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# The Regional Municipality of Durham Report

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To: Works Committee  
From: Acting Commissioner of Works  
Report: #2024-WR-4  
Date: April 3, 2024

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**Subject:**

Proposed Automated Cart-Based Garbage Collection Pilot Project

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**Recommendations:**

That the Works Committee recommends to Regional Council:

- A) That Regional Council direct staff to implement a one-year pilot project to assess the impacts of an automated cart-based residential garbage collection pilot project;
  - B) That staff be authorized to procure the necessary carts that are compatible with the automated collection vehicle to be used in the proposed pilot project from Miller Waste at a cost not to exceed \$49,500;
  - C) That the estimated cost of \$50,000 for this pilot project be financed from within the 2024 Waste Management Business Plans and Budget; and,
  - D) That staff be required to report back to Regional Council on the results and recommended next steps for the project.
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**Report:**

**1. Purpose**

- 1.1 The purpose of this report is to obtain the Regional Municipality of Durham's (Region) Council's approval to implement a one-year pilot project to assess the impacts of automated cart-based residential garbage collection.

## 2. Background

- 2.1 Waste collection is consistently ranked high as among the most hazardous jobs ([Canada's Most Dangerous Jobs of 2022 | W.B. White Insurance Ltd \(wbwhite.com\)](#), [Top 10 Most Dangerous Jobs According to OSHA | Invictus Law, P.C. \(invictuslawpc.com\)](#)) because of the significant risk of operators being struck by passing vehicles while collecting waste, trips, falls, joint injuries, risk of being cut, punctured or contracting disease from handling sharp items, and general injury to shoulders, hips and legs from this very demanding and heavy manual operation. These challenges make acquiring and retaining staff to sustain manual waste collection increasing difficult.
- 2.2 These issues are manifesting across the waste industry, posing significant challenges around staff recruitment and retention for manual waste collection operations. Specific challenges include:
- A diminishing labour pool willing to withstand the rigour of extensive physical labour.
  - Significant health and safety risks from slips, trips and falls, and ongoing lifting of heavy waste materials can lead to high absenteeism and shorter careers within the industry.
  - Adverse working conditions due to weather conditions, the nature of the work and negative perceptions of the industry.
- 2.3 The Region's waste collection contractors have experienced ongoing labour shortages since the beginning of the Covid pandemic. These shortages have impacted Regional residents through incomplete and deferred yard waste collections, and core garbage, recycling and green bin collection services ending later every evening. These labour shortages show no sign of subsiding.
- 2.4 The Region does not directly operate collection systems, however, it sets the standards required of contractors and, therefore indirectly experience the financial impact of issues impacting the industry. For example, the Region recently experienced costly increases in collection contract renewals after collection contractors significantly increased workers salaries to attract and retain workers.
- 2.5 The Region's waste collection contractors operate automated cart-based collections in other municipalities, and they report having almost no labour issues or service disruptions during the pandemic or on an ongoing basis.

- 2.6 Automated collection systems feature collection vehicles with mechanical arms that the driver operates using a joystick and camera in the cab. The arm picks up a wheeled cart, dumps it and places it back at the curb. Rarely are drivers required to exit the cab while conducting their work, and carts are returned to where they were placed for collection.
- 2.7 Industry research and local Ontario municipal experiences also demonstrate that it is becoming increasingly difficult for municipalities to obtain competitive bids from service providers for manual waste collection. Some Ontario municipalities report that service providers no longer bid on manual waste collection contracts. Monitoring of industry trends is ongoing, and several communities have already transitioned completely to automated collection systems.

### **3. Previous Reports and Decisions**

- 3.1 There are no previous reports on Automated Cart Collection.

### **4. Benefits of Automated Waste Collection**

- 4.1 Automated waste collection vehicles are typically single-operator systems instead of manual collection systems using rear-loading trucks, often requiring two operators. Also, because there is no need for heavy lifting or continuous getting in and out of vehicles with automated collection, operators can work an entire career operating an automated waste collection vehicle, with a reduced risk of physical injury. These factors contribute to reduced labour costs, from reduced need for labour and reduced injury-related costs and a more diversified workforce.
- 4.2 Also, manual waste collection relies on able-bodied, healthy operators willing to do this type of heavy, challenging work, as each household can set out four bags, each weighing up to 20 kg (44 lbs). Each household can set out up to four bags/cans for every collection, and up to 1,000 households on each collection route. Conversely, automated waste collection can be carried out by anyone who can drive a truck, as physical lifting is not required. The size, agility, physical ability, and age of the worker are not significant factors with automated collection, and operators do not encounter the waste they are collecting. This opens the available labour market extensively to every demographic, potentially including people with disabilities.

- 4.3 From a resident's perspective, rolling a single cart to the curb is more accessible than lifting and carrying multiple heavy bags/cans to the curb. Carts have a lid, which reduces litter, do not require bending down to pick them up and take up significantly less floor space than three or four garbage bags/cans. Also, since each cart can hold about four bags of garbage, residents only need one trip to the curb to set out their waste. Finally, carts are available with locking lid systems, which reduces illegal dumping and the ability of animals to interfere with the waste. Automated Waste Cart Collection Pilot.
- 4.4 Staff propose a pilot project from June 2024 to May 2025 of approximately 680 households to assess the impacts of an automated cart-based garbage collection on Durham's waste collection operations.
- 4.5 The following aspects will be explored in this pilot:
- a. Time efficiency - the number of households that can be collected in a day with each collection vehicle compared to manual collection.
  - b. Health and safety – the frequency and severity of health and safety incidents compared to manual collection.
  - c. Accessibility and ergonomics – residents' and operators' ease of maneuvering/handling carts compared to garbage cans and garbage bags.
  - d. Litter – the amount of litter generated from cart-based garbage collection compared to garbage bag/can collection.
  - e. Community Suitability – the challenges posed by using carts in areas with steep hills, smaller lots and on-street parking.
- 4.6 Regional staff has pre-selected two pilot study locations - rural residents in the Township of Scugog (Attachment #1) and urban residents in north Ajax (Attachment #2). The routes are included in Contract C003326 with Miller Waste Systems and were selected based on the following criteria:
- a. Friday collection day – allows for service continuity as the contractor can have a standby truck available from another municipality that does not operate on Fridays, if needed, for truck repairs or maintenance for the duration of the pilot, and;
  - b. A collection route not adjacent to another where the boundary streets may have carts on one side and manual collection on the other.

- 4.7 Staff propose purchasing the carts required for the pilot project directly from Miller Waste to ensure they are compatible with the collection equipment. The Region intends to have the carts cleaned and repurposed in other operations after the conclusion of the pilot rather than being disposed of.
- 4.8 Residents in the pilot project areas will be provided with a cart for garbage collection only, rather than a cart for garbage and a separate cart for organics. This is a cost-saving measure because providing automated carts for organics collection in the pilot project would also double the project costs due to the doubling of required bins and the need for a second automated collection vehicle. Also, the automated organics carts cannot be repurposed in other operations after the conclusion of the pilot project. The data gathered from this pilot using garbage carts can only be extrapolated to determine the impact of an automated organics collection system. Residents will continue using the regular green bins for the duration of the pilot project.
- 4.9 The pilot project residents will receive notice prior to the start of the pilot to inform them that their area has been selected and a complete instruction package about the pilot. The affected local and Regional Councillors will also receive a complete information package to be able to answer questions from residents.
- 4.10 At the start-up of the pilot, residents who are resistant to using a cart will be encouraged to participate for a trial duration prior to being allowed to opt out of the pilot. In other studies, it has been found that most residents who were initially resistant to this change continued to participate for the duration of the study.
- 4.11 During the pilot, staff will support residents with any unforeseen challenges and inquiries that may arise. Staff will also work with residents to seek feedback and identify and resolve issues.

## **5. Automated Garbage Cart Collection in Other Municipalities**

- 5.1 Table 1 below shows a listing of the Ontario municipalities that have already implemented or are in the process of implementing an automated cart collection program:

**Table 1 Ontario municipalities with cart collection programs**

<b>Municipality</b>	<b>Status</b>	<b>Year</b>
City of Toronto	Complete	2008
Guelph	Complete	2014
Region of Peel	Complete	2016
Sault St Marie	Complete	2019
Municipality of Bluewater	Complete	2020
Simcoe County	Complete	2021
Halton Region	Pilot in progress	2023
Barrie	In Progress	2025
Kingston	In Progress	2025
Kitchener	In Progress	2026
Waterloo Region	In Progress	2026

6.2 The following are advantages that these municipalities listed for moving to an automated collection system:

- Reduced employee injuries, lost time, and WSIB claims.
- Decreased employee turnover while increasing productivity due to fewer lost-time incidents and reduced operator injuries.
- Cost savings associated with single-operator vehicles.
- Convenient and easy to use, wheeled containers improved maneuverability and a higher measure of safety for residents (no lifting or carrying).
- Cleaner and healthier neighbourhoods with less litter on the streets after pickup.
- Collection vehicles are being developed to include internal-facing cameras that can identify contamination in waste being deposited into the vehicle.
- Automated collection vehicles can be fitted with alternate fueling systems (CNG/electric).

- The sole sourcing of the bins for the pilot project will be submitted put forth for approval based on the sole source procedures, and with the understanding that, if the pilot is successful, staff may recommend adding automated waste and source-separated organics (SSO) curbside collection to the scope of work for future residential waste and SSO collection contracts in accordance with the Region's Purchasing By-Law.

6.3 The following are some disadvantages/challenges that these municipalities experienced from moving to automated collection systems:

- High initial/upfront costs associated with purchasing the carts.
- Residents complaints regarding cart storage and cart placement.
- Significant upfront public educational resources for the rollout of the program.
- New driver training requirement and initially slower collection times as drivers become familiar with the technologies.

## 6. Financial Implications

6.1 Table 1 details the total estimated cost of completing the one-year automated waste collection pilot, including carts, promotion and education costs.

**Table 1: Estimated One-time Automated Waste Collection Pilot Costs**

<b>Automated Waste Collection Pilot Costs</b>	<b>Total</b>
Purchase of carts	<b>\$49,500</b>
Promotion and Education Campaign- Information packages, door hangers	<b>\$500</b>
<b>Total</b>	<b>\$50,000*</b>

\*Dollar amounts exclude applicable taxes.

6.2 The estimated cost of \$50,000 for this pilot project will be financed within the 2024 Waste Management Business Plans and Budget.

- 6.3 Miller Waste Systems is willing to participate in the pilot project under the existing provisions of contract C003008 and at no additional cost to the Region. The sole sourcing of the bins for the pilot project will be submitted for approval based on the Purchasing By-law, with the understanding that, if the pilot is successful, a public bidding process will be undertaken for future requirements.

## **7. Relationship to the Strategic Plan**

- 7.1 This report aligns with/addresses the following strategic goals and priorities in the Durham Region Strategic Plan:
- a. Goal 1.1 Accelerate the adoption of green technologies and clean energy solutions through strategic partnerships and investment.
  - b. Goal 1.2 Increase waste diversion and resource recovery.
  - c. Goal 1.4 Demonstrate leadership in sustainability and addressing climate change.
  - d. Goal 5.1 Optimize resources and partnerships to deliver exceptional quality services and value.
  - e. Goal 5.2 Collaborate for a seamless service experience.

## **8. Conclusion**

- 8.1 The anticipated growth in the Region and the changing labour market make it imperative for the Region to keep up with the increasing demands of garbage collection. Assessing the benefits of an automated cart-based program for safe and timely collection of garbage is an effective way to ensure a sustainable future waste collection service.
- 8.2 Staff must fully understand the benefits and challenges of automated waste collection to better plan for upcoming waste collection contracts and the future of Durham Region's waste collection program. A pilot project will allow staff to evaluate public perception, cost implications and the logistics of an automated cart-based garbage collection program.
- 8.3 Other Ontario municipalities have implemented automated cart-based garbage collection with improvements in increased time efficiencies, lower rates of injury, significantly reduced service interruptions and delays, and improved accessibility for users.



- 8.4 Staff will use various tools to measure the performance indicators, including resident surveys, time-in-motion studies and a detailed comparison of health and safety incidents. Monitoring and feedback from the pilot will be used to assess the feasibility of inclusion in upcoming collection contracts.
- 8.5 This report has been reviewed by the Finance Department.
- 8.6 For additional information, contact: Andrew Evans, Director, Waste Management Services at 905-668-7711, extension 4102.

**9. Attachments**

Attachment #1: Pilot Area Map – Township of Scugog

Attachment #2: Pilot Area Map – Town of Ajax

Respectfully submitted,

**Original signed by:**

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Ramesh Jagannathan, MBA, M.Eng., P.Eng., PTOE  
Acting Commissioner of Works

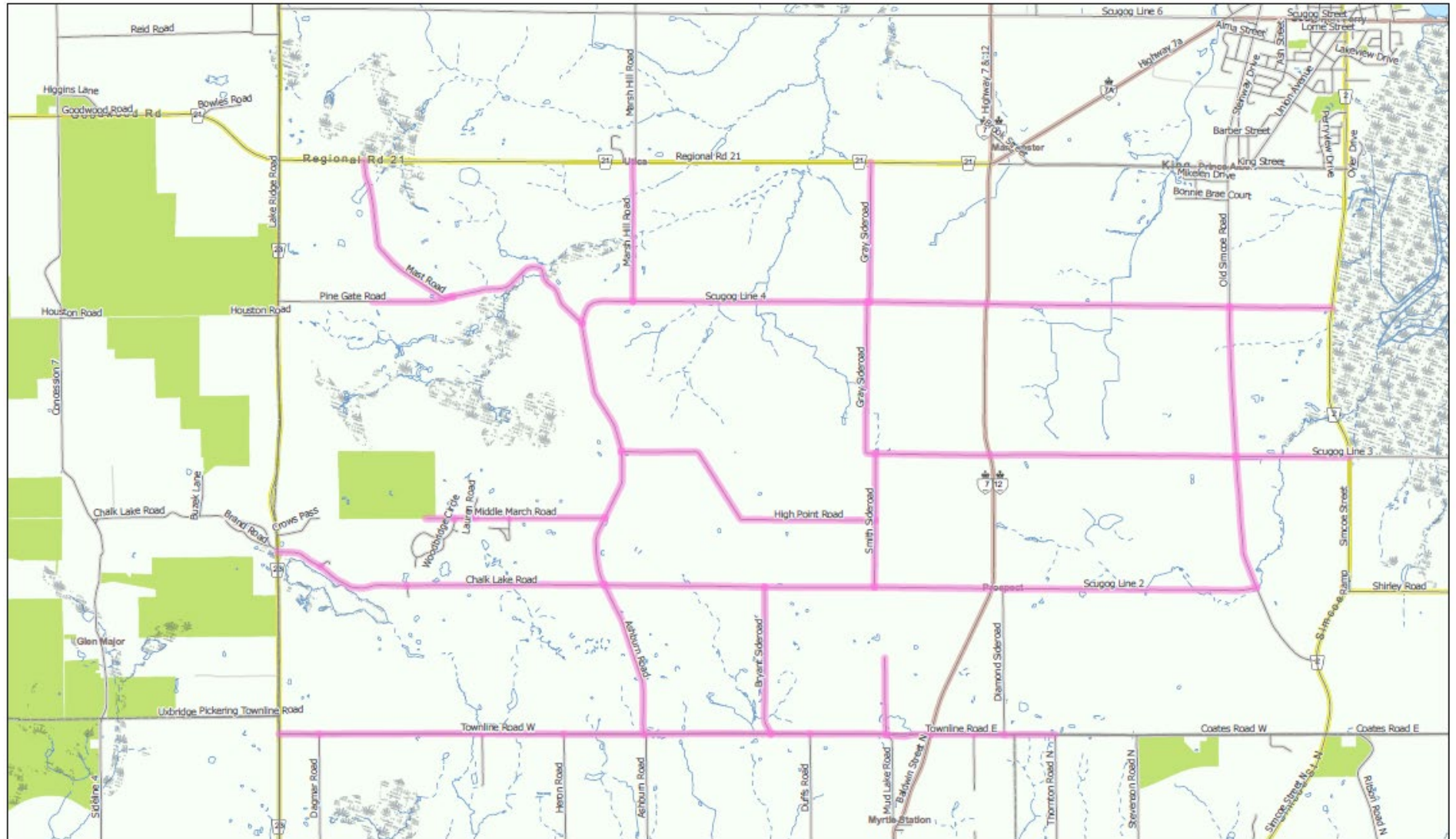
Recommended for Presentation to Committee

**Original signed by:**

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Elaine C. Baxter-Trahair  
Chief Administrative Officer

**Attachment #1: Pilot Area Map- Township of Scugog**



## Attachment #2: Pilot Area Map- Town of Ajax

Attachment #2 to Report #2024-WR-4

