

# UPDATE: RESIDENTIAL WASTE DIVERSION STRATEGY

OCTOBER 7, 2019



CITY OF  
*Lethbridge*

Waste and Recycling Services

# EXECUTIVE SUMMARY

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MARCH 2015

Official Business Resolutions:

- Waste Diversion
- Blue Bin Consultant

NOVEMBER 2015

## Residential Waste Diversion Strategy

The Residential Waste Diversion Strategy was approved November 28, 2016 to include the following:

- Approval of the Residential Waste Diversion Strategy
- Implementation of a curbside recycling pilot set to start in spring 2018
- Full implementation of biweekly residential curbside collection of recyclables in 2019
- Change from weekly to biweekly residential curbside collection of garbage in 2019
- Following the introduction of a blue cart program in 2019, administration to prepare an implementation plan for the residential curbside collection of organics
- Project creation for the 2018-2027 Capital Improvement Program for the design and construction of a Materials Recovery Facility
- Project creation for the 2018-2027 Capital Improvement Program for the collection equipment for the blue cart program
- Progress report on blue cart program implementation

Waste and Recycling Services have prepared an implementation plan for a residential Curbside Organics Program. This program is directed at achieving the diversion targets set in the approved Waste Diversion Policy. It is a key next step following implementation of the residential Blue Cart Curbside Recycling Program.

Baseline residential curbside waste audits conducted in 2019 estimated the potential amount of organic material that could be diverted through a Curbside Organics Program. Audit results indicate that 57% of materials currently landfilled through black cart material could be diverted and recovered through an organic treatment system. Organic waste diversion will increase Lethbridge's residential diversion rate to 50% in 2021, compared with the current 35% rate.

Program benefits include reduced landfill greenhouse gas and leachate emissions, increase landfill air space availability and provide another option for residential food waste management. The program is proposed to complement the current biweekly garbage and recycling curbside collection programs. However, Curbside Organics collections is proposed to offer weekly curbside service during the summer months and biweekly curbside collection in the winter. This seasonal approach considers the seasonal variation of yard waste material and addresses the potential odour and "yuck factor" issues that others have observed during the warm season.



# PLANS & POLICIES

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With the approval of the Residential Waste Diversion Strategy, the City of Lethbridge is in alignment with City Council, regional and provincial policies and aligns with resource conservation and waste diversion goals.

## SUPPORTING PLANS

This strategy is in direct alignment with **City Council's 2017-2021 Strategic Plan** community vision. That vision states that we will continue to work toward a City that demonstrates active leadership in environmental stewardship and innovation. Furthermore, we will be recognized as being a safe, healthy, vibrant, prosperous, economically viable place where all people can fully participate in community life.

Further support is found in the **City of Lethbridge Integrated Community Sustainability Plan/ Municipal Development Plan**, which seeks to minimize Lethbridge's ecological footprint. The policy encourages efficient use of resources and exploring methods to reduce, reuse and recycle materials currently being landfilled. The approach also aligns with the **South Saskatchewan Regional Plan**, by adopting a triple bottom line approach to conservation and protection of natural resources and the environment.

The Residential Waste Diversion Strategy supports **Waste and Recycling Services' 2019-2022 Business Plan**. That plan identified the need for a Curbside Organics Program to achieve 2021 diversion targets. The resulting program will provide processing solutions for the business sector, extend the life of the landfill and reduce waste related to long term environmental liability.

The strategy also aligns with the **City of Lethbridge Comprehensive Waste Diversion/Waste Prevention Master Plan**. That plan identified a curbside organics collections program as the recommended best practice for diverting food and yard waste from the landfill.

Lastly, this strategy adopts the **Alberta Government's Too Good to Waste: Making Conservation a Priority Plan**. That plan is intended to act as Alberta's road map for waste reduction. It recognizes reducing organic loading to landfills will reduce greenhouse gas generation and supports **Alberta's Climate Change Strategy**.



## GUIDING POLICIES

The proposed approach supports City Council's **Environmental Policy** (#CC51) that states the City is committed to taking a responsible leadership role in managing natural resources. The intent of the policy is to minimize Lethbridge's ecological footprint.

The strategy also supports City Council's **Waste Diversion Policy** (#CC54), approved July 20, 2015, which incorporated the waste management hierarchy of reduce, reuse, recycle to guide future diversion programs. The policy contains diversion goals for the residential sector of 50% waste diversion in 2021 and 65% in 2030.

### WASTE DIVERSION POLICY STATEMENTS:

- Protect and conserve resources
- Utilize resources efficiently to their fullest extent
- Maximize diversion and reduce per capita waste disposal
- Mitigate the long term liability of landfill sites
- Increase public awareness of environmental issues and resource conservation
- Engage citizens and meet customer expectation in the design and delivery of programs



# CURRENT PROGRAM STATUS

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MATERIAL	PROGRAMS	PROGRAM SUPPORT
<b>GARBAGE</b> 250 KG/CAPITA*	<ul style="list-style-type: none"> <li>• Biweekly Automated Curbside Garbage Collection</li> <li>• Large Item Service</li> <li>• Clean Community Programs</li> <li>• Demolition Bin Rentals</li> <li>• Free Saturday Disposal Program</li> </ul>	<ul style="list-style-type: none"> <li>• Litter Clean Up &amp; Prevention</li> <li>• Waste Reduction Promotion</li> <li>• Waste and Recycling Centre/Landfill Tours</li> <li>• Pickup Hiccup Service Support</li> </ul>
<b>RECYCLING</b> 75 KG/CAPITA*	<ul style="list-style-type: none"> <li>• Biweekly Automated Curbside Recycling Collection</li> <li>• Centralized Recycling Stations</li> <li>• Electronics Recycling</li> <li>• Hazardous Waste, Paint and Oil Safe Disposal Programs</li> <li>• Batteries, Scrap Metal, and Tire Recycling</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Wizard Search Engine</li> <li>• Online Schedule Reminders</li> <li>• Reduction and Reuse Promotion</li> <li>• Materials Recovery Facility Site Tours</li> <li>• Curbside Recycling Newsletters</li> <li>• Cart Checks for Contamination</li> </ul>
<b>ORGANICS</b> 30 KG/CAPITA*	<ul style="list-style-type: none"> <li>• Centralized Yard Waste Sites</li> <li>• Seasonal Curbside Leaf Collection</li> <li>• Seasonal Christmas Tree Collection</li> </ul>	<ul style="list-style-type: none"> <li>• Grasscycling Promotion</li> <li>• Backyard Composting Promotion</li> <li>• Composting Presentations and Outreach</li> </ul>

\*kg/capita rates are calculated by yearly trends and the first three months of curbside recycling



# WHAT WE HAVE FOUND

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## WASTE CART AUDITS

An audit of Lethbridge residential black carts was conducted after the Curbside Recycling Program was implemented. As previously mentioned, discarded food and yard waste represent a significant proportion of residential waste. In fact, that audit found that approximately 57% of material sorted and weighed from black carts was organic material. Research shows that this is not uncommon, as similar audit results are found in similar Canadian communities. This data supports the implementation of an organics diversion program in Lethbridge. That research also demonstrates a need to provide a convenient collection program to obtain satisfactory customer participation.



Black cart waste audit results after  
Curbside Recycling implementation (2019)



# WHAT WE WANT TO ACHIEVE

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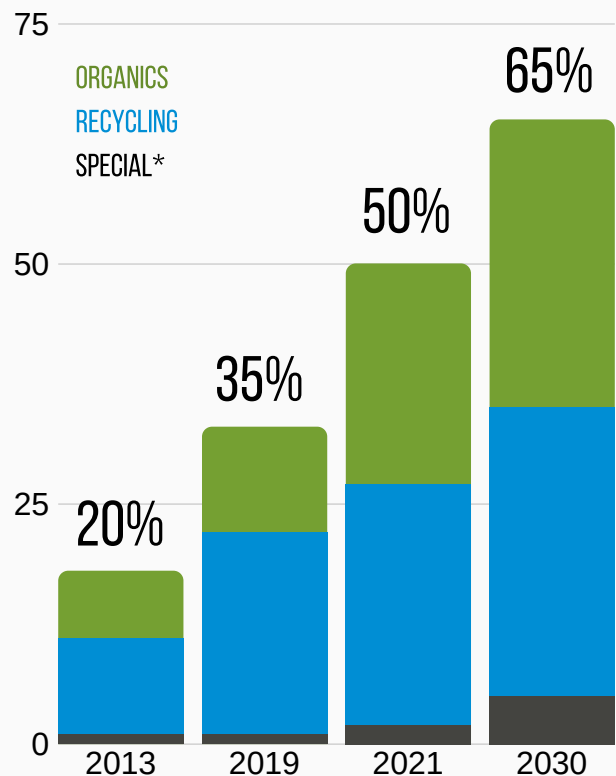
## WASTE DIVERSION POLICY TARGETS

Waste Diversion targets were first introduced in the Waste Diversion Policy to allow on-going performance measurement. Targets in the residential sector are measured by calculating the mass of diverted waste relative to the mass of waste generated. Performance is monitored by evaluating actual diversion rates relative to the Waste Diversion Policy targets.

The Residential Waste Diversion Strategy advocates attaining these goals through implementation of programs that effectively increase waste diversion. When the Residential Waste Diversion Strategy was presented, the residential waste diversion rate was 20%. The introduction of the Curbside Recycling Program resulted in an increased residential waste diversion rate of 35%. To reach the 50% target by 2021, a Curbside Organics Program must be implemented. Research on the experience of other similar jurisdictions show that integrating convenience will maximize customer participation and program effectiveness. Curbside collection is most common method of introducing that convenience factor.

Waste Diversion Policy goals for the residential sector:

- 50% waste diversion by 2021
- 65% waste diversion by 2030



\*Special material includes batteries, paint, tires and electronics

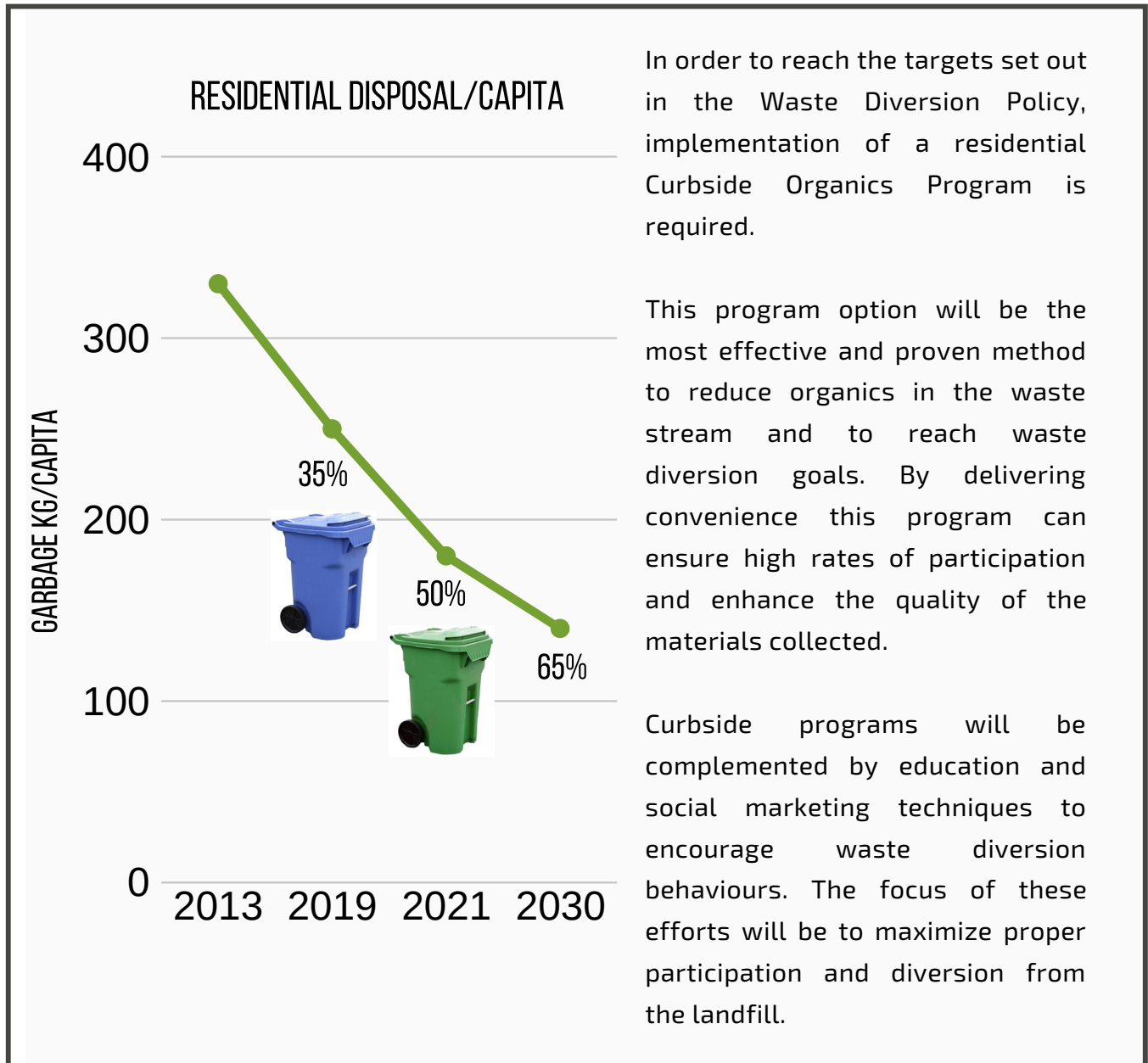




# HOW WE WILL ACHIEVE THE TARGETS

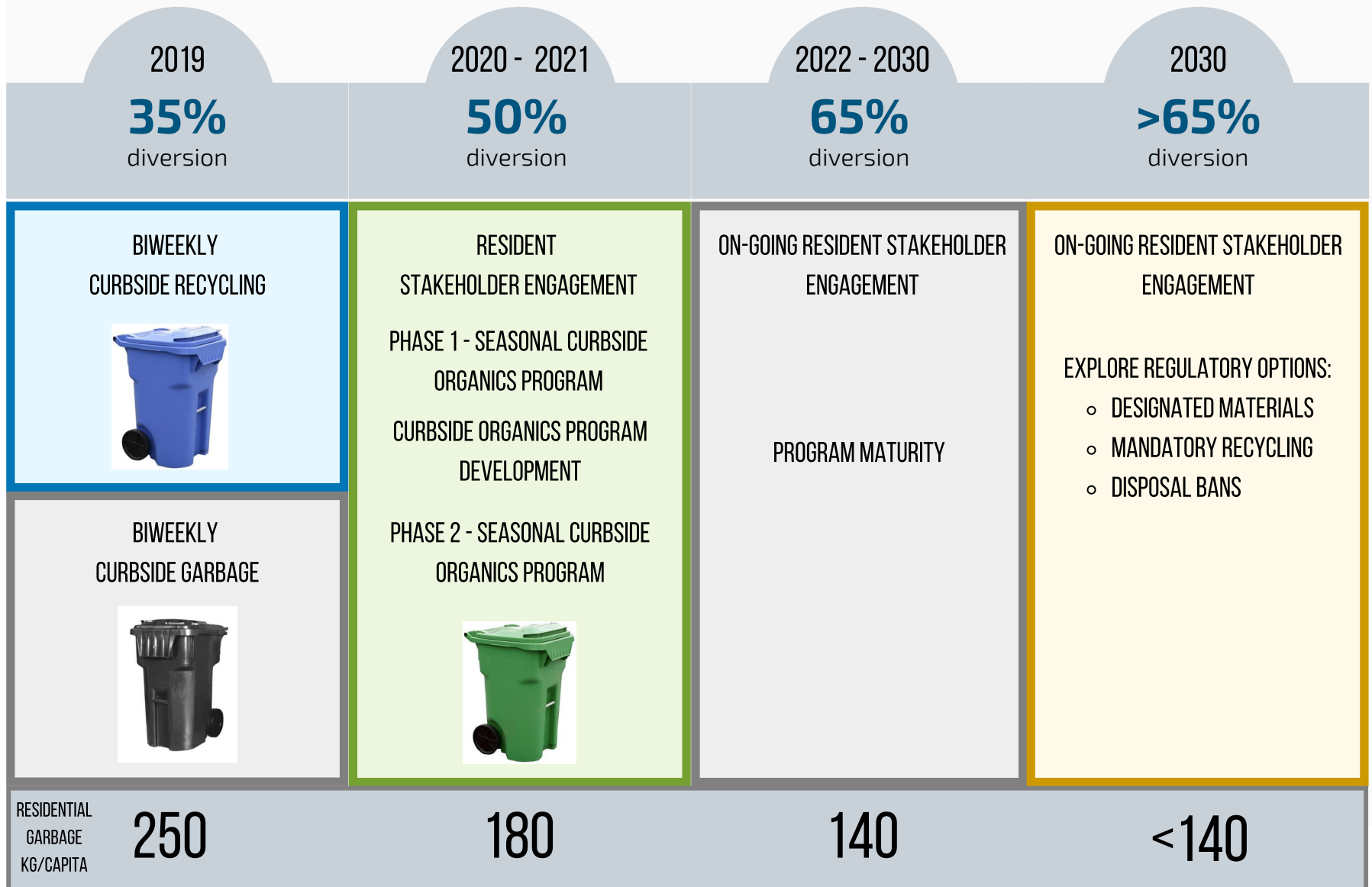
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## CURBSIDE ORGANICS PROGRAM





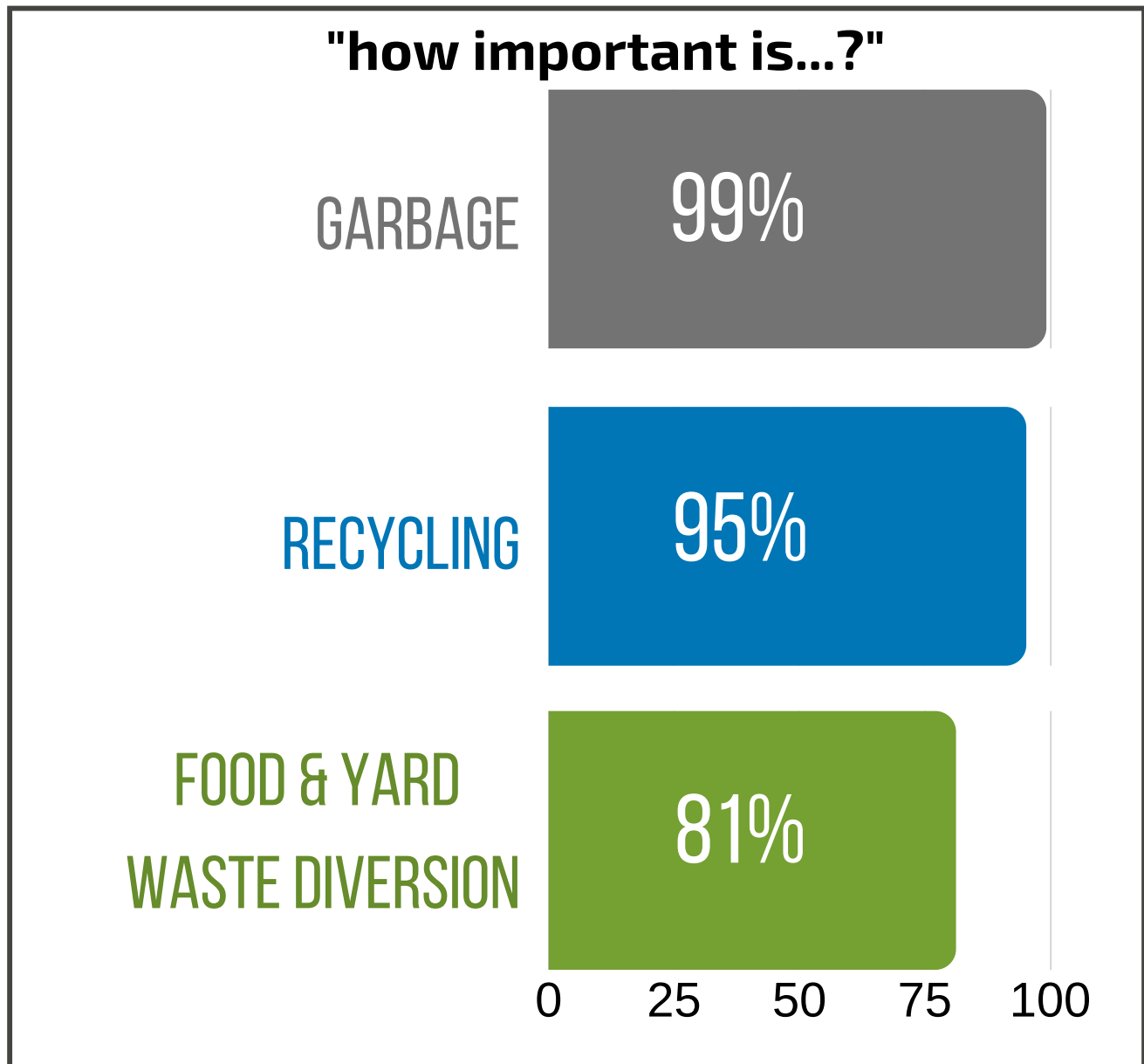
# RESIDENTIAL WASTE DIVERSION TIMELINE



# WHAT WE'VE HEARD FROM RESIDENTS

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## IMPORTANCE OF SERVICES



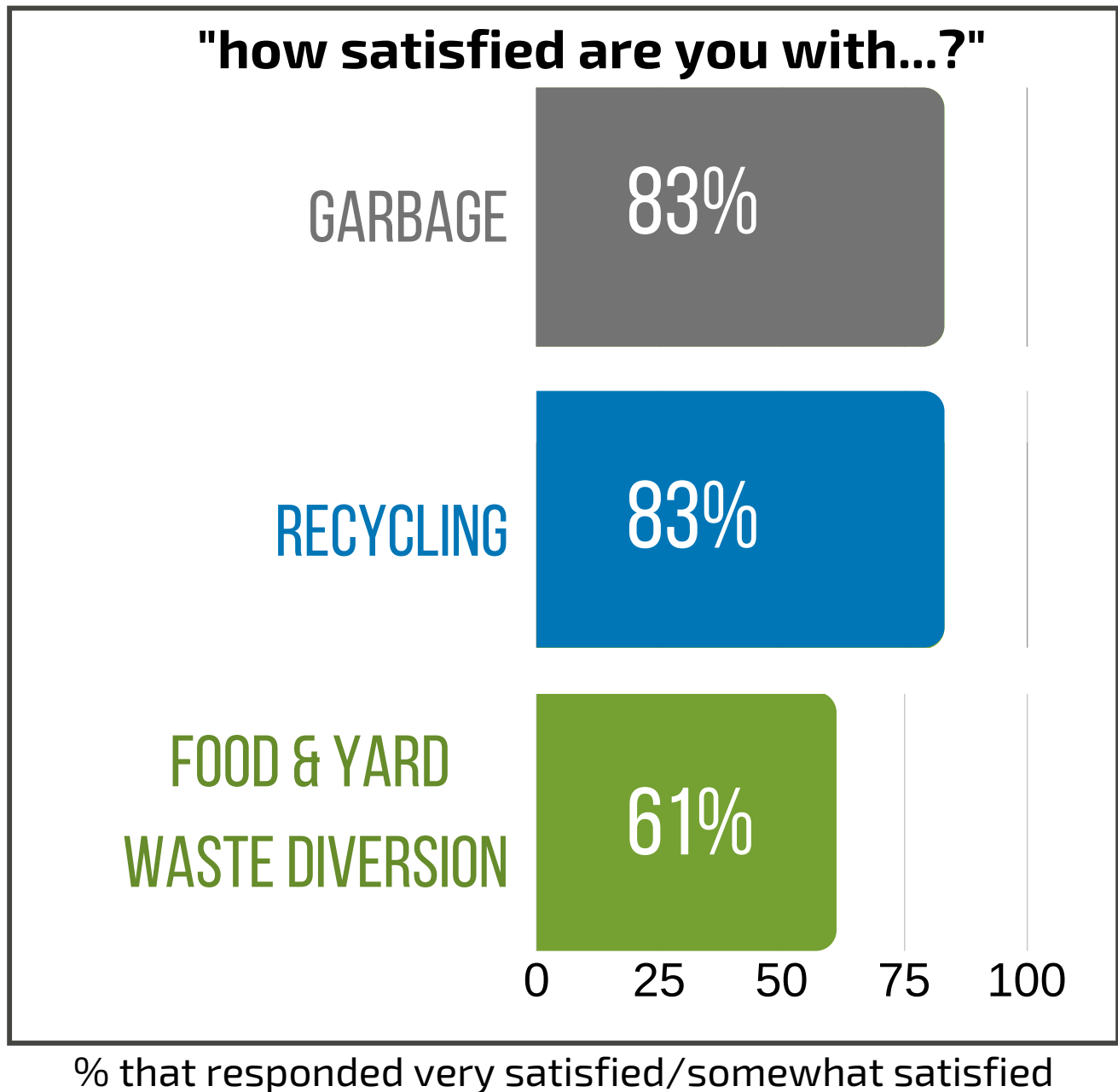
% that responded very important/somewhat important



# WHAT WE'VE HEARD FROM RESIDENTS

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## SATISFACTION OF SERVICES



# WHAT WE'VE HEARD FROM RESIDENTS

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## IMPORTANCE OF WASTE REDUCTION

"is it important to reduce the amount of ...?"

WASTE YOU GENERATE IN  
YOUR HOME?

94%

YARD WASTE GOING TO  
LANDFILLS?

87%

FOOD WASTE GOING TO  
LANDFILLS?

87%

0 25 50 75 100

% that responded very important/somewhat important



# WHAT WE'VE HEARD FROM RESIDENTS

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## INTEREST IN CURBSIDE ORGANICS

"how interested would you be in a  
curbside yard waste program?"

CURBSIDE YARD  
WASTE PROGRAM

64%

0 25 50 75

"how interested would you be in a  
curbside food waste program?"

CURBSIDE FOOD  
WASTE PROGRAM

61%

0 25 50 75

% that responded very interested/somewhat interested



# OUR RECOMMENDATIONS

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## TO ACHIEVE 50% WASTE DIVERSION BY 2021

- 2020 Residential stakeholder engagement on organics
- 2020 Phase 1 Curbside Organics
- 2019 - 2021 Curbside Organics Program Development
- 2021 Opening of new Composting Facility
- 2021 Phase 2/Full Program Implementation of Curbside Organics



# DIVERSION TARGETS

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## WASTE DIVERSION POLICY (#CC54) TARGETS

Waste Disposal Targets			
	2013	2021	2030
Residential	330 kg/capita	180 kg/capita	140 kg/capita
Waste Diversion %	20	50	65
Industrial / Commercial / Institutional	580 kg/capita	430 kg/capita	320 kg/capita
Construction Demolition	280 kg/capita	210 kg/capita	150 kg/capita
Waste Reduction %	0	25	45
Total	1,190 kg/capita	820 kg/capita	610 kg/capita
Waste Reduction %	0	30	50





# BENEFITS OF ORGANICS DIVERSION

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## LANDFILL SPACE

Based on 2019 waste audit results, approximately half of the material that goes into the landfill is organic material that could be diverted from the landfill. While landfill space is currently abundant at the City of Lethbridge Waste and Recycling Centre facility, we owe it to our citizens to use the available space wisely. Therefore, to maximize landfill air space efficiently, and based on the current City's residential Waste Diversion Policy, diverting the organics waste stream will help to make the available landfill space last longer and improve our environmental stewardship.

## LEACHATE MANAGEMENT

Organic material typically has a high moisture content and when it breaks down anaerobically, a toxic liquid known as leachate is produced. Regulations requires that this liquid is managed and monitored at the landfill. When leachate levels exceed compliance elevation limits, the City is required to remove leachate to compliance levels using approved methods. Currently leachate is pumped and applied back onto the landfill surface. This process helps to reduce leachate from collecting or accumulating on the landfill cell liner and minimizes the risk of seepage into the subsurface. Reducing organics material loading into the landfill will reduce the amount of leachate generated. It will also reduce the cost of implementing that management system. Furthermore, in the future, as the landfill grows, leachate generation will increase, until at some stage the City will need to improve its management technology, such as implementing treatment options that are generally quite costly. Diverting organics now will decelerate the growth of leachate production and, therefore, the future cost of leachate management.



# BENEFITS OF ORGANICS DIVERSION

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## GREENHOUSE GAS EMISSION REDUCTION

The breakdown of organic materials in an anaerobic environment, such as that present within a landfill cell, generates methane, a powerful greenhouse gas (GHG). Diverting organics from future landfill cells will minimize the production of methane in those cells, therefore mitigating climate change impacts.

Methane in the Earth's atmosphere is a strong GHG that has global warming potential (GWP) of approximately 104 times greater than carbon dioxide (CO<sub>2</sub>) in a 20 year time frame. As methane is not as persistent in the atmosphere as CO<sub>2</sub> but also tails off to about a GWP of 28 over a 100 year time frame. This means that a methane emission will have 28 times the impact on global temperature rise compared to that of a CO<sub>2</sub> emission of the same mass over that 100 year time frame. Therefore, methane has a large GWP but for a relatively brief period, as it has an estimated lifetime of only 9.1 years in the atmosphere, whereas CO<sub>2</sub> has a small effect for a long period, having an estimated lifetime of over 100 years. Therefore, reduction of methane emissions has a greater ability to slow the rate of near-term climate change. Reduction of GHG emissions is aligned with the City, provincial and federal atmospheric carbon policies.

The current methods of managing climate change impacts from landfill gas emissions is to extract and burn off the methane to generate CO<sub>2</sub> and water. The City's current program to management Landfill Gas (LFG) is to implement a system that can achieve that goal. Current projections indicate that the proposed LFG system will reduce GHG emissions from the current 90 thousand tonnes CO<sub>2</sub>e (carbon dioxide equivalent) per year to approximately 50 thousand tonnes CO<sub>2</sub>e per year. If future landfill cells have minimal organic load, minimal methane generation would be expected. Therefore, the need to extract methane to limit GHG emissions would be greatly reduced, thus eliminating the need to build costly methane extraction and treatment systems for future landfill phases.



# SUPPORTING DOCUMENTS

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## OFFICIAL BUSINESS RESOLUTIONS

- "Official Business: Waste Diversion." (March 2015). Retrieved from <https://agendas.lethbridge.ca/AgendaOnline/Documents/ViewDocument/WASTE%20DIVERSION%20-%20OB%20WASTE%20DIVERSION.DOC.pdf?meetingId=1946&documentType=Agenda&itemId=47662&publishId=39216&isSection=false>
- "Official Business: Blue Bin Consultant." (March 2015). Retrieved from <https://agendas.lethbridge.ca/AgendaOnline/Documents/ViewDocument/BLUE%20BIN%20CONSULTANT%20-%20OB%20BLUE%20BIN%20CONSULTANT.DOC.pdf?meetingId=1946&documentType=Agenda&itemId=47672&publishId=39221&isSection=false>

## POLICIES

- "Environment Policy." #CC51. City of Lethbridge. (2015, May 11). Retrieved from <https://www.lethbridge.ca/City-Government/City-Council/Documents/CorporatePolicyManual%20Council.pdf>
- "Waste Diversion Policy." #CC54. City of Lethbridge. (2015, July 20). Retrieved from <https://www.lethbridge.ca/City-Government/City-Council/Documents/CC54%20Waste%20Diversion.pdf>

## SURVEYS

- Citizen Perceptions about Residential Recycling. Ipsos Reid. Survey. (2013, April). Retrieved from <https://www.lethbridge.ca/living-here/Waste-Recycling/Documents/Attachment%204%20-%20Survey%20Citizens%20Perceptions%20About%20Residential%20Recycling%20%E2%80%9393%20February%202013.pdf>
- City of Lethbridge 2018 Community Satisfaction Survey. Ipsos Reid. Survey. (2018, May). Retrieved from [https://www.lethbridge.ca/City-Government/Documents/2018%20City%20of%20Lethbridge%20-%20Citizen%20Survey%20-%20Topline%20Report%20\(15-05-18\).pdf](https://www.lethbridge.ca/City-Government/Documents/2018%20City%20of%20Lethbridge%20-%20Citizen%20Survey%20-%20Topline%20Report%20(15-05-18).pdf)



# SUPPORTING DOCUMENTS

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## PLANS

- "Too Good To Waste: Making Conservation a Priority." Alberta Environment and Parks. (2007). Retrieved from <https://open.alberta.ca/publications/9780778567752>
- "City of Lethbridge Comprehensive Waste Diversion / Waste Prevention Master Plan." (2008). Sonnevera. Retrieved from <https://www.lethbridge.ca/City-Government/Financial-Documents/Document-Library/Documents/Waste%20Reduction%20Masterplan.pdf>
- "City of Lethbridge Integrated Community Sustainability Plan / Municipal Development Plan." (2010). Bylaw#5650. City of Lethbridge. Retrieved from <https://www.lethbridge.ca/Doing-Business/Planning-Development/Documents/ICSP.MUNICIPAL%20DEVELOPMENT%20PLAN.pdf>
- "Lethbridge City Council: Strategic Plan 2017-2021" (2017.) Lethbridge City Council. Retrieved from <https://www.lethbridge.ca/City-Government/City-Council/Documents/Council%20Strategic%20Plan%202017-2021.pdf>
- "South Saskatchewan Regional Plan (2014 – 2024): An Alberta Land-use Framework Integrated Plan." (2014.) Government of Alberta. Retrieved from <https://open.alberta.ca/dataset/460ac866-4416-4d77-a25a-a02fab85a6ec/resource/8261ce03-aa0f-4621-8e2d-c610a72ac37c/download/south-saskatchewan-regional-plan-2014-2024-february-2017.pdf>
- "Industrial, Commercial, and Institutional Waste Implementation Strategy." (2015). City of Lethbridge. Waste and Recycling. Retrieved from <https://www.lethbridge.ca/living-here/Waste-Recycling/Documents/ICI%20Waste%20Diversion%20Strategy.pdf>



# GLOSSARY

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**Centralized Recycling Stations:** The City of Lethbridge currently owns and operates three centrally located recycling stations which provide residents opportunities to divert recyclable material such as cardboard, paper, plastics [#'s 1-7], clear glass and metal food cans. The design of the recycling stations also includes a yard waste site which provides diversion options for organic material. Recycling stations complement curbside recycling collection and provide options for large volumes or targeted material.

**Centralized Yard Waste Sites:** The Yard Waste Sites offer residents an option for managing household organics from 9:00 AM to 7:00 PM seven days a week, open April 1st to November 30th. Yard waste and branches accepted at the sites are recycled into compost and wood fiber mulch, which is reused in city parks and made available to residents on a first come, first served basis.

**Biweekly Garbage Collection:** Current waste collection is provided by the City of Lethbridge to 37,500 dwellings, which are serviced on a biweekly basis through either semi-automated, or fully automated curbside service.

**Biweekly Curbside Recycling Collection:** Curbside collection that accepts materials such as cardboard, paper, hard plastics (#'s 1-7) and metal food cans.

**Seasonal Curbside Organics Collection:** Curbside collection that accepts food and yard waste, including many materials that are unsuitable for backyard composting. Collection would be weekly during summer months and biweekly during winter to accommodate seasonal volumes.

**Designated Materials:** Include readily recyclable materials that are resources and should be diverted from the landfill.

**Mandatory Recycling:** Regulatory option that requires residents to separate/divert designated materials from the waste stream through recycling alternatives. Materials that are required to be recycled must have well established markets and be promoted to the community prior to implementation.

**Materials Recovery Facility:** sorting and processing facility for curbside recycling material where material is baled and sent to markets.

**Waste and Recycling Centre:** facility that provides diversion and safe disposal options for all materials.

**Disposal Bans:** Regulatory option where designated materials are prohibited from disposal and require residents to participate in reduction and diversion programs. Disposal bans have a significant waste reduction and diversion potential, but rely on education and enforcement. Similar to mandatory recycling, materials that are banned from disposal must have well established markets and be promoted prior to implementation.

**Pay as You Throw (PAYT):** Residents are charged for the amount of waste they produce, with the intent to reduce waste and encourage participation in diversion programs. The current garbage collection service offers residents the option of a 5 bag cart at \$13.60/month and a 3 bag cart at \$11.85. Into the future, this cost saving for waste reduction could be extended to encourage and create a greater financial incentive to participate.

