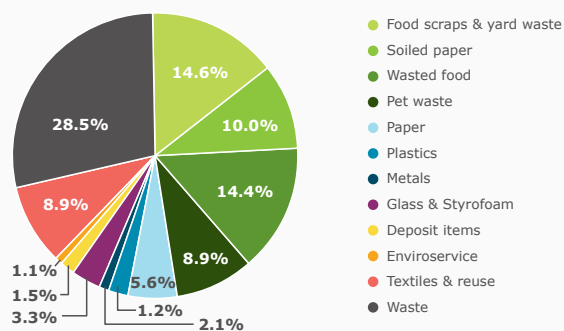


Figure 4.3 | Waste stream material characterization

## Curbside participation

Along with evaluating the actual outputs (quantity and characterization of each material stream) of the program, participation is assessed both by examining data from the use of radio frequency identification (RFID) technology, as well as through participant feedback shared in the survey.

### Survey Household Self-Assessment

Participants in the 2020 online survey (Figure 4.4) were asked to acknowledge where they lived within the County and whether they participate (mandatory or opt-in services) in the County's Green Routine household program. The following are those that indicated they currently receive curb or roadside services. Household size is also a factor to consider in evaluating waste generation and diversion behaviours.

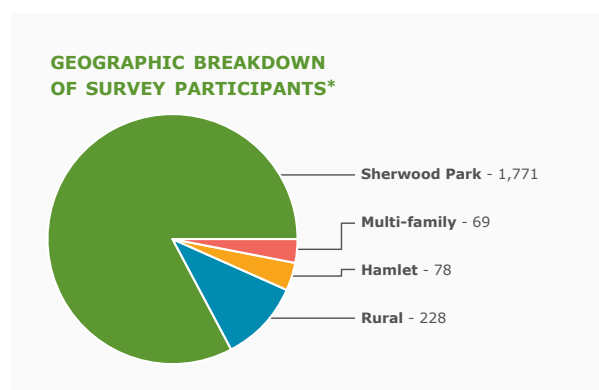


Figure 4.4 | Current program breakdown

Although the vast majority of survey respondents participate in the Green Routine program due to living in a mandatory service area, the rural non-hamlet portion of the County, which has the ability to opt-in to services, had great response from households. This could be attributed to a stronger interest in diversion opportunities and changes to the program.

### Curbside program

Survey respondents were asked to self-assess their participation in aspects of the curbside programs in order for the County to understand current practices and perceptions, while evaluating it against audit results.

### Waste

Waste cart usage (Figure 4.5) is fairly split among households within the County. Approximately 50% of households indicated that their waste cart is full, overflowing or are using two carts every two weeks. While the remaining 50% of households in the community are managing to produce less than 75% of a full cart.

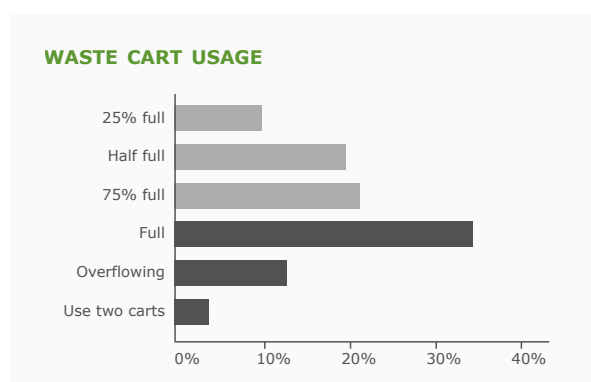


Figure 4.5 | Waste cart usage

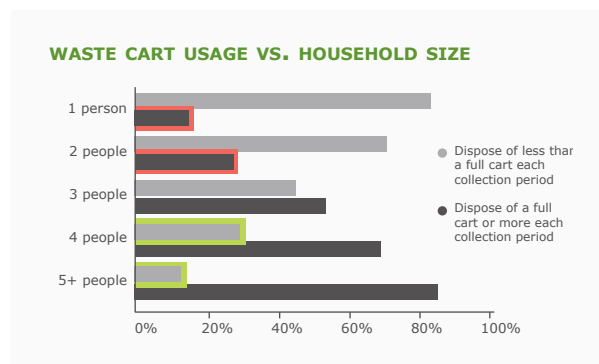
In analyzing this compared to household size (Figure 4.6), unsurprisingly the trend indicates that the larger the household the more waste cart space is required for disposal.

However, there are outliers at both ends of the scale; there are a number of small households that produce more than a full cart each collection period (red bolded section), and a number of large households who set out less than a full cart each collection period (green bolded section). The

\* An additional 65 responses to the survey were received by households that do not participate in the curbside program. These responses are excluded from the following data.

**Note:** Data captures all household types and locations. Where notable variations exist for different stakeholder groups, it will be noted.

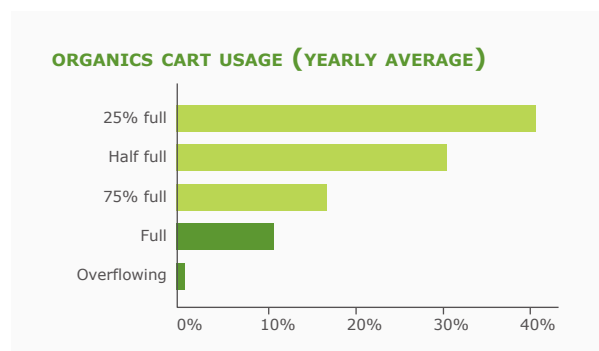
over-producing outliers offer the most potential for the biggest impact for waste reduction, while the under-producing outliers should be recognized for their efforts.



**Figure 4.6** | Waste cart use vs. household size

## Organics

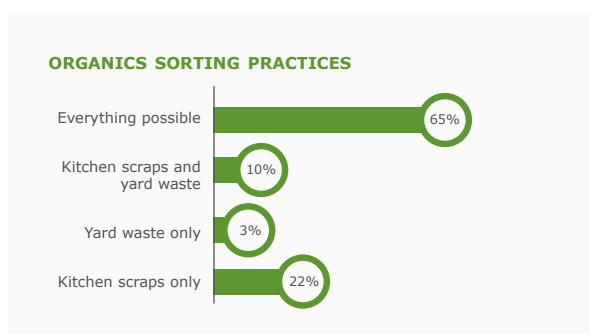
Alternatively, households assess their organics usage to be relatively low, with over 70% of households averaging less than half a cart full throughout the year (Figure 4.7).



**Figure 4.7** | Organics cart usage

**Exception:** Households in rural non-hamlet areas had a higher percentage of carts that were 75% full or greater, which might be attributed to the average size of carts being smaller (35 gallon) and desire to opt-in to participate in the diversion programs.

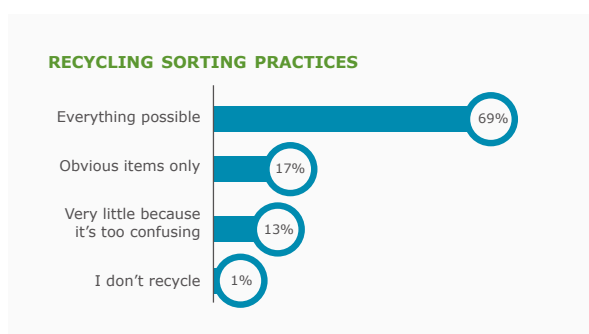
Despite this, Figure 4.8 notes that 65% of participants indicate they are maximizing their sorting practices by utilizing carts for all organic materials (food waste, soiled papers, pet waste and yard waste).



**Figure 4.8** | Organics sorting

## Blue bag recycling

97% of households indicate they participate regularly in the curbside recycling program, with 70% of households participating weekly. Almost 85% put out 1-2 bags or reusable containers per collection.



**Figure 4.9** | Recycling sorting

## Diversion Participation

In comparing sorting practices to household waste usage, specifically for households that indicate their black cart is full 75% or greater, the following was noted:

- Organics sorting—65% assessed their household to be maximizing their effort (Figure 4.8).
- Recycling sorting—Almost 70% assessed their household to be recycling as much as possible (Figure 4.9).

### Curbside events

Curbside events—large item collection, extra yard waste and Christmas tree collections—are well used by households participating in the Green Routine program. In particular large item collection has high participation in terms of frequency of use and number of items set out for collection, while extra yard waste and Christmas tree collection are utilized, but not consistently throughout the community nor for each offering. Efficiencies could be explored to maximize usage with collection strategies.

### Community reduction, reuse and recycling assessment

In the assessment of current waste management behaviours, the majority of participants identified that their current level of effort in most areas is adequate. Even though this was the case, approximately 35% of residents recognized that improvements could be made in many areas.

When looking at community waste practices such as reduction efforts and use of the community recycling services, such as Broadview Enviroservice Station, **it seems that when the practice is easy and convenient or is socially desirable, there is a higher willingness to change behaviours.** These include actions like taking extra steps to sort or prevent waste at home, or where there is higher environmental or social outcomes (donations to charities, refusing some single-use items or ensuring hazardous materials are properly handled and disposed of).

However, there is less appetite for behaviour change in waste reduction actions that require more effort or are conflicting with a social norm. This includes actions such as grasscycling, bringing reusable containers for shopping and purchasing products with less packaging.

### Set out rates—RFID & audits

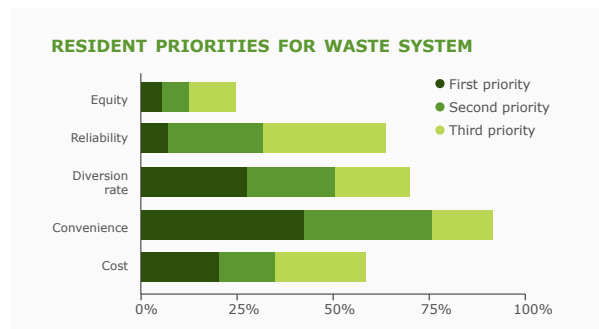
The survey responses provided input related to a household's evaluation of their current participation in both curbside and community services. To enhance this information, Strathcona County also utilizes Radio Frequency Identification (RFID) technology through the automated cart collection system that provides input into set out rates for both waste and organics. To supplement this, street audits are performed annually to evaluate participation and compliance with the overall program, but to also collect data on the recycling program.

When exploring set out rates through RFID, it demonstrates that households set out their waste carts for collection more regularly than their organics carts. On average, over 85% of households utilize black cart collection consistently, while just under 60% of households set out organics on a regular basis throughout the year. In addition, annual street audits are conducted on portions of the community to inspect participation and compliance with the organics and recycling streams. Approximately 8% of green carts have contamination that prevents collection until corrected, while a further 7% have minimal contamination that does not prevent collection and is corrected through further education. Overall there is good compliance with the organics program and improvement when audits ask for adjustments.

### Priorities and satisfaction of services

Consideration for priorities and current satisfaction levels with services enables the County to make decisions that accurately reflect the perspectives and attitudes of residents. Residents' experience provides insight into effort, behaviours and commitment to the program and helps determine where improvements can be made.

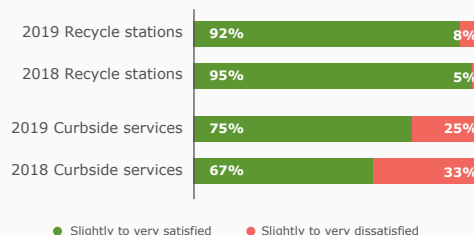
In Figure 4.10, residents indicate their highest priority to be convenience, followed by diversion. It is notable that cost of services was less significant for nearly all residents than convenience and diversion.



**Figure 4.10** | *Priorities*

Figure 4.11 demonstrates satisfaction with both curbside services and community recycle stations. Approval for services provided directly to households is less strong than community recycle services. It is notable that there was a decline in 2018 which is attributed to recycling changes made to the curbside program. In addition, the perception of services are more favourable where residents make a choice to utilize (ie. recycle stations) versus a requirement to participate.

#### SATISFACTION WITH SERVICES



**Figure 4.11** | *Resident satisfaction*

## Summary

It is understandable that participation levels directly impact overall performance of programs. What is noteworthy to include in evaluating participation is how households perceive their own participation levels as well as where they place value on services. This in conjunction with tangible data from audits helps shape where adjustments could be made to the program and where waste management in the community needs to go.

# RESEARCH

## ENVIRONMENTAL SCAN

### Growth and demographics

The County's population has nearly doubled since 1989. At 98,381 in the 2018 census, it is expected that the County's population may exceed 130,000 by 2036. The Edmonton Metropolitan Region Board has projected that the region will double its population, reaching 2.2 million people with 1.2 million jobs by 2044. Strathcona County's population is anticipated to grow between 40,000 to 60,000 people in that time. In anticipation of this, Strathcona County has been strategically planning for the Bremner Area Project that allows for population growth of 79,000. This project must include higher density targets: 40 dwelling units per net residential hectare, set by the region. As a comparison, existing area in the hamlet of Sherwood Park has an estimated density of 20 dwelling units per net residential hectare. Rapid growth and higher density targets are important and intricate influences that must be considered when planning for future waste management services.

Being a specialized municipality with urban and rural areas, servicing considerations are unique. 73% of the County's population lives within the Sherwood Park urban service area, while 27% reside within the rural service area. Additionally, with the County being a family-oriented community, the average age of residents is 39. However, based on national and local trends, it is likely that the mean age will increase over the coming

years with the proportion of seniors (age 65+) in the County increasing significantly. This shift will likely impact household size, waste generation volumes and the composition of waste.

### Economy

The County's economy has traditionally relied upon the vitality of the petrochemical industry. However, in recent years the County's economy has diversified into retail, construction and light industry. Strathcona County prides itself on promoting a diverse economy focusing in five main sectors in petrochemical development, agriculture business, manufacturing, retail/service and tourism. Oil and gas as well as agricultural operations are key industries contributing to the County's tax base. A wide variety of businesses from large retail chain stores to specialty stores and local businesses allow for a range of employment opportunities for residents and access to everyday needs.

More recently, there has been enthusiasm both at the provincial and local level regarding positioning industry towards a circular economy and being leaders in innovative plastics solutions.<sup>24</sup> Industries are rethinking their systems and processes to align with a circular model to be more productive and create new market opportunities. It is important for Strathcona County to remain well-informed and connected to these

conversations as government and industry collaboration will be important to address issues arising in waste management, specifically plastics issues.

## **External waste management industry analysis**

A number of circumstances also need to be considered when examining the current state, including industry shifts and trends, processing constraints and best practices. This environmental scan assists in systemically reviewing all influences related to Strathcona County's waste management system.

### **Recycling market shifts**

Over the last couple of years, the Waste Management industry has experienced some turbulent changes that have impacted recycling markets for municipal waste collection programs. In 2018, global recycling markets became unstable which affected the collection and processing of plastic, paper and glass products. As a result, local waste systems have had to adjust, foster understanding around the changes and regain confidence from participants related to blue bag programs.

In addition, any progress that was made related to resident participation, market improvements or technological advancements for recycling was paused or impeded by the COVID-19 impacts.

### **Processing pressures and capacity**

With changes to recycling markets and increase demand for organics composting in Alberta, costs associated with processing have risen, and although landfill capacity in the central region of Alberta is currently in a healthy state, a long-term lens needs to be used to factor in future capacity needs and land management expectations around new disposal sites.

Predominantly, organics processing in the province has become constrained with the number of municipal programs now providing organics

collection. With upcoming changes to a number of municipal programs in the capital region, organics capacity in the region needs to be a primary focus.

### **Measuring impacts**

Across all activities, the County's overall diversion of waste from landfill has been a major indicator of the impacts of waste programming. However, there is a shift in the way we view performance of the program, as diversion from landfill does not capture prevention activities, nor does it provide insight for areas of improvement.

A number of performance indicators can be used to identify participation, operational efficiencies and targets for reduction through recycling efforts. Methodology for deriving new metrics for program performance that aims at preventing and redirecting waste from the landfill will be developed.

### **New industry advances**

It is a pivotal time within the waste industry as markets adapt, regulations advance and expectations for environmentally responsible management of materials intensifies. As such, it is an innovative time in the industry that is bringing out the potential for new solutions to support the way in which we manage our waste. A few areas of interest to monitor include:

#### **Moving beyond diversion— A focus on waste prevention**

A sole focus on recycling creates a culture of guilt-free consumption, as opposed to consuming more consciously. And, while there is still a lot of improvement when it comes to landfill diversion, there is an increase focus on addressing the underlying issue of waste prevention.

Municipal programs have largely focused on end of life management of waste materials, but are now being given permission to play a larger role in the front end of the waste hierarchy by influencing reduction and reuse opportunities.

## Chemical recycling

Plastics have become a common product in our modern economy, and their production has doubled over the past few decades. Despite their many benefits, plastics end-of-life problems are a core issue calling for innovative solutions. As a result, several solutions are coming to the forefront in looking at plastics differently—instead of making products from resources, they are making resources from products. Chemical recycling is a process that breaks down post-consumer plastics into their basic form and then uses them again to remake plastics identical to virgin plastics, which restores their full value.

## Role of waste-to-energy (WtE)

Waste-to-energy technologies are in operation around the world and include thermal treatment technologies such as gasification and pyrolysis, biological systems and waste to fuels. Often WtE technologies require very specific and large quantities of feedstocks, therefore preprocessing and handling strategies to reduce feedstock variability

adds complexity to a solution. As there continues to be advances, there also continues to be questions on how these technologies work, what are the economic and environmental implications for managing waste and what role does it play when promoting reduction and recycling.

## Best practices review

As Strathcona County examines the current system and engages on what waste management could look like in the community over the long term, it's important to consider existing best practices that are carried out by other communities throughout Alberta, Canada and even globally. By examining successful guidelines, tactics and ideas that are being implemented within the waste industry, Strathcona County will ensure that a holistic approach is taken when developing this roadmap. A best practices review (Appendix C) was conducted of other programs, initiatives and policies, and elements and highlights have been inserted to support themes and next steps.

# REGULATIONS

## REGULATORY CONTEXT AND INFLUENCES

### What's the context around us?

In Canada, the responsibility for managing and reducing waste is shared among the different levels of government. Traditionally, municipal governments tend to play the largest 'day-to-day' role in guiding and managing waste programs within a community. Regional boards in many metro areas are starting to take a more collaborative approach to waste management to provide efficient and cost-effective services across a region. Provincial authorities mainly approve and monitor waste management facilities and operations but may also choose to establish waste reduction policies and targets across their jurisdiction. For its part, the Government of Canada complements these roles by controlling international and interprovincial movements of hazardous wastes, as well as identifying best practices that will reduce toxic pollution. Together all levels of government have a shared responsibility for managing and reducing waste.

### Regional partnerships & alignment

Strathcona County has been an active member with the Edmonton Region Waste Advisory Committee, which is a voluntary group of municipalities that are committed to cooperative and collaborative approach to the implementation of joint strategies and solutions for waste minimization. This long-time regional voice has been promoting best practices for waste management

in the capital region, and together developed a regional waste plan. This committee focuses on encouraging, facilitating and supporting policy development both within member municipalities and other external stakeholder groups, and relies mainly on the willingness of each municipality to implement suggested approaches.

With the formation of the Edmonton Metropolitan Region Board (EMRB), 13 municipalities in Alberta's capital region, there is now a regulatory requirement and formal commitment to work together to plan for and manage growth in a strategic and coordinated way. As a regional growth management board, the creation of a Metropolitan Region Servicing Plan (MRSP) is underway. An MRSP Task Force has recommended the creation of Regional Collaboratives, which includes making solid waste a priority.

Strathcona County has representation on the Solid Waste Collaborative group that is striving to:

- collaborate on regional level planning for solid waste;
- share regionally relevant data and information about solid waste;
- contribute to the identification and prioritization of regionally significant investments for solid waste;
- contribute to the advocacy of a zero waste region; and

- research and analyze different solid waste service delivery options for the region; subject to the above, analyze governance implications for solid waste.

As a result of these committees, one driven by passion and the other by commitment, regional partnerships will play a critical role in the future of waste management in Strathcona County and Alberta's capital region. Strathcona County administration will continue to participate in these discussions and seek opportunities to align our waste management roadmap.

## Provincial and federal context

Waste management in Alberta primarily falls under municipal jurisdiction, but provincial and federal governments play a role in shaping and guiding the management of this resource. Through the Environmental Protection and Enhancement Act (EPEA), the Alberta Environment and Parks (AEP) department provides specific standards, regulations and codes of practice for the end-of-life management of specific products. Alberta's main role is in overarching regulation, while municipalities are mainly responsible for providing strategic direction for the future of waste management in their communities (Appendix A). The Canadian government provides regulation for the transboundary movement of waste materials, in addition to negotiating international agreements related to waste and waste management. Direction from the federal government has been provided through the Greening Government Strategy<sup>6</sup> and the Canada-Wide Action to Reduce Plastic Pollution<sup>5</sup> to provide a national framework for waste reduction specifically through plastic waste diversion (Appendix B).

The Canadian government is becoming a larger player in the management of waste in Canada through commitments to international plastics reduction agreements like the Ocean Plastics Charter (2018) and more recently, the Canada-Wide Strategy on Zero Plastic Waste (2018).<sup>1</sup>

Championed by the Canadian Council of Ministers of the Environment (CCME) the Canada-wide Action Plan on Zero Plastic Waste, Phase 1 (2019)<sup>1</sup> and Phase 2 (2020)<sup>1</sup> were created. Phase 1 focuses on identifying tools for government procurement practices and greening operations, establishing national performance standards and requirements for plastics, and the facilitation of consistent programs for Extended Producer Responsibility (EPR) programs across the country. Phase 2 looks into single-use plastics by focusing on the reduction of plastic waste generated, addressing plastics in the environment through capture and clean up, and to overall improve consumer and commercial awareness about plastic waste prevention (Appendix B). At this time, the Government of Canada has pledged to ban six single-use plastics nationwide by the end of 2021: plastic grocery bags, straws, stir sticks, six-pack rings, cutlery and food containers made from difficult to recycle plastics. This is one step in achieving their goal of zero plastic waste by 2030.

The Government of Alberta's report *Too Good to Waste: Making Conservation a Priority* (October 2007)<sup>7</sup>, highlights the importance of having a place-based approach, flexible tools and incentives and a shared responsibility between waste generators, resource managers and municipalities. The province has not updated their waste strategy in over a decade, nor set formal targets or requirements for waste reduction in Alberta that could support municipal effort.

The Government of Alberta could have a larger influence on the management of waste in the province by enacting an EPR policy, but until now has chosen not to move in this direction.

## Extended Producer Responsibility (EPR)

EPR is one way of facilitating Alberta's transition to a circular economy, where materials and products are used as long as possible and are recirculated into the economy through recycling, refurbishing or repurposing.<sup>18</sup> EPR is a policy

approach under which producers are given a responsibility—financial and/or operational—for the end-of-life management of post-consumer products. Within this framework, producers must design, finance and implement a system to meet these outcomes set by law. This shifts costs and operational responsibilities away from taxpayers and municipal governments to producers and consumers.

**Strathcona County has been actively involved in advocating for stronger EPR policies in Alberta.**

EPR brings required end-of-life planning which results in less materials littered and disposed of in landfill. Along with environmental benefits, it also brings significant savings for municipal governments. It is estimated that EPR for packaging and paper products (PPP) would save Alberta municipalities an estimated \$65 to \$70 million annually.<sup>18</sup> Alberta is the only province west of Quebec without a producer-funded PPP recycling program. The cost of these programs is built into product pricing at point of sale, and these prices are standard across the nation. Albertan consumers pay for the cost of PPP recycling in the price of their goods. EPR levels the playing field for producers as all producers have the same incentive to green their products and packaging.

Provincial EPR systems divert more material from landfill and littering through coordinated recycling systems creating a greater economic opportunity for service providers (e.g. processors, haulers).

The Alberta Collaborative Extended Producer Responsibility Study (ACES) was a collaborative effort funded by the Alberta Urban Municipalities Association (AUMA), Rural Municipalities of Alberta (RMA), the Cities of Calgary and Edmonton and the Canadian Stewardship Services Alliance (CSSA).<sup>18</sup> A further 35 Alberta municipalities, including Strathcona County, supported the ACES work by either passing motions, writing letters of support or supplying data to inform the study. The AUMA and RMA have both passed motions supporting EPR at their most recent conventions. Strathcona County has demonstrated support for this study by sharing data and information related to our waste management programs. In addition, Strathcona County has been a vocal advocate to the Provincial Government about strengthening policies within Alberta.

While EPR has not been a focus or priority of the Alberta Government in the past, on October 26, 2020 a motion was passed unanimously by the Government and Official Opposition, to examine the feasibility of implementing measures such as extended producer responsibility, that balance the environmental and economic needs of Albertans. Consultation on EPR by the Province will commence in the spring of 2021. More information on EPR can be found in Appendix F.

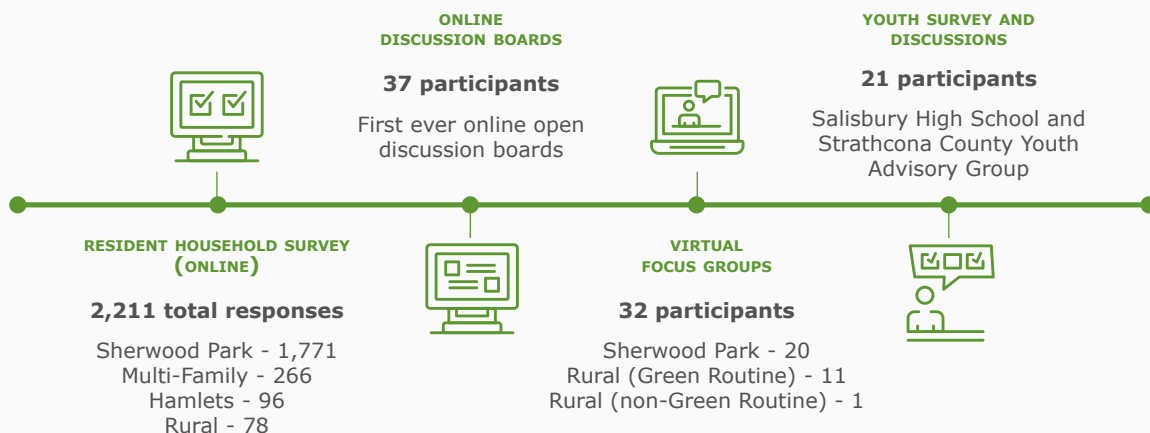
# REACH OUT

## PUBLIC ENGAGEMENT PROCESS

### How we listened

Strathcona County values public and stakeholder engagement; it is vitally important and extremely relevant to decision-making and future planning in our community. Throughout the development of the Waste Management Roadmap, participants from across the County provided feedback, engaged in dialogue and accessed information about waste through a variety of public engagement activities.

### INPUTS TO THE PUBLIC ENGAGEMENT PROCESS



*Public engagement process*



### COVID-19 disruption

With the onset of the COVID-19 pandemic early in 2020, the public engagement program required pivoting to adapt. The original objectives of the public engagement process did not change, but the techniques shifted from the proposed online and in-person public engagement program to solely providing virtual opportunities.

## Talking Out the Trash

A program of public engagement, called 'Talking Out the Trash', was developed to gather input that has been instrumental in the development of this draft roadmap. A public engagement communications plan supported the roll out of the process with several invitations and pieces of communications that were delivered to County stakeholders using the County website, public engagement newsletters, newspaper advertising, social media, and general email where applicable.

Resident and stakeholder input will be used to inform our community's philosophy, priorities and approach to Strathcona County's waste management system. The focus of the overall public engagement has been to explore:

- current participation and assessment of waste management behaviours;
- willingness to change behaviours and ways to improve our waste system;
- priorities and where we should focus our efforts;
- roles and responsibilities of waste management throughout the community; and
- the future of waste management while balancing the needs of the community with supporting long-term environmental and financial sustainability goals.

Furthermore, deeper conversations were explored through the discussion boards and focus groups on specific topics related to:

- waste management beyond the curb—what are the opportunities to improve waste diversion in the rest of the community?
- increasing equity in the system—should 'pay-as-you-throw' be explored for the residential program?
- what are the rural waste management challenges and opportunities?

## Informing and educating first

Waste management is a complex topic with varying degrees of understanding from participant groups on how waste management works at the County today and how it might work going forward. It was essential that as part of ensuring success in the public engagement process, information was shared to first work toward levelling the playing field on the understanding of waste management as it exists today in the County.

Since we could not inform and educate stakeholders in-person due to the COVID-19 pandemic, several videos and animations were created to educate and inform stakeholders online:

- [Introduction to Waste Management](#)
- [Making Changes](#)
- [Waste: A Shared Responsibility](#)

## What we heard reports

As part of the public engagement process, [What We Heard Reports](#) were developed for each of the public engagement tactics. A full account of the process, approach and questions asked, along with qualitative and quantitative results can be found in each of the documents.



*What we heard report*

# REPORT

## EVALUATION, THEMES AND WHERE WE NEED TO GO

### How what we heard is moving us to where we need to go

For the purposes of the overall roadmap, themed and patterned results were gathered from all of the feedback evaluated during the public engagement process. This 'what we heard' has been combined with research, best practices, and County considerations to form the major outcomes that will guide 'where we need to go'. Nine themes were identified and will support fostering a collective commitment and effort to rethinking our waste and divert more from landfill.



*Where we need to go*

# 1. WORKING TOGETHER

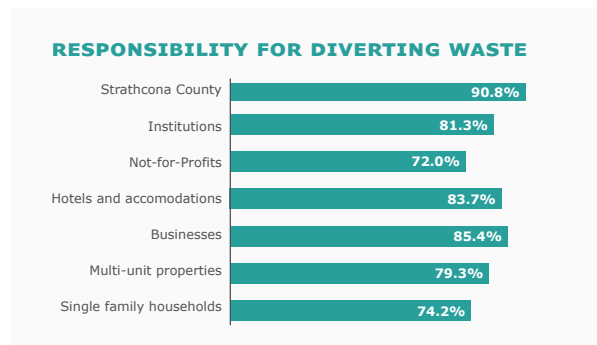
## WASTE MANAGEMENT IS EVERYONE'S RESPONSIBILITY



Within a community, waste is generated by everyone—individuals, households, businesses, institutions, organizations and government all participate in waste management. It is therefore foundational to this roadmap to acknowledge, engage on and increase awareness about the role that everyone plays.

### *What we asked and what we heard*

Information was shared about the current state of waste generation within Strathcona County to provide information and initiate discussion around 'how responsible different groups should be in diverting waste'. Survey respondents and participants in the discussion boards and focus groups were overwhelmingly supportive that a number of identified players within the community (Figure 9.1) should be highly involved in diverting waste.



**Figure 9.1** | *Waste diversion responsibility*

In addition, when asked about having diversion opportunities available throughout the community, residents had high expectations (importance of 74% to 84%) to be able to divert waste when they work, play, eat, learn, shop and gather. Building consistency in habits and ensuring fairness from all waste generators were important points shared by participants during the public engagement.

Specific to discussion boards and focus groups, dynamic conversations developed around waste management being a 'shared responsibility' and that all sectors need to contribute to waste diversion. In diving into these discussions, a major focus for participants was that the commercial community needs to play a larger and more formal role in waste management within the County (Theme 2). Many participants were unaware that unlike residential waste programs, there are no formal requirements for these other sectors to divert waste. It is important to note that participants stated that producers and manufacturers should be included in this category and there should be increased requirements for the role they play in waste management.

**"HONESTLY, IT REALLY IS EVERYONE'S RESPONSIBILITY TO DO BETTER. I THINK HAVING MORE OF THOSE SORTING BOXES AROUND THE COMMUNITY WOULD BE HELPFUL. I ALSO THINK BUSINESSES SHOULD BE MORE ACCOUNTABLE FOR THE AMOUNT OF WASTE THEY HAVE."**

**-- ANONYMOUS SURVEY RESPONSE**

As a result, it was evident from the survey and virtual discussions that participants noted that households are doing their part, and although there is room for improvement, some attention should be shifted to these other identified sectors to increase their contribution to the progress of waste management in the County.

### *Research and best practices*

Although waste is generated throughout the community, in the last several decades municipal governments have mainly focused on managing

waste in the residential sector. Local governments taking on responsibility for waste management was a function of sanitation and became a need to organize it as a public service in order to protect public health.<sup>23</sup> That function continues today, and although it has shifted from purely waste collection to also include diversion opportunities, municipal governments are still looked to by residents to assume ultimate responsibility for waste outcomes in a community.

With an increase in societal awareness and support for environmental issues, there is growing expectations that local governments should have a strong effect on environmental actions and outcomes.<sup>20</sup> Specific to waste management, local governments are beginning to pivot their focus from the residential sector to the broader community, as well as outcomes higher up in the waste hierarchy. Cities and communities that are leading in waste management are taking a holistic and circular approach to their local waste system and creating connection between waste generation and shared responsibility of all players within their community.

### **Town of Banff—Seeing waste as a shared responsibility<sup>60</sup>**

Located within Banff National Park, the Town of Banff strives to be a model environmental community. They recognize that being a municipality inside a national park comes with great responsibility, and their waste management program reflects this understanding.

The Town of Banff has set a waste diversion target of 70% by 2028 and has many other ambitious goals to reduce waste wherever possible. Their new zero waste program called “Take the Zero Waste Trail” by encouraging residents and businesses to take “The Business Trail” or “The Residential Trail” and set their waste loss goal for the year. This program treats waste as a shared responsibility to ensure that Banff preserves the pristine environment of the National Park.

### **County considerations**

Strathcona County, as a service provider, has taken primary responsibility of waste management in the community with focus mainly being on the residential sector. While individual households have been participating in waste diversion through the Green Routine program, there is still a disconnect of expectations, roles and responsibilities.

Regarding non-residential waste generators, such as local businesses, community halls, churches and other community organizations, Strathcona County has provided support to some commercial stakeholders who use community recycling services, and who require additional guidance for waste management. Moreover, since the Green Routine began, an important cooperative partnership has been developed with local school boards and schools to create consistency in behaviours and waste management solutions through education mimicking the household program.

Since the changes to the recycling program in 2018, Strathcona County has had the opportunity to emphasize the importance of the waste hierarchy (p. 14) with a reminder that reduction and reuse programs should be our first steps in eliminating waste from the system, so it doesn’t need to be managed. Changes to the recycling industry, have also amplified the need for the County to advocate for provincial-led programs for wastes that are difficult to manage (see Theme 3).

### **Where we need to go**

- A community that collectively commits to responsible waste management. We as an entire community are *Managing Waste Together*.
- Diversion opportunities and solutions that are consistently available in places where people live, work, play, shop or stay in Strathcona County.
- A community that endorses and prioritizes the waste hierarchy, with an emphasis on rethinking our waste and waste prevention.

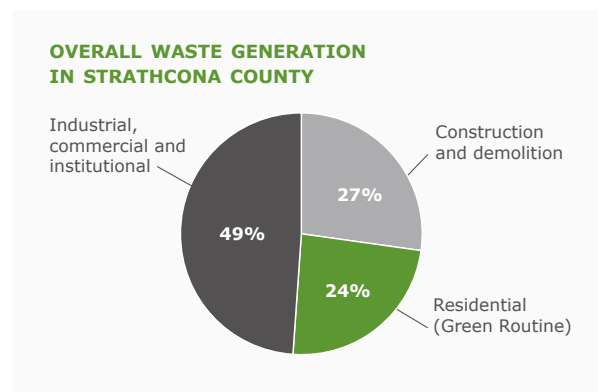
## 2. BEYOND THE CURB

### CREATING CONTINUITY WITHIN THE COMMUNITY



Waste generated within a community goes beyond the residential sector (Figure 10.1). Waste from commercial and institutional locations, such as businesses, schools and hospitals, as well as from the construction and demolition sector, make up approximately three quarters of the waste generated within the County. As such, Strathcona County wanted to explore where opportunities might exist to create continuity of waste management practices throughout the entire community and improve overall diversion of waste generated within our borders.

Through conversations with public engagement participants and in the feedback from the survey process, it became very apparent that County residents want the greater community to be more involved in formal waste diversion practices.



**Figure 10.1** | Strathcona County waste generation

#### **What we asked and what we heard**

As participants are more than familiar with their household routines and services, it was important that when public engagement on this topic was approached, a level of understanding needed to be achieved before beginning the conversations. As such, Strathcona County provided information on waste generation in the overall community, as

well as current practices, systems and regulations that exist outside of the residential sector.

As noted in the first theme, it was evident that engaged participants, both through the survey and online forums, had expectations that waste diversion should be more of a shared responsibility by several waste generators in the County. The strongest indicator, respondents answered “highly involved” for Strathcona County at 90% and businesses at 85%. Most respondents (72% or higher) also felt that single family homes and other categories should also be highly involved. Strathcona County not only plays a role in waste management as a waste generator, but also has a responsibility as a service provider and regulatory body. As such, it is expected that the County as an organization will have the biggest role to play in waste management for the community.

In asking specifically about the importance of diverting waste and developing programs for different groups, respondents expressed importance that the County should target waste diversion for the business sector, with particular importance on places where you eat (restaurants, fast food, etc.), where you learn (schools), where you shop (retailers, mall, and grocery stores), and where you stay (hotels and other accommodation). Correspondingly, several open-ended responses favored the concept of the County taking on a more assertive role in tackling waste management through the commercial sector.

Lastly, through the virtual discussions, the common reaction from participants after being informed that the commercial sector was not currently subject to a County-led waste management program was one of general surprise. A pattern in conversations was that residents felt they were doing all they could, and made comments

targeting the business sector as the primary sector that should improve waste management and landfill diversion practices. A small deviation to this trend would be in the expected involvement by not-for-profit organizations, such as charities or places of worship; data indicated that although they play a role, perhaps they are a gradual focus.

**"I THINK THAT RESTAURANTS, GROCERY STORES, COMMUNITY AND GOVERNMENT BUILDINGS, SCHOOLS AND BASICALLY ALL PUBLIC PLACES AND SPACES SHOULD HAVE VERY EASY ACCESS TO RECYCLING AND COMPOSTING."**

**-- ANONYMOUS SURVEY RESPONSE**

### **Research and best practices**

Under Alberta's Municipal Government Act, municipalities have the ability and the responsibility to set standards and services that are necessary or desirable for all or part of the municipality that supports the well-being of the environment. As value for the environment has increased, waste diversion at the community level has gained attention, and thus many municipalities are shifting focus to include other sectors beyond household participation.

In addition to a more inclusive approach to waste generation in a community, many municipalities are now also using a circular economy (p. 16) lens to approach waste management. This paradigm shift will change the way in which resources are managed and waste is viewed, creating more options not only for environmental preservation, but also economic development.

### **County considerations**

Outside of the residential sector, waste generators have managed their own waste with no formal requirements or expectations to divert waste. Commercial waste management has traditionally been a function of business and operational efficiencies. With the introduction of the Green

### **The City of Calgary's ICI Waste Diversion Strategy (2014)<sup>39</sup>**

To help reach their goal of 80% waste diverted by the commercial sector, the City of Calgary created new regulations for waste management. As of November 2017, businesses and organizations in Calgary must have waste diversion programs in place for their operations, customers, members and employees. All businesses must have waste disposal options for all streams: organics, recycling, refundable containers, and waste. Continuity between the residential and commercial waste program makes it easier for residents to look for waste diversion opportunities everywhere they go.

Routine in 2008, there has been some information sharing and general discussions with members of the business community, however these have been voluntarily initiated by a specific business or organization due to their desire to be socially and environmentally responsible.

However, institutional waste generators, including Strathcona County operations, have been a focus of attention for waste diversion over the last decade. Strathcona County recognizes that it has responsibility to demonstrate leadership when managing waste from our buildings, spaces and operations. This is directly connected to Strathcona County's commitment under the Environmental Framework. Effort has been made to mimic our residential program and maximize diversion from our operations where possible. Additionally, and as noted in Theme 1, successful collaborations with both local school boards have resulted in diversion opportunities within all schools in Strathcona County.

As attention is growing for non-residential sectors to increase their waste diversion, there is potential for regional alignment and a collaborative approach. Strathcona County, being an active member of the Edmonton Metropolitan Regional Board—Municipal Services Regional Plan Task

Force for Solid Waste, is anticipating conversations to develop regarding a regional outlook on all waste generators.

In addition, Strathcona County participated in a provincial-wide Circular Cities Project initiated and led by the Recycling Council of Alberta.<sup>25</sup> The partnership assists municipalities in building strategies that will help transition to a circular economy. It fosters innovation and better design, reuse, recycling, remanufacturing and waste prevention strategies. This project and how it connects to the overall Waste Management Roadmap and conversations with the commercial sector are still in the initial stages, but there is a lot of enthusiasm and momentum that could be created with this concept.



*Recycling Council of Alberta (RCA) Circular Cities logo*

### **Where we need to go**

- Businesses, institutions and organizations in the County are diverting organics and recycling from landfill.
- Successful community capacity building and collaboration that encourages best practices and knowledge sharing in order to support all organizations with their waste management practices.
- A community that collectively invests in the advancement of the circular economy and positions the County to become stronger and more resilient in the future.
- Strathcona County, as a waste generator, service provider and governing organization, is demonstrating leadership by maximizing diversion in public places and spaces, as well as operations.
- Regional partnerships and connections that strengthen consistency and equity in the non-residential sector for waste management across the Edmonton Metro Region.



### **COVID-19 disruption**

The Strathcona County “Talking Out the Trash” Waste Management Public Engagement Plan developed in early 2020 included developing and facilitating engagements on waste management with the commercial sector. Due to the onset of the COVID-19 pandemic in March 2020 and the resulting pressures being felt by this sector in response to the pandemic, these specific engagements were deferred.

## 3. PLASTICS SOLUTIONS

### PREVENTION, INNOVATION AND ADVOCACY



From the plastic bags we use to the food packaging we buy and the computers we work with, plastic has become part of our daily lives, and many of these plastics are used only once and trashed. This current system is a highly wasteful, linear, take-make-waste model that is harmful to the environment and misses economic opportunities as value is literally thrown away.

With recent changes to the recycling industry in 2018, people are beginning to understand that single-use plastics and packaging can be problematic, and that recycling markets for these materials are either unpredictable or non-existent. Recognition is increasing for the need to have better solutions in place, but what is not broadly recognized is that there is a combination of solutions needed to tackle plastics, which includes new regulatory conditions, processing and market developments, circular-principled approaches and strategies to restrict or reduce plastics overall.

**"MANUFACTURERS HAVE TO BE ENCOURAGED TO STOP WRAPPING EVERYTHING THEY SELL IN PLASTIC... YOU SOMETIMES HAVE NO CHOICE BUT TO BUY A PRODUCT THAT COMES IN PLASTIC. TOILET PAPER DOES NOT NEED TO BE WRAPPED IN TWO LAYERS OF PLASTIC."**

**-- ANONYMOUS SURVEY RESPONSE**

#### ***What we asked and what we heard***

The public engagement process did not directly tackle plastics as a topic of discussion, however in exploring reduction and reuse behaviours, as well as through the unrestricted questions and discussions used, it became clear that a repetitive theme emerged related to single-use plastics and other non-recyclables that people are having to "throw away."

When asked in the survey process about the future of waste management and ideas about diverting waste, a strong minority (26%) of the comments were related to Strathcona County needing to take a more assertive role in tackling waste management at the source—through the manufacturers and suppliers of products provided in single-use plastics or other non-recyclable packaging. The online discussions validated this theme as several participants encouraged the County to do more to collectively influence less of these products from entering the marketplace.

When specifically looking at behaviours associated with reduction activities, some practices have become habitual, such as using reuseable bags for shopping or reuseable containers for lunches and leftovers. When looking at actions that may require more effort, such as the use of reusable produce bags, coffee and beverage cups or choosing options with less packaging, the commitment level trends downward.

#### ***Research and best practices***

It has been noted by the Government of Canada, that nearly ninety per cent of Canada's plastic waste is not recycled or recovered. This represents an economic loss of \$7.8 billion.<sup>1</sup> As a result, a federal Canada-wide strategy on achieving Zero Waste Plastic has been actioned to reduce plastic waste and support improved reuse and value recovery through a more circular plastics economy. Most recently, a key part of the plan has been launched to ban harmful single-use plastic items; consultation and policy development will occur through 2021/22 with potential implementation targeting 2022/23.<sup>1</sup>

Establishing a circular economy requires having a clear and consistent framework for Extended Producer Responsibility (EPR). In 2009, the Alberta Government made a commitment to establishing

EPR in the province, however has not been a focus or priority over the last decade. With increased pressure from municipalities, industry stakeholders and the public, the provincial government is exploring the feasibility of EPR and commencing public engagement in 2021.

#### **Vancouver to MetroVan— Single-use Items Strategy<sup>57</sup>**

Every week in the city of Vancouver 2.6 million disposable cups and 2 million plastic bags are disposed of. Engagement identified that 86% of Vancouver residents see the importance of reducing single-use items. An education and outreach campaign began in November 2019 to support residents in the implementation of the single-use plastics strategy. The Single-Use Item Reduction Strategy bans foam cups and takeout containers, plastic straws, and disposable utensils, and placing mandatory charges for disposable cups and paper bags. Although the City of Vancouver initially spearheaded this initiative, MetroVan is supporting with a consistent regional approach to increase effectiveness of the strategy.

Many municipal approaches to plastic are beginning to focus on single-use items by introducing regulatory pieces that discourage use or ban disposable items. Within the Edmonton Metro Region, Wetaskiwin, Devon, Spruce Grove and City of Edmonton have all made commitments to single-use bans or strategies, while other municipalities are beginning to explore the strategy. A municipality known for their progressive approach in this regard is the City of Vancouver. As people and businesses cross boundaries, a regional approach may be more effective for not only creating consistency for the public but to ensure economic fairness and ease of implementation for the commercial sector. This is supported by organizations such as the Retail Council of Canada (RCC). The RCC is urging for harmonization on approaches and best practices for single-use items across jurisdictions.

### **County considerations**

Strathcona County has been actively involved in advocating for stronger EPR policies in Alberta. With an EPR framework in place, the cost of managing plastics waste would be partially or wholly shifted to producers, thus saving taxpayer dollars, while reducing waste and attracting jobs and investment to the province. The implementation of EPR in Alberta would mean that residents of Strathcona County could see more efficiencies and diversion specific to recycling.

As stated earlier, global markets for recyclables declined drastically in 2018. This impact on the Green Routine has led Strathcona County to focus on finding other solutions to processing and/or markets for plastics. We continue to have conversations with the recycling industry related to innovative opportunities, pilots and markets for plastics. An example of a solution that has been implemented is the collection and densification of polystyrene (Styrofoam) at Broadview.

Meanwhile, this system shift has allowed municipal programs to emphasize the importance of the waste hierarchy by developing reduction and reuse initiatives that improve waste diversion. Strathcona County is weaving these concepts into our programming where possible and will continue to do so through the Circular Cities Project, the HodgePodge Lodge program and outreach activities in the community.

### **Where we need to go**

- Strathcona County, as a municipal government, prioritizes and strengthens advocacy for stronger provincial and federal responsibility and investment in the areas of EPR, single-use items, plastics solutions, recycled-content standards and market development.
- People and organizations that value reduction of single-use items at the source and seek local opportunities for strengthening waste prevention initiatives.
- At the local and regional level, a community that collaborates to seek and support innovative solutions that foster a circular economy, with a priority on plastics.

## 4. PROCESSING MATERIALS

### FINDING OPPORTUNITIES AND VALUE IN WASTE



Processing plays an important yet mostly hidden role when managing waste in a community. From composting organic materials to sorting and marketing recyclables and the proper separation and disposal of hazardous materials, processing must be a deliberate focus of a program to ensure materials avoid landfilling.

#### *What we asked and what we heard*

Processing and disposal were not a topic that were specifically presented as part of the public engagement process. However, through significant feedback from the survey, it was apparent that there is a strong desire for processing solutions for plastics. Reactions and responses to what the future of waste management could look like in the County included queries about the need for innovative technologies, exploration of partnerships with local industry and waste-to-energy solutions.

Participants shared that Strathcona County should focus attention and resources on improving opportunities for non-recyclable materials that are destined for the landfill. This was strengthened by conversations in the discussion boards and focus groups with most interest around plastics solutions and finding new, preferably local, markets for these recyclables.

#### *Research and best practices*

Emphasis should primarily be placed on waste prevention in a system so individuals and/or communities do not have to bear the financial or environmental costs associated with the collection, processing and disposal of materials. While this is the ideal state, existing waste systems still require consideration on managing waste streams at the bottom of the waste hierarchy until such time that systems become more circular.

The concept of a circular economy is resonating

#### **Recycling Council of Alberta Circular Cities Project<sup>25</sup>**

The RCA has established a foundational group of Alberta municipalities to develop a Circular Cities Roadmap containing strategies for transitioning to a circular economy.

Circular principles are founded in the idea of shifting the paradigm of how we manage our resources by keeping products and materials in use for as long as possible at their highest utility and value. Conserving and sharing resources saves money while reducing air, water and noise pollution, and cutting down on the release of greenhouse gas emissions and toxic substances.

Strathcona County participated in this project to:

- raise awareness of strategies that reduce waste, conserve resources and combat climate change;
- increase understanding of why a linear economy is harmful, and what sustainable initiatives are possible that will create new jobs and business opportunities; and
- spark innovation (without externalities) and stimulate a circular economy within the County.

[Strathcona County Circular Cities report.](#)



Recycling Council of Alberta: Circular Cities

with many municipalities as it reframes the conversation away from having to 'manage' waste to looking for opportunities to 'utilize' waste as a resource. It is a commitment to creating a system that pursues continuous improvements, innovations without externalities, and rethinks wastes that can be used beneficially within a circular economy. For more information on the circular economy see Appendix E.

With momentum growing in the waste industry as a result of global market shifts and increase demand for environmental responsibility, innovative solutions are being sparked from necessity. Solutions are advancing in terms of product design, plastic markets, chemical recycling, organics processing and waste-to-energy. In a waste management system that strives to be connected and integrated, these treatment methods can play a role in reaching targets when carefully considered within the waste hierarchy and evaluated for their circular economy potential.

### **County considerations**

Strathcona County stays well-informed of industry trends, innovative ideas and best practices for managing all waste streams. Through provincial and regional relations, Strathcona County is part of conversations regarding processing and treatment.

- Increase capacity for organics processing in Alberta.
- Find innovative, local opportunities for plastics processing.

- Industry conversations about chemical recycling.
- Circular Cities Project with Recycling Council of Alberta.
- Extend landfill capacity in Alberta.

### **Where we need to go**

- Resilient community that values waste as a resource and keeps goods and products in use by balancing local production with global supply changes.
- A thriving local economy that fosters economic productivity with new growth and business opportunities connected to a circular economy.
- Strong partnerships locally and regionally that strengthen processing capacity for all waste materials while extending landfill life in Alberta.

## 5. CONVENIENCE IS KEY

### MAKING REDUCTION AND DIVERSION SIMPLE AND ACCESSIBLE



Successful waste management strategies are often directly correlated to convenience. Ease and accessibility have a big impact on participation and performance. A return to increased convenience “at the curb” was a major point of input by almost all engaged participants throughout the process.

#### *What we asked and what we heard*

When asked about priorities for waste collection services (Figure 13.1), majority of residents ranked convenience to have the utmost importance (85% of urban, 83% of rural hamlet and 73% of rural respondents). The exception to this was for rural customers that have the ability to opt in to the program; although convenience was still a main priority, diversion drives their choice to participate in the County’s Green Routine program.

This was also substantiated when exploring participation data. Where well-established routines existed for recycling or no curbside options made available, residents demonstrated higher willingness to find options for diversion. As an example, residents are accustomed to dropping off hazardous wastes, electronics and tires as these programs are foundational and easy to access, nor accepted curbside. However, if it was easily disposed of (black cart) at the curb, despite alternate options for diversion, residents were less likely to be willing to take those extra steps. This is the case for items such as Styrofoam and glass.

In addition, it is notable that convenience and diversion outperform cost as a priority, indicating that residents may be more likely to support an increase in resources that better program accessibility and ease, while also achieving higher diversion.

Similarly, through survey responses and the online consultations, participants spoke to the inconvenience of not having curbside solutions for some recyclable materials. Additional barriers to participating included confusion, limited storage options and lack of time; effort should focus on reducing these barriers and making the alternatives more difficult.

#### **Actions we want to target:**

- Sort recycling and organics
- Find information about sorting practices
- Compost soiled papers
- Reduce food waste
- Reduce single-use plastics by refusing and using reusable
- Grasscycle
- Upcycling
- Reuse and donate textiles

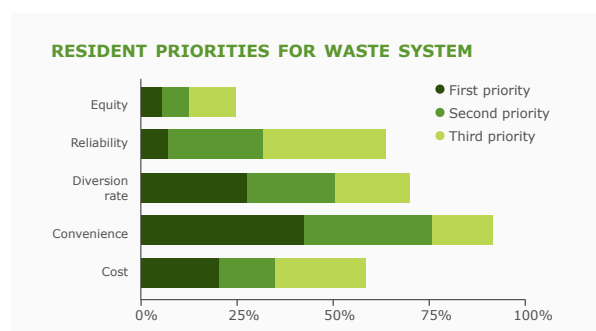


Figure 13.1 | Priorities

Of the numerous (1694) qualitative responses received, the second largest theme was participants’ disappointment with changes to the recycling program, with some plastics and glass no longer recyclable or picked up at the curb. There is a general lack of understanding for why things changed, frustration with waste items out of their control and a disconnect with components of the broader waste management system.

## **Research and best practices**

Research shows that no matter what other tools are implemented to encourage a behaviour change, it will not be achieved if the action is believed to be inconvenient. If the behaviour is perceived as unpleasant, or time-consuming for example, no matter how well you address the other barriers the change will be difficult to achieve.<sup>19</sup>

Due to the possibility of multiple reasons why someone could perceive a behaviour as inconvenient, it is best to consider making the behaviour you wish to discourage less convenient and more costly. It is best to design a program that enhances motivation and actions by making the sustainable behaviour more convenient and less costly than the alternative, non-sustainable activity. This links to the concept that a positive incentive-based approach coupled with increased compliance and inconvenience will drive progress (see Theme 8).<sup>22</sup>

## **County considerations**

With the introduction of the Green Routine, it has been a goal of the program to focus on convenient and effective waste diversion opportunities by offering households opportunities to divert more at their curb. With the shift in the waste management industry over the last couple of years, specifically the recycling markets, changes to the program have resulted in reduced ability to recycle some materials, requiring more effort, less convenience and less diversion.

Due to the market shifts in 2018, some items were more marketable if they were collected separately at a centralized location, which requires more effort and commitment by participants to divert these wastes (glass, polystyrene and tetra paks).

### **Convenience boosts rates of participation<sup>19</sup>**

A study conducted by the University of British Columbia (UBC) and evaluated in multi-family buildings demonstrated that accessibility and proximity of recycle and compost bins greatly increased diversion rates. The theory tested out different bin placements in buildings from less convenient options to more suitable and accessible options. The findings showed that changes in conditions had a huge impact on behaviours. As a result, recycling and composting rates increased by 141 per cent.

Researchers indicated “we call this intention-action gap. What psychologists can do is change the environment a little bit so that our actions can follow through on our intentions. We need to provide solutions and alternatives to current practices to help people recycle and compost more.”

Since this modification to the program, there has been an uptake in participation in these programs, however audits have demonstrated that there is still room for improvement.

### **Where we need to go**

- People and organizations have access to convenient and simple reduction and diversion opportunities in the County from every household through every hamlet.
- Everyone in the County has a collective understanding of the system, including sorting practices, benefits and outcomes that will achieve greater diversion from landfills.

## 6. ASSESSING BEHAVIOURS

### UNDERSTANDING DRIVERS AND WILLINGNESS TO CHANGE



Behaviour change is a vital consideration when developing waste management programs. Whether looking at household recycling and organics participation, waste prevention practices or consumption activities, behaviour change matters. Changes in behaviour not only directly affect progress towards improving waste diversion from landfills, they can also empower residents to view how their actions are creating positive change and create connection to the broader community.<sup>22</sup>

Exploring behaviours allows Strathcona County to tackle any obstacles or barriers related to improving habits, and develop pathways forward to progressing waste diversion. In addition, the degree to which behaviours can improve will be proportionate to the waste diversion targets that Strathcona County can target.

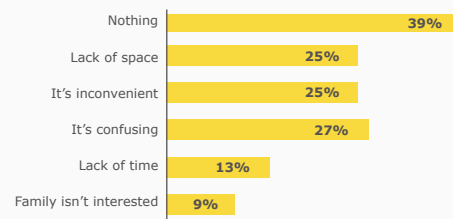
#### **What we asked and what we heard**

Participants were asked about their current behaviours related to their personal and household waste management practices, as well as their willingness to change these behaviours in order to improve waste diversion outcomes. The behaviours explored included habits related to existing service offerings like recycling, composting and use of the Enviroservice Station, but also about future opportunities of focus, like waste prevention habits around reuse, reduction and refuse (donation, use of HodgePodge Lodge, single-use items and grasscycling).

In many cases, respondents' self-assessment about certain actions demonstrated that they believe their current level of effort is adequate. In spite of this, there was a strong minority (approximately 35%) that acknowledge that improved effort could be made in many areas. These are important actions to target, as these are openings for improvements that would result in incremental progress.

When diving deeper into people's current behaviours compared to their willingness to improve, these results demonstrate that where people can shift their current efforts easily and when it is convenient, there is higher willingness to change. This includes being more diligent at composting all materials like food waste and soiled papers and taking additional steps to understand whether something is recyclable. Alternately, there is less desire to change behaviours related to actions that may require more effort, such as using reusable containers for shopping, making different purchasing choices and grass-cycling. Furthermore, where a change in behaviour has a perceived benefit and connects to the broader community (donation, reuse, single-use item refusal), residents have more appetite for improvement. Survey participants were also asked about barriers to change or what might get in their way of increasing waste diversion (Figure 14.1).

#### **WHAT GETS IN YOUR WAY?**



**Figure 14.1** | Program hinderances

Although not an option in the specific survey response, it's important to note that in the open

**27%** of respondents indicate that they are not always sure what goes where, which gets in their way of increasing their waste diversion.

ended comments, the largest barrier identified was the inability to avoid certain wastes, like non-recyclable single-use plastics and items brought into homes. These comments reflect the desire of residents that more responsibility should be placed on manufacturers and businesses that produce or distribute these wastes.

When we analyzed the responses in other related categories in the survey, a pattern emerged. Residents' willingness to change is also tied to how much other sectors in the community are also contributing to the community's waste diversion progress. Participants in discussions expressed in general that although there was room for improvement, they felt residents were doing "their part" in contributing to diversion from landfill while other sectors, like the commercial sector, need to do more.

Specific to online discussions, participants indicated that residents could be doing a better job with waste management, with sorting especially. They also stated that if waste management and/or landfill diversion targets are set, they need to be reasonable and be strived for gradually (see Theme 9).

One area of note was in our discussions with youth, where there was an overwhelmingly high willingness to change personal habits. The youth groups were also asked what was getting in the way of them improving their waste management behaviour. Some youth found the "rules" to be confusing at times as to what goes where and what can be recycled. This feedback reveals that our youth are willing and flexible but we have to make it easy.

### **Research and best practices**

Many environmental behaviours are habitually performed, and waste management is no exception. Initiatives should focus on building habits that are familiar, convenient and consistent, and that are carried out at the community level and involve direct contact with people.

A successful concept in the field of developing sustainable behaviours is the use of community-based social marketing, as it is particularly effective in fostering change.<sup>22</sup> Community-based social marketing is pragmatic. It involves identifying barriers to behaviours; develop/pilot/implement programs to overcome these barriers; and evaluate the effectiveness of the program. Tools can be implemented such as motivation techniques, prompts, commitments, norms, feedback, financial incentives/disincentives and vivid and personalized communications tools with engaging messaging and images.

### **Canada's Turn it Off Campaign<sup>22</sup>**

To address the issue of unnecessary vehicle idling in school zones, an effort was made to target undesirable behaviours in areas within Toronto. A combination of prompts, awareness and commitments tools were utilized to focus on improving behaviours. Signs were used to remind drivers to stop idling; facts were shared with parents regarding harmful emissions that decrease local air quality and contribute to climate change; and users were asked to pledge to turn off their engines and place a sticker on their windshield as a reminder to themselves and others to do the same. While the signs themselves did not reduce engine idling, when combined with other personal connection and commitments, idling was reduced by 32% and duration by 73%.

Traditionally the reliance exclusively on advertising may be effective in creating public awareness and understanding, but they are limited in their ability to encourage individuals at turning good intentions into action.

### **County considerations**

The philosophy and goals of the Green Routine program are based on a need to create change at the source of the behaviour. Our desired future state is a community that endorses the program by

learning it and living it. Strathcona County acts as change managers by helping residents adapt and take action with ease and purpose. Furthermore, this is strengthened by the County's Environmental Framework that commits to responsible waste management and procurement practices.

The Green Routine program has utilized a number of community-based social marketing techniques over the years to help improve resident participation and ultimately waste diversion from landfill. A notable success has been the 'star program' (Figure 14.2), which creates a positive cue to reassure our residents that they are on the right course and should continue. It also creates community visibility for a sustainable act that will inspire others to do the same.



**Figure 14.2** | *Gold star program*

Through street audits, positive reinforcement and educational reminders, there has been a reduction in the number of contaminated green carts requiring correction. In previous years, 12% of the organics carts were flagged, however due to auditing efforts, a decrease to 7% has been observed for the past two years.

In addition, effort has been made on creating consistent behaviours in the community by replicating the Green Routine program in County-owned facilities and spaces, as well as mirroring much of the program in schools within the community, which is particularly important in terms of creating habits in future homeowners.

### ***Where we need to go***

- A cooperative waste management community that reaffirms everyone's roles and a shared responsibility, which in turn drives willingness to change and contribute to doing 'their part'.
- Waste reduction and diversion programs are implemented throughout the County that remove barriers and focus on encouraging positive behaviours.
- Reward, recognition and incentive-based tools provide inspiration for turning intent into action.

## 7. WASTE MATTERS

### CONNECTING OUTCOMES & EDUCATING USERS



To participate fully in Strathcona County's Green Routine waste management program, residents are required to know and understand the varying elements and requirements of the program. With a long list of items that are typically disposed of by a household, understanding what goes where, why it's important to sort and what happens to the materials after collection can get overwhelming. Despite a robust education and outreach component of the Green Routine, a major theme emerged related to residents eager for more education and information, distributed in creative ways at different times and via different channels.

#### ***What we asked and what we heard***

Survey responses indicated that residents are still experiencing confusion with sorting their wastes, which is again confirmed by waste characterization studies that reveal many recycling and organic materials still being placed in the black cart.

When participants were asked about the best ways for them to learn about the Green Routine and other waste management programs, the leading responses (over 50%) included the waste collection calendar, the County website, and a smartphone application. Other methods that received high support included information sent through utility bills and social media. There were specific suggestions that the County should utilize a more direct communication approach using email or text communication for important changes or impacts to the program.

Through the online discussion forums, a major theme emerged around the need for more creative education to inform stakeholders about the narrative around waste, including the advantages, the rules and good practices to improve waste diversion. Innovative perspectives presented ideas about utilizing 'users' as advocates and

champions for the program, which could focus on neighborhood participation, citizen advisory teams or ambassador initiatives.

Of particular interest was the conversations with youth stakeholders, who indicated they found the 'rules' to be confusing at times. What was revealing, but not surprising, about these conversations is that the Green Routine serves varying audiences, and education and communication must sweep more broadly and creatively to attract the attention of its users.

#### **Green Routine outreach**

- Trashfest and Poop-A-Palooza
- Meal planning and food waste reduction
- Bee Kind workshop
- Community events and farmers markets
- Star program
- School curriculum
- Zero waste event options
- To go kits for schools and community organizations
- Waste Reduction Week
- Shred-it events
- Display cases
- Videos
- Truck decals
- Textile Strategy

#### ***Research and best practices***

Creative communication is a method that best connects with your target audience; it can help bring clarity and increase your chances of interacting

### **“Own Your Throne”— Hamilton’s flushables campaign<sup>16</sup>**

Like many older North American municipalities, Hamilton, Ontario was dealing with the issue of unsuitable items being flushed down the toilet, which lead to the damage of homes, neighborhoods, the wastewater system and was even polluting the Hamilton Harbour. The city created an innovative and provoking educational campaign called “Own Your Throne.” It features characters like Richard the Turd, Sir Peeter and the Duchess of Swirl on their adventure to protect their throne from the unflushables (wipes, floss, feminine hygiene products, etc.) The humorous characters and the videos of their many quests drew much needed attention to the problem of unflushables and their impact on the city, as well as the environment. The campaign was very successful with a 140% increase in awareness that disposable wipes can damage the community’s wastewater infrastructure, and a 60% increase in understanding that these actions have impacts on taxpayers. The City of Hamilton’s edgy and eye-catching campaign created a space to talk about the 3P’s and their sewer systems.

with your viewers across the channels that they are using. If communication and outreach is relatable and looks to not only inform but connect with audiences in a genuine and ‘human way’ then it will enable a broader reach.<sup>8</sup>

It’s also important to note that information and communication must be user-friendly—easily available and timely. While trying to reach a broad audience, methods to share information must be varied. There is also a certain level of obligation on users to actively search for the information they seek.

Specific to communicating and educating on environmental issues, audiences can quickly get overwhelmed by negative information and how to contribute to solving the problem. It is important to balance this information with positive stories and connections to local communities and potential

solutions.<sup>26</sup> Tapping into values, understanding behaviours and reframing to connect to people’s motives is crucial for pro-environmental action.<sup>10</sup>

### **County considerations**

Strathcona County’s Green Routine program has long been considered a leader in terms of education and outreach. From traditional methods of communication such as web and print to our creative outreach initiatives like TrashFest, the HodgePodge Lodge, the Green Routine App, and community workshops and events, the Green Routine team continuously endeavours to educate residents about the program. Yet despite successful outreach initiatives, there is acknowledgement that further resources could be dedicated to strengthening understanding and connection within the community. Reframing conversations with residents has proved to be a valuable strategy and should be increased to reinforce commitments to the program.

Where perhaps more attention needs to be invested is on creating connection to the importance of participating in the Green Routine program. Much focus has been spent on the ‘how’ and it is evident that residents need to be reminded of the ‘why’ which would hopefully reconnect them to the waste that they generate and the role that they play in managing it.

### **Where we need to go**

- A community that endorses the program by learning it and living it resulting in a stronger community identity and connectedness.
- People are inspired to take action through storytelling, connecting the narrative, reframing the conversation and creative campaigns.
- Programs and initiatives that are driven by champions in the community.

## 8. TOOLS FOR CHANGE

### INCENTIVES AND COMPLIANCE



With a stagnant diversion rate, waste characterization audits have confirmed that there is room for improvement, and that not all households are fully participating in the program. With an objective to identify specific strategies to improve participation in waste management programs, the Roadmap notes the use of financial incentives and requiring compliance as an opportunity to increase rates of utilization.

#### *What we asked and what we heard*

In connecting savings to willingness to change behaviours, a majority of respondents believe that if they could save money, they would be willing to do more to divert waste.

And although the number one priority in terms of waste management services was not associated to costs (it was convenience), it still is notable (57%) in terms of importance and could be utilized to shift commitments in the program. If fees increased or savings could be realized, would participants reprioritize and change their behaviours?

**63%** of respondents are willing to change behaviours to realize **savings**.

The concept of incentive-based or user pay systems was not directly explored as part of the survey, due to its complexity and number of potential levers that could be used. Yet in asking participants in the survey about the future of waste, there was a good number of comments received related to a 'user pay' system. While several comments supported the development of a system that incents, rewards or rebates/credits households who

maximize waste diversion, other feedback noted that some concerns would need to be alleviated regarding an economic incentive-based program. This includes people potentially cheating the system by throwing their garbage away through other means, discrepancy in sizes of households being penalized, measurement, enforceability, and necessary exclusions. Overall, there were slightly more respondents that demonstrated support for a possible user-pay system, however it was evident that further examination of this topic is required.

**65%** of respondents endorse the pursuit of ensuring program compliance.

Discussion boards supplemented the concept by gaining feedback related to the use of incentives/disincentives to motivate all County waste generators to improve behaviours. Specifically, for the commercial sector, a small majority of participants indicated that reward-type programs should be considered before disincentives, fines, or regulations.

Focus groups provided a more in-depth opportunity to open up the conversation on whether a more equitable, user-pay system, could work and how it might be approached. Participants in both areas (urban and rural) indicated a user pay system would need to address concerns about illegal dumping, neighbours using others' bins, and implementing a fair system. What type of user-pay system would work best for our County was also part of the discussion, with most participants preferring positive reinforcement or incentives versus a more punitive approach.

These conversations also indicated that participants who are not contributing or sorting properly should be held more accountable. Households that are maximizing their diversion should not be exposed to a system that penalizes them for having a larger family or being at a different family stage (ie. babies in diapers or medical considerations) when others are not doing their part.

### **Research and best practices**

Most Canadian municipalities collect waste at the curbside with minimum restrictions, with a flat fee to cover these services charged through utility fees or taxes. This type of fee structure means that households pay the same amount regardless of how much waste they generate. In other words, there is no financial incentive to recycle or divert organic waste, or to avoid single-use, packaging, or low quality items.<sup>23</sup>

#### **Halifax, Nova Scotia<sup>59</sup>**

Operating under Nova Scotia's Environment Act and the Environmental Goals and Sustainable Prosperity Act, the City of Halifax has committed to a target of less than 300kg per person per year by 2015. This is achieved through regulation and program rules that set restrictions on waste through clear bags and limits, requirements for specific sorting and bans that do not allow specific items in the waste stream or landfills. Diversion compliance officers check the contents of the clear bags, inspect materials and issue fines for non-waste items found in the waste stream. Halifax also complements their bylaw requirements with great education tools. Their strategy coupled with strong provincial support, results in exceptionally low contamination rates and performance has been positive.

There are several economic incentive policy options that could be used to drive higher performance in terms of waste diversion. However best practices indicate that residential systems,

in which households are charged on the basis of the quantity of waste generated encourages waste reduction and diversion strategies since the more you throw away, the more you pay (see Appendix G). User pay systems achieve the following objectives:

- **Economic:** Waste management service is treated like other utilities that are charged by unit of consumption. Variable rates provide a recurring economic signal to modify behaviour and allow small disposers to save money compared to those who use more service and impose more costs on the system. Creating the right scheme and price signal is key to creating efficiencies. Rather than fixed charges, which encourage overuse of the service, pay-as-you-throw (PAYT) encourages customers to use only the amount of service they need.
- **Environmental:** Variable rates reward all behaviours—recycling, composting and source reduction. Reduction is the cheapest waste management strategy and thus of the highest priority.
- **Social:** Waste collection costs are distributed more fairly among the population, and in proportion to the amount of waste each user generates. Variable rates do not restrict customer choices. Customers are not prohibited from putting out additional garbage, but those that do put out more will pay more, or alternatively, those that put out less will see a savings.

High performing waste programs enforce compliance for program expectations, especially in behaviours that should be discouraged. These rules need to be equitably and consistently enforced to ensure buy in from participants. Once this is achieved it also allows to move 'beyond compliance'.

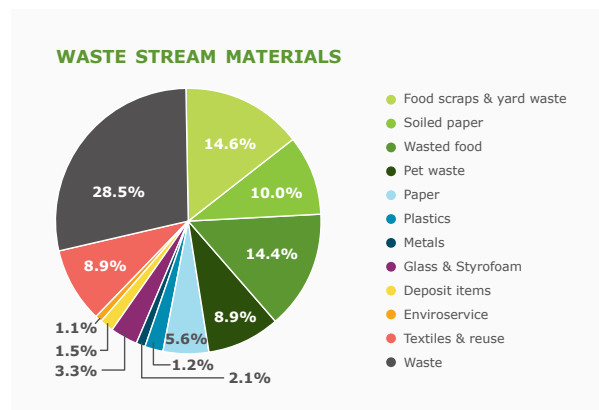
### **County considerations**

The current Green Routine program is structured so separation and sorting is readily available to

divert materials from landfill. The Waste Management Bylaw 39-2014 outlines a set of sorting and participation expectations for households, while placing informal limits on the amount of waste that can be landfilled. However, if waste fits in the black cart with the lid closed, compliance for maximizing diversion has not been strongly enforced. By and large, education has been primary focus to request compliance of the organics and recycling materials to ensure that these streams remain contaminant free.

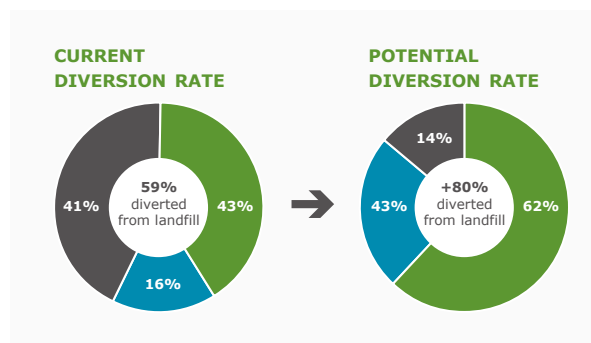
By weight, over **70%** of materials placed in the black cart shouldn't be going to the landfill.

Focusing more attention on what is being thrown out in the black cart may result in better diversion results, as waste characterization audits show that over 70% (8,500 tonnes) of what is being disposed of in the black carts could be sorted into an alternate stream and not be sent to landfill (Figure 16.1). Almost 6,000 tonnes of this material is organics that should be composted and used as a valuable resource for cycling back into Alberta soils.



**Figure 16.1** | Waste stream characterization

Considerations for enhancing compliance and introducing financial signals that value behaviours that support reduction and diversion would assist in achieving higher performance from households. This means that there is potential to set higher targets and could achieve upwards of 80% of our materials being diverted from landfill (Figure 16.2).



**Figure 16.2** | Program potential

### Where we need to go

- People and organizations are encouraged by positive programming that inspires better performance in waste reduction and diversion from landfill.
- Equitable waste management system that maximizes efficiencies and promotes waste prevention, while improving environmental behaviours and flexibility for users.
- People and organizations are fully accountable for the waste they generate and compliant with diversion practices.

## 9. TRACKING SUCCESS

### COMMITMENT TO LEADERSHIP AND TARGETS



Strathcona County has a vision to be Canada's most livable community. This statement summarizes the aspiration of what the community could look like in the future. Everything that it does, from planning through to service delivery, is centered on community and the priorities that do and will set it apart. As a result, the public engagement process confirmed residents' expectation that our County should strive to remain a leader in waste management and look to improve results for the entire community.

#### *What we asked and what we heard*

The intent of the survey and discussions were not to seek feedback on specific targets or measurements for the program, but to assess residents' current participation and priorities with the program and determine where improvement could be made. This insight allows for the evaluation of potential actions and targets that could be set. That being said, a large response to the survey combined with passionate comments indicates residents' pride for their County and expectation that the County continue to be leading waste managers. This was echoed by participants in the discussion boards.

With the focus groups, more in-depth discussions could be had about the future of waste management and being leaders in waste reduction and diversion. The majority of participants were vocal about Strathcona County continuing to be a leading place to live in our province. They shared that they would like our County to continue to be leaders in waste management while also paying close attention to other priorities in the County. This revealed a desire to remain progressive but to balance realistic targets with efforts, expectations and priorities of residents. A large majority of the youth participants were very vocal that Strathcona

County should "absolutely" continue to be a leader in waste management.

#### *Research and best practices*

Municipal waste programs traditionally outline strategies and efforts toward achieving a set target. Creating a clear image of the future, aligning values and priorities with that vision, and implementing measurable action plans with goals, will establish a common purpose and motivate and encourage participants.

#### **Markham's Approach<sup>50</sup>**

The City of Markham, Ontario is known as "The Best of the Best" when it comes to waste management. They not only have a comprehensive approach to tackling all parts and players of their waste system, but they set progressive and achievable targets for their community. Markham is diverting 81 per cent of their waste from the landfill—an astonishing achievement and a symbol of what can be accomplished with inspired leadership.

Managing performance of these actions is important to keep track of progress and adjust along the way. To date, a common waste management practice has been to focus on measuring diversion of materials from the landfill. However, it is becoming more apparent that solely relying on the diversion metric as a measurement tool for success of a program is flawed. The diversion metric does not have the ability to capture/demonstrate reduction efforts. It doesn't accurately represent waste generation per person or household, doesn't consider changing weights of materials, and strongly places the wrong emphasis in the waste hierarchy.<sup>28</sup>

There is an industry shift to re-evaluate methodologies for measuring performance of a waste management program. What is overall waste generation per household and how is it trending? What is still being sent to the landfill, and what percentage of our black cart could still be diverted elsewhere?

Along with material targets, other performance trends include measurements for service delivery, recovery rates, contamination and residual rates, costs per managing material type, and measurements for greenhouse gases linking waste to climate change targets.

### *County considerations*

When Strathcona County initiated the Green Routine program in 2008, it was leading the way in terms of residential services and diversion from landfill. Although participation in the curbside and community diversion programs have been successful, the County's diversion rate has been relatively stagnant with no significant increase since the inception of the Green Routine program. On average the program has achieved a 58%—61% over the last decade\* and has been unable to achieve the originally stated target of 70% diversion that was set to be achieved by 2018.

This idle metric doesn't reflect the effort that residents are putting in to the program and does not reveal where improvement can be made. For example, reduction efforts like grasscycling are not fully captured when calculating diversion rates despite their contribution to overall program goals. The strategy should position the County to continue to progress, by linking actions to incremental outcomes that strive for an achievable, yet ambitious target. Performance indicators, and

the methodologies used to evaluate and measure programs, need to shift to reflect the entire community's responsibility in managing waste and should focus on outcomes for all parts of the system.

It has also been common practice to benchmark progress against other municipal programs, however there is significant differences in how each municipality collects, tracks and reports data for their waste management programs. This variation prevents a clear comparison and impedes efforts to collaborate and work in partnership.

At time of writing this, Strathcona County is beginning to participate in regional conversations about developing a Regional Monitoring and Measurement Program through work being done with the Edmonton Metropolitan Region Board—Metropolitan Region Servicing Plan Solid Waste Collaborative. By setting standards and improved information, there is opportunity to prioritize initiatives and resources at the local level but also on a regional scale.

### *Where we need to go*

- A forward-thinking community that has leading practices and progress in waste management throughout the County.
- Incremental actions are linked to achievable outcomes and overall targets that are balanced with expectations and priorities of residents.
- A measurement and monitoring system that reflects the entire waste management system and all waste generators within the County, as well as aligns regionally and provincially with industry standards.

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\* Excludes data from 2020, as COVID-19 resulted in distorted data as a result of impacts to household and community behaviours, and adjustments to service delivery.

# ROLL OUT

## SUMMARY

### From where we need to go to how we might get there

The evaluation of the public engagement process combined with internal and external research establishes a forward-thinking path of where we need to go or get to as a community. Taking this a step further, each theme contains some preliminary or initial priorities that will guide us in putting vision into action.

#### WORKING TOGETHER

Waste management is everyone's responsibility

##### How we might get there:

- Communication and education programs will reflect this "shared" responsibility moving away from any indication that implies the County has sole responsibility in managing waste.
- Purposely working towards the following outcomes:
  - ◇ Residential: increase awareness about individual and household contributions to waste management and simplify roles, responsibilities and expectations.
  - ◇ Commercial and institutional sector: engage further with businesses in the community on the approach and support they will need to increase waste diversion and take steps toward a circular economy within the County (see Theme 2).
- Concentrate programming on decreasing the amount of waste that needs to be managed in the system with a focus on following the waste hierarchy.

#### BEYOND THE CURB

Creating continuity within the community

##### How we might get there:

- Develop and implement a public engagement plan (and deliver) for the commercial sector that looks to build capacity while identifying priorities and needs related to waste management.
  - ◇ With COVID-19 pandemic pressures continuing to persist into 2021, the process may benefit from some initial conversations with the business community regarding how to approach engagement for this sector.
  - ◇ Report back on results from these commercial conversations in a separate report. Seek County Council support in 2021 for recommended steps forward with commercial sector waste management as part of the overall Waste Management Roadmap once we have input from that sector.
- Identify waste diversion champions in the commercial sector that have adopted reduction or diversion practices and willing to share lessons learned.

- Apply a circular economy lens while engaging and connecting with the business community.
- Initiate community conversations that bring together multiple voices from the community to collaborate on opportunities to improve waste diversion in the community.
- Review Strathcona County's operations to look for opportunities and possible efficiencies with existing waste management practices. Create an overall report card to evaluate progress and where improvements may be needed. Connect this with the Environmental Framework.
- Promote a collaborative, regional approach to improving waste management practices in the commercial sectors.

## PLASTICS SOLUTIONS

### Prevention, innovation & advocacy

#### How we might get there:

- Participate in the provincial consultation process for EPR and continue to work collaboratively with partners to place more end-of-life management responsibility on producers and manufacturers regarding packaging. Develop public messaging to build understanding of EPR.
- Keep abreast of the federal plastics strategy and approach to single-use plastics and look for opportunities to create conversations and collaborations on a regional approach to single-use reduction strategies.
- Develop a targeted waste reduction strategy that prevents more materials from becoming part of the waste stream, with a focus on single-use items.
- Enhance understanding of what happens to materials as they travel through the waste management system—from source to sort to end.

## PROCESSING MATERIALS

### Finding opportunities and value in waste

#### How we might get there:

- Prioritize problematic waste streams and processing capacity concerns for short-term focus.
- Investigate possible processing options for recyclables that currently do not have markets.
  - ◇ Advocate support for local innovation and circular economy approaches within the County's business and industrial sector.
- Continue to advance conversations at the regional and provincial level regarding processing and treatment capacity and solutions for all waste materials, including landfill long-term capacity.

## CONVENIENCE IS KEY

### Making reduction and diversion simple and accessible

#### How we might get there:

- Explore options that offer convenient, accessible solutions for waste prevention and diversion activities.
- Reduce confusion related to sorting practices and expectations through accessible and understandable communication and awareness campaigns and tools.
- Ensure solutions for materials are stable and strong to offer stability for program and overall participation by users.

## ASSESSING BEHAVIOURS

### Understanding drivers & willingness to change

#### How we might get there:

- Pinpoint and prioritize behaviours that will generate incremental progress.
- Pair behaviours with the most effective tools and link to specific, measurable targets ensuring that they are attainable.
- Acknowledge existing contributions to the program and connect impact to the broader community and environment.
- Connect overall responsibility of waste generators in the community (see Themes 1 & 2) to reinforce individual behaviours and reaffirm that everyone's actions play a role.

## WASTE MATTERS

### Connecting outcomes & educating users

#### How we might get there:

- Enhance education and information strategies.
  - ◇ Creative campaigns that gain attention and create awareness.
  - ◇ Multiple methods, tools and platforms.
  - ◇ Connecting people and purpose with the program through storytelling.
  - ◇ Connects to existing programs and services that are offered by the County and other organizations locally or regionally.
- Create opportunities where champions and/or users of the system can engage, promote and interact with others in their neighbourhood or community at large.

## TOOLS FOR CHANGE

### Incentives & compliance

#### How we might get there:

- Develop a tactical plan to enhance compliance with a focus on waste carts to ensure sorting practices are maximized.
- Evaluate economic levers that will increase motivation and drive better performance, while taking a positive, incentive-based approach.
  - ◇ Include incentive methods in engagement discussions with the commercial sector.
- Develop and implement a specific public engagement program related to incentives and user pay options to build capacity and receive input from County residents.

## TRACKING SUCCESS

### Commitment to leadership & targets

#### How we might get there:

- Identify incremental actions and link with outcomes and metrics that tracks and evaluates all aspects of the community and system.
- Update monitoring and measurement methodologies.
  - ◇ Participate in regional conversations related to aligning practices.
- Set realistic, progressive and timely target for the entire community's commitment to improving waste management outcomes.
- Get endorsement, raise awareness and generate some enthusiasm for the new target.

# ROLL OUT

## NEXT STEPS

This Roadmap outlines the community's values and desired outcomes specific to waste management practices. It is intended to reflect the entire community and all aspects of the waste system by integrating best practices and new advancements. This guiding document is informed by and intended for all waste generators in Strathcona County.

Strathcona County will use this Roadmap to guide new strategies and initiatives over the next 10 years. Action items will be developed and outlined in an implementation plan that will have short, medium and long-term planning focuses.

The 'where we need to go' outcomes outlined are best achieved if we all commit to a shared responsibility for waste management and move forward for this common vision, sharing knowledge with each other, collaborating often and ensuring all waste generators are engaged and active in waste reduction and diversion initiatives throughout the County.

***Together we value waste as a resource and are committed to rethinking our practices in order to make Strathcona County the most livable community in Canada.***





## APPENDIX A

### SUMMARY OF GOVERNMENT OF ALBERTA'S WASTE POLICIES AND PROGRAMS

#### **"Design for Environment (DfE) Opportunities within Alberta's Waste Stewardship Programs" (2006)<sup>3</sup>**

- Design for Environment' (DfE) is an umbrella term describing techniques used to incorporate an environmental component into products and services before they enter the production phase.
- Assessment of current waste stewardship program with respect to DfE.
  - ◇ The programs were not designed to promote DfE and are therefore not aligned
  - ◇ DfE is most relevant to Alberta's electronics and beverage container recycling programs.
  - ◇ With the tire and used oil stewardship program there are fewer DfE opportunities; therefore, Alberta should place less emphasis on integrating DfE in these product categories.
- Promoting DfE in other jurisdictions.
  - ◇ Three approaches: voluntary, regulatory, or a combination of both.
  - ◇ Based on case studies it is too early to draw conclusive evidence to know which approach is most effective in promoting DfE among producers.

#### **"Construction, Renovation and Demolition Waste Materials: Opportunities for Waste Reduction and Diversion" (Sonnovera report—2006)<sup>2</sup>**

- Report explores instruments which could be applied to the design and construction of new buildings and renovation projects in Alberta, with the aim of reducing the amount of construction and demolition (C&D) waste disposed.
- Instruments that could be considered:
  - ◇ Voluntary mechanisms—building green programs, green procurement, government leadership, industry self managed.
  - ◇ Mechanisms that influence design—levy on virgin materials, green procurement.
  - ◇ Financial mechanisms—landfill taxes/levies, differential tipping fees, green procurement.
  - ◇ Mechanisms linked to permitting—required diversion plans, targets backed by fees or deposits, performance reports.
  - ◇ Regulatory or mandatory mechanisms—mandated standards/regulations, disposal bans.
- Based on research and stakeholder feedback, a framework for C&D waste was developed.

- ◇ Provincial government leadership—create green building standard, require waste diversion standard on all government projects, develop projects that maximize waste diversion.
- ◇ Imbed waste diversion goals within construction permitting process.
- ◇ Introduce province-wide disposal bans and surcharges.
- ◇ C&D environment fund—use unredeemed deposits and surcharges to promote and develop programs to increase construction waste diversion.

### **“Too Good to Waste: Making Conservation a Priority” – Alberta Government, Oct 2007<sup>7</sup>**

- “Every society produces residual material, or what is commonly known as waste. Waste tends to be an indicator of economic success—the more prosperous society becomes, the more waste we generate.”
- Current: 80 (disposed)/20 (recycled or recovered).
- Goal > 20/80 > ultimately work towards zero waste society.
- History of leading the way. Example: beverage recycling collection system (1972), hazardous waste legislation (1994), electronics recycling program (2004), etc.
- Waste management is consistent with Alberta’s 20-year strategic plan—long term commitment to research conservation and environmental protection.
  - ◇ Albertan’s and Climate Change: Taking Action, Rural Development Strategy, alternative energy initiatives, Water For Life: Alberta’s Strategy for Sustainability.
- Focus on having a place-based approach, having flexible tools and incentives, and a shared responsibility (between waste

generators, resource managers and municipalities).

- Outcomes:
  - ◇ Albertans take responsibility for resource conservation and waste minimization.
    - » Increase tipping fees to incent resource recovery.
    - » Develop and implement green procurement—utilize purchasing power.
    - » Continual development of policies to ensure the conservation and optimal use of natural resources.
      - Education, economic instruments, incorporate full cost accounting into waste management policies.
  - ◇ Set recovery targets for specific materials with reliable reporting systems.
    - » Waste management systems are integrated to provide the capacity for processing and/or recovery of materials that would otherwise be disposed of as wastes.
      - Development of bio-products and bio-energy from the agriculture sector and forestry.
      - Identify infrastructure requirements.
      - Link provincial funding and support for regional waste management plans to provincial outcomes and policies regarding resource conservation and waste management.
  - ◇ Facilities and practices to manage secondary materials and wastes are protective of air, land, water and human health.

# APPENDIX B

## SUMMARY OF FEDERAL DIRECTION FOR WASTE MANAGEMENT

### Greening Government Strategy<sup>6</sup>

- Increase plastic waste diversion with a goal of diverting more than 75% of plastic waste by 2030 from federal operations.
  - ◇ In support of the Oceans Plastic Charter, commitments to increase the efficient use of resources while strengthening waste diversion systems and infrastructure to collect and process plastic materials.
- Reduce single-use plastics in operations, meetings and events with a goal of eliminating unnecessary use of single-use plastic items such as disposable straws, utensils, beverage bottles, disposable hot and cold drink cups, and plastic bags. These are visible components of the plastic waste stream and constitute a significant portion of the plastic litter in terrestrial and marine environments and can be difficult to collect and recycle.
  - ◇ While single-use plastics may sometimes be necessary for accessibility, health, safety or security reasons, in many situations they can be avoided entirely or replaced by more reusable, compostable or recyclable alternatives. Alternatives that serve the accessibility and health needs of public servants, such as disposable bendable straws, will still be provided when needed.
- Procure sustainable plastic products with a goal of promoting procurement of sustainable products and reducing associated plastic waste packaging.
  - ◇ Public procurement can be used to support markets for more sustainable plastics products, such as those that can be reused or repaired, are remanufactured or refurbished, are made with recycled plastic

content, or can be readily recycled or composted at their end of life.

- ◇ For all of these initiatives, the government approach will take into consideration the availability of plastic waste recycling and diversion options, health, accessibility, and national safety and security exemptions.

### Canada-Wide Action Plan on Zero Plastic Waste – Phase 1 Canadian Council of Ministers of the Environment, 2019<sup>1</sup>

- Nearly 99% of Canada's plastic waste is not recycled or recovered. This represents an economic loss of \$7.8 billion.
- Retaining materials and products in a circular economy not only reduces effects on the environment but also has significant economic benefit.
- This Strategy's approach aligns with the Ocean Plastics Charter championed by Canada during its G7 Presidency in 2018 and the principles established in the waste management hierarchy: reduce, repair, reuse and recycle materials according to the value each method retained in the economy.
- **Phase 1 focus:** product design, single-use plastics, collection systems, recycling capacity and domestic markets.
- **Phase 2 focus:** action plan – preventing plastic pollution in oceans/other waterways and monitoring the impacts of plastic in our environment.
- During its G7 Presidency in 2018, Canada championed the Ocean Plastics Charter, which contains commitments to work with industry to reach:

- ◇ 100% reusable, recyclable, or, where viable alternatives do not exist, recoverable plastics by 2030.
- ◇ At least 50% recycled content in plastic products where applicable by 2030.
- ◇ With other orders of government, recycling and reuse of at least 55% of plastic packaging by 2030 and the recovery of 100% of all plastics by 2040.
- ◇ The reduction in the use of plastic microbeads in rinse-off cosmetic and personal care consumer products to the extent possible by 2020, and to address other sources of microplastics.
- **Priority action 1:** Extended Producer Responsibility.
  - ◇ CCME will identify the components and tools that can be used by jurisdictions across Canada and will include guidance on common material categories and product definitions; performance standards to guide reuse and recycling programs; options to encourage innovation and reduce costs; and clear monitoring and verification approaches. (to be completed 2020) Note: timeline extended due to COVID-19.
- **Priority action 2:** single-use and disposable plastic products.
  - ◇ CCME will develop a roadmap to strengthen management of single-use, disposable plastics.
- **Priority action 3:** national performance and requirements standards > better incorporate recycled content and to facilitate recycling at end of life.
- **Priority action 4:** incentives for a circular economy.
  - ◇ Remove barriers to accelerate a circular economy (ex: reduce cost of recycling, low landfill costs, inclusion of harmful additives to plastics).
  - ◇ Fiscal incentives for greater value recovery (repair/refurbishment).
- **Priority action 5** – infrastructure and innovation investments – targeted investments for infrastructure and innovation in the areas of plastic design, production and recovery (aid in transitioning to circular economy).
- **Priority action 6** – public procurement and green operations—CCME will facilitate information and best practice sharing between member jurisdictions to strengthen their sustainable procurement policies and practices to support a more circular economy for plastics (December 2021).

# APPENDIX C

## MUNICIPAL WASTE PROGRAMS

MUNICIPALITY WITHIN ALBERTA	PROGRAM GOALS AND TARGETS	NOTEWORTHY INNOVATION	PLANS FOR THE FUTURE
<b>The City of Calgary</b>  “Industrial, Commercial and Institutional (ICI) Organics Diversion strategy” (City of Calgary, 2015) <sup>40</sup>  Industrial, Commercial and Institutional Waste Diversion Strategy Analysis (City of Calgary, 2014) <sup>39</sup>	Residential waste program: <ul style="list-style-type: none"> <li>• Single family – 70%;</li> <li>• Multi-family – 65%;</li> <li>• ICI – 75%;</li> <li>• C&amp;D – 40%; and</li> <li>• Overall diversion target of 70% by 2025.</li> </ul> ICI waste program: <ul style="list-style-type: none"> <li>• Goal of “zero waste”;</li> <li>• 80% of ICI waste diverted by 2020; and</li> <li>• Increase diversion of organics from landfill to 90% by 2025 within the ICI sector.</li> </ul>	“ICI waste diversion strategy” and “ICI Organics diversion strategy.” <ul style="list-style-type: none"> <li>• Amendments made to the waste and recycling bylaw to maximize diversion of ICI waste.</li> <li>• Mandatory source separation of all streams, differential tipping fees, and landfill bans used as tools for increased diversion.</li> <li>• Development of a monitoring and management strategy with the private sector.</li> </ul>	Exploring a PAYT program in 2021—fees based on the amount of required pickups. <sup>41</sup>  “Single-use items waste reduction strategy” is in the making (draft expected 2021).
<b>Cochrane, AB</b>  “Toward Zero Waste: Zero Waste Framework” (City of Cochrane, 2012) <sup>42</sup>	Waste diversion rate applied to all sectors. <ul style="list-style-type: none"> <li>• 80% diversion by 2020.</li> <li>• Following the Zero Waste International Alliance principles and practical steps towards zero waste.</li> <li>• Goal of true cost waste and recycling pricing.</li> </ul>	<ul style="list-style-type: none"> <li>• Using regional partnerships to increase waste diversion.</li> <li>• Residential waste limits at the curb: 3 units/ household.</li> <li>• Additional waste bags can be purchased (\$3/bag).</li> </ul>	<ul style="list-style-type: none"> <li>• Development of an ICI waste program.</li> <li>• Development of a standardized construction and demolition materials recovery plan (potential for a reuse program).</li> <li>• Development of green procurement policy.</li> </ul>
<b>Edmonton, AB</b>  “The Future of Waste: Edmonton’s 25-year Comprehensive Waste Management Strategy” (City of Edmonton, 2019) <sup>43</sup>	<ul style="list-style-type: none"> <li>• Diversion targets set at 90% across all sectors.</li> <li>• Focus on less contamination.</li> </ul>	<ul style="list-style-type: none"> <li>• Switch to measuring diversion in per capita waste generation.</li> <li>• More focus on activities at the top of the waste hierarchy (rethink/ redesign, reduce, reuse).</li> <li>• Zero waste to be achieved through circular economy lens.</li> </ul>	<ul style="list-style-type: none"> <li>• Restrictions on single-use plastics and other single-use disposables. (subject to council approval in 2020).</li> <li>• Considering a clear waste bag for residual waste.</li> <li>• Considering differential cart sizes and rate variability.</li> <li>• ICI recycling and organics separation.</li> </ul>

MUNICIPALITY WITHIN ALBERTA	PROGRAM GOALS AND TARGETS	NOTEWORTHY INNOVATION	PLANS FOR THE FUTURE
<b>Fort Saskatchewan, AB</b>  “Waste Services Public Engagement Survey – Final Report” (The City of Fort Saskatchewan, 2019) <sup>44</sup>	Goal of overall decrease in waste production.	Successfully implemented biweekly waste pick up (black cart), biweekly organics collection (green cart – weekly throughout the summer months), weekly recycling collection, extra yard waste (4 times/ year) and household hazardous wastes (HHW) through toxic roundup events.	<ul style="list-style-type: none"> <li>73% of residents believe the city should implement a single-use plastic policy.</li> </ul>
<b>Leduc, AB</b>  “GHG Reduction Action Plan 2020—2030” (City of Leduc, 2019) <sup>47</sup>  “City of Leduc Environmental Plan” (City of Leduc, 2012) <sup>45</sup>  “Environmental Progress Report” (City of Leduc, 2018) <sup>46</sup>	Environmental plan goals of; <ul style="list-style-type: none"> <li>65% residential diversion rate by 2021; and</li> <li>2018 diversion rate of 49%.</li> </ul>	<ul style="list-style-type: none"> <li>Waste management plans seen through the lens of greenhouse gas (GHG) reduction.               <ul style="list-style-type: none"> <li>Goal of reducing landfill methane emissions through a bio cover, and/or garbage baling.</li> </ul> </li> <li>Regular waste audits are conducted to understand waste streams, track and report progress annually.</li> </ul>	<ul style="list-style-type: none"> <li>Development of a waste reduction strategy for businesses and multifamily residential. Industrial, commercial, and institutional (ICI) organics diversion will be explored in 2026.</li> <li>Develop guidelines for zero waste events.</li> <li>Considering a variable cart size program in 2026.</li> <li>Considering a plastic bag reduction policy.</li> <li>Development of policies to increase C&amp;D waste.</li> </ul>
<b>Lethbridge, AB</b>  “Residential Waste Diversion Strategy” (City of Lethbridge, 2015) <sup>49</sup>  “Industrial, Commercial and Institutional Implementation Strategy” (City of Lethbridge, 2015) <sup>48</sup>	Waste diversion: <ul style="list-style-type: none"> <li>50% diversion by 2021; and</li> <li>65% by 2030.</li> <li>Curbside recycling introduced in 2018.</li> <li>Curbside organics coming in 2021.</li> <li>Reduce the current overall Lethbridge disposal rate of 1150 kg/capita to 600 kg/capita within the next 15 years, in order to align with the Province of Alberta’s 2015 target of 662 kg/capita.</li> </ul>	<ul style="list-style-type: none"> <li>Focus on creating fully costed waste disposal.</li> <li>Use of Community Based Social Marketing (CBSM) as a base for educational programs.</li> <li>Clearly defined roles between municipality, waste processor, and waste generator for collective responsibility.</li> </ul>	<ul style="list-style-type: none"> <li>Curbside organics collection to be introduced to residential program in 2021.</li> <li>Incremental increase of tipping fees for ICI sector to encourage diversion.</li> </ul>

MUNICIPALITY WITHIN ALBERTA	PROGRAM GOALS AND TARGETS	NOTEWORTHY INNOVATION	PLANS FOR THE FUTURE
<b>Red Deer, AB</b>  "Waste Management Master Plan" (City of Red Deer, 2013) <sup>51</sup>	Waste diversion targets: <ul style="list-style-type: none"> <li>• 2009 – 10%;</li> <li>• 2015 – 20%;</li> <li>• 2020 – 30%; and</li> <li>• 2035 – 50%.</li> </ul>	<ul style="list-style-type: none"> <li>• ICI waste reduction recognition program.</li> <li>• Community engagement through community based social marketing principles.</li> <li>• Successfully implemented public space recycling and zero waste public events.</li> <li>• Enhanced multifamily program through targeted educational campaign and in suite recycling containers.</li> </ul>	<ul style="list-style-type: none"> <li>• User pay program based on cart sizes are in the city's long term strategy.</li> <li>• Regulatory options being considered for the ICI and residential sector, including differential tipping fees, disposal bans, and mandatory source separation.</li> <li>• Expansion of C&amp;D program to include wood waste.</li> </ul>
<b>Spruce Grove, AB</b>  "Environmental Sustainability Action Plan" (2011) <sup>52</sup>  Energy Management Plan and Greenhouse Gas Reduction Strategy (2019) <sup>53</sup>  "City of Spruce Grove Residential Waste Audit" (2019) <sup>54</sup>	<ul style="list-style-type: none"> <li>• 60% organics diversion by 2020.</li> <li>• Per capita waste reduction from 200 kg to 150 kg by 2020.</li> </ul>	<ul style="list-style-type: none"> <li>• Collaboration with schools and community groups to help reach reduction goals.</li> <li>• Construction waste is collected at Spruce Grove Eco-station.</li> <li>• Regular waste audits to understand waste stream and target education programs.</li> </ul>	
<b>St. Albert, AB</b>  "Environmental Master Plan" (City of Spruce Grove, 2014) <sup>55</sup>	Reduce garbage to landfill to 105 kg/person/year by 2020. (2008 was 195 kg per person). <ul style="list-style-type: none"> <li>• Increase diversion rate to 75% by 2020.</li> </ul>	<ul style="list-style-type: none"> <li>• Successfully implemented weekly curbside recycling, biweekly garbage, seasonal organics collection, and HHHW through recycling depot.</li> <li>• Large item drop off, fall leaf collection, take it or leave it and shred it day.</li> <li>• Commercial recycling and organics collection is encouraged through public outreach.</li> <li>• Simplified pay-as-you-throw (PAYT) approach has been implemented, by providing three service level options.</li> </ul>	<ul style="list-style-type: none"> <li>• Single-use plastic reduction programming.</li> <li>• Increasing organics collection services (city facilities, events, elementary schools).</li> </ul>

MUNICIPALITY OUTSIDE ALBERTA	PROGRAM GOALS AND TARGETS	NOTEWORTHY INNOVATION	PLANS FOR THE FUTURE
<b>London, Ontario</b>  "A Waste Recycling Strategy for The City of London" (City of London, 2014) <sup>58</sup>  Residual Waste Disposal Strategy <sup>58</sup>	<ul style="list-style-type: none"> <li>60% waste diversion overall.</li> <li>Continuous improvements to maximize waste diversion.</li> </ul>	<ul style="list-style-type: none"> <li>Expanding blue box recycling program to include mixed polycoat items (ice cream containers, coffee cups, etc.).</li> <li>Ontario Extended Producer Responsibility policy &gt; residents have opportunities to recycle/take back products throughout the city (ex: lightbulbs, batteries, plastic bags, paint, electronics).</li> <li>Resource recovery of materials banned from collection and disposal (Example: scrap metal/wood).</li> </ul>	<ul style="list-style-type: none"> <li>Residual Waste Disposal Strategy coming in 2021.</li> <li>Looking into new and emerging technologies for waste management (anaerobic digestion, aerobic composting, refuse derived fuels, etc.).</li> </ul>
<b>Toronto, Ontario</b>  "City of Toronto Long Term Waste Strategy" (City of Toronto, 2016) <sup>56</sup>	<ul style="list-style-type: none"> <li>70% waste diversion achieved through:               <ul style="list-style-type: none"> <li>source reduction initiatives;</li> <li>reuse centers;</li> <li>switch to blue bins;</li> <li>addition of recyclable materials; and</li> <li>organics in multifamily residences.</li> </ul> </li> <li>Circular economy lens thinking.</li> </ul>	<ul style="list-style-type: none"> <li>Using regional partnerships to increase waste diversion.</li> <li>Residential waste limits at the curb: 3 units/household.</li> <li>Additional waste bags can be purchased (\$3/bag).</li> </ul>	<ul style="list-style-type: none"> <li>Development of an ICI waste program.</li> <li>Development of a standardized construction and demolition materials recovery plan (potential for a reuse program).</li> <li>Development of green procurement policy.</li> </ul>
<b>Boulder, Colorado</b>  "Zero Waste Strategic Plan" (City of Boulder, 2015) <sup>38</sup>	85% waste diversion in each sector by 2025. <ul style="list-style-type: none"> <li>Single family, multifamily, and commercial).</li> <li>Goals: measure per capita waste generation (lbs/person), greenhouse gas (GHG) emissions from waste disposal, and number of participants in zero waste programs.</li> </ul>	<ul style="list-style-type: none"> <li>Guiding investment principles, which prioritizes investments that strive to achieve multiple community goals.</li> <li>City run disposal site for construction and demolition waste.</li> <li>Multifamily housing education program.               <ul style="list-style-type: none"> <li>Zero waste education and assistance.</li> </ul> </li> <li>Door-to-door training is needed.</li> </ul>	<ul style="list-style-type: none"> <li>Innovative ICI plan that encourages businesses to provide recyclable or compostable takeout options.</li> <li>Volume based residential collection and embedded recycling (Pay As You Throw).</li> </ul>

MUNICIPALITY OUTSIDE ALBERTA	PROGRAM GOALS AND TARGETS	NOTEWORTHY INNOVATION	PLANS FOR THE FUTURE
<b>Vancouver, BC</b>  "Zero Waste 2040" (City of Vancouver, 2018) <sup>57</sup>	<ul style="list-style-type: none"> <li>80% by 2020.</li> <li>Zero waste by 2040.</li> <li>Primary objective to "eliminate the disposal of solid waste to landfill and incinerator by 2040.</li> </ul> Order of approach: <ul style="list-style-type: none"> <li>avoid and reduce;</li> <li>reuse; and</li> <li>recycle and energy recovery.</li> </ul> Note: big focus on changing attitudes (Example: normalizing reuse and repair).	<ul style="list-style-type: none"> <li>Zero waste plan aligns with Vancouver's "Greenest City Action Plan" (2011).</li> <li>BC EPR programs deal with paper and packaging, textiles, carpet, furniture and C&amp;D waste.</li> <li>Focus on circular lens thinking.               <ul style="list-style-type: none"> <li>◇ Growth in number of share, repair and reuse assets.</li> <li>◇ Growth in number of businesses pertaining to zero waste/circular economy.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Between 2020-2022 – ban foam cups/takeout containers, plastic straws, disposable utensils, disposable cups, plastic/paper bags.</li> <li>Plan to partner with local businesses to create a reusable container initiative.</li> <li>Development of green operations plan and zero waste procurement standard.</li> </ul>
<b>Halifax, Nova Scotia</b>  "Waste Resource Strategy Update" (Halifax Regional Municipality, 2013) <sup>59</sup>	Goals: <ul style="list-style-type: none"> <li>Reduce program costs through the implementation of service delivery efficiencies.</li> <li>Maximize the opportunity for program revenue generation from recovery of and/or processing of waste resource materials and increased diversion.</li> </ul> Diversion is measured in: <ul style="list-style-type: none"> <li>kg/person and total % diversion; and</li> <li>program cost per tonne of waste (in comparison to similar municipal operations).</li> </ul>	<ul style="list-style-type: none"> <li>Biweekly waste collection (opposite green cart).</li> <li>Limit of 6 bags (1 dark, remaining clear).</li> <li>1 bulky item allowed per collection (i.e. large appliance, mattress, etc.).</li> <li>Biweekly organics collection.</li> <li>Recycling bag 1 (non paper products), recycling bag 2 (paper products).</li> <li>HSW collected at depot, or through mobile events.</li> <li>Offer presentations to any community/school group.</li> <li>Utilize the master composter recycler program.</li> <li>Curbside giveaway weekend – during environment week in June and waste reduction week in October (giveaway map online).</li> </ul>	<ul style="list-style-type: none"> <li>Wasteless campaign is focused on single-use plastics production mainly through educational programs.</li> <li>Continuing use of diversion compliance officers to increase diversion rates and decrease contamination.</li> </ul>

# APPENDIX D

## SUMMARY OF SINGLE-USE PLASTICS RESEARCH

### **“A Vision for a Circular Plastics Economy in Canada – The benefits of plastics without the waste and how we get it right” (Smart Prosperity Institute – February 2019)<sup>35</sup>**

- Plastics circular economy would have three characteristics: renewable resins, the use of renewable energy to power each life cycle stage, and the recirculation of hydrocarbon molecules.
- Five barriers: economic disparities driven by direct production subsidies for fossil-based plastic, unpriced and unmitigated externalities, poor exchange of information, technological barriers, and existing policies and regulations that block the development of circular economy practices.
- Circularity will result from market evolution, not revolution. Focus on changes to behaviour and shifting cultural norms.
- What can we do?
  - ◇ Assign property rights for end-of-life plastic waste (EPR policy).
  - ◇ Set recycled content performance standards.
  - ◇ Create common definitions—performance standards, measurement and assessment protocols.
  - ◇ Prohibitions or bans to prevent the supply of certain plastic products.
  - ◇ Economic instruments—single-use plastic taxes or waste disposal levies.
  - ◇ Full cost pricing, including the cost of incineration of plastics as fuel.
- Circular economy outcomes with EPR policy for plastics.
  - ◇ Induces the creation of a reverse supply chain, and creates a large sustained supply of quality resins for recycling.

- ◇ Will address unpriced externalities by mitigating the discharge of plastic into the environment.
- ◇ Help overcome key information barriers: Producers/recyclers, regulators/producers and producers/consumers.
- ◇ Drive efforts to overcome technological barriers.

### **“Plastics Action Plan Policy Consultation Paper – Recycling Regulation Amendments, Ministry of Environment and Climate Change Strategy, Province of British Columbia.” (Smart Prosperity Institute – Sept 2019)<sup>9</sup>**

- Bans on single-use packaging. Recommendation: “We encourage a transparent, science-based approach to the identification of plastic packaging products for bans, building on existing global work around the definition of problematic and unnecessary single-use packaging.
- More recycling options. Recommendation: “We support expanding the B.C. Recycling regulation to include packaging like products and single-use items.
- Reducing plastic overall. Recommendation: “in addition to collaborating with the federal government to develop national performance standards, we recommend B.C. adopt procurement standards for recycled content in plastic products. This should also be incentivised across the B.C. public sector.”

## **“Economic Tools to Reduce Household Waste and Related Greenhouse Gas Emissions” (Smart Policy Institute – Apr 2018)<sup>23</sup>**

- Charges (or even bans) on single-use items have been successful in Canada for plastic bags and could be extended to other areas such as cups, polystyrene containers and plastic plates.
- Financial rewards for recycling atypical items such as batteries or e-waste are very successful.
- Using fewer materials in design and manufacturing is key, while changes in behaviour, business models, and process modification can lead to waste and cost savings in the upstream manufacturing, distribution and retail sectors, it is fundamental to prevent waste in the first place.
- Creating the right price signals in a key policy tool for encouraging producers and consumers to be more waste conscious.
- When it is no longer free to put out garbage, behaviour changes.
- Expand incentive-based mechanisms to other areas (Example: household batteries and e-waste).
  - ◇ Often seen through eco fees, or environmental handling charges.
  - ◇ Could also be coupons/free product on the return of a product.
- Tax breaks for reuse/refurbish. Example: Swedish government gives tax breaks on repaired items such as bicycles, clothes and shoes, cutting the value added tax (VAT) on these items in half.

# APPENDIX E

## SUMMARY OF CIRCULAR ECONOMY RESEARCH

### The Circularity Gap Report (Circle Economy, 2019)<sup>13</sup>

- The world is only 9% circular—the linear economy is no longer an option in today's resource constrained world.
- DISRUPT: Seven key elements of the circular economy.
  - ◇ D: design for future—adopt a systemic perspective to employ the right materials for the appropriate lifetime.
  - ◇ I: incorporate digital technology—track/optimize resource use and strengthen connections between supply chain.
  - ◇ S: sustain and preserve what's already there—maintain, repair and upgrade resources that already exist.
  - ◇ R: rethink the business model—consider opportunities to create greater value and align incentives through business models that build on the interactions between products and services.
  - ◇ U: use waste as a resource.
  - ◇ P: prioritize regenerative resources.
  - ◇ T: team up to create joint value—work together throughout the supply chain, internally within organisations and with the public sector to increase transparency and create shared value.
- "It is no longer enough to think of financial value as something created simply by turning extracted materials into products. Instead, the circular model sees the financial service value of existing assets being optimised and retained for as long as possible." (p. 14)
- Mass-value-carbon nexus.
  - ◇ **Profile 1:** Housing, mobility and consumables.

- » Together responsible for 66% of material footprint, 65% of carbon footprint, 48% of financial value.

- » Typical solutions—improving the utilization rate.

#### ◇ **Profile 2:** Nutrition.

- » Second largest material footprint: 20.1 billion tonnes.

- » Relies predominantly on organics—through photosynthesis it taps into potentially a completely renewable resource.

#### ◇ **Profile 3:** Services, health and communication.

- » High value activities that require significantly less material and have a lower carbon footprint per unit of value-added than other societal needs.

### 2020 Circular Communities Roadmap: Strathcona County (Recycling Council of Alberta, 2020)<sup>25</sup>

- According to the Ellen MacArthur Foundation, "the implementation of a Circular Economy vision could foster the emergence of:
  - ◇ thriving cities in which economic productivity increases through reduced congestion, eliminated waste, and reduced costs. New growth and business opportunities support skill development and jobs;
  - ◇ liveable cities with improved air quality, reduced pollution, and enhanced social interactions; and
  - ◇ resilient cities, reduce reliance on raw materials by keeping products in use and

balancing local production with global supply chains.”

- Mechanisms identified by workshop participants.
  - ◇ Modular and adaptable spaces, sharing networks and services, and monetary and policy incentives.
  - ◇ Fostering partnership in Strathcona County through collaboration with industry on waste reduction.
  - ◇ Communication to bridge the gap between urban and rural areas.
  - ◇ Education and awareness:
    - » greater systematic awareness;
    - » development of skills for citizens to make an impact at the individual level; and
    - » creating awareness about existing programs.

#### Focus areas:

- **Land use:** repurpose underutilized County land, multiuse buildings, remodeling residential densification, LEED building design standards, create more space for community sharing/renting, leverage high level of stewardship that exists on private lands.
- **Transportation:** subsidize county staff transit passes, electric vehicle charging station requirements, encouragement of alternate modes of transportation, car sharing programs, improvement of bike routes to access transit.
- **Economics:** provide more capital to fund innovative programs, have the municipality act as a lender, , incentives/tax breaks for circular business, implement user pay fees for waste disposal or other sustainable actions.
- **Policy:** reduce red tape that is required for private uses of underutilized public spaces, require permits for road parking, require large retailers to donate leftovers, model circular economy initiatives on ecological systems.

- **Communications:** use social media for circular economy themed community based social marketing, communicate increased accountability to residents by adopting circular economy practices.
- **Sharing economy:** creation of libraries for tools, sports equipment, camping equipment; room sharing services, network for sharing/ recovering food in the community, resource/ network map that can be accessed to see where opportunities exist.

#### Opportunities

Leveraging connections between unique urban and rural mix.

- Connect land and resources.
- Create diverse economies.
- Return biowaste to the start of the food chain in agricultural industry.
- Communication increased accountability to residents by adopting a Circular Economy.
- Leveraging the high degree of stewardship that currently exists on private lands.
- Advertising infrastructure and reducing red tape to use public spaces for events, classes, and workshops by the public.
- Moving policy direction forward and finding alignment within existing policy or making policy adjustments.

#### Challenges

- Finding a champion for a Circular Economy (eg. Council member) and someone dedicated to finding grants and resources (e.g., administration).
- Tendency to be risk-adverse and requiring a cultural shift.
- Heavy presence of environmentally damaging industries.
- Lack of economic diversity outside of core industries of agriculture and oil.
- Restrictive urban planning practices.

- Making the county more attractive for business.
- Underutilized land and space owned by the County.
- Lack of focus on youth population and their different expectations and values.

## London's Circular Economy Route Map<sup>21</sup>

Context and opportunities—themes which create the right conditions for a circular economy.

- **Communications:** the shared benefits need to be shared more widely amongst different sectors to ensure greater adoption. Collaborate and learn from demonstration projects.
- **Collaboration:** key to enabling the circular economy across the supply chain. Not collaborating is often the biggest roadblock in implementing principles of a circular economy.
- **Policy:** local authorities play a key role in the move to a more circular economy. Powers around housing, local plan development and implementation, economic development, waste management and well being.
- **Procurement and market development:** public sector procuring goods and services should challenge the markets to use new and innovative circular economy business models that are resource efficient and financially attractive.
- **Finance:** availability of affordable capital. Due to innovative nature of some circular economy business models, businesses often find it difficult to access traditional kinds of finance.
- **Business support:** provide specialist advisory services and support networks for businesses transitioning to a more circular business model.
- **Demonstration:** it is vital to capture

learnings from demonstrators, both positive and negative.

- **Innovation:** there is a real opportunity for companies to gain competitive advantage in the market by offering circular economy approaches over more traditional ways of doing business.

### Built Environment:

- Buildings designed for adaptability, with the intention that they can be disassembled at the end of their life.
- Buildings that use innovative products and technologies to be more circular.
- Buildings being re-used and refurbished instead of demolished.
- Buildings deconstructed to enable maximum material re-use.
- The use of innovative business models which enable both current, and new, buildings to be used more flexibly and therefore perform more efficiently.
- Durable infrastructure that can adapt over time.

### The Food Economy

- Prevention of food waste in the residential and business sector, and the redistribution of this surplus food to those in need or as animal feed.
- Where efforts higher in the waste hierarchy have been unsuccessful the best option is to be recycled, composted, or energy recovery.
- Beyond the waste hierarchy: food growth and urban farming create a more circular food system for the city.
  - ◇ Wasted food can be used as compost to nourish the local food.

### Textiles Waste

- Fibre recycling: build capacity of existing small scale fibre recycling operations
- Product as service: further value can be

created by retailers and manufacturers making more durable clothing and renting rather selling.

- Procurement: corporate wear and uniforms could be procured as a managed service rather than buying the products outright.
- Longevity: processing raw materials into finished products results in 1/3 of the waste and ¾ of the carbon and water footprint of the sector. Making clothes last longer reduces this impact significantly.

### Electricals

- Better value out of electrical equipment, creation of new jobs, reduction of resource and environmental impact.
- Build circularity into electricals design.
- Extending product life: development of repair economy, support for businesses that improve product lifespan.

### Plastics

- Be apart of larger partnerships to drive change in plastics production.
- Redesign and innovation plastic packaging in the food sector.
- Business and public sector procurement: drive the change to recyclable, reusable, or products with recycled content.
- Consumer behaviour changes: can be changed through bans/taxes or the provision/promotion of alternatives.
- Harmonization of plastic recycling: consistent messaging (communication and labelling).
- Encouragement for consumers to support organizations that procure circular products.

### Municipal Policy for the circular economy: Lesson's learned from Amsterdam<sup>14</sup>

- Knowledge instruments: develop and disseminate insights about the circular economy

through research.

- ◇ Establish a uniform definition of circularity for every value chain or product group (ex: focus on renovation and retrofitting instead of the broader building construction).
- ◇ Collect and manage data on the circular achievements of the city. Make it publicly available and actively engage with relevant institutions to set up collaborations.
- ◇ Act as an independent connecting party by establishing networks.
- ◇ Establish the municipality as a professional learning organisation by means of managing, monitoring and measuring to increase professionalism and support for circular initiatives.
- Circular public procurement: acquiring products or services with a view to optimally (re)use products, parts and materials during and at the end of their lifetime.
  - ◇ Ability to use purchasing power to create a market for circularity.
    - » Amsterdam assesses bids on: fair price, functional specifications, process criteria, entire life cycles.
  - ◇ Circular procurement creates long term relationships and creates new business models in order to make circular bids competitive with non-circular ones.
  - ◇ Organize internal training on circular procurement for all relevant stakeholders.
- Legislation: use of legal authority to require or prohibit circular practices.
  - ◇ Initiate small changes across the board and develop ownership for the municipalities circular ambitions in all departments.
  - ◇ Strengthen the conversation with national legislators where legal barriers emerge.
  - ◇ Compile a coherent agenda with a clear focus and ambitious goals for the more prominent circular value chains in the city.

- ◇ Integrate a common understanding of circularity into administrative standards to guide policy decisions.
- Spatial planning: divide and classify the physical environment in a way that promotes circular resource management.
  - ◇ Everything built today will determine boundary conditions of the built environment in coming decades.
    - » Set area specific priorities, provide clarity on stakeholder responsibilities, build in flexibility/adaptability for future demand, allow enough time to realise circular ambitions.
- Business Support: financial and non-financial supports to help businesses build capacity to transition to a circular model.
  - ◇ New financing instruments: change risk calculations to a circular business model.
  - ◇ Focus business support on impact and not process.
  - ◇ In kind support: training and courses on specific challenges in certain sectors, support entrepreneurs who are working in the circular business model.
- Triple bottom line targets.
  - ◇ **Economy**: will improve competitiveness of Finland and Finnish organizations. Circular economy solutions will become and export advantage.
  - ◇ **Environment**: improved resource efficiency, replacement of non-renewables with renewables and gain control of environmental impacts.
  - ◇ **Society**: circular economy taken into account when determining social actions. Can be achieved thorough PPP's to create a network to transfer to a service and sharing economy.
- Focus areas
  - ◇ A sustainable food system – brings together a wide range of different sectors and industries. Consumer choices will be more resource wise than at present and they will be promoted through public food services. Increased transparency when looking at emissions and resource consumption in food production.
  - ◇ Forest based loops – an area of expertise. Continually and constantly strive to increase the manufacturing and added values of products and services derived from the forest-based loop
  - ◇ Technical loop – principle is sustainable use of non-renewable natural resources, lengthening the product life cycle via maintenance, and determining how the waste produced during processing and manufacturing and the materials at end of life can be returned back to the loop.

### Leading the Cycle: Finnish road map to a circular economy 2016 – 2025<sup>29</sup>

- The goal and mindset are the starting point for the road map to make Finland a leading circular economy by 2025
  - ◇ Guiding principles provide direction: do ensure that society develops in the right direction
  - ◇ Focus areas: actions and pilots—actions related to administrative requirements and policy actions, key focus area projects and focus area pilots.
  - ◇ Continuous monitoring of systemic change—implementation model that focuses on results.

## **“The Circular Economy: Moving from theory to practice” – McKinsey Centre for Business and Environment. (October 2016)<sup>36</sup>**

- Sharing economy principle: “pay as needed to use durable goods, rather than buying them outright.”
- Restorative by design: “preserve and enhance natural capital by controlling finite stocks and balancing the flow of renewable resources.”
  - ◇ “Optimize resource yields by circulating products, components, and materials in use at the highest possible levels at all times.”
  - ◇ “Make the system more effective by eliminating negative externalities.”
- Key principle: decouple value creation from resource consumption.
- Can also create opportunities for economic and industrial renewal: shifting to the circular model could significantly contribute to growth, employment and environmental objectives.
- Key principle: “create initiatives at the international, national and city levels to facilitate the development of profitable circular business opportunities at scale.”
  - ◇ Share, optimize, loop goods, virtualize, exchange.
    - » Not all technological changes will reduce costs, but over time performance will be improved.
  - ◇ Create accessible value pools. Goal of capturing the value in waste flows.
    - » Aggregation – creates economic value, simply by putting separated goods together.
    - » “Recyclers or other downstream users of the waste must be comfortable enough with the numbers to invest.”
    - » “Transparency builds credibility with system suppliers and partners and facilitates government monitoring of environmental health and social outcomes.
- ◇ New plastics economy: from linear value chain to circular system.
  - » Improve the economics of plastic reuse and recycling > find ways of making plastic products that lower the need for virgin materials.
  - » Boost the value of after-use plastics > could be done through RFID tags.
  - » “A single set of standards for packaging materials and formats could reduce the variety of plastic packaging so more types become economically appealing to recyclers” (p.20).
  - » Voluntary pledges by manufacturers can help stimulate demand, as could mandates specifying that public agencies buy items made of recycled plastic.”
  - » Key action: “government officials need up-to-date tools, data, and insights related to plastics.” > set shared goals and standards.

# APPENDIX F

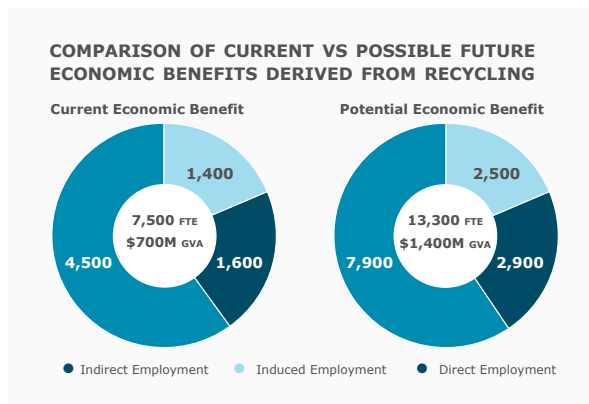
## PLANNING FOR THE FUTURE

### **“Quantifying the Economic Value of Alberta’s Recycling Programs: Now and Towards the Future” (September 2019)<sup>24</sup>**

- Goal of report: “understand the benefit of existing recycling programs but also identify the economic potential of diverting material that is currently going to landfill.”
- The information gathered through municipality surveys suggests that 75% of all households have access to curbside recycling services, and 44% to curbside organics diversion programs.
- Recycling in the ICI sector is primarily cardboard/boxboard, excluding municipalities which require businesses to have the same service as residential (Example: Calgary).
- Beverage container program is the highest performing and lowest cost in Canada.
- Programs for electronics, paint and tires also outperform the (interprovincial) average at a cost like or lower than the interprovincial average.
- It is estimated that a total of 1.2M tonnes of material was diverted for recycling in 2018, 320,000 tonnes more than the tonnage reported by Statistics Canada for 2016. That equates to over 260 kg per capita (p. vii).
- Report thesis: The study shows that although there is significant recycling activity in the province, specifically in the residential sector, significantly more can be done to increase the amount of material that is being captured through existing diversion programs and also to capture material currently being disposed of and re-introduce the material to the circular economy. Programs that aim to capture this material for recycling will lead to increased economic and environmental prosperity for Albertans.
- “Statistics Canada reports that over 4 M tonnes of waste (over 1.2 M tonnes from residential sources and 2.9 M tonnes from ICI and C&D sources) continues to be disposed of every year in Alberta, much of which could be recycled delivering additional economic benefits” (p. 57).
- Many factors will impact the future waste stream.
  - ◇ Design changes: electrical and electronic equipment are light weight and many products have converged together.
  - ◇ Purchasing changes: with an increase in online shopping there is a higher proportion of cardboard in the waste stream.
- Future recycling and economic potential.
  - ◇ High diversion practices of residential PPP—through provision of curbside services to >90% of population and drop off depots for the remainder.
    - » Can be done through mandating minimum service levels and recovery targets.
  - ◇ High diversion practice for household organics—43% of Albertan’s have access to curbside organics.
  - ◇ Industrial, commercial and institutional (ICI) organics—2.9 M tonnes of ICI and construction and demolition (C&D) waste disposed of annually for the last 10 years. This is a significant loss of valuable materials that could have been introduced into the circular economy. (This is an estimate based on trends from Calgary ICI study.) (p. 92).

- » In a 10-year strategy it is estimated that 155,000 tonnes of ICI organics and 495,000 tonnes of ICI packaging and other dry materials.
- ◇ Approximately 650,000 tonnes of C&D waste disposed in Alberta in 2010 (the last year for which the split out is available) it is reasonable to set a target to divert 300,000 tonnes/year of this C&D material annually by year ten of a ten-year strategy.
- ◇ Mattress disposal: no province has implemented a disposal ban; however, many municipalities have developed mattress recycling programs (ex: Airdrie, Edmonton, Metro Vancouver, etc.) potential of 1.8 kg/capita/year = 7000 tonnes in Alberta.
- ◇ Textile recycling – estimated Alberta diversion rate is 41% (based on city of Airdries 2018 audit – 2.6% textiles).
  - » Potential diversion is 16,900 tonnes (half of remaining textiles).
- ◇ Carpet: target of 40% carpet diversion in 10 years = 13290 tonnes/year.
- ◇ Furniture: an estimated 53,000 to 81,000 tonnes of furniture generated (this study used 67,500 tonnes, which is the average of the two estimates), and using Eunomia factors from the EU study, a recycling program for furniture in Alberta could lead to the following furniture diversion values by year ten of a ten-year implementation strategy.
  - » Reuse of 13,500 tonnes/year of furniture; Recycling of 25,000 tonnes/year of furniture.
- ◇ Agricultural Plastics: Recycling of grain bags and twine will start in fall 2019 through a pilot project. Assuming a 70% recovery rate over 10 years, a total of 7,210 tonnes/year of the following additional agricultural plastic could be diverted.
- 3,240 tonnes/year of film plastic; and 3,970 tonnes/year of non-film plastic.

- If these high diversion practice policies and programs are implemented in Alberta over a 10 year period a total of 2.4M tonnes of waste could be diverted for recycling increasing GVA to \$1,400M (a 104% increase from current activities). There would also be an increase of more than 76% in direct, indirect and induced jobs created, taking the total number of jobs attributed to the recycling sector to approximately 13,300 FTE jobs.
- Progress towards a circular economy: materials rather stay within Alberta and be used in remanufacturing products. The more material diverted for recycling the greater the potential for new processing and manufacturing facilities to be developed in Alberta (Figure 25.1).
  - ◇ It is estimated that 1 job could come from every 1000 tonnes remanufactured.
  - ◇ Focus on reuse and repair: economic benefits from repair and reuse additional to those created from recycling.



**Figure 25.1** | *Economic benefits of recycling*

## • Conclusion and recommendations

- ◇ Based on the limited data available, the ICI and C&D sectors appear to offer the most diversion opportunity and potential to create a significant increase in jobs and economic prosperity to Albertans.
- ◇ on estimated 1.2M tonnes of material is currently collected for recycling, and based

on the performance of high diversion practice programs in other jurisdictions, there is the potential to increase this to 2.4M which would result in a 105% increase in GDP and 76% increase in the number of direct, indirect and induced jobs.

- ◇ It is recommended that a process be put in place to require all organizations involved in the collection, transportation and processing of waste and recyclables to record and annually report key waste flow data that can be verified and used to update this study over time.

### **Extended Producer Responsibility for Residential Packaging and Paper Products – Alberta Collaborative Extended Producer Responsibility Study (ACES) (December 2019)<sup>18</sup>**

The Alberta Collaborative Extended Producer Responsibility Study (ACES) report provides baseline information about recycling programs in urban and rural Alberta municipalities, and the possible impacts to stakeholders of an EPR

regulatory framework in Alberta. The ACES report confirms that EPR can save taxpayer dollars, reduce waste, and attract jobs and investment to Alberta. Alberta municipalities spent approximately \$107 million in 2018 collecting and marketing 197,000 tonnes of packaging and paper products (PPP). With an EPR framework in place in Alberta, that cost would be partially or wholly shifted to producers.

Triple bottom line benefits were determined as part of the future state vision of EPR in Alberta. It is estimated that an additional 21,000 tonnes of PPP would be recycled, increasing the total tonnes recycled to 184,000 annually. It is also estimated that \$4.7 million of disposal and collection costs would be avoided, reducing costs of managing recycling programs. About 219 full-time equivalent (FTE) direct, indirect and induced jobs would be created, resulting in a total of 1,581 jobs as a result of recycling PPP through EPR in Alberta. Finally, an additional 71,900 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) emissions would be avoided, comparable to taking 15,000 passenger vehicles off the road annually.

# APPENDIX G

## USER PAY SYSTEMS / PAY-AS-YOU-THROW (PAYT)

BEST PRACTICES	LESSONS LEARNED
PAYT – EPA Toolkit (1998) <sup>12</sup>	
<ul style="list-style-type: none"> <li>• Set goals (etc: waste reduction, raise revenues, social equity).</li> <li>• Variable can program: resident billed for the size of cart they choose.</li> <li>• Weigh costs against revenues and adjust as needed.</li> </ul>	<ul style="list-style-type: none"> <li>• Keep community on board throughout the process and show them how PAYT will contribute to set goals.               <ul style="list-style-type: none"> <li>◊ Variable size cart program can have greater revenue stability, but can increase admin costs.</li> </ul> </li> </ul> <p><b>Challenges:</b> illegal dumping, multi-family, low income, revenue stability, hidden taxes.</p>
PAYT Workshop for RCA– Lisa A. Skumatz (Nov 2017) <sup>32</sup>	
<ul style="list-style-type: none"> <li>• Awards all diversion activities while giving the customers choice.</li> <li>• Carts by size: works best with automated system.</li> <li>• Optimal incentive levels (containers and dollars).</li> <li>• Make small containers available.</li> <li>• Clear education/information.</li> <li>• Enforcement/level the playing field.</li> <li>• Keep the rates simple—confusion around rates leads to resistance.</li> <li>• Do a pilot if possible.</li> </ul> <p><b>Multifamily:</b></p> <ul style="list-style-type: none"> <li>• Multi-family trash is paid for by volume.</li> <li>• Embedded recycling fees and/or multi-family recycling.</li> <li>• Extensive education required.</li> </ul> <p><b>Commercial:</b></p> <ul style="list-style-type: none"> <li>• Volume-based system.</li> <li>• Key is recycling embedded in trash rate.</li> <li>• Example programs: Seattle, Aspen.</li> </ul> <p><b>Overall:</b></p> <ul style="list-style-type: none"> <li>• Aggressive PAYT differentials—no more than 50% differential.</li> <li>• Mall trash option available (32 gallon or smaller).</li> <li>• Clear bills and good education.</li> </ul>	<ul style="list-style-type: none"> <li>• Development of an ICI waste program.</li> <li>• Development of a standardized construction and demolition materials recovery plan (potential for a reuse program).</li> <li>• Development of green procurement policy.</li> </ul>

BEST PRACTICES	LESSONS LEARNED
<p>Municipal Scan of Pay-as-You-Throw Practices (City of Calgary – Waste and Recycling Services (2018))<sup>15</sup></p> <p>Successful municipal programs:</p> <p><b>1. City of Coquitlam:</b> variable cart size program with automated collection and biweekly collection in 2014.</p> <ul style="list-style-type: none"> <li>• 120L, 240L and 260L cart options.</li> <li>• During rollout residents can change their cart size once for fee. \$50 charge for subsequent changes.</li> <li>• Still offer large item and yard waste collection.</li> <li>• Only charged for waste collection, not organics and recycling (due to EPR program).</li> <li>• Year 1—diversion increased 8%.</li> </ul> <p><b>2. City of Toronto:</b> PAYT program with variable waste and recycling cart sizes implemented in 2008.</p> <ul style="list-style-type: none"> <li>• Four garbage and recycling cart options (75L, 120L, 240L, 360L).</li> <li>• Residents are charged \$23.40 to change to a larger cart, but no fee for changing to a smaller size.</li> <li>• Also have a tag system for extra bags of garbage (extra recycling accepted free).</li> <li>• Weekly organics and biweekly waste/recycling.</li> </ul> <p><b>3. City of Vancouver:</b> variable cart program with automated collection.</p> <ul style="list-style-type: none"> <li>• Five sizes for garbage (75L, 120L, 120L, 240L and 360L) and four cart sizes for organics (120L, 180L, 240L and 360L).</li> <li>• Can switch one time per year for free and \$25 for additional.</li> <li>• Extra bags can be placed out with purchased tags.</li> </ul> <p><b>4. Region of Peel:</b> variable cart sizes and alternating biweekly garbage and recycling collection.</p> <ul style="list-style-type: none"> <li>• Three cart sizes (120L, 240L and 360L) for both garbage and recycling, while 100L carts are offered for food waste. The standard cart sizes offered are different for each type of residential dwelling: 360L is the standard for single family homes; 240L for semi-detached homes; and 120L for row/town homes.</li> <li>• Can change cart size for \$25.</li> <li>• Exemption periods for excess garbage.</li> <li>• Tags can be purchased for extra garbage.</li> </ul>	
	<p>“With The City moving to a customer-centric, service-based model, a PAYT program gives the customer flexibility in choosing the level of waste collection and disposal service they need from The City” (p.4).</p> <p>U.S. Examples:</p> <p><b>1. Grand Rapids, Michigan:</b> began PAYT in 1973—switched to a variable cart set out program in 2012.</p> <ul style="list-style-type: none"> <li>• Radio-frequency identification (RFID) tag links customer cart size to account.</li> <li>• Garbage (120L, 240L, 360L), two cart sizes for recycling (240L and 360L), while a 360L cart is offered for yard waste.</li> <li>• One swap per year, subsequent for \$15.</li> <li>• Excess garbage/yard waste can be put out with purchased tags.</li> <li>• Charged for garbage and yard waste collection, but not recycling.</li> <li>• Residents pay into an account and it is debited every time the carts are tipped (if account is empty it will not be tipped).</li> </ul> <p><b>2. Minneapolis, Minnesota:</b> PAYT since 1995.</p> <ul style="list-style-type: none"> <li>• Two options for garbage, (120L and 360L) and one standard size for organics depending on the number of dwelling units per property (120L for two dwelling units or less and 240L for more than two dwelling units).</li> <li>• Yard waste in paper bags or containers.</li> </ul> <p><b>3. Portland, Oregon:</b> uses private haulers—no public system. Haulers introduced PAYT in 1992.</p> <ul style="list-style-type: none"> <li>• Four cart sizes for garbage (75L, 130L, 230L and 340L) and one cart size for organics and recycling (230L)</li> <li>• Biweekly collection, and monthly collection for customers with the 130L cart.</li> <li>• After implementing biweekly collection initially reduced by 38%.</li> </ul> <p><b>4. San Francisco, California:</b> PAYT in 1989 with manual collection. Automated collection introduced in 1997.</p> <ul style="list-style-type: none"> <li>• Standard cart sizes for garbage (60L), recycling (240L) and organics (120L).</li> <li>• Three additional black cart sizes (120L, 240L and 360L), and two additional blue cart sizes (240L and 360L).</li> <li>• Excess trash premium charged in the 240/360L cart sizes.</li> </ul>

BEST PRACTICES	LESSONS LEARNED
City of Saskatoon – PAYT Fact Sheet <sup>17</sup>	
<p>“The PAYT Utility system is common across North America and is similar to how water and electricity are charged where households pay according to the amount of resources they use. Having costs increase with use encourages residents to reduce how much garbage they throw away and to recycle, reuse or compost more.</p> <p>Revenues from PAYT systems help communities pay for their waste and recycling programs, and often allow communities to enhance recycling or composting services, further encouraging residents to reduce their waste.”</p> <p><b>Background:</b> Saskatoon put together a whole program proposal, but council did not vote in favour in 2016. Looks like it was revisited in 2018, but no program updates have been made. Waste management program is funded through property taxes.</p>	<p>Five Advantages of PAYT:</p> <p><b>Fairness</b>— Residents pay only for the amount of garbage they generate. Households that generate less garbage – by reducing, recycling and composting— pay less than households that generate more.</p> <p><b>Control</b>— Residents get to choose how much service they need (like a bigger or smaller cart) and pay accordingly, while receiving a reward for waste reduction and diversion.</p> <p><b>Diversion</b>—As residents come to understand they can pay less for generating less garbage, they will be more likely to recycle, compost, and reuse.</p> <p><b>Economic Sustainability</b>—A PAYT Utility will generate the revenue needed to cover Saskatoon’s waste management costs for all programs including garbage, recycling and composting.</p> <p><b>Environmental Quality</b>—PAYT often leads to reduction and conservation. To save money residents can make day-to-day decisions on what to buy that considers how to reduce the amount of waste placed at the curb. These changes can also lead to reduced energy use and materials conservation.</p>
Strategies for increasing recycling and introducing user fees for trash (Pay as you throw/“Recycle & Save”) What Works in Multifamily Buildings? <sup>33</sup>	
<p>Best approaches to address barriers with multi-family residences.</p> <ul style="list-style-type: none"> <li>• Two tier rates or recycling credits. à charge less for trash for buildings that recycle.</li> <li>• Direct tenant bill incentives/rebates administrated through trash or through utilities bills tenants pay.</li> <li>• Hauler incentives.</li> <li>• Mandates like recycling plans, required space for recycling, etc.</li> </ul>	<p><b>Common Strategies:</b></p> <ul style="list-style-type: none"> <li>• Embedded fees: recycling services embedded in trash rates. With variable rates within the MF sector. No incentive to the household, so property managers save a lot of money by encouraging recycling.</li> <li>• Discounted recycling fees: reduced rates to incentivize participation.</li> <li>• Mandatory recycling: coupled with variable rates for multifamily trash. Varying levels of enforcement exist (fines or little to no enforcement).</li> <li>• Extensive education.</li> </ul>

BEST PRACTICES	LESSONS LEARNED
Pay-As-You-Throw/Variable Rates for Trash Collection: 2014 Update Volume 1 <sup>30</sup> Pay-As-You-Throw/Variable Rates/ Recycle & Save for Trash Collection Webinars and Community Assistance Volume 2 <sup>31</sup>	
<ul style="list-style-type: none"> <li>• Have convenient recycling available.</li> <li>• Have effective rate incentives “strong recycling is achieved with 80% extra charged for double the volume of trash service (ex: \$10/month for 32 gallons, \$18 for 64 gallons, \$26 for 96 gallons). Differentials below 50% do not change behaviour as substantially.”</li> <li>• Clear identification of educational responsibilities.</li> <li>• Reporting—helps track progress, address stalls, and compare program effectiveness after changes.</li> </ul>	<ul style="list-style-type: none"> <li>• Diverted tonnes: extensive studies show 17% diversion from the waste stream on program implementation (1/3 to recycling, 1/3 to organics, and 1/3 to source reduction), with 50%-plus increases in recycling tons.</li> <li>• Optimal impacts: impacts are much stronger with aggressive PAYT incentives. Differentials of about 80% for double the service (e.g. the cost difference between total fees associated with 64 and 32 gallons, with that dollar difference repeated for additional 32 gallon service levels) bring about the same incremental recycling as programs that double the cost for service.</li> <li>• Commercial and multi-family PAYT—embedding the cost of recycling is essential. The combination of incentive and access results in strong participation. “Some require a minimum 96 gallons of “free” (really, embedded) recycling service; others establish ratios of recycling service equal to 50%, 100% or 150% of the trash volumes.”</li> </ul> <p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>• Long term system costs are reduced.</li> <li>• Disposal savings—fewer disposal tipping fees.</li> <li>• 76% of those surveyed indicated a change in their purchasing decisions.</li> <li>• 90% of customers are pleased with the system after implementation.</li> </ul>

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