

Variable Black Cart Garbage Utility Model Options

ISSUE

The City of Saskatoon (City) has a target of diverting 70% of waste from the City's landfill. To help achieve this target, the City is implementing or expanding various residential waste diversion policies, programs, and services, as outlined in the Solid Waste Reduction and Diversion Plan. City Council has directed that the City institute a variable rate utility for residential curbside garbage collection commencing in 2024. What are the key considerations for the implementation of a variable rate garbage utility? How many cart sizes should be offered?

BACKGROUND

History

At its August 30, 2021 meeting, City Council resolved:

That the Administration proceed with the implementation of a waste utility funding model for curbside organics and black cart garbage programs, and that further direction about timing, phase-in options, and affordability options be provided at such time that the related reports are provided to the Governance and Priorities Committee.

At its October 25, 2021 meeting, City Council resolved:

That the City of Saskatoon proceed with Option 2: A fixed monthly rate for the curbside organics utility with a January 2023 implementation, and a variable rate for black cart garbage utility with implementation in 2024.

Current Status

The Curbside Organics Program is on track to launch in Spring 2023, and the organics utility rate is being finalized. A decision is required on the program design and model for the variable rate for the black cart garbage utility to ensure the implementation timeline of 2024 can be met.

Public Engagement

The Saskatoon Talks Trash: Curbside engagement ran from February 12 - March 6, 2018. Engagement focused on the design of curbside organics and variable rate garbage utility programs. At that time, over 5,000 residents participated in a variety of engagement activities. A small majority (approximately 60%) of residents who participated in engagement activities demonstrated support for a variable garbage utility. A minority (about 30%) expressed opposition, while a third group were uncertain or had further questions. The full engagement results are available in the [Changes to Waste Management in Saskatoon - Engagement Results report](#).

City of Saskatoon's Current Approach

The City's garbage collection and landfill crews collect and process garbage from approximately 73,000 single-family households. Approximately 52,600 tonnes of

residential garbage was collected in 2021 and there were more than 2.6 million scheduled black cart lifts (tips). Weekly collections are provided from May to September, with the remainder of the year on a bi-weekly collection schedule. Residential garbage is collected with a 360-litre black cart through automated collection. A 240-litre black cart is available upon request. The vast majority (99%) of curbside residents currently have the largest cart size. In 2023, the City is expanding its solid waste services by adding a single-family curbside organics program as previously directed by City Council. Garbage collection will move to bi-weekly year-round service levels in 2023, to align with the launch of the green cart service.

Approaches in Other Jurisdictions

Research included in Appendix 1 indicates that the municipalities that implemented utility fees (especially variable rate fees) for solid waste collection had higher diversion rates, on average, relative to those who had not. Cart-based rate structures are the most common variable-pricing model for utilities in Canada where automated waste collection is in place. Examples include Vancouver, Burnaby, Red Deer, Edmonton, Lethbridge, Toronto, and Beaconsfield, Quebec. An analysis of utility funding models for waste services are included in Appendix 1.

OPTIONS

This section of the report offers two different options for a variable black cart model for consideration. The proposed options have minor variations from one another, as they are based on the following assumptions:

- A variable cart utility where residents pay based on the size of their garbage cart;
- A monthly fee that incentivizes correct sorting and waste diversion;
- A “by request” approach to changing cart sizes; and
- A robust education and enforcement program to accompany roll-out.

A Variable Cart Utility

A variable cart utility is a rate-based program where residents pay fees for the volume of waste they dispose and the services they receive based on the size of their garbage cart. The volume-based rate structure is designed to encourage residents to divert as much as possible away from landfill. Residents with the largest garbage carts pay the most and those with the smallest pay the least. Residents would have a choice of cart size for year-round bi-weekly pick up, which would be charged monthly on the City utility bill. Appendix 1 aims to build on research and previous recommendations to City Council on a variable cart garbage utility. Appendix 2 provides a Triple Bottom Line Assessment that was used to maximize the benefits of the recommended option.

A Fee Structure to Incentive Diversion

The City’s shift to a variable rate utility funding model for garbage establishes a transparent link between garbage disposal and the cost of services. Providing variable rates, linked to cart size, creates a financial incentive to change waste disposal behaviours. The monthly utility rates will be based on the resident’s choice of garbage cart size, which will incentivize less waste production and give residents some control over their monthly payments. A rate difference between cart sizes is a financial

incentive to encourage residents to make good use of their available disposal options, and properly sort waste into organics (green cart), recycling (blue cart), and garbage (black cart).

Development of a financial model for garbage services is a complex process with a variety of variables and decisions required. Two main inputs need to be determined to set the utility rates for garbage, including:

- the number of cart sizes available for residents to choose from; and
- the cost differential between cart sizes to incentivise diversion.

Research completed by Skumatz Economic Research Associates, Inc. (SERA)¹ suggests a rate with a 65-75% rate increase between the smallest and largest cart size for truly incentivizing waste diversion. Once the above assumptions and considerations have been finalized, then the funding model based on cost recovery can be further refined to include the impact and cost per household of funding via a variable garbage utility.

A Request-Based Approach to Cart Size Changes

For both options presented, a foundational assumption is that existing black carts will be kept in the field unless residents request a smaller size. This will minimize the waste cart procurement and deployment costs and maximize the life of the existing carts, while still providing residents with flexibility and choice based on their individual needs. It is anticipated that implementation of the city-wide curbside organics program could divert up to 50% of the materials from the black cart. The City engaged SERA¹ to conduct a study which incorporated data from Pay as You Throw (PAYT) programs from over 10,000 communities across North America. Preliminary research indicates that up to 60% of residents typically choose to decrease their cart size and save costs on their monthly utility bill, while still having adequate capacity in all waste streams. Details of the research are provided in Appendix 1.

Education and Enforcement

For communities that opt for variable user fees for garbage rather than fixed monthly fees, the problem of illegal dumping to avoid user fees can be a concern. However, experience of other municipalities has shown that this risk can be minimized through effective education, adequate enforcement measures and by providing outlets for recycling, composting and bulky waste collection². Waste Bylaw amendments will be required to include the additional garbage utility rates with the implementation of a variable cart program.

Option 1: Variable Three Cart Model

In this option, three different garbage cart sizes would be available to residents upon request, including the current large (360 L), medium (240 L) and a smaller black cart

¹ City of Saskatoon: Research and Recommendations on PAYT Subscription Level Shifts, Incentive Design and Organics Program Options, (2018) Skumatz Economic Research Associates, Inc. (SERA).

² [Citizen Budget Commission. A Better Way to Pay for Solid Waste Management \(February 2015\)](#)

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that would still be compatible with modifications to the current collections fleet. A small modification to the collection trucks (a retrofit of the mechanical arms) would be required to accommodate the smallest cart size with this option.

Advantages

- Residents have a range of customizability and control over their cart size and rates.
- Easy to implement larger rate differentials between the smallest and largest cart which can support higher levels of waste reduction and diversion.
- This is a common variable-pricing design for utilities in Canada where automated waste collection is in place.
- Reduces resources required to meet long-term program goals by requiring a one-time integration of the approved variable pricing model with the City's billing system and a single procurement of carts.

Disadvantages

- Modifications will be required to the automated collection trucks to accommodate carts smaller than 240 L.
- It is difficult to forecast the number of carts in each size that will be required, and rates are set in advance, so this model requires a contingency to be considered within the rate. This could create an additional stockpile of large carts, with limited repurposing value.

Financial Implications

- New carts will be a significant investment for the new utility.
- Additional staff resources would be required to administer billing, carts management and cover the costs of education and communications.
- Fleet modifications for the mechanical arms are expected to cost approximately \$4,000 per collection truck.

High level estimates are provided below based on experience with existing cart contracts and ongoing green cart procurement for the organics project. These costs are sensitive to resin and shipping pricing as well as the specifications of cart sizes and are subject to change. Administration will consider deployment strategies and associated costs for swapping of existing carts and the life cycle of cart assets (i.e., disposal or repurposed). An assumption built into the estimates include 60% of residential curbside customers switching to smaller cart sizes.

Table 1: Initial Cart Purchase – Estimated Capital Impacts

Item	Garbage Carts (180L and 240L)
Cart Purchase and Distribution	\$4.1 million
Fleet modifications	\$120,000
Education and Communications	\$250,000
Total Initial Implementation	\$4.5 million

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Environmental Implications

The variable rate utility for garbage is projected to increase waste diversion and extend the life of the landfill, as well as reduce greenhouse gas (GHG) emissions. The exact environment benefits will depend on program design and user participation. Projections from the Solid Waste Reduction and Diversion Plan estimate relative to the status quo include:

- Waste diversion of 5,000–16,000 more tonnes per year, improving the overall waste diversion rate by 5 - 17%; and
- GHG emission reductions between 3,000 – 10,000 tonnes CO₂e per year.

Option 2: Variable Two Cart Model

In this option, two different garbage cart sizes would be available to residents upon request, including the current large (360 L) and medium (240 L) black cart.

Advantages

- There is less complexity in inventory management and implementation for operations with only one new cart size.
- Compatible with current collection trucks (modifications not required).

Disadvantages

- Provides less opportunity to implement rate differentials that incentivize waste diversion.
- Less choice and ability for residents to control costs.
- Difficult to adapt more cart options in the future, as an additional cart will require further billing system changes and additional procurement and deployment.

Financial Implications

- As with Option 1, significant investment in cart inventories and administration costs are anticipated.
- Cart purchase is \$400K more than Option 1 due to the higher anticipated costs for the 240 L cart.
- No additional requirements for fleet modifications as it is compatible with current fleet.

Table 2: Initial Cart Purchase – Estimated Capital Impacts

Item	Garbage Carts (240L)
Cart Purchase and Distribution	\$4.5 million
Education and Communications	\$250,000
Total Initial Implementation	\$4.8 million

Environmental Implications

As with Option 1, variable rate utilities promote waste reduction and diversion. Results may be lower than Option 1 as two cart options may not allow pricing to influence waste behaviours as significantly as three cart options.

RECOMMENDATION

That the Standing Policy Committee on Environment, Utilities and Corporate Services recommend to City Council Option 1: A variable cart utility including three cart options for the black cart garbage utility, with implementation funded through borrowing against the future utility.

RATIONALE

As has been identified above, Option 1 is recommended based on the following:

- Residents have additional customizability and control over their cart size and rates.
- There is greater financial incentive for waste reduction and diversion as larger rate differentials between the smallest and largest cart is feasible.
- This is a common variable-pricing design for utilities in Canada where automated waste collection is in place.

A Triple Bottom Line assessment was undertaken to identify opportunities to maximize benefits of the recommended strategy. Details can be found in Appendix 2 - Triple Bottom Line Implications – Variable Cart Garbage.

ADDITIONAL IMPLICATIONS/CONSIDERATIONS

Assessment of Alternative Options

The Administration considered implementation of the variable garbage utility using a pay per tip model. This option was not deemed feasible at this time as it would not meet the 2024 variable utility implementation timelines. Pay per tip is not well established (currently operational in only one municipality in Canada, two in North America) and is not recommended due to complexity of billing practices, cart inventory and asset management. Due to the heightened risks of billing inaccuracy and financial instability, the Administration does not recommend this option. Further rationale is provided in Appendix 1.

Administration also reviewed bag-tag programs which some municipalities use for additional waste capacity. Bag-tags are difficult to introduce within a fully automated collection system as bags must be loaded manually. This option would re-introduce manual collection, a practice abandoned in Saskatoon in the mid-1980's to improve efficiencies and costs of waste collection and reduce potential for worker injuries.

COMMUNICATION ACTIVITIES

Education and communications will be an important part of a variable pricing model for garbage including right-sizing garbage carts, service costs and engaging with the program. A robust, multi-faceted education and communications plan will be in place to support the launch and implementation of this program.

NEXT STEPS

With approval of the variable garbage utility model, planning work will continue to prepare for the launch of a variable cart garbage utility in 2023. City Council approval

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will be required throughout 2022 and 2023 on certain aspects of the program including securing a loan for carts, as well as the garbage utility rate.

Affordability program considerations are included in a separate report being presented to City Council in October 2022.

APPENDICES

1. Background and Research on Variable Waste Utility Models
2. Triple Bottom Line Implications for a Variable Cart Garbage Program

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