



2012-2022 Waste Management Strategy

5-Year Progress Report

November 16, 2016
City of Medicine Hat



Medicine Hat
The Gas City

Contents

Introduction: The Waste Management Strategy	4
Background	4
5-Year Progress Report.....	4
1997-2022: Setting the Path	5
2012-2017: 5-Year Progress Report Card.....	6
2005-2015: A 10-Year Trend.....	12
2017-2022: Moving Forward	15
Future Considerations: The City's Commitment.....	19

Did You Know?

100,000 tonnes of carbon credits have been generated from the composting program since 2012.

Introduction: The Waste Management Strategy

Background

The City of Medicine Hat (the City) developed the 2012-2022 Waste Management Strategy (WMS) to establish the framework for the sustainable and cost-effective management of the City's solid waste over a 10 year period. Built on past successes and momentum, the WMS outlines 23 specific strategies that consider the community's feedback on the costs and benefits of additional services. All strategies were developed based on three commonly accepted principles within the solid waste industry:



Industry R's

All strategies consider the most universally accepted solid waste management principles recognized as the industry R's: reduce, reuse, recycle, recovery, and then dispose.



Triple Bottom Line

To ensure sustainability of the City's Solid Waste Utility, all strategies consider the triple bottom line: maintaining the balance between economic, social, and environmental factors.



Diversion vs Cost

In contrast to the principle of diversion at all cost, the City has adopted a philosophy of reasonable diversion at reasonable cost based on preference within the community.

5-Year Progress Report

This 5-Year Progress Report serves as an opportunity to identify and build on successes, review existing strategies, and refresh the commitment to the path moving forward. The City has taken significant steps in diverting material from the landfill, but there is, and always will be, room for improvement.



1997-2022: Setting the Path

There is no defined path when it comes to the sustainable management of Medicine Hat's solid waste. Implemented strategies and initiatives are continuously shifting and improving based on community feedback and industry trends. Throughout the years, the City has been actively involved in improving waste management services, waste diversion initiatives, and optimizing landfill management. The City has passed several significant milestones in developing the path leading to where the Solid Waste Utility is today.

Launch of the City's waste diversion program and development of first Waste Management Strategy

1997

2005

Completed the Resident Satisfaction Survey

2009

Public consultation and implementation of the Ready to Roll auto-cart system

2012

Approval of the 10-Year Waste Management Strategy

2015

Completed the Resident Waste Management Survey

2017

5-Year Progress Report and Recommendations

2022

Conclusion of the current Waste Management Strategy

WE ARE
HERE!



Did You Know?

The City of Medicine Hat completes 1.2 million garbage collections each year.

5-Year Progress Report Card

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Ongoing

No strategy is ever complete, but is continually improving. "Ongoing" strategies include those that have been implemented with benefits being realized.

In Progress

Medicine Hat wasn't built in a day. "In Progress" strategies include those that may have multiple stages, need further review, or are pending approval before implementation.

On Hold

The right strategies need to be implemented at the right time. "On Hold" strategies include those to be considered in a future strategic planning period due to current economic, social, or environmental factors.



Medicine Hat
The Gas City

Waste Management Model Strategies			
Number	Strategy	Status	Update
1	Financial Revenue to Cost Ratio of 1	Ongoing	The full cost recovery funding model is incorporated into the City's annual budget to ensure continued financial sustainability of the Solid Waste Utility.
2	Waste to Energy	Up for Review: On Hold	The waste to energy model has been reviewed and has been deemed not economically viable at this time. Trends in technology and conversion by other Canadian municipalities will continue to be monitored for consideration in a future strategic planning period.
3	Waste Diversion Initiatives	Ongoing	The City has completed various waste diversion initiatives through partnerships with the Medicine Hat College, Grasslands Naturalists Society, and other local agencies.

Did You Know?
 Approximately 4,000 additional yard waste carts have been added since 2012, increasing the service to over 50% of the households in Medicine Hat.

Solid Waste Collection Strategies			
Number	Strategy	Status	Update
4	Residential Garbage Collection	Ongoing	The City's Solid Waste Utility currently completes 1.2 million automated cart collections each year. This service is continually refined and has seen improvements to the level of service and a reduction in the number of missed collection inquiries.
5	Residential Yard Waste Collection	Ongoing	Since 2012, residents have added approximately 4,000 yard waste carts through the City's voluntary yard waste collection program. Over 12,000 households are now participating in this voluntary program.
6	Commercial Collection Development Standard	In Progress	A minimum standard for an effective layout and screening for Industrial, Commercial, and Institutional (ICI) and multi-residential waste collection has been drafted for inclusion in the Municipal Servicing Standards Manual. Implementation of this strategy is awaiting further approval.
7	Downtown Core Commercial Waste Collection Service	On hold	Various downtown ICI stakeholders have been consulted to explore the use of the automated cart collection system. This strategy is not currently being pursued due to the limited interest identified during the consultation process.

Did You Know?
 An average of 9,000 tonnes of compostable material is diverted from the landfill each year.

Landfill Strategies			
Number	Strategy	Status	Update
8	Landfill Expansion Study	In Progress	The first phase of the landfill expansion study has been completed, identifying a potential extended capacity of 6 to 11 years through optimization of existing operations. A further economic assessment is planned for 2017.
9	Non-Hazardous Industrial Service	Ongoing	The Solid Waste Utility continues to offer a non-hazardous industrial cell service at the landfill and will assess the need to invest in future cells as demand requires.
10	Landfill Gas Study	In Progress	The first two phases of the landfill gas study have been completed. A further economic assessment is planned for 2017.
11	Alternate Daily Cover	Ongoing	The use of alternate daily cover (ADC) has significantly increased efficiencies within landfill operations. Multiple ADC systems have been added to reduce the use of limited on-site soil and minimize the amount of ADC required. Implemented systems include Iron Grizzly Plates, shredders, and compactors. Additional ADC systems are continuously assessed for implementation.
12	Pursue Market Tipping Fees	In Progress	The City has investigated the incremental implementation of a differential tipping fee structure. Various stakeholders within the community have been consulted to obtain feedback and create awareness. Implementation of this strategy is awaiting further approval.
13	Regional Landfill	In Progress	The Town of Redcliff and Cypress County have been consulted to consider regionalization opportunities for solid waste disposal services. A feasibility study is anticipated for 2017 following the further review of the landfill expansion study.

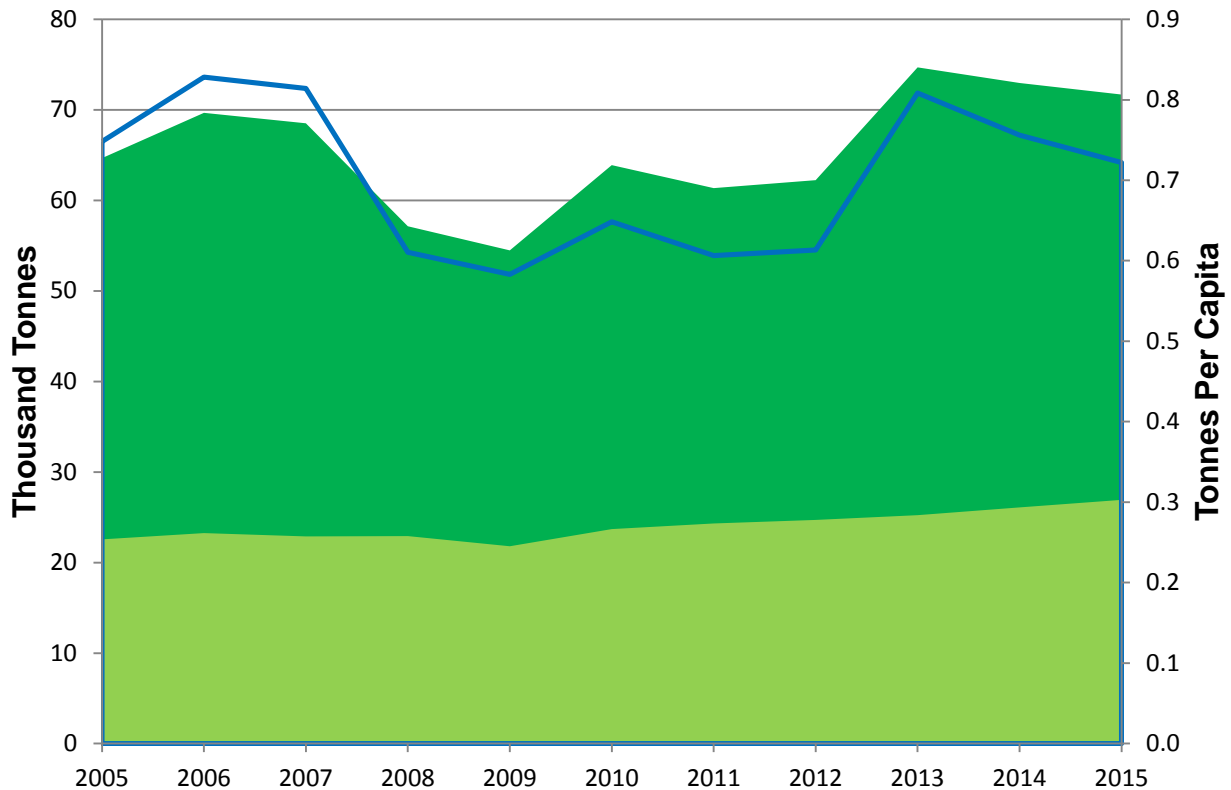
Compost Strategies			
Number	Strategy	Status	Update
14	Expand Biosolids Compost Service	On Hold	The City has consulted multiple municipalities to pursue the expansion of the biosolids compost service on a fee for service arrangement. This strategy has been placed on hold indefinitely due to the limited demand identified.
15	Food Waste Collection and Composting	Up for Review: On Hold	A City sponsored food waste collection and composting program, while environmentally and social desirable, has been deferred until a future strategic planning period due to the high costs of implementation versus limited public interest in this service. Technology improvements, investment costs, and operation costs will continue to be monitored for future consideration.

Did You Know?
 9 Compressed Natural Gas (CNG) trucks have been added to the collection fleet.

Waste Diversion Strategies			
Number	Strategy	Status	Update
16	Construction and Demolition Waste Diversion	In Progress	The City has consulted multiple Construction and Demolition (C&D) stakeholders to identify strategies to increase diversion. Pilot projects have been completed with interested parties.
17	Expand Commercial Sector Fiber Diversion	Ongoing	The City has consulted multiple ICI and multi-residential stakeholders to expand the current fiber diversion service and revenue stream. Pilot projects have been completed with interested parties.
18	Residential Curbside Collection Service	Up for Review: In Progress	A City has investigated and gathered public feedback on the implementation of a residential curbside collection service and is currently seeking proposals for implementation. Further review is pending.
19	Expand the Drop-Off Depot Service	Up for Review: On Hold	The City has identified and designed a location for an additional drop-off depot. This strategy has been placed on hold until further review of strategies 18 and 20.
20	Materials Recycling Facility Expansion	In Progress	The City has investigated the implementation of a regional materials recycling facility and is currently seeking proposals for implementation. Construction is anticipated for 2018 pending approval from City Council.
21	Plastic Bag Ban Bylaw	Up for Review: In Progress	The Youth Advisory Board completed a Shopping Bag Survey to gather public feedback on the thoughts and practices around plastic and reusable shopping bags. Further review of the survey results is needed.
22	Eco Center	Up for Review: On Hold	The City has deferred the consideration for an ECO Center to a future strategic planning period due to the associated cost. Residents are encouraged to continue using the ECO Center located at the landfill.
23	Other Waste Management Initiatives	Ongoing	Service enhancements and partnerships with local charitable and private sectors include ongoing work with REDI, 4H, Saamis Rotary Club, the Government of Alberta, and other groups.

2005-2015: A 10-Year Trend

The City continually monitors and reviews the progress of each strategy. In measuring progress, a 10-year trend has been developed to report on the overall success of the WMS. Analyzing this 10-year trend enables the continual improvement of strategies moving forward. Measuring the successes, failures, and limitations of past initiatives guides future decisions for the implementation of additional strategies. Medicine Hat's 10-year waste generation and diversion trend can be seen below.



Buried Material
Average increase of
702 tonnes/year

Diverted Material
Average increase of
436 tonnes/year

Waste Per Capita
Consistent at
0.7 tonnes per capita

This trend shows that the City has achieved an average diversion rate of 36% of the total waste generated. This percentage is consistent with the rate identified during the development of the WMS. Overall, the 10-year trend highlights that the initiatives currently in place are effective in maintaining the current rate. To achieve higher diversion rates, additional strategies and educational initiatives will need to be implemented.

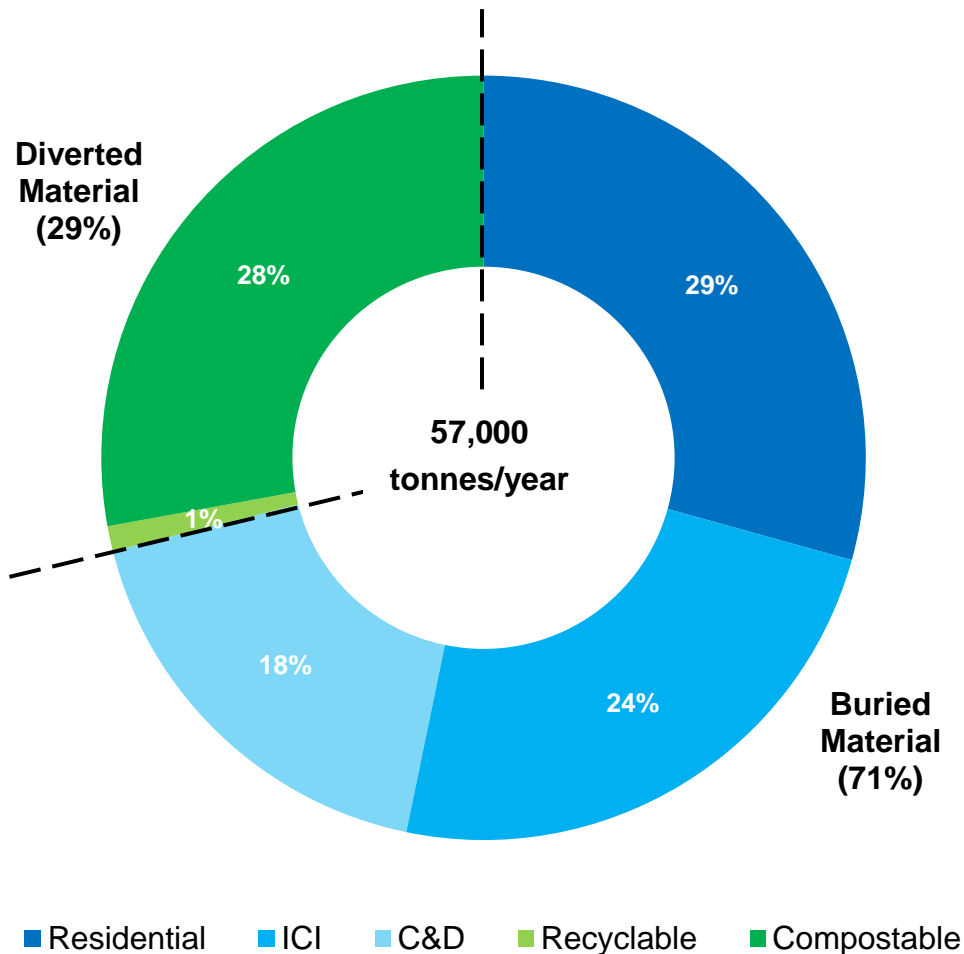
When reviewing this information, it is also important to note that waste generation is greatly influenced by outside factors. The economic slowdown of 2008 and 2009 is responsible for the significant drop identified over the corresponding years. A tighter economic environment means less disposable income and, consequently, fewer waste generating purchases and activities. Conversely, the spike noted in 2013 can be attributed to the flood followed by an overall improvement in economic conditions.

In addition to the overall trend, the City further characterizes the waste entering the landfill through waste audits and standard operating procedures. This material can be separated into 23 waste streams, falling into one of five categories:

The infographic consists of five horizontal bars, each with a unique icon and color. From top to bottom: 1. A dark blue bar with a house and trash can icon, labeled 'Residential Municipal Solid Waste'. 2. A medium blue bar with a factory icon, labeled 'ICI Industrial, Commercial, and Institutional Waste'. 3. A light blue bar with a construction crane icon, labeled 'C&D Construction and Demolition Waste'. 4. A light green bar with a laptop and tire icon, labeled 'Recyclable Metals, E-waste, Household Hazardous Waste, Used Motor Oil, and Tires'. 5. A dark green bar with a plant growing from soil icon, labeled 'Compostable Biosolids, Yard Waste, and Clean Wood'.

- Residential**
Municipal Solid Waste
- ICI**
Industrial, Commercial,
and Institutional Waste
- C&D**
Construction and Demolition Waste
- Recyclable**
Metals, E-waste, Household Hazardous
Waste, Used Motor Oil, and Tires
- Compostable**
Biosolids, Yard Waste, and Clean Wood

The following summary of each of the identified category entering the landfill has been developed based on data collected over the last 10 years.



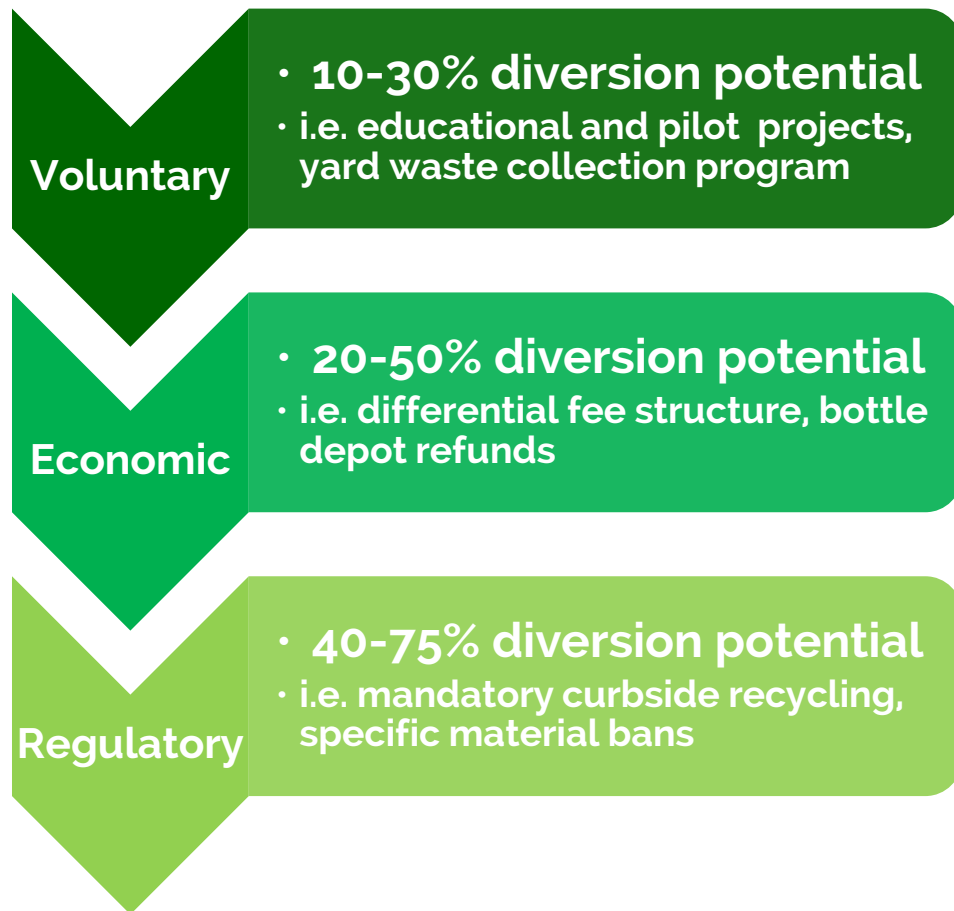
It is important to note that a portion of the 36% of material diverted through City initiatives is removed before reaching the landfill. This figure shows that, of the material entering the landfill, 29% is diverted for beneficial reuse and 71% is buried. Like the diversion rate, these numbers are also consistent with those identified when developing the baseline used for the WMS.

When considering implementation of future strategies, the City will focus on minimizing the amount of divertible material that is continued to be buried at the landfill. A further analysis of the Residential, ICI, and C&D waste streams is provided in the subsequent section.

2017-2022: Moving Forward

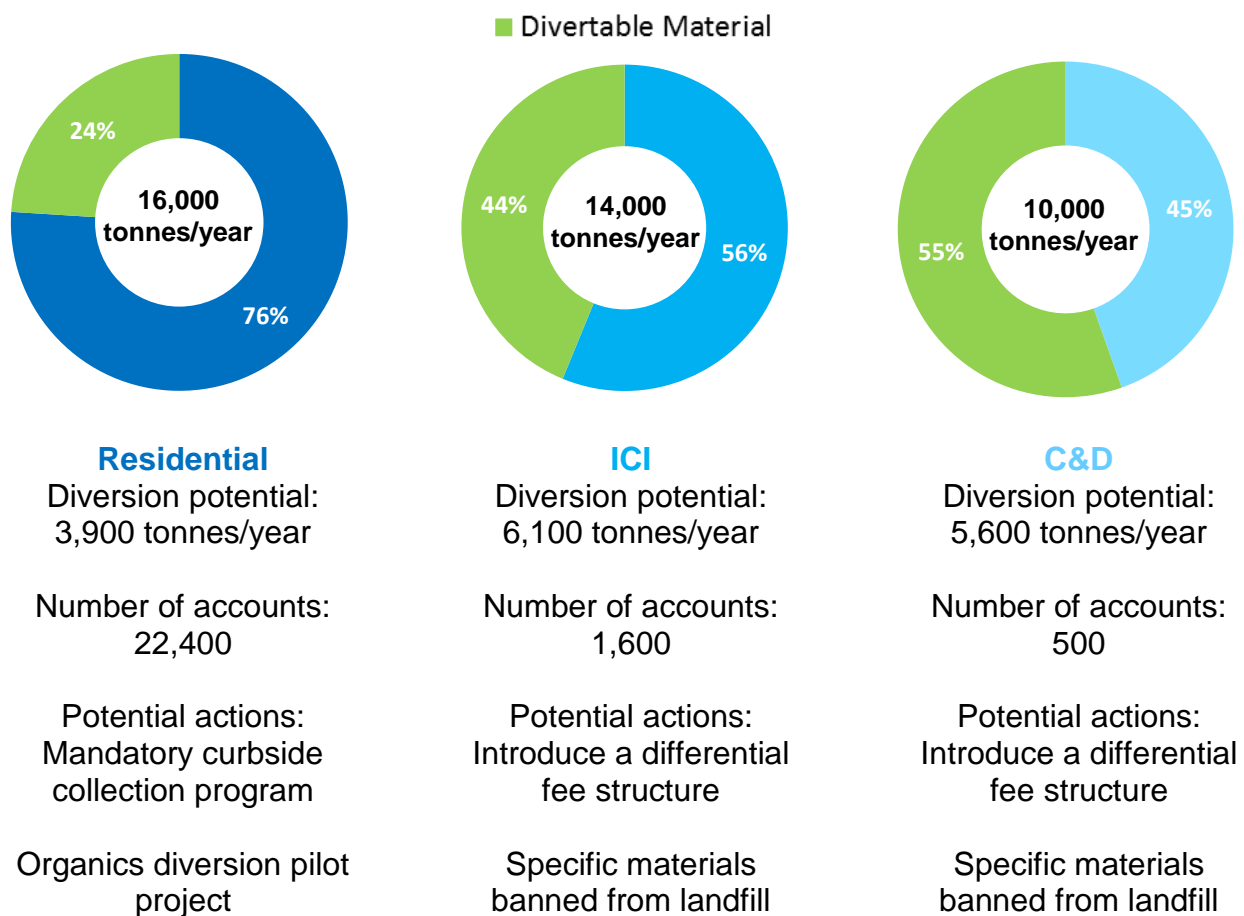
While the City has maintained a consistent and respectable diversion rate of 36%, results from the 2015 Residential Waste Management Survey suggest that 82% of residents within Medicine Hat would like to see some level of improvement. However, the City's 10-year trend demonstrates that the maximum potential diversion has been realized for all strategies currently in place. In order to see improvements new strategies and initiatives must be implemented.

The majority of the City's waste diversion strategies are voluntary-based. Trends throughout the industry suggest that additional economic and regulatory initiatives are now needed to see further improvements. The following provides a breakdown of the diversion potential expected for each type of initiative based on industry trends.



While these three categories exist as a hierarchy, the City is not limited to pursuing one before another. All opportunities need to be assessed to determine the best options for Medicine Hat moving forward. The best interests of residents shall always be considered when pursuing further economic and regulatory initiatives.

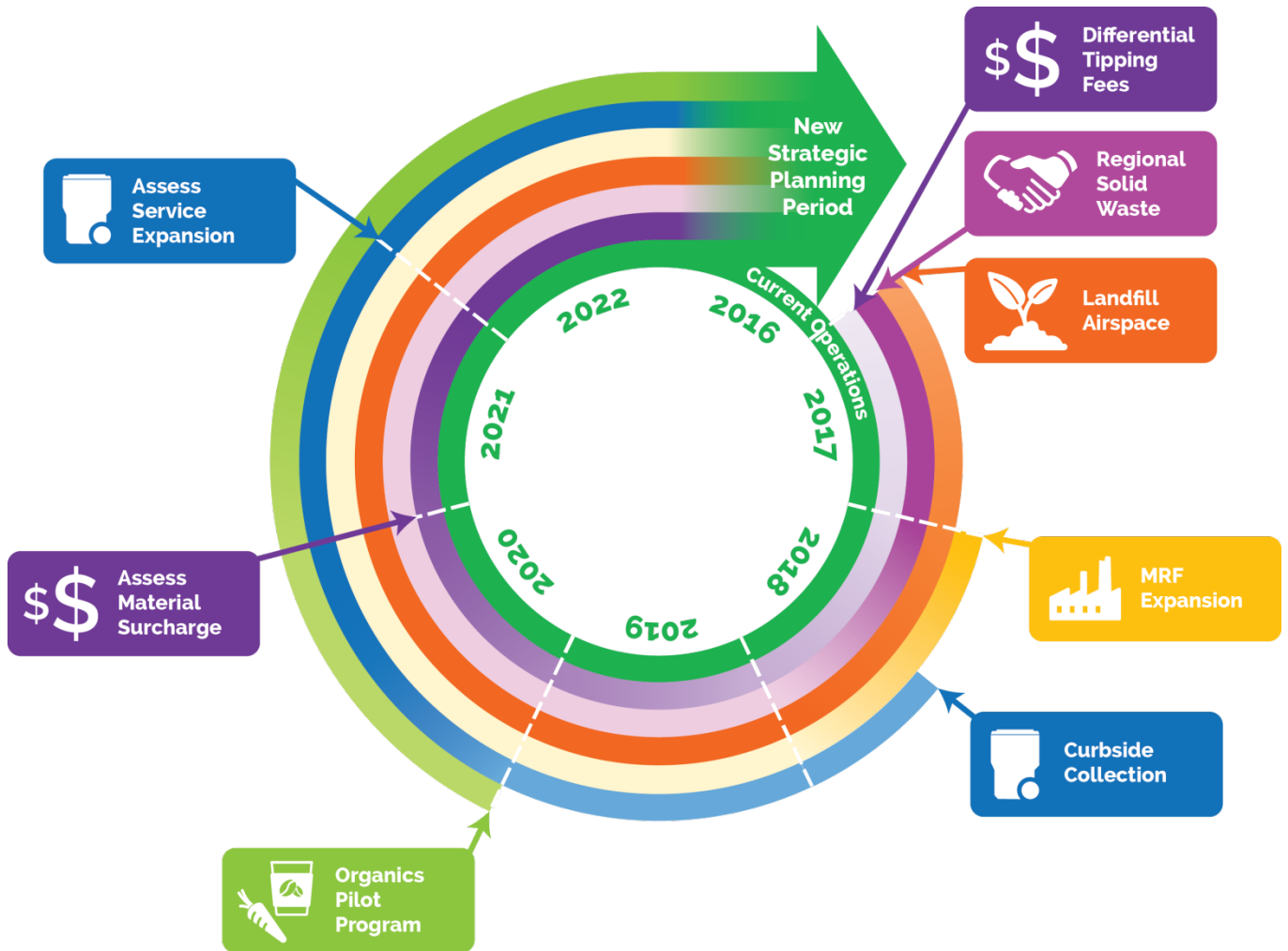
Potential opportunities for further improvements can be identified by taking a closer look at the three categories accounting for 71% of waste continuing to be buried at the landfill. Further analysis of Residential, ICI, and C&D waste streams has allowed the City to identify the amount of waste from each sector that could easily be diverted from the landfill through new initiatives. The following provides an overview of each sector.



While the Residential sector accounts for the largest amount of waste entering the landfill, it has the smallest diversion potential of the three identified above. From this information, it is apparent that significant material diversion can be achieved by targeting the ICI and C&D sectors. Potential actions being considered by the City for each sector have been included above. These strategies have been identified as the best options to achieve a higher diversion rate while considering the feedback of stakeholders and residents within Medicine Hat.

Before moving forward with the identified potential actions, it is vital that the City consider expansion the existing Materials Recycling Facility (MRF). An expansion in the overall capacity and processing ability of the MRF will greatly increase the anticipated diversion rate for multiple strategies being considered. In turn, this will increase the overall feasibility of implementing each corresponding strategy.

After reviewing the progress made in the five years following the implementation of the WMS, the next step is for the City to identify a path for the next five years. The trends and opportunities identified throughout the 5-Year Progress Report have been considered and incorporated into the plan for implementing strategies through the conclusion of the current WMS. The following provides a proposed timeline and description of potential actions to be implemented through 2022 subject to City Council approval.





Current Operations

The City has achieved a diversion rate of 36% through the strategies and initiatives currently being implemented. This rate serves as the baseline when considering the additional increases expected with each potential strategy implemented through 2022.



Differential Tipping Fees

The proposed introduction of differential tipping fees for 2017 should result in a gradual increase in the overall diversion rate while providing economic incentives to landfill customers to source-separate their waste. Differential tipping fees create an economic incentive by offering a lower rate for source separated divertible material when entering the landfill. The incentive to separate designated materials from the incoming waste stream will increase as that difference between the two rates continues to grow. That stage of the economic incentive will require the City to assess the need to pursue additional economic incentives such as a surcharge for waste loads containing designated materials that can or should be diverted.

Overtime, this strategy of introducing economic incentives is anticipated to result in an increase of 5% to 20% of the City's overall diversion rate.



Regionalization of Solid Waste Services

In 2017, Cypress County, the Town of Redcliff, and the City of Medicine Hat will engage a consulting team to study the benefits, risks, sustainability, and governance models to provide regional solid waste services. Results from this study will be brought forward to City Council for their information and future consideration.



Landfill Airspace Conservation

After years of planning and review, several projects and processes will be implemented in 2017 to improve the sustainability of programs at the landfill, and to preserve valuable airspace. For instance, the implementation of an improved compost pad will enable more organic materials to be diverted from the landfill. Proposed efficiencies will extend the expected life of the landfill.



Expansion of the MRF

The proposed expansion of the MRF for 2018 is a crucial step in the success of the WMS. Expanding the MRF's capacity and operations is key to the implementation of future strategies that involve co-mingled, or mixed, waste streams.



Curbside Collection Roll-Out

In 2017, staff will bring forward for City Council consideration a proposal for the processing of recyclable materials and implementation of the curbside collection of residential recyclables. The proposed roll-out of a mandated residential curbside collection program for 2018 creates a regulatory incentive for residents to divert recyclable material from the waste stream. This program can be further expanded to accept additional materials based on markets and processing permits. The need for an expansion in services will be continually assessed following the implementation of this strategy.

This strategy has the potential to increase the amount of materials diverted from the landfill, and significantly increase the awareness of the City's diversion programs while enhancing the current service levels experienced by our residential customers. As this strategy matures, it is anticipated to result in an increase of 5% to 10% of the City's overall diversion rate.



Organics Pilot Program

Following the implementation of the other strategies, organics will account for the largest amount of remaining divertible material by volume, weight, and carbon dioxide footprint. In order to divert this material, the City will need to implement an organics collection program. The proposed organics pilot program for 2020 will create an incentive for residents and businesses to divert organic material from the waste stream. Moreover, it will allow the City the opportunity to determine the overall feasibility prior to expanding organic diversion to all waste generators.

Did You Know?

Since 2012, the number of waste scans completed each year has increased by 4 times.

The City's Commitment

The City places a high value on creating and sustaining a healthy natural environment and recognizes its commitment to protect and enhance the environment. This commitment has been demonstrated through the City's active involvement in improving waste management services, waste diversion initiatives, and optimizing landfill management since 1997. Regardless of the specific path chosen moving forward, the City recognizes the need to ensure sustainable solid waste management. The City's role will continue to set the direction and bring credibility to waste diversion initiatives.

Strategies pursued through the conclusion of the current WMS in 2022 will continue to support this ongoing commitment. The City will focus on providing excellent service to customers while continually monitoring and improving operations based on best practices, sustainability, and affordability. The City will structure strategies and programs in a way that is economically viable for residents and industry to participate in and allocate resources. Industrial and government successes, as well as community feedback, will continue to be employed to determine the best opportunities for improvement within Medicine Hat.

When entering the new strategic planning period in 2022 and beyond, the City will reflect upon its successes, failures, and opportunities to develop a new strategy moving forward. This new strategic plan will incorporate a renewed commitment to sustainable solid waste management and will outline new waste diversion goals based on the opportunities within Medicine Hat and new trends within the solid waste industry.