# AGENDA

## SPC ON UTILITIES AND CORPORATE SERVICES

**January 23, 2019, 9:30 AM**

**IN THE COUNCIL CHAMBER**

**Members**

**Councillor W. Sutherland, Chair**
**Councillor P. Demong, Vice-Chair**
**Councillor G. Chahal**
**Councillor D. Colley-Urquhart**
**Councillor J. Farkas**
**Councillor D. Farrell**
**Councillor S. Keating**
**Mayor N. Nenshi, Ex-Officio**

1. CALL TO ORDER

2. OPENING REMARKS

3. CONFIRMATION OF AGENDA

4. CONFIRMATION OF MINUTES

   4.1 Minutes of the Regular Meeting of the SPC on Utilities and Corporate Services, 2018 December 12

5. CONSENT AGENDA
   None

6. POSTPONED REPORTS
   *(including related/supplemental reports)*

   None

7. ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

   7.1 UCS Orientation Presentation - Verbal Report - UCS2019-0115, UCS2019-0115

   7.2 Waste and Recycling Services 2018 Residential Collection Services Review, UCS2019-0113

8. ITEMS DIRECTLY TO COMMITTEE

8.1 REFERRED REPORTS
None

8.2 NOTICE(S) OF MOTION
None

9. URGENT BUSINESS

10. CONFIDENTIAL ITEMS

10.1 ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

10.1.1 Proposed Sale – (Wildwood) – Ward 08 (4620 Bow TR SW (AD), UCS2019-0099
Held confidential pursuant to Sections 23, 24, and 25 of *FOIP*.

10.1.2 Proposed Approval of Expropriation – (Stoney 2) – Ward 03 (2020 Airport TR NE (CG), UCS2019-0100
Held confidential pursuant to Sections 23, 24, and 25 of *FOIP*.

10.1.3 Summary of Real Estate Transactions for the Third Quarter 2018, UCS2019-0101
Held confidential pursuant to Sections 23, 24, and 25 of *FOIP*.

10.1.4 Summary of Green Line Real Property Transactions for the Third Quarter 2018, UCS2019-0102
Held confidential pursuant to Sections 23, 24, and 25 of *FOIP*.

10.2 URGENT BUSINESS

11. ADJOURNMENT

# MINUTES

## SPC ON UTILITIES AND CORPORATE SERVICES

**December 12, 2018, 9:30 AM**
**IN THE COUNCIL CHAMBER**



| | |
|---|---|
| PRESENT: | Councillor W. Sutherland, Chair<br>Councillor P. Demong. Vice-Chair<br>Councillor D. Colley-Urquhart<br>Councillor J. Farkas<br>Councillor D. Farrell<br>Councillor S. Keating |
| ALSO PRESENT: | General Manager D. Duckworth<br>Deputy City Manager B. Stevens<br>Acting City Clerk J. Dubetz<br>Legislative Assistant J. Palaschuk |

1. CALL TO ORDER

Councillor Sutherland called the Meeting to order at 9:35 a.m.

2. OPENING REMARKS

No opening remarks were provided.

3. CONFIRMATION OF AGENDA

**Moved by** Councillor Colley-Urquhart

That the Agenda for the 2018 December 12 Regular Meeting of the SPC on Utilities and Corporate Services be confirmed.

**MOTION CARRIED**

4. CONFIRMATION OF MINUTES

4.1 Minutes of the Regular Meeting of the SPC on Utilities and Corporate Services, 2018 November 21

**Moved by** Councillor Colley-Urquhart

That the Minutes of the SPC on Utilities and Corporate Services, held on 2018 November 21, be confirmed.

**MOTION CARRIED**

5. CONSENT AGENDA

5.1 Status of Outstanding Motions and Direction, UCS2018-1428

**Moved by** Councillor Colley-Urquhart

That with respect to report UCS2018-1428, the following be approved:

That the Standing Policy Committee on Utilities and Corporate Services receive this report for information.

**MOTION CARRIED**

6. POSTPONED REPORTS

None

7. ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

7.1 Appeal Mechanism – Water Utility Billing, UCS2018-1437

Copies of a presentation entitled "Appeal Mechanism – Water Utility Billing", dated 2018 December 12 were distributed with respect to Report UCS2018-1437.

**Moved by** Councillor Colley-Urquhart

That with respect to Report UCS2018-1437, the following be approved:

That the Standing Policy Committee on Utilities and Corporate Services recommend that Council direct Administration to continue to use the appeal mechanism of escalation to the Director, Water Resources for customers with abnormally high water consumption, who are not satisfied with the initial bill adjustment decision.

**MOTION CARRIED**

7.2 Deferral Report: Response to NM2017-36 (Green Roofs), UCS2018-1044

**Moved by** Councillor Demong

That with respect to Report UCS2018-1044, the following be approved:

That the SPC on Utilities and Corporate Services recommends that Council defer Administration's response to NM2017-36 outlining a business case and a potential strategy on green roofs and actions to move forward to no later than 2019 February.

**MOTION CARRIED**

8. ITEMS DIRECTLY TO COMMITTEE

8.1 REFERRED REPORTS

None

8.2 NOTICE(S) OF MOTION

None

9. URGENT BUSINESS

None

10. CONFIDENTIAL ITEMS

10.1 ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

10.1.1 Proposed Deferral of Report – (Eau Claire) – Ward 07 (200 Barclay PR SW), UCS2018-1423

**Moved by** Councillor Colley-Urquhart

That with respect to Report UCS2018-1423, the following be approved:

1. That Council adopt Administration Recommendation 1 contained in the Report; and
2. That the Recommendations, Report and Attachments remain confidential pursuant to Sections 23, 24 and 25 of the *Freedom of Information and Protection of Privacy Act*.

Against: Councillor Farrell

**MOTION CARRIED**

**Moved by** Councillor Demong

That pursuant to Sections 23, 24 and 25 of the *Freedom of Information and Protection of Privacy Act*, the SPC on Utilities and Corporate Services move into closed meeting, at 9: 55 a.m., in the Council Lounge, to discuss confidential matters with respect to Item 10.1.2, Proposed Method of Disposition – (Capitol Hill) – Ward 07 (1404 and 1406 22 AV NW, UCS2018-1422.

The Committee reconvened in a public meeting at 10:04 a.m. with Councillor Sutherland in the Chair.

**Moved by** Councillor Colley-Urquhart

That the SPC on Utilities and Corporate Services rise and report.

**MOTION CARRIED**

10.1.2 Proposed Method of Disposition – (Capitol Hill) – Ward 07 (1404 and 1406 22 AV NW, UCS2018-1422

Administration in attendance during the closed meeting discussions with respect to Report UCS2018-1423:

Clerk: J. Dubetz. Legal: K. Stewart. Advice: B. Stevens, D. Cassidy, T. Benson. Observer: F. Snyders, R. Auclair, S. McClung, J. Moisan.

A Revised Attachment 1 (c) was distributed in the closed meeting, which is to remain confidential pursuant to Sections 23, 24 and 25 of the *Freedom of Information and Protection of Privacy Act* until the report is published in the Council agenda.

**Moved by** Councillor Farrell

That with respect to Report UCS2018-1422, the following be approved:

1. That Council adopt the Administration Recommendations contained in the Report;
2. That the Recommendations, Report, **Confidential distribution**, Attachments 1, 2 and 3, and the closed meeting discussions remain confidential pursuant to Sections 23, 24 and 25 of the *Freedom of Information and Protection of Privacy Act* until the report is published in the Council Agenda; and
3. That Attachments 4 and 5 remain confidential pursuant to Sections 23, 24 and 25 of the *Freedom of Information and Protection of Privacy Act*.

**MOTION CARRIED**

10.2 URGENT BUSINESS

None

11. ADJOURNMENT

**Moved by** Councillor Demong

That this meeting adjourn at 10:06 a.m.

**MOTION CARRIED**

The following items have been forwarded to the 2019 January 14 Combined Meeting of Council:

**Consent**

Appeal Mechanism – Water Utility Billing, UCS2018-1437

Deferral Report: Response to NM2017-36 (Green Roofs), UCS2018-1044

Proposed Method of Disposition – (Capitol Hill) – Ward 07 (1404 and 1406 22 AV NW, UCS2018-1422

**Confidential Items**

Proposed Deferral of Report – (Eau Claire) – Ward 07 (200 Barclay PR SW), UCS2018-1423

The next regular Meeting of the SPC on Utilities and Corporate Services is scheduled to be held on 2019 January 23.

CONFIRMED BY COMMITTEE ON

| | |
|---|---|
| CHAIR | ACTING CITY CLERK |

**Utilities & Environmental Protection Report to SPC on Utilities and Corporate Services 2019 January 23**

**ISC: UNRESTRICTED UCS2019-0113**

# Waste and Recycling Services 2018 Residential Collection Services Review

## EXECUTIVE SUMMARY

Waste & Recycling Services (WRS) engaged consultants to conduct a residential single detached dwelling Collection Services Review for the Black, Blue and Green Cart Programs in 2018. The review included: an analysis of WRS' performance since 2014; a municipal benchmarking analysis of residential collection; an industry scan and strategic analysis; and a financial comparison of the WRS service delivery model to an alternative service delivery model.

To standardize the evaluation of WRS' residential collection services, service value objectives of customer experience, safety, environment and costs were established. However, key value-added components of WRS service delivery to Calgarians were not considered, for example: resources for emergency response and identifying and notifying 3-1-1 of incidents outside of WRS' scope of work.

The key consultant review recommendation is that WRS maintain the public-sector service delivery model for collections, provided regular review, assessment and performance reporting occur. This recommendation was based upon the following Collection Service Review findings:

- WRS has demonstrated cost efficiencies across both manpower and fleet maintenance with collection costs per scheduled service decreasing by 6.5 per cent since 2014, even with labour wage increases and the implementation of the Green Cart Program in 2017;
- WRS residential performance for reliability and responsiveness to service requests is better than or comparable to most reporting municipalities;
- WRS has a competitive advantage, relative to private sector service providers, in attracting and retaining qualified drivers in Alberta's cyclical labour market;
- A mixed service delivery model is the most likely alternative to offer potential cost savings;
- Estimated annual savings of $425,000 to $1,275,000 may be achieved through a one-third mixed service delivery model, equating to less than two per cent of WRS' collection costs and a city-wide cost savings of approximately $1.30 to $3.90 per household per year; and
- A mixed service delivery model could put two of The City's service values objectives, customer experience and safety, at risk.

Although significant efficiencies have been realized in WRS over time through automation of collection, improvements in fleet maintenance costs, and implementation of industry specific route design software in 2018, there is further potential to reduce costs. Additional measures such as limiting excess garbage collection, developing an alternative fuel strategy, considering moving to a ten-hour work day and advocating for the Province to implement an Extended Producer Responsibility program for recycling are being explored, with reports coming to Council in 2019.

**Utilities & Environmental Protection Report to SPC on Utilities and Corporate Services 2019 January 23**

**ISC: UNRESTRICTED UCS2019-0113**

## Waste and Recycling Services 2018 Residential Collection Services Review

**ADMINISTRATION RECOMMENDATION:**

That the Standing Policy Committee (SPC) on Utilities and Corporate Services (UCS) recommends that Council: direct Administration to:

1. Receive this report for information; and
2. Direct Administration to assess and pursue service efficiency opportunities, as identified in the 2018 Collection Services Review, with a report back to SPC on UCS no later than Q2 2020.

### PREVIOUS COUNCIL DIRECTION / POLICY

2015 June – Waste & Recycling Services Collection Service Review: Operational Performance & Fleet Management (UCS2015-0324): report received for information.

2015 March – Waste & Recycling Services: Collection Service Review (UCS2015-0220): Council directed Administration to provide city-wide black, blue and green cart residential collection services through a public service delivery model for the remainder of the 2015-2018 business cycle, and to consider an alternate service delivery model in alignment with the 2019-2022 business cycle.

2014 October – Waste & Recycling Services Collection Service Delivery Review (UCS2014-0262): Council directed Administration to report back to SPC on UCS with a recommended collection service delivery model for black, blue and green cart service commencing in 2017 no later than 2015 March and review the consultants' recommendations on operational performance and fleet management and bring a status update to SPC on UCS no later than 2015 June.

### BACKGROUND

In 2017 WRS underwent operational change with the implementation of city-wide Green Cart Program (Council direction summarized in UCS2016-0440, Attachment 2) and the change in service level to every-other-week for black cart collection. In 2018 WRS' level of service for the three residential cart based services were: black cart every-other-week; blue cart weekly; and green cart weekly in the summer season and every-other-week for the winter season.

In preparation for the 2019-2022 service plans and budgets, WRS conducted a Residential (single detached dwelling) Collection Services Review for the Black, Blue and Green Cart Programs in 2018. WRS commissioned consultants with industry specific expertise in waste management (Tetra Tech Canada Inc. and Stack'd Consulting) and labour market analysis (HR Align Consulting) to complete the review.

### INVESTIGATION: ALTERNATIVES AND ANALYSIS

The consultants completed several different analyses to conduct a balanced review of WRS' performance in the delivery of residential black, blue and green cart collection services. Results of the 2018 Collection Services Review are summarized in Attachment 1.

The review included an analysis of WRS' performance since 2014, a benchmarking analysis of residential collection with other municipalities, an industry scan and strategic analysis, and a financial comparison of WRS to the private sector for residential cart based service. Combined,

## Waste and Recycling Services 2018 Residential Collection Services Review

these evaluations allowed the consultants to make recommendations. Results from these evaluations are included in the investigation below.

A municipal scan comparing residential waste and recycling charges, programs and level of service provided by each municipality is summarized in the table below. Typically, these charges cover full program costs including collection, processing/disposal, education and communications. The municipal scan identifies that WRS' charges remain aligned with those of other municipalities.

| Service Delivery Model | Municipality | 2019 Annual Fees | Type of Programs | Collection Frequency |
|---|---|---|---|---|
| Public | **Calgary** | $292 | *unlimited*  | Black EOW<br>Blue Weekly<br>Green summer Weekly winter EOW |
| Mixed | **Vancouver** | $299*<br>Black and Green only |  | Black EOW<br>Blue Weekly<br>Green Weekly |
| | **Toronto** | $347*<br>Black and Green only |  | Black EOW<br>Blue EOW<br>Green Weekly<br>Yard EOW seasonally |
| | **Edmonton** | $565 | Black/Green and Blue & Depots, Reuse Centre, Big bin events and Eco Stations | Black/Green Weekly<br>Blue Weekly |
| Private | **Airdrie** | $255 | *one bag*  | Black Weekly<br>Blue Weekly<br>Green summer Weekly winter EOW |
| | **Cochrane** | $258 |  | Black Weekly<br>Blue Weekly<br>Green summer Weekly winter EOW |

**Ontario and British Columbia have producer-funded recycling programs for blue cart recycling, therefore charges are for Black and Green cart service only.*

*EOW – every other week.*

To standardize the evaluation of WRS' residential collection services, a set of service value objectives were developed: customer experience, safety, environment and costs. Considered together, these objectives support understanding of the overall performance of collection services. However, key value-added components of WRS service delivery to Calgarians were not considered, for example: resources for emergency response and identifying and notifying 3-1-1 of incidents outside of WRS' scope of work.

The consultants' key results and recommendations for the collection service review can be summarized as follows.

**Utilities & Environmental Protection Report to SPC on Utilities and Corporate Services 2019 January 23**

**ISC: UNRESTRICTED UCS2019-0113**

## Waste and Recycling Services 2018 Residential Collection Services Review

*WRS' Efficiency and Effectiveness Analysis (Attachment 2)*

Since the 2014-2015 Collection Services Review, WRS has had major changes to both its services and levels of service. Attachment 2 summarizes the consultants' efficiency and effectiveness analysis of WRS' performance between 2014 and 2018.

- Collection costs have decreased by 6.5 per cent per scheduled service since 2014, even with collective bargaining labour wage increases and the introduction of the Green Cart Program in 2017.
- WRS and Fleet Services have demonstrated cost efficiencies across both manpower and fleet maintenance.
- WRS has been providing reliable, responsive and valued collection services with service reliability performance better than most reporting municipalities and comparable service request responsiveness.

*Industry Scan and Strategic Analysis (Attachment 3)*

The consultants completed a qualitative scan of alternative service delivery models and a strategic analysis of the residential collection industry. The following highlights were identified.

- Collection contracts primarily fail due to labour issues with the attraction and retention of qualified drivers.
- In Alberta, over the short-term, the private sector could likely provide reliable, cost effective services and a comparable alternative to WRS collection services.
- In the medium to long-term, the private sector could be challenged to attract and/or retain labour in Calgary, which can lead to higher risk of service unreliability.
- Private service providers may not be able to maintain initial cost savings over the life of the contract.
- WRS has a competitive advantage, relative to private sector service providers, in attracting and retaining labour in Alberta's cyclical labour market.
- Historically, The City has had an effective and positive relationship with the Labour Unions.
- Contracting out part of the service may get an aggressive bid from a private company to win a contract, but they may not be able to maintain initial cost savings over the life of the contract.
- A mixed service delivery model could put two of The City's service values objectives, customer experience and safety, at risk. This is due to the decrease in direct control a municipality has to achieve desired outcomes, a potential conflict between the drive for profit and service quality, and challenges associated with including performance measures within contracts.

*Cost Impact for Alternative Service Delivery Model (Attachment 4)*

The consultants recommended a cost comparison to a mixed service delivery model. For consistency with the 2014 review, a contract area of one-third of the residential collection services for black, blue and green carts was determined to be the most appropriate cost comparison for Calgary. The attachment shows the cost comparison between WRS and an ideal private sector service provider.

- Costs focused on labour including fringe benefits, fleet, miscellaneous business expenses, contract management costs, corporate allocations, and profit.
- Labour: WRS hourly driver labour rate is 10 per cent above the market median and WRS pays more for fringe benefits including pension. In the consultants' financial evaluation, the private sector has been given the benefit of both lower costs and greater efficiency over WRS.
- Fleet: WRS purchases trucks and fuel at the same price as the private sector, typically has a lower interest rate for purchases, and likely spends more on trucks to include ergonomic features. In the consultants' financial evaluation, the private sector has been given the benefit of both lower costs and greater efficiency over WRS.
- Contract management costs of $775,000 and a private sector profit of 10 per cent were included in the financial analysis.
- Based on the analysis, the estimated annual savings of $425,000 to $1,275,000 may be achieved by transitioning to a mixed service delivery model. This equates to less than two per cent of WRS' residential collection costs and a city-wide cost savings of approximately $1.30 to $3.90 per household per year.

*Consultants Key Recommendations (Attachment 4)*

This attachment summarizes the consultants' recommendations based upon the research and analysis completed.

- Maintain the public-sector service delivery model for residential collections, provided, regular review, assessment and performance reporting occur.
- Manage costs per scheduled service through the 2019 to 2022 cycle in balance with the service value objectives of customer experience, environment and safety objectives.
- Create and maintain performance measures and operational indicators for residential collection services to support annual reporting on progress across all three service value objectives, as noted in Attachment 5.
- Consider extending collection shifts to a ten-hour work day.
- Consider alternative fuel vehicles to further enhance cost savings.

*Benchmarking and Performance Measurement (Attachment 5)*

Regardless of the service delivery model, monitoring performance is a critical activity. WRS participates in several initiatives to monitor and compare performance including: Municipal Benchmarking Network Canada; National Solid Waste Benchmarking Initiative; annual Accountability Reports to Council; and The City's Envirosystem and Safety reporting systems.

Several existing performance measures and benchmarks will support WRS' efforts to continually monitor performance of the residential black, blue and green cart collection system. Use of measures that support all four of the service value objectives will create a balanced representation of overall performance. Attachment 5 shows performance measures for residential collection as they relate to the service value objectives. WRS is also committing to participate in either a zero-based review or another Collection Services Review to inform the 2023 to 2026 service plan and budget cycle.

*Residential Collection Services Summary*

## Waste and Recycling Services 2018 Residential Collection Services Review

The consultants' key findings upon completing the 2018 Collection Services Review were:

- WRS has been providing reliable, responsive and valued collection services;
- WRS has a competitive advantage to attract and retain qualified labour;
- Specific risks to changing the service model for residential black, blue and green cart collection services include customer experience and safety;
- WRS should develop an annual benchmarking plan to monitor its' indicative performance; and
- A mixed service delivery model likely has the potential for cost savings in the range of $425,000 to $1,275,000, equating to a city-wide cost savings of approximately $1.30 to $3.90 per household per year.

WRS' Black, Blue and Green Cart Programs offer highly valued services at competitive rates. Significant efficiencies have been realized over time with the introduction of automated collection, cost improvements in fleet maintenance, and the implementation of industry specific route design software in 2018.

The potential exists to further reduce collection costs for the Black, Blue and Green Cart Programs. The consultants have recommended WRS consider extending collection shifts to a ten-hour day and developing an alternative fuel strategy. In addition, WRS continues to explore cost cutting opportunities such as: limiting excess garbage collection, in-truck technology and advocating the Province to implement an Extended Producer Responsibility (EPR) program for recycling. Reports will be coming to Council in 2019.

### Stakeholder Engagement, Research and Communication

Other municipalities that have experience with alternative collection service delivery models were engaged regarding information on their services, levels of service and performance. Tetra Tech Canada Inc. and Stack'd Consulting completed strategic and analytical evaluations. HR Align Consulting conducted a labour market analysis of Class 3 drivers.

Citizen satisfaction with WRS continues to be consistently and highly valued. In 2018, citizen satisfaction with residential collection programs were:

- 88 per cent with residential garbage (black cart) collection;
- 91 per cent with residential blue cart recycling; and
- 78 per cent with green cart service (Ipsos Reid surveys, Spring Pulse and November 2018).

WRS has consistently delivered high-quality services that are important to citizens. These results largely demonstrate increased satisfaction of residential cart-based programs as they mature.

### Strategic Alignment

The Collection Services Review aligns with the 2019-2011 Council Directive for A Well-Run City:

> W2 – We need to shift our understanding and focus from how services are delivered to why services are delivered. The City must work on improving the value of municipal services delivered by simplifying and streamlining processes and procedures, cutting red tape, eliminating service silos, and discontinuing those services that The City should not

be providing. Beyond removing barriers, The City must move to a culture that actively promotes businesses.

### Social, Environmental, Economic (External)

*Social*

Customer experience of residential collection services needs to be consistent, reliable, and responsive to inquiries. Issues will be resolved in a timely, accurate and courteous way. At the same time residential black, blue and green cart collection services need to be performed in a way that ensures public and worker safety, while protecting public and private property.

*Environmental*

The City has a culture which focuses on environmental outcomes. For residential collection services, this places emphasis on greenhouse gas emissions and spills. Reductions in these aspects helps to protect air, land and water. As well, collection drivers facilitate diversion in the cart based programs through their cart tagging and education efforts.

*Economic (External)*

Ongoing evaluation of WRS' collection system to identify efficiencies minimizes the cost of the services WRS provides to Calgarians.

### Financial Capacity

***Current and Future Operating Budget:***

There are no direct impacts to WRS operating budget with these recommendations.

***Current and Future Capital Budget:***

There are no direct impacts to WRS capital budget with these recommendations.

### Risk Assessment

Continuing with the public-sector service delivery model for collections could lead to potential risks, including:

- customers not realizing potential savings from potentially lower cost service delivery model options;
- potential future city budget constraints may lead to a decreased level of service;
- potential for labour negotiations to impact costs and citizen customer service experiences; and
- though unlikely given the current economic climate and past performance, lack of competition could create complacency instead of striving for further efficiencies.

Anticipated risks with contracting out residential collection services include:

- initial savings promised to customers might not be realized over the term of the contract;
- aggressive bids and large contracts create less competitive markets over time resulting in potentially smaller cost savings;
- potential motive for profit becomes more important than quality service;
- failure to meet performance expectations for customer experience and safety;

## Waste and Recycling Services 2018 Residential Collection Services Review

- service levels impacted by contract default from lack of driver attraction and retention, especially in challenging cyclical labour markets; and
- service quality may suffer due to the difficulty of including qualitative performance measures within contracts.

It should also be noted that initiating and managing contracts may compete for available resources and other WRS strategic efforts, such as Pay-As-You-Throw (PAYT). Contract costs can also be negatively impacted by the desire to include flexibility to allow for future system changes. For example, a fixed contract term could result in delayed savings for citizens from Extended Producer Responsibility (EPR) implementation in Calgary.

**REASON(S) FOR RECOMMENDATION(S):**

Since 2014, WRS' performance shows: improved collection costs per scheduled service; collection reliability performance that is better than most reporting municipalities; and comparable responsiveness to service requests.

WRS' Black, Blue and Green Cart Programs offer highly valued services at competitive rates. Significant efficiencies have been realized over time with the introduction of automated collection, cost improvements in fleet maintenance, and the implementation of industry specific route design software. The consultants have recommended WRS consider extending collection shifts to a ten-hour day and developing an alternative fuel strategy to realize further efficiencies. In addition, WRS continues to explore cost reduction opportunities such as: limiting excess garbage collection, in-truck technology and advocating the Province to implement an Extended Producer Responsibility (EPR) program for recycling and reports will be coming to Council in 2019.

**ATTACHMENT(S)**

1. Attachment 1 – WRS 2018 Residential Collection Services Review Summary
2. Attachment 2 – Efficiency and Effectiveness Analysis
3. Attachment 3 – Industry Scan and Strategic Analysis
4. Attachment 4 – Cost Impact for Alternative Service Delivery Model and Recommendations
5. Attachment 5 – Residential Cart based Collection Benchmarking and Performance Measurement

# WASTE & RECYCLING SERVICES

## 2018 Residential Collection Services Review Summary

# Table of Contents

# 1. INTRODUCTION

In preparation for the 2019-2022 business plan and budget, Waste & Recycling Services (WRS) conducted a 2018 residential Collection Services Review. This review focuses on the single detached dwelling residential collection system, specifically for Black, Blue and Green Cart Programs. WRS commissioned several consultants with industry specific expertise. Tetra Tech Canada Inc. and Stack'd Consulting completed the strategic and analytical evaluations and HR Align Consulting completed the labour market analysis.

The 2018 scope of work included: strategic review; external scan; analysis of WRS' efficiency and effectiveness; performance measurement and benchmarking; labour survey; industry evaluation and cost comparison; and industry research including trend identification.

## 1.1 CURRENT RESIDENTIAL SERVICES AND LEVELS OF SERVICE

Operationally, WRS underwent significant change in 2017, with the city-wide implementation of the Green Cart Program, and the change to every-other-week black cart garbage collection. In the fall of 2018, the Green Cart Program started every-other-week winter collection.

### BLACK CART COLLECTION

The Black Cart Program has every-other-week collection, Tuesday through Friday, of a 240 litre cart, plus excess bags outside the cart. WRS' Director can limit excess, if necessary, because of operational constrains from large volumes, to ensure all customers receive service. Service runs 52 weeks per year.

### BLUE CART COLLECTION

The Blue Cart Program has weekly collection, Tuesday through Friday, of a 240 litre cart, without excess outside of cart. Service runs 52 weeks per year.

### GREEN CART COLLECTION

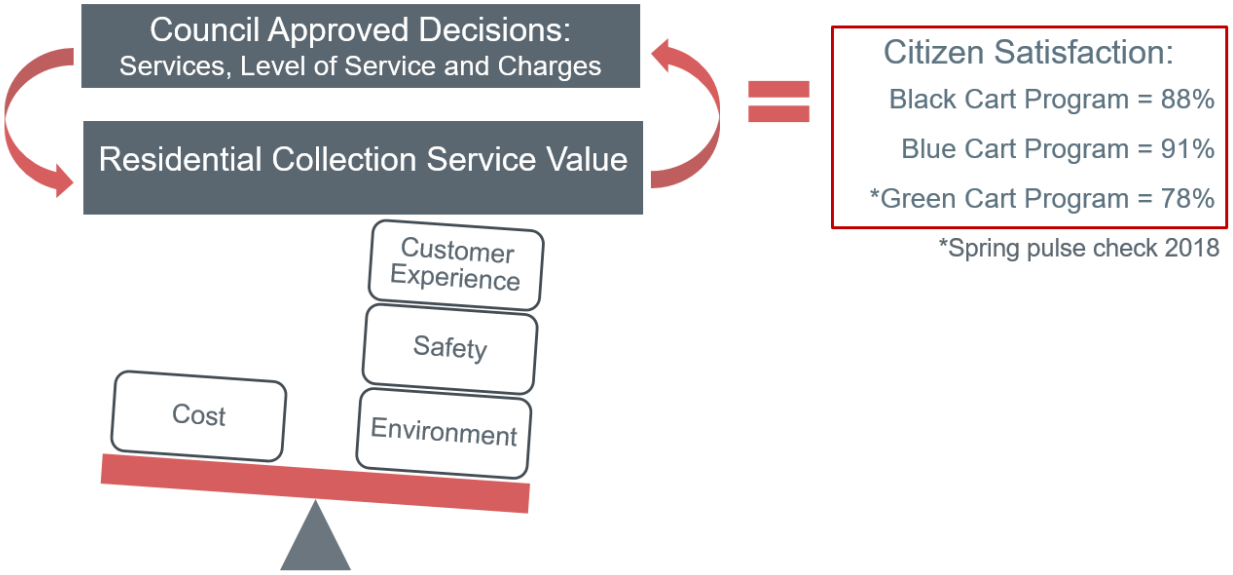
The Green Cart Program has weekly collection in the summer months, and every-other-week collection (November to March) in the winter months as of the fall of 2018. Collection occurs Tuesday through Friday, of a 240 litre cart, plus excess outside the cart in paper bags or bundled. WRS' Director can limit excess, if necessary, because of operational constrains from large volumes, to ensure all customers receive service. Service runs 52 weeks per year.

# 2. STRATEGIC REVIEW - OBJECTIVES

To standardize the evaluation of WRS' residential collection services, a set of service value objectives were developed. The following objectives define the residential collection service values: customer experience, safety, environment and costs. Considered together, the service value objectives support understanding of the overall performance of these services and how WRS makes life better for Calgarians every day.

Figure 1 below shows the service value objectives trade-off. It illustrates how residential collection service values and Council approved decisions regarding the service, service level and charges, impact the citizen satisfaction survey results for residential collection.

**FIGURE 1: SERVICE VALUE OBJECTIVES AND CITIZEN SATISFACATION**




These residential collection service value objectives are defined in Table 1. Further analysis within the 2018 Collection Services Review uses these service value objectives as their framework.

**TABLE 1: SERVICE VALUE OBJECTIVES DEFINITIONS**

| Service Value Objectives | Definition |
|---|---|
| **Customer Experience** | • Deliver consistent and reliable black, blue and green cart collection services.<br>• Respond to inquiries and resolve issues in a timely, accurate and courteous way. |
| **Safety** | • Ensure public and worker safety while protecting public and private property. |
| **Environment** | • Protect air, land and water.<br>• Facilitate waste diversion. |
| **Cost** | • Provide safe; environmentally responsible; reliable and responsive customer experiences at the lowest possible cost. |

Beyond these objectives, WRS' provision of residential collection services allows for the opportunity for Calgarians to receive additional value-added service. Examples include: WRS participating in emergency responses; WRS often returns to collect a cart, regardless of fault; or drivers as part of the wider

community who are able to call into 3-1-1 for issues beyond their own scope of work, as additional eyes and ears on the streets and back alleys of Calgary.

## 2.1 CUSTOMER SATISFACTION

The City of Calgary (The City) conducts an annual Citizen Satisfaction Survey to ask Calgarians how satisfied they are with City performance, programs, services, and overall quality of life in Calgary. Specifically included in the survey are questions asking citizens about the importance of and satisfaction with, residential garbage, recycling and green cart services. Table 2 shows the history of citizen satisfaction survey results.

**TABLE 2: CITIZEN SATISFACATION SUVEY RESULTS FOR RESIDENTIAL COLLECTION PROGRAMS**

| Calgary Citizen Satisfaction Results | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|
| Importance of Residential Garbage (Black cart) collection | 99% | 98% | 99% | 99% | 99% | 99% | 99% | 98% | 98% |
| Satisfaction with Residential Garbage (black cart) collection | 95% | 93% | 94% | 95% | 96% | 97% | 96% | 91% | 88% |
| Importance of Blue Cart Recycling | 89% | 92% | 95% | 94% | 94% | 95% | 93% | 93% | 93% |
| Satisfaction with residential blue cart recycling | 83% | 84% | 90% | 90% | 92% | 92% | 93% | 93% | 91% |
| Importance of Green Cart Service | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | *80% |
| Satisfaction with Green Cart Service | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | *78% |

***THE 2018 SPRING PULSE SURVEY INCLUDED QUESTIONS REGARDING THE GREEN CART PROGRAM.**

For The City, residential Black Cart and Blue Cart Programs continue to be a primary strength. WRS has consistently delivered high-quality services that are important to citizens. These results largely demonstrate increased satisfaction of residential cart-based programs as they mature over time.

# 3. PROJECT FRAMEWORK

Using the integrated service value objectives, the consultants completed several different types of analyses in order to perform a balanced review of WRS' overall collection performance in the delivery of residential black, blue and green cart services.

Included in the review was: an analysis of WRS' performance since 2014; a benchmarking analysis of residential collection to other municipalities; an industry strategic analysis; and a financial comparison of WRS to the private sector for a portion of The City's residential cart-based service. Combined, these evaluations allowed the consultants to draw conclusions and make recommendations on WRS service provision in consideration of a potential move to a mixed service provider model for a portion of The City's residential collection; potential cost savings; and associated risks for changes in service delivery models. Results from these evaluations are further discussed below.

Often finding comparable benchmarks for a distinct collection system is challenging as the likelihood of finding another municipality with the same residential services and level of service is low. As such, it is important for WRS to monitor its own performance over time. Given the timing of these service changes and this review it was challenging to gather full-year data of the new collection system as part of this evaluation, the consultants performed necessary data extrapolation to be used as a basis for analysis, as required.

## 4. CUSTOMER EXPERIENCE

Customer experience is the result of direct customer interaction. In 2018, WRS residential cart-based collection had over 40 million scheduled services to homes across Calgary. WRS strives to make these interactions reliable, responsive, timely, accurate and courteous.

WRS delivery of collection services allows for direct control of this objective. It allows The City to retain an in-depth understanding of residential collection operations issues and opportunities to shape customers' experiences. Additional benefits to public service delivery is that it maintains collection capabilities for emergency response situations and places city employees in the community to offer value-added services, as previously mentioned.

Reliability is measured through missed collections per scheduled service. WRS' performance is better than other municipalities who reported this performance metric. Further opportunities exist to improve data gathering for this performance measure by determining when collection has been missed by a driver, versus a 'missed collection' for other reasons. Examples of missed collections that are not driver error include: carts not set out on time, carts containing inappropriate materials, carts not used, incorrect cart spacing or emergency road closure. In these cases, collection was not possible, yet was recorded as a 'missed collection'.

WRS' response time for service requests is typically between one and two days and is consistent with other municipalities.

The consultant evaluation reported that consistent, reliable service is achieved through the driving workforce. Typically, drivers with longer tenures create a more consistent customer experience. WRS has a competitive advantage for providing collection services based on its ability to attract and retain qualified drivers throughout the cyclical labour markets in Alberta. The City's relationship with the Labour Union also positively impacts this evaluation.

The consultants noted that private companies may have risks of labour instability based on their inability to attract and retain drivers over the long-term, which can impact the reliability of the customer's

experience. However, if collection is completed reliably on the scheduled day of service, then citizens may not notice any change in service delivery model.

Municipalities can have conflicting pressures to limit user fee increases while still maintaining high quality service. If budgets are too stringent, then customer service may be impacted; however, the private sector may have a similar challenge between the conflicting objectives of profit and customer service.

## 5. SAFETY

A safe collection operation requires constant focus and attention. Safe operations are not only about the driver's safety, but about public safety and protection of public and private property. Benchmarking across Canada shows that safety performance is not consistently measured or managed. Safety performance measures are not always included in collection contracts, or if they are included, results are often not publicly reportable outside the contract for comparison purposes.

WRS delivery of collection operations allows for direct monitoring of impacts of safety choices in our community. To support safe services, The City applies stricter driver infringement rules than the Province of Alberta.

Industry research suggests that public collection drivers often experience better working conditions than the private sector. Enhanced truck ergonomic features support driver safety and safety equipment, such as 360 degree cameras, creating a safer environment for the public. The industry-wide move to automated collection has decreased the number and severity of injuries and claims for drivers. However, excess collected outside of carts still has an impact on driver safety, as this is where the majority of sprains and strains happen from lifting, slipping and falling.

## 6. ENVIRONMENT

Through The City's environmental management system (Envirosystem), The City supports a culture focused on environmental outcomes. For WRS residential collection services this places emphasis on both greenhouse gas emissions and spills. WRS supports a culture of spill reporting, such that root cause analysis can be applied and future incidents avoided. Other municipalities have noted that it is difficult to get environmental performance reporting from contracted services unless explicitly included as a contract requirement.

WRS drivers facilitate diversion efforts for the Black, Blue and Green Cart Programs through their education and cart tagging efforts. Interactions with customers become opportunities to reinforce behaviour, using tags to help educate where behaviour can be changed.

The public sector is often more risk adverse in the adoption of new technology for vehicles. For residential collection, the private sector is adopting both Compressed Natural Gas (CNG) fueled trucks and electric trucks. Both types of vehicles produce fewer emissions than diesel vehicles. Investments in specific fleet is a significant operating and capital costs and as such, relevant and rigorous testing is

important. WRS is developing an alternative fuel strategy to further enhance environmental outcomes and potentially increase cost savings.

## 7. COSTS

Since the 2014 and 2015 Collection Services Review, WRS has had major changes to both its services and levels of service. Council decisions based on Administration recommendations on levels of service impacts collection costs. Examples include: continuing to collect excess garbage outside of black carts (more expensive), and switching to every-other-week winter collection for the Green Cart Program (less expensive).

WRS delivery of collection services provides Council with a degree of cost control through the approval of budgets and associated performance expectations. WRS residential black, blue and green cart collection services are operated on cost recovery basis.

The consultants' research concludes that a potential initial cost savings from privatizing collection services may be hard to maintain over the life of a multiple-year contract. Often aggressive bids are submitted to 'win the work', resulting in a first mover advantage over competitors. In the long run, these bids are often difficult to maintain and may pose an additional challenge of reduced competition for future bids.

Overall, WRS collection services costs per scheduled service have decreased across the current business cycle (Table 3). Since 2014 black and blue cart collection costs per scheduled service have decreased 3.5 per cent even with collective bargaining increases. If those increases were backed out the decrease in costs per scheduled service would be 8.8 per cent. If green cart costs for 2017 and 2018 were added to the calculations, cost per scheduled service would have decreased 6.5 per cent and adjusted for collective bargaining would have decreased 10.2 per cent.

**TABLE 3: RESIDENTIAL COST PER SCHEDULED SERVICE**

| Residential cost per scheduled service | 2014 | 2018 | Percent Change 2018 vs 2014 | Percent Change 2018 Adjusted Costs vs 2018 |
|---|---|---|---|---|
| **Black and Blue** | $1.40 | $1.35 | -3.5% | -8.8% |
| **Black, Blue and Green** | $1.40 | $1.31 | -6.5% | -10.2% |

### 7.1 EFFICIENCY AND EFFECTIVENESS

When comparing collection performance, it is important to remember that it can be impacted by program variables including: distance between stops; distances to processing and disposal sites; materials to be collected; material weight; excess allowed outside the cart; weather; topography; and traffic.

For overall residential collection performance one of the most useful proxies for efficient collection performance is households collected per truck per day, or households collected per truck per hour. This measure demonstrates the importance of efficiency of the main two cost drivers, vehicles and labour resources. WRS performance since the 2014 Collection Services Review is noted in Table 4. Going forward, benchmarking this efficiency may be more meaningful if changed to households collected per truck per hour. This would take out any bias in different collection systems days and hours of work between municipalities.

**TABLE 4: HOUSEHOLDS COLLECTED PER TRUCK PER DAY**

| Residential Collection Efficiency | 2014 | 2018 |
|---|---|---|
| Black Cart Program | 905 | 1050 |
| Blue Cart Program | 1225 | 1200 |
| Green Cart Program | Not applicable | 1050 |

In 2017, WRS had major changes to its operation with the addition of the Green Cart Program and the change to every-other-week collection for the Black Cart Program. Improvements in black cart collection efficiency is notable considering the 2017 change to every-other-week collection increased set out, with most carts set out every collection period, and unlimited excess still acceptable outside the black cart. Further efficiencies could be achieved in black cart collection if excess outside the cart were to be removed or limited.

## 7.2 LABOUR AND LABOUR MARKET EVALUATION

The industry scan completed by the consultants noted that generally in North America there is a shortage of qualified drivers for collection services. In the short-term, in Calgary the private sector would likely be able to find qualified drivers and pay them a lower rate than The City, which would create a cost savings. However, with a return to a strong economy there is a risk that private sector would have to increase the rate they pay drivers becoming more expensive or not able to get drivers over the life of a contract due to higher competition for qualified drivers across the province.

The consultants noted WRS has a competitive advantage for providing collection services based on its ability to attract and retain qualified drivers throughout cyclical labour markets. The consultants identified that offering an attractive total compensation package, trucks featuring ergonomic features for driver safety and a collaborative relationship with the Labour Unions support this advantage.

WRS hired an independent consultant that specializes in labour market evaluations, HR Align Consulting, to complete a salary survey of Class 3 drivers to gain an understanding of market conditions and commented on the likely range of fringe benefits. The consultant gathered publicly available 2018 market data related to Class 3 truck drivers. As is standard salary survey methodology, the consultant collected top job rates and calculated the median of all participants' data. The market median was then compared to The City's top rate ($34.85). In short, the analysis compares the market's top step to The City's top step.

The salary reviewed 16 Alberta private sector organizations, 7 municipalities in Alberta; and results from the Alberta Government Wage and Salary Survey, which is completed every two years. The consultant noted that the Alberta Government Wage and Salary Survey is "unique and insightful as it incorporates a large number of smaller private sector employers (less than 10 employees) that do not typically participate in labour surveys".

The review identified the "2018 median pay rate for comparable Alberta private sector Class 3 truck drivers as $31.72 and $31.75 for the public sector (low/high range of all private sector data is $27.90-$36.56) and public sector ($28.30 – $35.49). Standard industry methodology for estimating a job market competitive range is to calculate plus/minus five percent of the market median. Applying this methodology to private sector 2018 Alberta class 3 driver rates would result in a competitive range of $30.13 to $33.31."

The survey "recognized that of the 16 private sector organizations surveyed, there were 16 distinct market rates collected". The "median calculation ($31.72) simply provides a centralized representation of all the data. The plus/minus five percent suggests: a) The market for truck drivers should not be viewed as one precise number, $31.72 but rather a range; and b) If an Alberta business is paying $30.13 to $33.31, they are generally aligned with where the market data clusters."

The consultant noted "that relative to the rest of Canada, Alberta has been a distinct labour market for 15-20 years. Today, most Alberta companies compare their pay exclusively with other Alberta employers".

For reference purposes, WRS also asked the consultant to reviewed labour rates in Ontario and British Columbia (BC). "The data sample from Ontario and BC indicates rates average 8 per cent behind the Alberta market and 18 per cent behind The City of Calgary drivers. However, the consultant recommends that non-Alberta market data should be considered as contextual information only."

The City's "current pay rate for Waste & Recycling residential collection drivers is $34.85. Therefore, The City of Calgary is approximately 10% above the market median and calculating that range using the plus/minus 5% methodology".

Tetra Tech and Stack'd Consulting's efficiency and effectiveness analysis revealed that WRS has produced cost efficiencies of 6.5% in combined labour for black and blue cart collection costs per scheduled service over the last five years, after adjustments for labour rate increases. As WRS does not directly control collective bargaining decisions, this demonstrates how WRS has more efficiently deployed manpower since 2014. Green cart has improved efficiency in all cost areas since rollout in mid-2017.

## 7.3 FLEET

Since 2014, WRS and Fleet Services have increased collaboration for vehicle procurement, maintenance, and driver training. Over that same time, fleet maintenance costs per scheduled service shows improvement across all three services and fleet leasing costs have remained consistent.

However, even with these improvements the consultants concluded that it is likely private companies would pay less for fleet due to a lower fleet labour rate, greater standardization of vehicles and lean operational practices.

The consultant's industry scan concluded that WRS Fleet Services has competitive purchasing power for vehicle procurement, with the possible exception of one large multi-national service provider. In the purchase of fleet, The City likely has lower borrowing rates for capital purchases. It should be noted that vehicle costs are impacted by United States (US) dollar exchange rates, as all chassis come from the US. Vehicle costs are also impacted by choices of ergonomic and safety features.

Between 2014 and 2018, fuel and oil costs per scheduled service improved. This is likely attributed to differences in market prices and not to overall efficiency. In future, the potential use of Compressed Natural Gas (CNG) vehicles could produces saving in fuel costs and greenhouse gas emissions. But, CNG vehicles will add to the purchase cost and will require new, more expensive fueling stations.

Several improvements have been implemented since 2014, such as adjustments to inspection and maintenance schedules to allow for most work to occur after hours and during the weekends. This coordination allows WRS to lower our vehicle spare ratio from 24 per cent in 2014 to 16.5 per cent in 2018. Typically, jurisdictions have reported spare vehicle ratios between 10 and 25 per cent. It has been observed that contracts with the private sector often require a minimum of 10 per cent spare vehicle ratio.

WRS is updating collection routes using a waste collection industry specific software, Route Smart™. The first routes have been rolled out and updates based on actual use are under development. Use of industry specific software gives WRS the ability to operate routes based on industry best practices. This should allow WRS to be as efficient as large private waste haulers. However, the consultants noted that WRS has not implemented turn-by-turn technology in trucks, which gives the driver a specific route to follow to complete the necessary number of households. This technology would likely add a further level of efficiency to operations.

Initiatives currently underway include the implementation of software that improves asset lifecycle analytics and truck lifecycle prediction; on-going efforts to improve pre-trip inspections; and a WRS alternative fuel strategy.

Previously WRS has specified vehicles that are interchangeable between garbage, recycling and food and yard waste collection. It was thought that allowing vehicles to move from one area to another, as required, was the most efficient fleet strategy. Experience with this model has shown that this is not necessarily the case. In 2018, the fleet acquisition strategy was adjusted with the ordering of 'fit for purpose' vehicles, specifically for blue cart collection.

## 7.4 CONTRACT MANAGEMENT

Currently WRS does not have any contract management costs with public service delivery. Moving to private collection through an alternative model will add costs for: procurement; contract management; oversight; quality control; and 3-1-1 service request coordination. The consultants estimated that 8 additional full time positions would be required to contract out one-third of residential collection.

One time transition costs per contract period are estimated at $600,000 every 7 to 8 years, based on contract length. It was estimated by the Toronto Environmental Alliance study of waste collection that proper monitoring for waste collection contracts costs are about 20 per cent of the annual contract costs to achieve high performance levels.

### 7.5 MISCELLANEOUS COSTS

A move to an alternative service delivery model would have several changes both positive and negative to miscellaneous costs. Most noticeable are the avoidance of Corporate Human Resources costs which are typically based on the total number of full-time equivalent positions due to the reduction in WRS residential collection services positions.

The consultants noted that miscellaneous business expense costs per scheduled service has increased over time. They recommended that further review may be warranted in this area.

### 7.6 PROFIT

According to industry review, private sector companies' profit margins specifically for collection operations are estimated at 10 per cent. Previous studies have noted that a range of 7 per cent to 15 per cent are possible.

## 8. COST OF ALTERNATIVE SERVICE DELIVERY

There are risks involved in switching service delivery models. The consultants' industry scan noted that a mixed service delivery model has potential for cost savings relative to WRS existing service delivery model. For consistency with the 2014-2015 Collection Services Review, a contract area of one-third of the residential collection services for black, blue and green carts was determined to be the most appropriate cost comparison for Calgary. The consultants were not asked to comment on the ideal number of households to consider contracting out, their scope did include assessment of risks and potential savings.

The comparative financial analysis for the two service delivery models for 1/3 of Calgary's residential collection is based on costs for: labour; fleet; miscellaneous business expenses; corporate allocations; and profit. Estimates are based on differences between known WRS costs and efficiencies; and expected private sector costs and efficiencies. Table 5 summarizes the cost comparison.

**TABLE 5: SUMARY COST COMPARISON OF 1/3 OF SERVICE DELIVERY PUBLIC VS. PRIVATE**

| Cost Element | WRS Current Model Annual Cost for 1/3 Collection Network | 1/3 Private Sector Estimate | | 1/3 Private Sector vs. WRS Current Model Difference |
|---|---|---|---|---|
| Labour | $8.928 million | $6.919 million | | ($2.009 million) |
| Fleet Leasing | $3.473 million | $3.039 million | | ($0.434 million) |
| Fleet Maintenance | $3.096 million | $2.787 million | | ($0.309 million) |
| Fuel & Oil | $10388 million | $1.319 million | | ($0.069 million) |
| Misc. Business Exp. | $0.874 million | $0.830 million | | ($0.044 million) |
| Contract Management | - | $0.775 million | | +$0.775 million |
| Corp HR Allocations | $0.250 million | - | | ($0.250 million) |
| Profit | - | $1,490 million | | +$1.490 million |
| **Total Difference** | **$18.011 million** | **$17.160 million** | | **($0.851 million) +/- 50% range** |

Overall, annual savings of approximately $850,000 may be achieved with an alternative service delivery model where one third of residential black, blue and green cart collection are contracted out. This is less than 2 per cent of WRS' entire collection costs and equates to a possible city-wide rate savings of $2.59 per household per year. Based on the nature of this evaluation, the analysis could vary by as much as plus or minus 50 percent.

## 9. RISKS

WRS' existing residential collection services model could lead to some potential risks. These risks include:

- Customers not realizing savings passed onto them from potentially lower cost service delivery options;
- Potential future city budget constraints may cause the level of service to decrease;
- Potential labour negotiation impacts on costs are unknown, while unlikely, there is the potential for impacts to citizen customer service experiences if contract negotiations were to become contentious; and
- Although unlikely given the current economic climate and past performance, lack of competition could create complacency instead of striving for further efficiencies.

As well, there are anticipated risks with contracting out residential black, blue and green cart collection services. These risks include:

- Initial savings promised to customers might not be realized over the term of the contract;
- Aggressive bids and large contracts can create less competitive markets over time resulting in potential smaller cost savings;
- The profit motive could become more important than quality service, if costs are higher than anticipated at the time of the bit;
- Moving to a mixed service delivery model poses potential risks to performance in Customer Experience, particularly for reliability, and safety, due to the lack of control over the service and an increased risk for the private entity to attract and retain qualified drivers;
- Industry scan has noted that the most likely cause for contract default is the lack of qualified drivers, especially in a challenging labour market like Calgary where there are large fluctuations in demand based on the cyclical nature of the oil and gas industry, this could cause service level impacts; and
- Customer service quality could suffer due to the difficulty of including qualitative performance measures and reporting requirements within contracts.

It should also be noted that initiating and managing contracts may compete for available resources and other WRS strategic efforts, such as Pay-As-You-Throw (PAYT). Contract costs can also be negatively impacted by the desire to include flexibility to allow for future system changes. For example, a fixed contract term could result in delayed savings for citizens from Extended Producer Responsibility (EPR) implementation in Calgary.

## 10. RESIDENTIAL CHARGES – MUNICIPAL SCAN

A recent scan of charges for residential waste programs are shown in Table 6 below. Typically, these charges are for full program costs including: collection, processing/disposal, education, communication and administration. Municipalities were selected to cover various service delivery models including, public, mixed and private.

It should be noted that Ontario and British Columbia have producer-funded recycling programs (Extended Producer Responsibility) for recycling. Therefore, the charges noted for Toronto* and Vancouver* are for Black and Green cart services only.

**TABLE 6: SCAN OF OTHER MUNICIPALITIES' WASTE MANAGEMENT CHARGES**

| Service Delivery Model | Municipality | 2019 Annual Fees | Type of Programs | Collection Frequency |
|---|---|---|---|---|
| **Public** | Calgary | **$292** | *unlimited*  | Black EOW<br>Blue Weekly Green summer Weekly winter EOW |
| **Mixed** | Vancouver | **$299*<br>Black and Green only** |  | Black EOW<br>Blue Weekly<br>Green Weekly |
| | Toronto | **$347*<br>Black and Green only** |  | Black EOW<br>Blue EOW<br>Green Weekly<br>Yard EOW seasonally |
| | Edmonton | **$565** | **Black/Green and Blue & Depots, Reuse Centre, Big bin events and Eco Stations** | Black/Green Weekly<br>Blue Weekly |
| **Private** | Airdrie | **$255** | *one bag*  | Black Weekly<br>Blue Weekly<br>Green summer Weekly winter EOW |
| | Cochrane | **$258** |  | Black Weekly<br>Blue Weekly<br>Green summer Weekly winter EOW |

Vancouver, Toronto, Airdrie and Cochrane all limit either the amount of garbage for collection and / or the amount of paid excess garbage that can be collected, which impacts collection efficiency and costs to deliver services.

This illustrates that even though the potential exists for residential collection savings WRS' overall program charges remain in line.

## 11. RESIDENTIAL COLLECTION PERFORMANCE

WRS participates in several initiatives to monitor and compare performance including: Municipal Benchmarking Network Canada (MBNCanada); National Solid Waste Benchmarking Imitative (NSWBI); annual Accountability Reports to Council; and The City's Envirosystem and Safety reporting systems.

WRS will continue to benchmark and monitor performance of the residential cart-based collection system, using measures from both existing initiatives and corporate programs to monitor black, blue and green cart collection services. Combined use of all these measures supports achieving the outcome of providing safe; environmentally responsible; reliable; and responsive customer experiences at the lowest possible cost.

Any collection service delivery model has risks and it is important to evaluate and monitor those risks to determine future courses of action. As such, WRS is also committing to participate in either a Zero-Based Review or another Collection Services Review to inform the 2023 to 2026 service plan and budget cycle.

## 12. CONSULTANTS KEY RECOMMENDATIONS

As part of the 2018 Collection Services Review, the consultants made 10 individual recommendations as a result of the research and analysis completed. Highlights include:

- Maintain the public-sector service delivery model for residential collections, provided, regular review, assessment and performance reporting occur.
- Manage costs per scheduled service through the 2019 to 2022 cycle in balance with the service value objectives of customer experience, environment and safety objectives.
- Create and maintain performance measures and operational indicators for residential collection services to support annual reporting on progress across all three service value objectives.
- Consider extending collection shifts to a ten-hour work day.
- Consider alternative fuel vehicles to further enhance cost savings.

## 13. SUMMARY

The key findings upon completing the 2018 Collection Services Review were:

- WRS has been providing reliable, responsive and valued collection services;
- WRS has a competitive advantage to attract and retain qualified labour;
- Specific risks to changing the service model for residential black, blue and green cart collection services include customer experience and safety;
- WRS should develop an annual benchmarking plan to monitor its' indicative performance; and
- A mixed service delivery model likely has the potential for cost savings in the range of $425,000 to $1,275,000, equating to a city-wide cost savings of approximately $1.30 to $3.90 per household per year.

WRS' performance since 2014 shows: improved collection costs per scheduled service; better cost efficiencies in labour and fleet maintenance per scheduled service; collection reliability performance that is better than most reporting municipalities; and comparable responsiveness to service requests.

Regardless of the service delivery model, monitoring performance is a critical activity. WRS continues to be part of several benchmarking initiatives and corporate performance reporting system that allow monitoring of residential black, blue and green cart collection performance. Use of measures that

support all four service value objectives creates a balanced representation of overall performance and will be used to report annually on WRS' residential Collection Service. Transparent reporting assures the public of the value for money received from residential collection services.

A mixed service delivery model is the most likely alternative to WRS' current service delivery model to offer potential cost savings. Estimated annual savings of $425,000 to $1,275,000 may be achieved through a one-third mixed service delivery model, equating to less than 2 per cent of WRS' collection costs and a city-wide cost savings of approximately $1.30 to $3.90 per household per year. However, a mixed service delivery model could put two of The City's service values objectives, customer experience and safety, at risk.

WRS' Black, Blue and Green Cart Programs offer highly valued services at competitive rates. Significant efficiencies have been realized over time with the introduction of automated collection, cost improvements in fleet maintenance, and the implementation of industry specific route design software in 2018.

The potential exists to further reduce collection costs for the Black, Blue and Green Cart Programs. The consultants have recommended WRS consider extending collection shifts to a ten-hour day and developing an alternative fuel strategy. In addition, WRS continues to explore cost cutting opportunities such as: limiting excess garbage collection, in-truck technology and advocating the Province to implement an Extended Producer Responsibility (EPR) program for recycling. Reports will be coming to Council in 2019.

# Waste & Recycling Services Collection Services Review
# Attachment 2 – Efficiency and Effectiveness Analysis

PRESENTED TO
**The City of Calgary**

DECEMBER 2018
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# 1.0 STRATEGIC, EFFECTIVENESS AND EFFICIENCY ANALYSIS

The purpose of this section is to analyze WRS' recent performance for both effectiveness and efficiency regarding the delivery of residential collection services. In addition, it provides a strategic analysis of the waste collections industry's competitive dynamics, including an analysis of competitive advantages between WRS and the private sector.

## 1.1 Financial Overview

This section identifies the significant cost elements which comprise WRS' current residential collection services model. In addition, it itemizes how these costs comprise each the black, blue, and green cart collection services.

A review of the projected 2018 operating and maintenance (O&M) collection costs was performed each for black, blue, and green cart program. These were projected based on actual costs to date (as of the end of June 2018) and projected costs for the remainder of the calendar year. Considerations were also given to a planned change to the green cart service level, which is planned to adjust to once every two weeks at the start of November 2018. On a go-forward basis, it is acknowledged that green cart will be collected once every two weeks across November to March and once every week from April to October. WRS estimates the cost savings over the course of a full year to be approximately $2 million.

The total projected 2018 O&M costs for each of the curbside programs is detailed in the chart below.

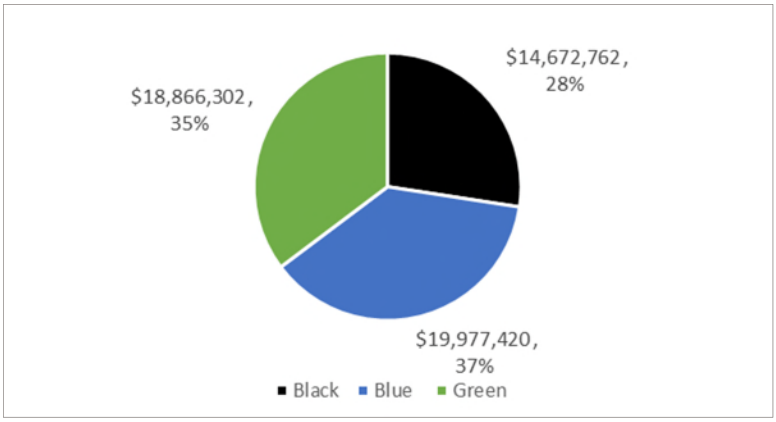


**Figure 4-1: Project 2018 Residential Collection Costs by Service**

This demonstrates that a slightly greater share of the present residential collection programs is focused on the diversion programs. Between the blue and green cart programs, the total collection service O&M costs comprise 72% of the total collection services costs. The remaining 28% is associated with the black cart program. This is not surprising given the scale back in the collection frequency of black cart to once every two weeks across 2018 and the weekly collections (to date) for each the blue and green carts.

In addition, analysis was provided to determine how the total collection costs per service have evolved over the previous business cycle. Figure 4-2 below illustrates this. Total collection costs have increased since 2014 from $45.2 million to a 2018 projected total of $53.5 million, but the primary source for this has been the introduction of the Green Cart program. Customer growth has been another driver for increased costs, as the number of Black Cart customer accounts has increased from 313,250 to in 2014 to an estimated 332,466 households in 2018. Total costs for Black cart collections have declined as its collection frequency was scaled back to once every two weeks.

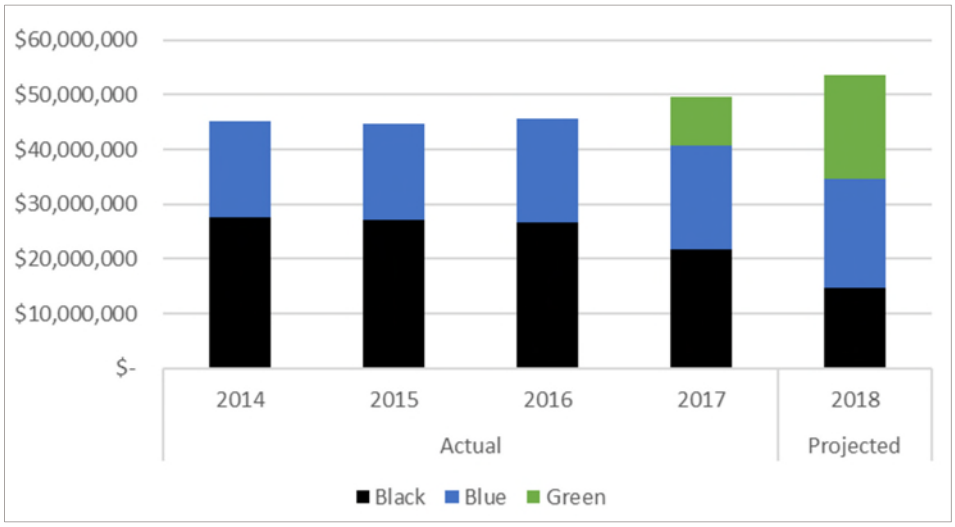


**Figure 4-2: Total Collection Costs**

As noted in Section 3.2, the majority of WRS' residential collection costs are comprised of fleet management, manpower labour, and administrative expenses. These costs are further itemized for each the black, blue, and green cart programs below.

## Black Cart

The following chart (Figure 4-3) details the composition of the projected 2018 black cart collection costs by element. Internal labour represents the largest component at 50% ($7.31 million). Fleet costs comprised of leasing ($2.50 million), maintenance ($2.61 million), and fuel and oil ($1.13 million) together represent 42% of the total costs. The remaining 8% of costs are represented by miscellaneous administration costs, including training, utilities, telecommunications, route design and sanding.

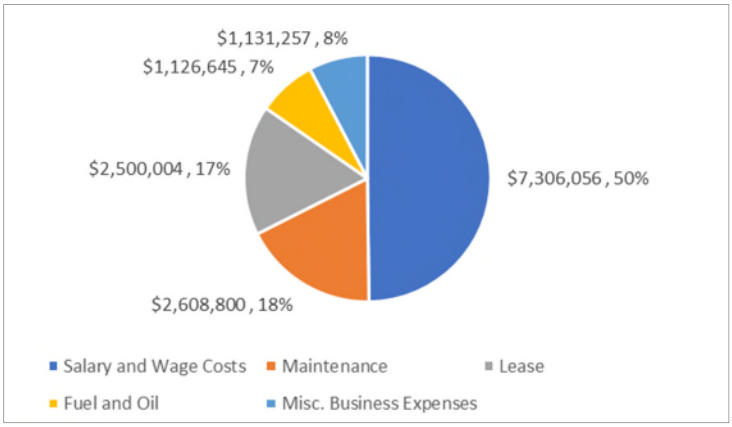

**Figure 4-3: 2018 Project Black Cart Collection Service Costs by Element**

## Blue Cart

The following chart details the composition of the projected 2018 Blue Cart collection costs by element. Internal labour represents the largest component at 52% ($10.40 million). Fleet costs comprised of leasing ($3.41 million), maintenance ($3.96 million), and fuel and oil ($1.48 million) together represent 44% of the total costs. The remaining 4% of costs are represented by miscellaneous administration costs, including training, utilities, telecommunications, route design and sanding.

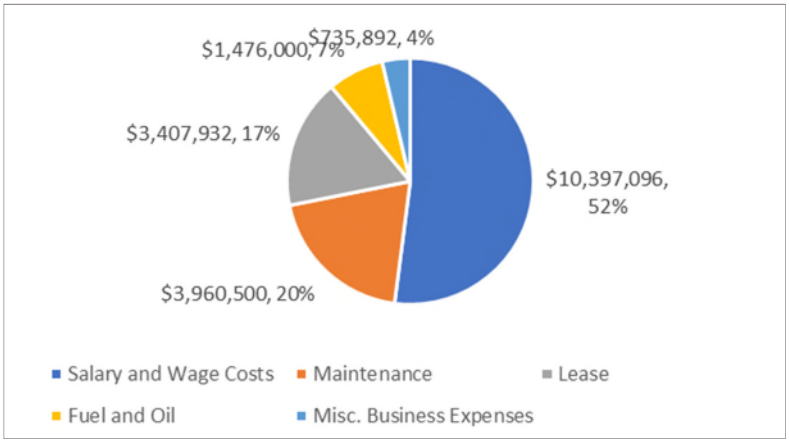


**Figure 4-4: 2018 Project Blue Cart Collection Service Costs by Element**

## Green Cart

The following chart details the composition of the projected 2018 Green Cart collection costs by element. Internal labour represents the largest component at 48% ($9.08 million). Fleet costs comprised of leasing ($4.51 million), maintenance ($2.72 million), and fuel and oil ($1.56 million) together represent 47% of the total costs. The remaining 5% of costs are represented by miscellaneous administration costs, including training, utilities, telecommunications, route design and sanding.

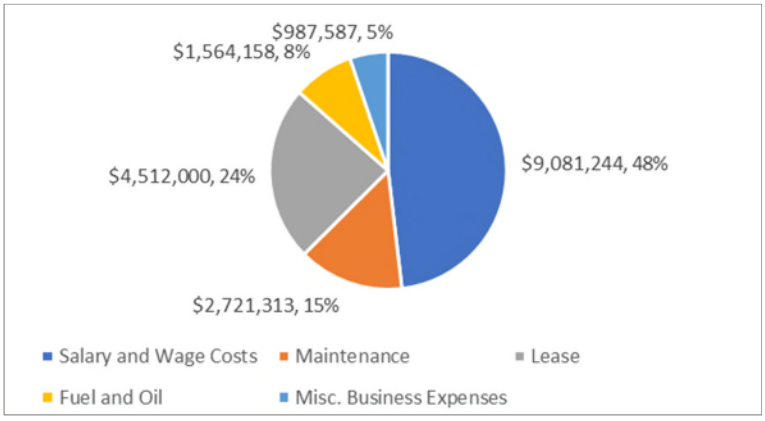


**Figure 4-5: 2018 Project Green Cart Collection Service Costs by Element**

## 1.2 WRS Performance Analysis

This section identifies the recent performance for WRS' black, blue, and green cart collection services. This considers performance for each of the priority residential collection services objectives (i.e., customer experience, environment, safety, and cost).

### 1.2.1 Customer Experience Performance

To assess WRS' residential collections customer experience performance, historical data for both the number of missed collections and average days to complete 3-1-1 service requests was obtained.

#### Reliability

The number of missed collections from 2015 to 2018 (projected) per service type was obtained from 3-1-1. While these total numbers are noted as missed collections, they are in fact classified as per intake by 3-1-1 operators and the citizen. True missed collections (where a driver did not service a household despite a cart being properly set out) would be a subset of these total numbers. For example, if a driver was not able to service a household because the cart was not set out appropriately and the customer calls 3-1-1 to log a missed collection, 3-1-1 would add this to the overall list of recorded missed collections. In 2018 WRS has started to track true missed collections by root cause (i.e., distinguish between driver vs. customer issue).

In addition, the number of scheduled collection services per service was obtained in order to normalize the measurement and truly understand the frequency upon which there are reported collection issues for each scheduled customer collection event. The graph below illustrates the frequency of total missed collections across all services from 2015 to 2018 (projected) for every 10,000 scheduled collection services:

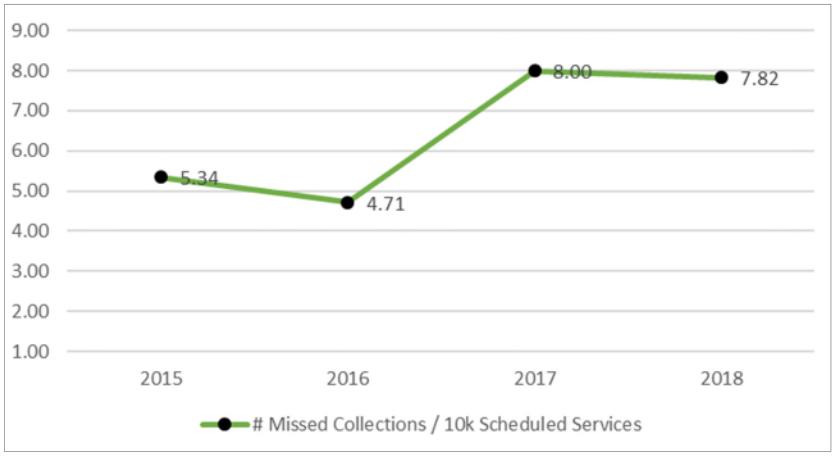


**Figure 4-6: WRS Missed Collections**

It was found that, prior to the roll-out of the green cart program and change of the black cart program to every-other-week collection, WRS averaged close to 5 missed collections for every 10,000 scheduled services. Upon roll-out of the green cart program, this frequency increased to approximately 8 missed collections. This increase is easily explained by the introduction of the green cart program and changing service levels for the black cart program (i.e., adjusted from weekly collection to once every two weeks collection).

By comparison to the results of the external scan, it is noted that WRS is performing better than those municipalities who have reported on this number, with the exception of Edmonton (Edmonton uses an application and Foremen to track any collections which are not completed by drivers such that any 3-1-1 call can be properly handled). This demonstrates WRS' ability to provide dependable, reliable collection services on the scheduled day of pick-up.

### Responsiveness

In addition, the number of days required to respond to and complete 3-1-1 service requests was obtained from 2015 to 2017. These were specific to the residential collection program (i.e., not including service requests related to other functions and services within WRS). The 2018 numbers to date were not yet available. The graph below illustrates the average number of days to complete 3-1-1 service requests:

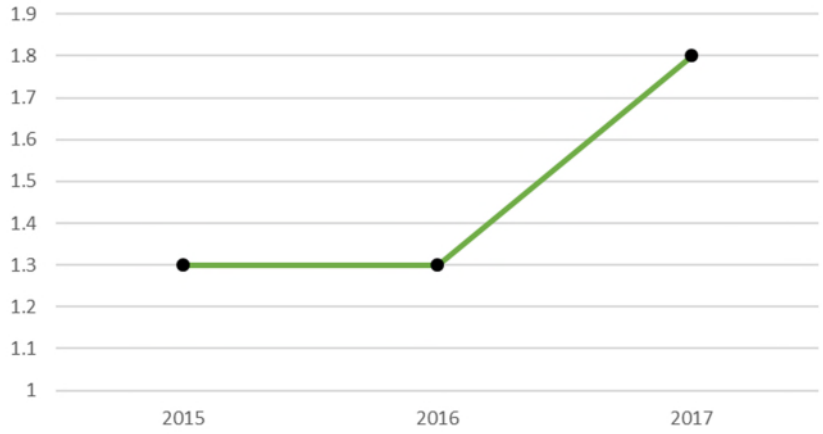


**Figure 4-7: WRS Service Request Response Time**

This shows that WRS has consistently completed collection services-related service requests between 1-2 days. This is directly in-line with data received from comparable municipalities in the external scan. The relative increase in 2017 is explained by the introduction of the green cart program. In addition, it is noted that WRS' target responsiveness for collection service requests is 6 days. As such, WRS' recent performance has been greatly superior to its target. Given this demonstrated performance, there is an opportunity for WRS to evaluate the appropriateness of this target.

## 1.2.2 Environment Performance

To assess WRS' residential collections environmental performance, historical data for both the number of vehicle spills and GHG emissions was obtained. The number of vehicle spills is reported annually, and data was made available from 2015 to 2018 (projected). The total GHG emissions for WRS was obtained for 2017 and was calculated based on the total diesel fuel consumption for each service type with a constant Diesel Emission Factor of 2,754.28 (gCO2e/L).

The 2017 actual GHG emissions per cart service type and per scheduled service are itemized below:

- Black Cart:
  - 3,710 tonnes
- Blue Cart:
  - 4,527 tonnes
- Green Cart:
  - 1,651 tonnes

Based on each service's individual consumption of fuel and number of scheduled services, it was found that each service incurs approximately 2.72 tonnes of CO2 emissions per every 10,000 scheduled services.

In addition, the number of vehicle spill events (for all WRS vehicles, not just residential collection services) was analyzed and compared to the number of scheduled collection services. The graph below illustrates the general downward trend in number of these events from 2016 to 2018 (projected). It is noted, however, that comparative vehicle spill data was not collected in the external scan and would represent a difficult measure upon which to assess WRS' residential collection fleet environmental performance.

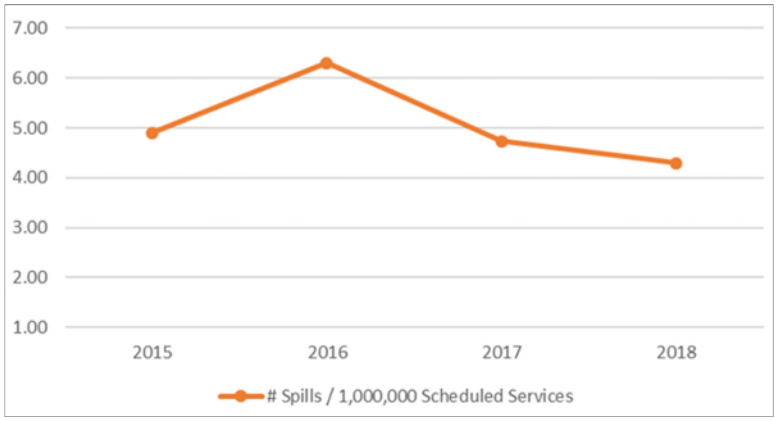


**Figure 4-8: WRS Spills**

### 1.2.3 Safety Performance

To assess WRS' residential collections safety performance, historical data for the number of driver Worker Compensation Board (WCB) claims, Lost Time Claims (LTC) Frequency, Total Reportable Injury Frequency (TRIF), and Public Damage expenses were obtained.

## Residential Collections Workforce Safety

The following graph illustrates the historical performance for residential collections workers' safety. It includes LTC Frequency, TRIF, and Days Lost per Claim.

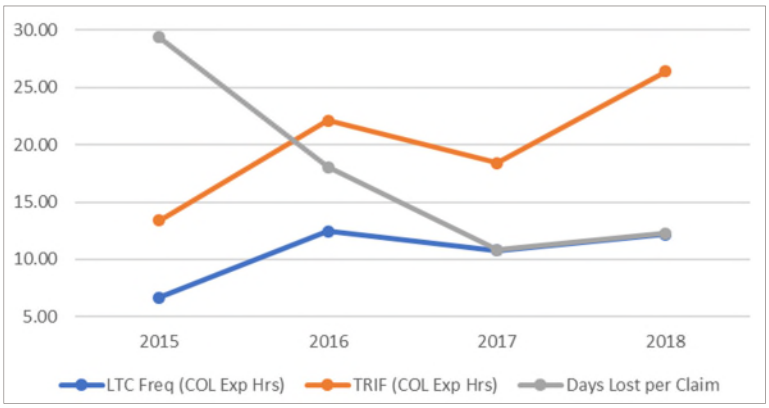


**Figure 4-9: WRS Residential Collection Employee Injury Data**

Generally, it shows that the number of safety-related incidents for drivers has been trending upwards across 2015 to 2018 (projected). In discussions with WRS subject-matter-experts, it is acknowledged that small muscle repetitive strain-type injuries have been increasing due to the increased automation of the collection vehicles. WRS has already modified worker training programs to better address this growing issue from both a prevention and rehabilitation perspective. Driver safety is an area that WRS Management Team will continue to monitor closely.

## Public Safety

To analyze public safety performance, the total public damage (PDOR) accident claims expenses were obtained and compared against the total number of scheduled services. The following graph illustrates the trend of this performance from 2015 to 2017:

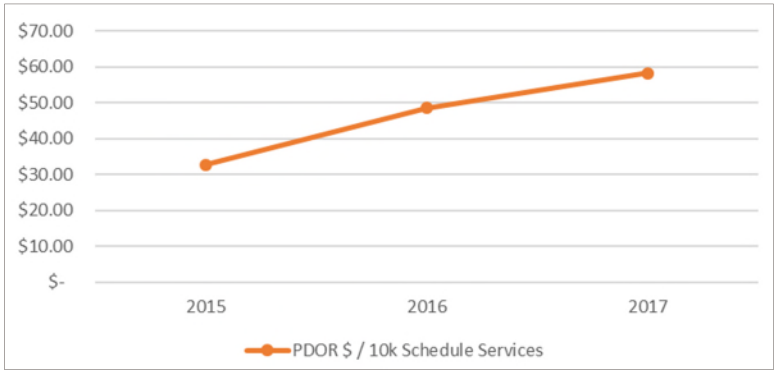


**Figure 4-10: WRS Residential Collection PDOR**

As detailed in the graph, the total PDOR expenses per every 10,000 scheduled services has increased in each of the two years from 2015. It has almost doubled from a total of $32.68 to $58.23 (for every 10,000 scheduled services).

It is noted that comparative safety data was not collected in the external scan and would represent a difficult measure upon which to assess WRS' residential collection safety performance. However, given this objective's importance, WRS should continue to measure its own performance over time. Moving forward performance measurement system maturity would require support from other municipalities and industry on this type of reporting.

### 1.2.4 Cost Performance

To assess WRS' residential collections cost performance, historical and projected data for the major expenses for each the black, blue, and green cart collection services functions were obtained. In addition, the costs for the service's primary cost elements was obtained in order to assess trends for the individual resources required to support the delivery of the services. To assess trending performance, the results were normalized against the total number of scheduled services.

Cost analysis is presented and discussed in the following order:

1. Cost trends at the service level (i.e., black, blue, and green cart programs); and
2. Cost trends for major cost elements (i.e., salary and wages, fleet leasing, fleet maintenance, fuel and oil, and miscellaneous administration expenses).

#### 1.2.4.1 Overall Collection Costs per Cart Program

The following graph illustrates the trend in the collections cost per scheduled service for each cart program:

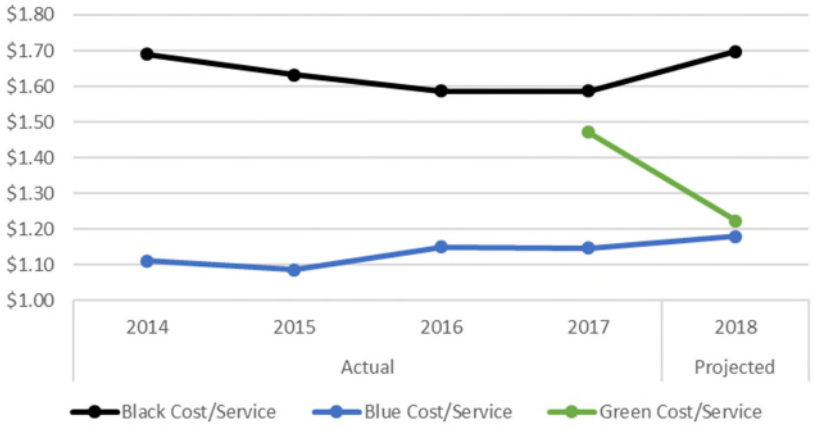


**Figure 4-11: Cost per Scheduled Collection**

As can be seen in Figure 4-11, black cart collection costs per scheduled collection are consistently higher than either blue or green carts. The primary reason for this is the increased service levels which exist for black (i.e., collecting excess materials customers set out beside their carts), which result in a fewer number of households which can be collected in a single beat. In addition, it can be seen that the total cost per scheduled collection decreased from 2014 ($1.69) to 2017 ($1.58) before rising back up in 2018 ($1.70).

Blue cart costs per scheduled collection are relatively stable across 2014 to 2018, albeit with a slight increase in costs. Costs per scheduled collection are projected to increase from $1.11 (2014) to $1.18 (2018). This is an average increase of approximately 1.6% per year.

Green cart costs were first recorded in 2017 when the roll-out of the green cart program commenced. Projected costs per scheduled service are estimated to be lower for 2018 as the service stabilizes. However, further cost stabilization will likely continue across 2019 as the service levels switch to a less frequent collection schedule (i.e., once every two weeks) during the winter months.

Overall, an initial observation from this analysis is that WRS' residential costs per scheduled collection are fairly consistent. A more in-depth analysis of major cost elements was required to further understand individual changes and trends across 2014 to 2018. This is discussed in the following section.

### 1.2.4.2 Collection Cost Elements

This section provides further detail on the 2014-2018 cost trends for major cost elements which comprise the black and blue cart collection services.

The collection costs per scheduled collection for each cost element within the black cart service are plotted below:

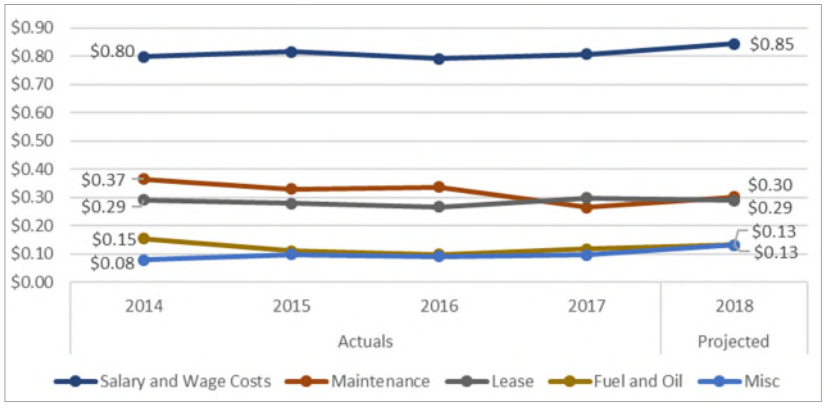


**Figure 4-12: Black Cart Cost Elements per Scheduled Service**

Similarly, the collection costs per scheduled collection for each cost element within the blue cart service are provided:

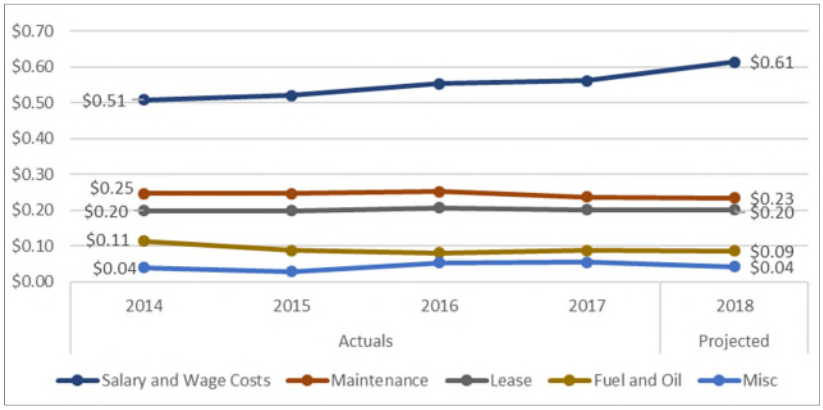


**Figure 4-13: Blue Cart Cost Elements per Scheduled Service**

Finally, the collection costs per scheduled collection for each cost element within the green cart service are provided. It is noted that results are only provided for 2017 and 2018.

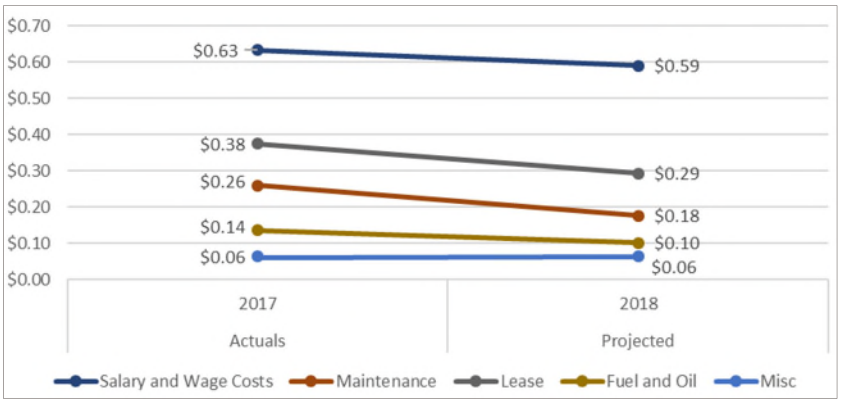


**Figure 4-14: Green Cart Cost Elements per Scheduled Service**

Discussion on each cost element is provided below.

## Salary and Wages

Key observations from the analysis across both black and blue cart services include the following:

- Salary and wage costs increase on a per scheduled collection basis each for black and blue as follows:
  - Black: increased from $0.80 (2014) to $0.85 (2018), or an average annual increase of 1.5%.
  - Blue: increased from $0.51 (2014) to $0.61 (2018), or an average annual increase of 5.2%.
- It should be noted that these salary and wage costs are subject to approved union labour wage increases which occurred across 2015 to 2018. The annual wage increases per year were 3.2%, 3.5%, and 4.0% for 2015, 2016, and 2017, respectively. If these approved wage increases are removed (as WRS does not directly control these collective bargaining decisions), then more meaningful observations can be made regarding how efficiently WRS' collections manpower have been deployed. The following table summarizes this analysis:

### Table 4-1: Salary and Wage Analysis

| Service | 2014 Salary and Wage Cost per Scheduled Collection | 2018 Adjusted Salary and Wage Cost *(Adjusted for Wage Increases)* per Scheduled Collection | 2018 Adjusted vs. 2014 Change |
|---|---|---|---|
| **Black** | $0.80 | $0.75 | -5.4% |
| **Blue** | $0.51 | $0.55 | +7.9% |
| ***Black + Blue Combined*** | ***$0.65*** | ***$0.62*** | ***-5.6%*** |

From this analysis, it can be shown that black cart manpower cost efficiency per scheduled collection has improved by 5.4% across 2014 to 2018. Conversely, it shows that blue cart manpower has required an additional 7.9% additional resourcing across this same period. However, when considering total manpower costs across both black and blue services relative to the number of scheduled services, WRS has decreased its overall manpower

requirements on a per scheduled collection basis from $0.65 to $0.62. This represents an approximate 5.6% manpower cost efficiency improvement in 2018 relative to 2014.

It is also noted that green cart salary and wages costs per scheduled collection decreased from $0.63 in 2017 to $0.59 in 2018, but it is also noted that these costs are still in midst of stabilization given adjustments to service levels.

### Fleet Leasing Costs

Fleet leasing costs stay very consistent across 2014 to 2018 each for black cart and blue cart. Black cart leasing costs per scheduled collection are maintained at $0.29 while blue cart's respective costs are maintained at $0.20.

Green cart fleet leasing costs per scheduled collection have decreased from $0.38 (2017) to $0.29 (2018 projected), but it is also noted that these costs are still in midst of stabilization given adjustments to service levels.

It is noted that, since 2014, several initiatives were taken to improve the level of efficiency and effectiveness of Fleet. These comparative costs demonstrate a stabilization of the required fleet leasing resources and costs to support delivery of the collection services.

### Fleet Maintenance Costs

Fleet maintenance costs per scheduled collection show improvement across each of the black, blue, and green cart services. Between 2014 to 2018, black cart fleet maintenance costs per scheduled collection decrease from $0.37 to $0.30 while blue cart's respective costs decrease from $0.25 to $0.23. Green cart fleet maintenance costs per scheduled collection have decreased from $0.26 (2017) to $0.18 (2018 projected), but it is also noted that these costs are still in midst of stabilization given adjustments to service levels.

Overall, this shows continued fleet maintenance cost efficiency relative to the reported 2014 performance.

### Fuel and Oil Costs

Fuel and oil costs per scheduled collection has also decreased for both black and blue cart programs across 2014 to 2018. However, this primarily indicates the difference in market prices for fuel and oil over this time, as neither differences in truck fuel economy nor internal purchasing practices can justifiably be attributed with these cost efficiency improvements.

### Miscellaneous Administrative / Business Expenses

Overall, there has been an increased cost per scheduled collection across all cart programs for miscellaneous administrative and business expenses. This has been primarily the case for the black cart program. Given the extent of increase, a further review by WRS may be warranted.

## 1.2.4.3 Overall Collection Costs across All Cart Programs

An overall review of WRS' entire residential collection services costs per scheduled collection was calculated and analyzed. The results of this analysis are summarized in the table below:

### Table 4-2: Collection Cost Analysis

| Services | 2014 | 2015 | 2016 | 2017 | 2018 | 2018 vs. 2014 Change | 2018 Adjusted Costs vs. 2014 Change |
|---|---|---|---|---|---|---|---|
| **Black + Blue Combined** | $1.40 | $1.36 | $1.37 | $1.34 | $1.35 | ***-3.5%*** | ***-8.8%*** |
| **Black, Blue, + Green Combined** | $1.40 | $1.36 | $1.37 | $1.36 | $1.31 | ***-6.5%*** | ***-10.2%*** |

This analysis demonstrates that, overall, WRS' collection services costs per scheduled collection have decreased across the current business cycle. Considering just the black and blue cart programs, the collection costs per scheduled collection have decreased by 3.5% since 2014 (despite collective bargaining labour wage increases across 2015 to 2017). If those labour wage increases are backed out, the costs per scheduled collection show an improvement of 8.8%.

Further, if the costs and scheduled collections for green cart are included (which started in 2017), the 2018 average cost per scheduled collection is $1.31, which is down from the $1.40 in 2014.

Overall, this shows that WRS has been effective in increasing its residential collection services efficiency.

# Waste & Recycling Services Collection Services Review
# Attachment 3 – Industry Scan and Strategic Analysis

PRESENTED TO
**The City of Calgary**

DECEMBER 2018
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FILE: 704-SWM.PLAN03046-01



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# 1.0 INDUSTRY SCAN

Collecting waste from single detached dwellings has evolved over the past three decades from a one stream (garbage only) system to, typically, a three-stream system that consists of separated garbage, recyclables and organics. In Canada, the entities who administer these collection programs are typically the municipality but the entity who actually delivers the waste stream collection service can be either in-house/municipal staff or contracted out to private sector service providers or a combination of both. This section discusses the various aspects of the curbside waste collection industry.

## 1.1 Service Delivery Models

Most municipalities in Canada have service delivery models for curbside collection that consist of municipal crews, contracted services or a combination of arrangements. Table 3-1 provides a summary and comparison of the three main service delivery models.

**Table 3-1: Comparison of Service Delivery Models for Residential Curbside Collection**

| | Public Sector (In-House Service) | Mixed (In-House and Contracted Service) | Private Sector (Contracted Service) |
|---|---|---|---|
| Model Description | ▪ City is responsible for staffing, collection, procurement and maintenance of vehicles.<br>▪ City manages customer service operations. | ▪ Divided into work areas either by geography or material type.<br>▪ Residential collection managed through a combination of public and private sector service providers.<br>▪ Private sector is managed through contract or agreement.<br>▪ As a secondary implementation decision, can be established via Managed Competition where The City provides a bid to compete with private sector contractors for the work. | ▪ City issues request for proposal for private sector to bid on contract, agreement of exclusive permit to operate.<br>▪ Depending on arrangement, customer service requests can be managed by City or private sector contractor.<br>▪ As secondary implementation decisions:<br>– Can be one service provider or multiple.<br>– Can be divided by geography or by material type. |

Historically, waste collection from single detached dwellings was delivered by the public sector. Due to a number of variables that include: collection cost, operational efficiencies, work site injuries, labour relations, asset management, etc., there has been a growing trend across North America to outsource waste collection services. In most of these cases, waste collection was conducted manually. One or two swampers would ride and stand off the back of a rear packer garbage truck and jump off the truck as it neared the waste to grab and throw the materials into the back of the truck. Jumping on and off of a slow-moving truck and throwing garbage cans and bags that weigh up to 25 kg can result in a number of different types of worker injuries. These injuries result in higher costs to the city or program because of workers compensation and replacement worker costs. This was typically one of the main drivers for changing the delivery model to contracted services.

Over the past decade, the collection approach has been changing from manual collection to automated collection. More and more communities are transitioning to this new approach because of technological and labour management improvements. Ultimately, it leads to cost savings for the following reasons:

- Labour costs: automated collection requires one staff person (i.e. a certified truck operator) versus two to three staff members (including physical labourers) for manual collection.
- Worker compensation cost: automated collection has less probability of detrimental physical injuries and results in lower insurance costs for the entire corporation.
- Labour management: automated collection allows for a wider range of workers (less reliant on young workers by reducing physical labour requirements).
- Technical improvements: advancements in robotics means automated trucks can perform almost as well as manual trucks in urban settings with tight set-outs and in terms of tipping speed.

With fewer labour related issues, many communities are starting to reconsider their service delivery model. There are cities that have changed from a contracted service model to an in-house model because of service improvements, flexibility to change and less reliance on private sector waste haulers. In the past two years this includes the Canadian Cities of St. John's, Nanaimo, and Port Coquitlam amongst others.

### 1.1.1 Evaluation of Alternative Service Delivery Models

The purpose of this section is to provide a qualitative analysis of the alternative service delivery models against the priority residential collection services objectives as defined in Section 2.4. This considers ***industry-general*** advantages, concerns, and overall degree of support for each objective are noted for each delivery model. Where it is perceived that WRS is an exception to the industry-general observations, specific notes have been included.

#### 1.1.1.1 Public Sector Model (In-House)

This section provides a qualitative evaluation of the Public Sector Model relative to each collection services objective.

**Customer Experience**

| Advantages | Concerns |
|---|---|
| ▪ Municipalities have more control to manage collection services scope and quality of service. This increased control makes it easier to:<br>– Provide a high-quality customer experience;<br>– Respond to and modify service levels (if desired in the future);<br>– Direct drivers to provide a greater extent of customer cart tagging / education to encourage desired customer behaviour; and<br>– Direct drivers to provide any additional community value-add services where desired (e.g., calling 311 for City tree / road or other community issues).<br>▪ Typically, more drivers with longer tenures of service, thereby enabling a more consistent customer experience.<br>▪ Municipalities, through recognition and adoption of emerging citizen-focused public service models, are now providing drivers with extensive customer service training.<br>▪ Municipal crews can be more readily deployed to provide other services *(e.g., community emergency response).* | ▪ Municipalities typically bear pressure to both limit user fee increases and deliver high quality customer experience, which are conflicting objectives:<br>– Municipalities may sacrifice desired customer experience objectives to fit within approved budget envelopes.<br>▪ Existing service requirements to complete beats on-time may hinder customer education (in some cases) or providing other types of community value-add activities.<br>▪ Within Alberta, there is a risk of labour instability over the longer-term. As such, driver availability and retention willingness can be dependent on the condition of the labour market across the province.<br>▪ Within some municipalities, there are examples of disruptive relationships with labour unions which have resulted in strikes, service disruptions, and poor reliability.<br>– *It should be noted that Calgary has historically not been subject to such labour disruptions.* |

Overall, it is viewed that the Public Model can be ***strongly aligned*** to the customer experience objective. This is gained primarily from a municipality's ability to directly control the desired customer service levels and benefit from emerging municipal citizen-focused public service models. However, a key factor in this evaluation for any specific municipality is its relationship with its labour union. There are examples where municipalities have not reliably or consistently provided collection services due to labour disruptions.

## Safety

| Advantages | Concerns |
|---|---|
| ▪ Often results in better worker conditions, benefits and safety and health training<br>– *In particular, it is noted that WRS has focused on truck ergonomic features for enhanced driver safety*<br>▪ Municipalities tend to enforce stricter requirements for internal driver competencies than the minimum Provincial requirements.<br>▪ Municipalities can directly monitor the impacts of safety choices. | ▪ Budget limitations can result in cost cutting measures on safety investments as other expenses rise. |

Overall, it is viewed that the Public Model can be ***strongly aligned*** to the Safety objective primarily due to typically better working conditions and the municipality's ability to directly control the organization's adoption of a safety-minded environment.

## Environment

| Advantages | Concerns |
|---|---|
| ▪ Direct control over the implementation of desired environmental objectives.<br>▪ Municipalities can develop a specific culture focused on environmental outcomes:<br>– *E.g. Utilizing Triple-Bottom-Line as decision criteria to guide organization investments, providing ongoing tracking and environmental reporting, ensuring use of vehicle spill kits, providing focused employee training, etc.* | ▪ Municipalities typically lag private sector with respect to certain vehicle technologies:<br>– *e.g., municipalities tend to be risk averse – will let others prove new technologies first prior to adoption*<br>▪ Noted that some private sector collection entities have adopted natural gas vehicles, which tend to produce fewer emissions vs. diesel vehicles. |

Overall, it is viewed that the Public Model can be ***moderately aligned*** to the environment objective. Although it has more direct control on achieving desired environmental outcomes and has typically developed an enhanced organizational culture focused on minimizing impact to the environment, it typically lags the private sector in the adoption of leading vehicle technologies focused on fuel efficiency and limitation of emissions.

### Cost

| Advantages | Concerns |
|---|---|
| ▪ Municipalities typically operate on a cost-recovery basis – which avoids a profit rate-revenue requirement *(which can range from 7% to 15% in the private sector).*<br>▪ Avoids incremental contract management, procurement, and service request coordination costs *(required for an outsourced model).*<br>▪ Enables greater economies of scale and scope *(particularly vs. the Mixed Model).*<br>▪ Enables Council a greater degree of control in setting future user rates / directing cost reduction initiatives:<br>– *Typically, waste collection contracts lock in rates for the private sector vendor over a 7-8-year timeframe.*<br>▪ Avoids the potential risk of an incumbent contractor advantage:<br>– *Industry research has noted that some municipalities which have outsourced sizable collection contracts have resulted in providing the private entity a first mover advantage vs. its private sector competitors, thus decreasing the level of competition for future contracts.*<br>▪ Municipalities typically have access to a lower cost of capital / borrowing for capital (vehicles / equipment). | ▪ Unlike private sector, no profit motive exists for the public sector to help drive efficiency and lower overall cost for collection services.<br>▪ Municipal fleet services, which provide services for all municipal departments, can typically be less focused and efficient specifically for collection trucks vs. private sector *(which are typically streamlined for their collections business).*<br>▪ Private sector entities can provide a lower cost of service primarily either through:<br>– *Aggressive "low-ball" bids in order to initially win the work; and*<br>– *Lower total labour wages and benefits.* |

Overall, it is viewed that the Public Model can be ***moderately aligned*** to the Cost objective, although this will vary from municipality to municipality based on the degree to which their internal capabilities have been developed. Observations from across the industry repeatedly point to cost savings realized from outsourcing to the private sector (at least initially). However, these observations also indicate that municipalities who have focused on increasing their internal operational efficiencies and effectiveness can do so. Note that further specific cost comparisons between the Private Sector and WRS' current service delivery model are provided in **Section 6.0**.

#### 1.1.1.2 Mixed Model

This section provides a qualitative evaluation of the Mixed Model relative to each collection services objective.

### Customer Experience

| Advantages | Concerns |
|---|---|
| ▪ Allows the municipality to maintain control on the overall customer experience and service.<br>▪ Enables municipality to retain an in-depth understanding of collection operations from which to monitor and compare vs. the outsourced portion.<br>– *Can directly compare metrics for internal vs. outsourced portions (if included in contract required reporting).*<br>– *Possibility to learn leading practices from private hauler.*<br>▪ Maintains internal collections capabilities – can ramp up as potential risk mitigation in case service disruption occurs with private hauler. | ▪ Positions customer interactions to be partially managed through arms-at-length contract – harder to control and adjust *(in case of future changes to service levels).*<br>▪ Customer experience could be inconsistent and dependent on geography / material type.<br>▪ Mixed model can be complex to implement and requires more resources to administer effectively, particularly upon managing and reporting customer service request responses vs. hauler contract clauses incentives and/or penalties. |

| | |
|---|---|
| – *Similarly, in cases where service disruption occurs within the in-house portion, the private sector could ramp up resourcing to help mitigate.*<br>▪ Municipal crews can be used to provide other services (e.g., emergency response). | – *Potential risk to customer experience.*<br>▪ For a private hauler, the profit motive / drive for efficiency **may** sometimes be in direct conflict with service quality. |

Overall, it is viewed that the Mixed Model can be ***moderately aligned*** to the customer experience objective. Customer service interactions become increasingly provided by an arms-at-length model, which decreases the direct control a municipality has to achieve desired customer outcomes. In addition, there is increased risk to customer service consistency given the additional number of collections providers.

## Safety

| Advantages | Concerns |
|---|---|
| ▪ Municipality has direct control over the setting of working conditions for their staff.<br>▪ Enables the municipality to achieve a minimum level of safety that may be then compared to private sector. | ▪ Requires the municipality to provide contract management efforts to ensure outsourced model operates in accordance with internal expectations.<br>▪ It is less likely that the private sector hauler would divulge safety performance; may be more difficult to measure *(e.g., property damage).*<br>▪ There is potential that the private sector adheres to lower safety standards compared to the municipality.<br>– *It is noted that WRS' safety standards for driver demerits is more stringent than Provincial requirements.* |

Overall, it is viewed that the Mixed Model can be ***moderately aligned*** to the safety objective given that it is unlikely that the Private Sector would perform at the same levels as the Public Sector Model.

## Environment

| Advantages | Concerns |
|---|---|
| ▪ Municipality maintains some level of control over environmental factors (e.g., greenhouse gas [GHG] emissions).<br>▪ May be able to leverage private-sector truck fuel technology advantages vs. municipal fleet. | ▪ May be more difficult to measure private hauler environmental performance *(e.g., emissions, fluid spills).*<br>▪ Pending final route designs between municipality vs. private sector hauler – Mixed Model may result in increased mileage and fuel consumption. |

Overall, it is viewed that the Mixed Model can be ***moderately aligned*** to the environment objective. Potential increases in risk to environmental performance introduced from outsourcing portions of the collection network may be mitigated by gains from increased utilization of vehicles with increased fuel technologies.

### Cost

| Advantages | Concerns |
|---|---|
| ▪ Takes advantage of potentially lower cost of service which the private sector may be able to provide.<br>▪ Enables the municipality to compare in-house costs and performance vs. those of outsourced model, which in turn can drive internal efficiencies through competitive tension.<br>▪ Can enable the municipality to spread contracts among qualified vendors to:<br>– *Maintain competitive tension;*<br>– *Prevent potential incumbent advantage; and*<br>– *Assign specific districts / materials to vendors based on unique competencies*<br>▪ Municipality can alleviate potential fleet decommissioning costs through retirement of older/less reliable trucks.<br>– *Examples of private hauler commencing collections contract with a fleet with a mixed lifecycle status (i.e. not all new trucks upon commencement) which enables it to avoid larger initial capital investments* | ▪ Could result in incumbent contractor advantage based on the local market, which risks increased costs for future contract negotiations.<br>▪ With multiple providers, the entire collection system may potentially risk diseconomies of scale *(e.g., inefficiencies, duplicate resources and processes, etc.).*<br>▪ Potential for single private hauler to come in at a throw-away price that is not competitive and "true" for the overall market.<br>▪ Requires municipality to invest in ongoing contract management, procurement, and service request coordination resources and costs.<br>▪ Will require some one-time change costs for every contract (i.e. once every 7-8 years). |

Overall, it is viewed that the Mixed Model can be ***strongly aligned*** to the cost objective, primarily with the expectation that the private sector can provide a lower cost of service. Note that further specific cost comparisons between the private sector and WRS' current service delivery model are provided in ***Section 6.0.***

#### 1.1.1.3 Private Sector Model (Fully Contracted Service)

This section provides a qualitative evaluation of the Private Sector Model (fully contracted out) relative to each collection services objective.

### Customer Experience

| Advantages | Concerns |
|---|---|
| ▪ Still possible to manage reasonable customer experience outcomes through contract management requirements and tactics.<br>▪ Recognizes that as long as reliable collection occurs on scheduled day of pick-up, customers may not tangibly notice difference in service. | ▪ Municipality would be "out of the game" – difficult to re-enter should service disruptions or performance / cost issues arise.<br>▪ Direct customer interactions now fully managed through arms-at-length contract – harder to control and adjust *(in case of future changes to service levels).*<br>– *Service changes need to be negotiated with private haulers, making it more difficult for city to standardize or improve services.*<br>▪ Customer experience could be inconsistent and dependent on geography / material type / number of individual private haulers.<br>▪ The private sector entity's profit motive / drive for efficiency could impact service quality.<br>▪ Risk in loss of consistency due to higher turnover of staff vs. usual municipality norms.<br>▪ Service reliability entirely based on private sector's ability to attract and retain competent drivers, which has **not** |

| | |
|---|---|
| | consistently been the case in situations across North America. |

Overall, it is viewed that the Private Sector Model can be ***weakly aligned*** to the customer experience objective. Customer service interactions are entirely left to an arms-at-length contract relationship and present significant levels of risk.

## Safety

| Advantages | Concerns |
|---|---|
| ▪ Enables municipality to ensure that minimum-level safety objectives are included in contract with the private entities.<br>▪ Avoids internal efforts focused on further investments to optimize internal working conditions (*e.g., truck ergonomics).* | ▪ Requires municipal contract management efforts to ensure outsourced model operates in accordance with internal expectations.<br>▪ May be more difficult to measure private hauler safety performance (e.g., property damage), which puts this performance at risk vs. the other models.<br>▪ There are noted instances where private hauler worker conditions have been significantly below typical municipal expectations. |

Overall, it is viewed that the Private Sector Model can be ***weakly aligned*** to the safety objective given that it is unlikely that the private sector would perform at the same levels as the Public Sector Model.

## Environment

| Advantages | Concerns |
|---|---|
| ▪ May be able to leverage private-sector truck fuel technology advantages. | ▪ May be more difficult to measure private hauler environmental performance (e.g., emissions, fluid spills). |

Overall, it is viewed that the Private Sector Model can be ***weakly aligned*** to the Environment objective, as typical private sector focus on this outcome are less than those of municipalities.

### Cost

| Advantages | Concerns |
|---|---|
| • Profit incentive of private hauler to continuously drive for efficiencies can result in lower cost operations than public (in-house) or mixed models.<br>▪ Private hauler may have synergies in its other local waste management operations – which may be leveraged to reduce costs.<br>– *e.g., using collection trucks on non-residential collection days to reduce normalized truck cost.*<br>▪ May achieve greater economies of scale (e.g., international) and as such potential cost reductions.<br>– *Private sector might have ability to drive down capital purchase costs.* | ▪ If using only one hauler, the incumbent may have a distinct incumbent advantage in future proposals / bids, thus costs can rise substantially over time.<br>– *It has been repeatedly studied and identified that the degree of savings from outsourcing decreases over time due to a decrease in market competitiveness and increase in the municipality's operational efficiencies. If fully outsourced, this competitive tension between internal vs. outsourced operations is lost.*<br>▪ Municipality must spend the resources, time and money to develop and negotiate high quality service requirements on go-forward basis.<br>▪ Cost of incremental and ongoing procurement, contract negotiation and management must be considered against savings.<br>▪ Will require some one-time change costs for every contract (i.e. once every 7-8 years).<br>▪ Timing of contracts / procurement needs to be staggered if multiple vendors.<br>▪ If multiple vendors – economies of scale are dependent on the size of the zones tendered (costs can increase if zones are too small).<br>▪ Municipality would face potential decommissioning costs for existing fleet – slim potential market for used inventory. |

Overall, it is viewed that the Private Sector Model can be ***moderately aligned*** to the cost objective. Although there may be more significant initial savings than the other models, there is more risk to cost increases over the medium to long-term.

#### 1.1.1.4 Summary of Qualitative Evaluation of Alternative Models

Based on the in-depth qualitative evaluation of the model alternatives in the previous sections and WRS-specific observations (for WRS' current Public Model), the following summary evaluation of each service delivery model against each priority objective is provided:

| Objective | WRS' Public Model | Mixed Model | Private Model (Fully Outsourced) |
|---|---|---|---|
| **Customer Experience** | **Strong** | **Moderate** | **Weak** |
| **Safety** | **Strong** | **Moderate** | **Weak** |
| **Environment** | **Moderate** | **Moderate** | **Weak** |
| **Cost** | **Moderate** | **Strong** | **Moderate** |

From this analysis, it demonstrates that WRS' Public Sector Model is likely to achieve stronger levels of customer experience and safety outcomes but may feature higher costs than a model which partially outsources to a private sector entity. There are advantages and concerns for public vs. private sector performance in regard to the

environment objectives for each service delivery model. However, as greater portions of the collection network are outsourced to the private sector, there are increasing risks in achieving desired customer experience and safety outcomes. The increase in risks primarily stem from the lack of direct control a municipality has from an arm-at-length contract (which are normally set for a 7-8-year duration, and thus more difficult to adjust over time pending changing customer or Council priorities). In addition, there is evidence of increased risk for the private sector attracting and retaining sufficiently competent drivers, which can result in significant service instability and unreliability.

This presents the need to quantitatively estimate the degree of potential cost savings from an outsourcing arrangement and compare to the added performance risks. This analysis is provided in ***Section 6.0***.

## 1.2 Waste Collection Components

Waste collection cost considerations typically consists of four components: (1) fleet management which includes collection system assets such as collection vehicles and containers and consumables such as fuel; (2) labour management that consists of the people who operate the collection system assets; (3) administrators who plan and/or manage the collection system; and (4) customer service component which helps collection customers understand how to use the collection system and/or field questions and requests regarding their service.

Figure 3-1 illustrates the four key components that make up the cost for a residential curbside collection program. The following subsections describes the four components in greater detail.


**Figure 3-1: Waste Collection Cost Illustration**

### 1.2.1 Fleet Management

The fleet management cost is one of the largest portions of the waste collection costs and consists of the equipment used to collect the waste, fuel to run the equipment and operation and maintenance of that equipment. The following describes the various aspects of the assets in greater detail.

#### 1.2.1.1 Collection Equipment

Collection equipment consists of collection vehicles and in some instances, generator-based waste receptacles such as carts that service curbside collection customers. There are generally two companies that supply collection trucks to the industry in North America (LeBrie and Heil).

The total cost for a standard collection truck ranges from approximately $200,000 for a rear load truck to $300,000 for an automated side loader. The cost is dependent on two key considerations: (1) the chassis of the truck and (2) the box and body parts that are put on the truck.

- The cost of the chassis can range from $100,000 to $150,000. Most trucks that are in the low-cost range have chassis that cost between $100,000 to $120,000. It is important to note that the chassis are built in the United States and their cost can be affected by fluctuations in the US exchange rate and potentially trade tariffs.
- The cost of the payload box and the loader position are other cost considerations that make up the remainder of the total cost. A rear loader with a built-in compactor adds approximately $100,000 to the cost of the chassis. A side loader with a compactor adds about $150,000 to the cost of the chassis, and an automated side loading arm is an additional $30,000 to $50,000. Figure 3-2 shows photos of two collection truck configurations used by WRS.

**Figure 3-2: Photos of Side Load and Rear Load Waste Collection Trucks**

Added features to a collection truck whether it is for comfort, or safety reasons, can add up to 25% to the total cost of the waste collection truck. Right-hand-side driver control is typically an added feature and adds in the order of $25,000 to the cost of the truck. Cameras, sensors, air conditioning and air-ride suspension seats normally add less than $10,000 to the overall cost of the truck.

Interesting notes from the collection truck suppliers include the following:

- About 80% of the curbside collection vehicle market is automated.
- Typical vehicle replacement is 7 to 8 years with most trucks logging between 12,000 and 13,000 hours of use.
- Automated arms require considerable ongoing maintenance and should be rebuilt every 5 to 7 years.
- Maintenance requirements are less extensive for rear load trucks.
- With the possible exception of the largest waste collection firm, most private sector waste haulers do not purchase collection trucks at a discounted rate.
- Truck delivery from time of ordering is typically 12 to 18 months.

Financial implications of collection trucks are typically amortized on an annual basis. Amortization periods normally coincide with replacement vehicle periods. Trucks that are amortized for a shorter period such as five years will result in higher annual costs to pay for that vehicle. For this reason, most communities that contract out their collection service to the private sector have a contract length that is consistent with expected vehicle life.

Most communities require a certain number of vehicles (i.e., spare ratio) to accommodate vehicles that are taken out of service for repairs or to account for busier waste collection periods. Spare ratios range from 10% to 20% which means an additional truck or two is required for every fleet of 10 collection trucks. Having these extra vehicles adds to the total cost of collection assets.

#### 1.2.1.2 Fuel

The standard fuel type for most collection fleets is diesel. In the past decade, more fleets are moving towards compressed natural gas (CNG) because the cost for CNG is almost half the cost of diesel and emissions from CNG vehicles are less. Although diesel fueled trucks deliver about 15% more power than CNG, many public and private sector waste haulers are moving towards using CNG for the financial and environmental benefits. However, CNG collection trucks typically cost 10% more and fueling stations need to be established or arrangements made with existing fueling stations.

*Waste Management Inc. has so far replaced 14,000 of its more than 18,000 trucks with natural gas fueled vehicles which save an estimated 8,000 gallons of diesel fuel, worth approximately $31,000, per truck per year. A CNG garbage truck only costs $30,000 more than a comparable diesel truck, so most major service providers that have access to CNG or LNG fueling stations, or are willing to build in their own, are in the process of transitioning their fleet to the new fuel. (from Ford Research Group).*

Another aspect with regards to CNG is bio-CNG which comes from landfill gas and anaerobic digestion of source separated organics, such as the materials in WRS's green cart program. Collecting and upgrading landfill gas for vehicle use has been occurring for over a decade. Recent trends in solid waste management include anaerobic digestion of source separated organics to produce biogas which can be used by a combined heat and power (CHP) unit to generate electricity and heat or upgraded for use as vehicle fuel or injected into the CNG distribution network. It should also be noted that bio-CNG is not fossil fuel based and is exempt from the GHG accounting protocol.

A new innovation for waste collection is electric/battery powered collection vehicles. These vehicles are being tested in many jurisdictions and might be an alternative in the future when more sustainable energy generation options such as solar and wind become more available. A limitation with electrical vehicles is poor battery performance during cold weather conditions. The Municipality of Anchorage is testing electric waste collection vehicles and it is worth contacting them in the near future to discuss their overall experience.

WRS is working on an Alternative Fuels Strategy for all of its vehicles.

#### 1.2.1.3 Operation and Maintenance

Operating and maintaining collection trucks is a large undertaking. Automated collection vehicles require more maintenance and generally it is recommended that automated arms be rebuilt after approximately 5 years of use. According to a collection truck supplier, annual maintenance cost for an automated truck is typically between 10% and 13% of the cost of the truck, which equates to approximately $30,000 to $40,000 per year per truck. This is an average over the life of the vehicle with maintenance requirements for the first four years of use generally much less compared to the last three to four yours of the vehicle's life. In addition, the maintenance costs by year seven or eight are such that purchasing a new truck is typically more cost effective.

Recognizing the expected maintenance cycle, it is ideal to spread out the vehicle replacement process over the likely life of the vehicles. This is estimated to be 15% of the fleet annually. This should provide a more consistent maintenance demand and minimize peaks for major servicing and or breakdowns.

In northern climates such as the Canadian Prairies where temperatures are typically -10°C or below during the winter months, collection vehicles are more often stored indoors in large vehicle shelters which reduces maintenance costs of the vehicles and improves start up times during cold winter mornings. This saves fuel required to warm up the vehicles, allows better performance of hydraulic systems, allows for maintenance and cleaning to occur when the vehicle is parked and not in use, and provides a better work environment for staff when they start and end their day or need to assess the condition of the vehicles.

Organizations can either maintain their vehicles on an as needed basis or also undertake a preventative maintenance program to minimize unexpected breakdowns. Although preventative maintenance has an additional cost, there are potential savings from having a smaller spare ratio and fewer service disruptions.

For the private and public sector, having in-house servicing departments are feasible when the fleet reaches a certain size. The priority is to have sufficient work so that staff can be retained full-time. Smaller fleets usually have contracts with private sector fleet shops to address their servicing needs. WRS has one of the largest publicly owned waste collection fleets in Canada and are of a suitable size to cost effectively service their vehicles in-house.

#### 1.2.1.4 Cart Management

Most jurisdictions in Canada have moved or are in the process of moving to an automated waste collection system. Automated collection requires carts for proper storage and collection of waste materials. The jurisdictions that led the path for automated collection bought and maintained the carts that are required for the collection system. These carts are normally warrantied for up to 10 years, and servicing and switching of carts typically occur over the life of the cart.

Depending of number, size, and quality of carts, the cost of carts can range from $60 to $120 per unit. When contracts to procure carts are awarded, most jurisdictions require the vendor deliver the carts as part of the purchase price. The vendor typically retains a firm to deliver and track the distribution of the carts. Servicing of the carts is usually left with the community. Additional resources are needed to provide additional carts that are required for replacing and switching, space or property for storage of the carts and customer service staff (including field staff) to receive calls, address issues and replace/switch carts as requested.

Some jurisdictions who contract out collection services will require the contractor to procure, deliver and maintain the carts as part of their contract. Depending on the contract arrangement, ownership of the carts could transfer to the jurisdiction at the end of the contract.

Another approach to cart management is leasing carts from the vendor. In these situations, a vendor would bid to provide and deliver the carts to the jurisdictions customers, receive and address customer service requests, and deliver the services as stipulated in the contract. This approach was used by one of the largest cities in Canada and has positive and negative aspects such as cost and contract administration.

### 1.2.2 Labour Management

Labour is one of the greatest challenges for waste collection programs. Prior to 2010 in Canada, most jurisdictions had manual waste collection programs where two to three people would ride each truck, collecting the various waste streams. In most instances, there was one driver and one or two swampers/helpers who would ride on the back of the collection truck until the truck came up to a garbage and/or recycling set out and the swampers would jump off the truck, grab the containers or bags, and throw the waste materials into the truck. The swampers had a physical job and in most situations, they were young men who were able to complete repetitive physical tasks under varying weather conditions.

Most jurisdictions realized that manual waste collection costs were on the rise because of worker injuries. These injuries could be caused from repetitive motions, slips/trips/falls or sprains from getting on and off the trucks or strains as a result of an aging work force (Figure 3-3). These employees would be compensated for their incurred injuries and another person would need to be brought in to replace the injured worker. This essentially doubles the labour cost for each injured person. Because of these rising labour costs, many jurisdictions turned to contracted services to move away from worker compensation claims and have the private sector deal with labour management issues.

**Figure 3-3: Photo Illustrating Manual Collection with Snow on the Ground**

Because of rising labour costs and injury claims, interest in automated waste collection started becoming more prevalent. Although these trucks were up to 50% more expensive than manual collection trucks, the savings from only requiring one staff member and potential for reduced workplace injury claims made automated collection the new standard for curbside waste collection. Additional benefits for automated collection trucks were the personnel who could operate these vehicles. This opened this opportunity to a wider range of workers that did not have to be physically fit and can include persons from an older workforce.

An important consideration in Western Canada is obtaining and retaining a specially trained workforce that can drive and operate a waste collection truck. Some jurisdictions had a difficult time retaining physically fit people who can drive large trucks and collect waste. These jurisdictions turned to automated collection trucks to reduce the number of workers needed and to expand the range of workers they can hire. This was the situation in interior British Columbia where it was difficult retaining trained staff who would move to jobs in the oil industry for higher wages.

The labour market in Alberta is challenging. When the oil industry is booming, wages for Class 3 drivers rise significantly and retaining staff is difficult when wages are so much higher in other sectors. Considering that waste collection contracts typically span seven years, it makes it difficult for a private sector hauler to guarantee waste collection rates if staff cannot be retained over the life of the contract and higher wages are needed to complete the waste collection services. If a contractor is unable to meet its obligations for financial or technical reasons, the city can dissolve the contract and look for another contractor (which takes significant resources) or adjust the contract to meet market rates.

### 1.2.3 Administration and Planning

Most jurisdictions have personnel who oversee the entire program on behalf of the municipality and have a team that, at a minimum, will be responsible for: (1) planning for the future services; (2) addressing regulatory and/or service requirements; (3) assessing the municipality's needs; (4) managing financial expenditures and revenues; (5) addressing customer complaints and queries; (6) managing contracts with internal and/or external entities; (7) managing customer accounts (new, old and closed); (8) general office/department administration; (9) procurement of vehicles and (10) performance management.

In a contracted service model, most of the responsibilities listed above still need to be overseen or undertaken by municipal staff. The extent of oversight required depends on the services that the municipality relinquishes to the private sector. The municipality will also require additional staff for contract enforcement and monitoring to ensure the contractor(s) are delivering the collection service as per the final contract.

### 1.2.4 Public Education and Communication

Most large cities use a call centre to receive calls from their customers, and to distribute those calls to the appropriate service providers. The financial commitment to maintain this customer service system is not likely to change if the collection services were contracted out to a private sector waste hauler.

In the United States, where many jurisdictions have a franchise system, customers call the private hauler sector directly for missed pick-ups, queries and general complaints. The municipality typically does not receive any progress and/or annual reports unless it is stipulated in the terms of the contract.

## 1.3 Contracted Services

The extent of a waste collection contract can range from strictly providing the labour, to conduct the work, to providing all the necessities to undertake the work. For most collection contracts, the chosen hauler provides the trucks, labour, fuel and fleet maintenance. Sometimes the rate for fuel is adjusted annually to account for unforeseen price hikes. Program planning, contract management, education/public outreach and customer service requests are usually undertaken by the municipality.

Prior to 2010, in Canada waste collection was manual and labour intensive. Due to rising labour rates and work place injury claims, municipalities moved towards contracting out their waste collection services to the private sector to avoid these costs and issues. Most private sector waste haulers are not unionized and, in addition, are not bound to the same standards as municipal workers. The private sector has a financial advantage because they typically use a workforce that is less expensive (and therefore, typically less experienced), less prone to injuries and recognises that the employment lasts for the life of the contract.

Many jurisdictions across Canada contract out waste collection services to the private sector. The rationale for contracting out from a municipality's perspective may include the following:

- Resources required to address administrative and human resource management issues;
- Rising costs as a result of worker injury claims;
- Managing asset and budgeting responsibilities;
- Perceived efficiencies provided by the private sector; and/or
- Lack of political will to acquire/re-acquire assets and labour resources for in-house collection.

Contracted collection services are not always a positive experience for municipalities or their citizens. Some municipalities have had bad agreements that led to termination of their contract. Whether it is the fault of the contractor or the municipality, the disruption of service reflects poorly on the municipality as a whole, as well as those who are administering the contract.

Important considerations to ensure a good contract and working relationship include the following:

1. **Comprehensive Contract** – have comprehensive specifications and procedures in the contract to ensure services are delivered as expected. It is also prudent to have a dispute resolution processes that enables both parties to resolve unplanned issues.

2. **Company Reputation** – retain a service provider that prides itself on good service and shared responsibility should result in a better working relationship and delivery of service.

3. **Value for Money** – the lowest cost proposal is not always the best value. Details of the value for service need to be assessed.

### 1.3.1 Liquidated Damages

Guidelines developed for municipalities writing collection contracts[1] often recommend including a liquidated damages clause to help recover the Municipality's costs for contractor defaults. Due to the nature of residential waste collection, it would be impractical to assess actual damages to a city for each individual action or default by a contractor such as failing to correct a missed pickup or repeated customer service failures. Therefore, waste collection contracts often include provisions for liquidated damages to substitute a predetermined cost for assessment of actual damages. The challenge of these clauses is in their enforcement by municipalities. At their core, liquidated damages should serve as a timely deterrent for a contractor cutting corners, but often due to lax incident tracking, and lack of monitoring, liquidated damages are applied in lumps for significant time periods damaging the contractor-city relationship and not positively impacting contractor performance as detailed in the 2011 waste industry article "Waste Collection Contractors Beware"[2].

## 1.4 Labour Rates

Labour rates in Alberta are typically higher than other provinces. The labour rates in Alberta increase dramatically when the economy is strong, and this drives the cost of services across all sectors in the province. The economy in Alberta is known to cycle through highs and lows. This creates an inherent risk for the private sector trying to predict and guarantee a sustainable labour rate that would span the life of a collection contract.

Labour rates in the public sector are typically higher than the private sector. When the economy grows in Alberta, the labour rates for the private sector increase due to market demand. This becomes a risk for private sector waste haulers who need to guarantee collection rates over the life of their contract. If the firm is unable to physically or financially deliver the service, they will need to default on the contract or renegotiate a higher rate that is competitive with the rest of the industry to attract skilled workers. In the event a contractor defaults on its contract obligations, there will be liquidated damages that the city can claim but in the meantime the collection service will suffer, and customers will express their displeasure to the city.

In a 2018 article, the Canadian Centre for Policy Alternatives in Manitoba[3] summarized concerns for the working conditions of labourers hired through temporary help agencies by one of the City's previous collection contractors. The article claims that labour standards for these temporary workers did not meet legislative requirements and

[1] Recent guidelines include "Is Your Waste Contract Putting Your Municipality at Risk? Best Practices in Municipal Waste Contracting" from the U.S. based In the Public Interest.
[2] An article published by Waste 360 in 2011 warned waste collection contractors about the challenges with public contracts.
[3] The Canadian Centre for Policy Alternatives Manitoba Office published the article "Trashed: How Outsourcing Municipal Waste Collection Kicks Workers to the Curb" in February 2018 following the City of Winnipeg's fall 2017 award of solid waste collection services to two contractors who had not held the previous contract.

suggests that in-house services would provide more stable, safe, and healthy jobs in the City (Winnipeg). When labour rates are higher in the private sector, the benefits of in-house services would be an important consideration for skilled workers to not seek employment elsewhere.

The data sample from Ontario and BC indicated rates average 8% behind the Alberta market and 18% behind The City of Calgary drivers.

## 1.5 Publications

WRS is sometimes asked to demonstrate their service efficiency and effectiveness, and whether there would be cost savings in outsourcing segments of its residential collection services. This largely stems from an attitude that *"the private sector can do it better"*. A 2010 article from C.D. Howe Institute[4] further implies that municipalities can have savings through outsourcing collection services.

While the general consensus amongst industry research is that some level of competition in service provision provides value by increasing innovation and keeping costs down, few argue that the private sector will always out-compete the public sector. Indeed, this view is espoused by the previously referenced C.D. Howe Institute article which argues that it is innovation rather than privatization that drives costs down[5]. In a response to this article[6], the Canadian Union of Public Employees (C.U.P.E.) identifies a number of areas where the article's analysis is inconclusive as to the relative cost of public and private costs and identifies a number of municipal studies that have concluded that costs are comparable with either entity providing services.

A United Nations Development Program (UNDP) article[7] echoed the idea that contracting services can increase efficiency but cautioned against the notion that private actors could universally achieve greater efficiency than the public sector as other characteristics of collection such as geographic characteristics had a greater influence.

## 1.6 Industry Scan Summary

There is no apparent major trend toward private or public delivery of waste collection services in North American municipalities at this time. Indeed, privatization is an often-debated topic within the industry with groups dominated by private haulers arguing for contracting services, and groups dominated by the public sector arguing for greater public-sector control. A 2011 waste industry article[8] summarized that "the private versus public debate should be judged largely on a case-by-case basis" and made an argument for municipalities using managed competition as a catalyst to increase efficiency and define the scope of their collection services for both public and private sector bidders.

Increasingly municipalities are choosing approaches that eliminate monopolies of services by either the public sector or a single private contractor. In larger municipalities this tends to take the form splitting services based on

[4] The C.D. Howe Institute's Commentary No. 308 "Picking up Savings: The benefits of Competition in Municipal Waste Services" argues that municipalities with waste collection services primarily provided by municipal staff could decrease costs by contracting more services.

[5] The report states "Privatization alone does not reduce costs, but much evidence shows that the existence of a competitive tendering system results in cost savings provided by either public employees or private contractors."

[6] The Canadian Union of Provincial Employees' article "Garbage In, Garbage Out: the real costs of solid waste collection" identifies that the per tonne and per household cost of solid waste collection in Ontario does not indicate that contracting more services results in lower costs to consumers.

[7] The United Nations Development Program article "Is the Private Sector More Efficient? A cautionary tale" sites a Japanese study of waste collection efficiency from 2013 that concluded private participation could increase efficiency in some situations.

[8] An article published by Waste360 in 2011 "Private Benjamins: The Debate Over Privatizing Waste Collection" summarized the public debate occurring in the United States at the time between the National Solid Waste Management Association and the Solid Waste Association of North America.

location or materials collected. This approach allows municipalities to encourage and increase competition for their collection services and protects against the risk of not being able to replace a private contractor who cannot fulfill the requirements of the contract by either maintaining internal City resources who can step in to provide service and/or maintaining relationships with multiple contractors who can take on extra work if required. In municipalities where only one potential private collection contractor exists (frequently in small or remote communities), the public sector often chooses to retain collection services to maintain control of costs and in recent years many smaller municipalities have moved from contracted service to in-house collection services due to increasing contract costs.

Large municipalities are increasingly using mixed service delivery models to encourage ongoing innovation and competition amongst private sector contractors and public sector service providers. These processes can be initially onerous for municipal staff and have associated costs. They provide citizens and politicians a level of confidence that collection services are efficient and cost-effective. In North America, the public sector often wins these competitions[9].

Municipalities are particularly vulnerable to private sector contractors dictating prices where infrastructure such as landfills and transfer stations are privately held. WRS's landfills enable them to not be reliant on the private sector for solid waste infrastructure.

### 1.6.1 Automated Collection

As discussed in Section 3.2.1, there is a trend toward automated collection in municipalities wherever possible. In some cases, commentators have estimated significant cost savings from municipalities switching from manual to automated collections. In a 2014 report, the New York Citizens Budget Commission[10] estimated that The City could reduce injury rates and improve productivity by switching from the demanding physical labour required in manual collection for a total cost savings of $10 to $22 million per year.

### 1.6.2 CNG Collection Vehicles

There is a trend to using CNG collection vehicles. Although it is approximately 10% more to purchase a CNG collection truck, adoption of CNG trucks could cut fuel costs in half[11]. As noted above, Waste Management Inc. (arguably the largest private sector waste management provider in North America) aspires to have more CNG vehicles, which save an estimated 8,000 gallons of diesel fuel, worth approximately $31,000, per truck per year. Therefore, most major service providers that have access to CNG fueling stations or are willing to build in their own, are in the process of transitioning their fleet to the new fuel (from Henry Ford Research Fund[10]).

### 1.6.3 Contracted Services

Siting studies published from 2004 through 2008[12], the Toronto Environmental Alliance (TEA) study of waste collection (2011) estimated that proper monitoring for waste collection contracts costs about 20% of the annual contract cost to achieve high performance levels. Monitoring contractors should be considered when estimating the

[9] The C.D. Howe Institute's Commentary No. 308 "Picking up Savings: The benefits of Competition in Municipal Waste Services" argues that municipalities with waste collection services primarily provided by municipal staff could decrease costs by contracting more services.

[10] In its September 2014 article "Getting the Fiscal Waste Out of Solid Waste Collection in New York City", the New York Citizens Budget Commission suggests that there are significant opportunities for savings in changing a portion of its collection to automated trucks.

[11] Waste Management Services Industry, prepared by The Henry Ford Research Fund, Dated February 11, 2014

[12] The Toronto Environmental Alliance report cites several studies including "Privatization and Its Reverse: Explaining the Dynamics of the Government Contracting Process" (2004), "Municipal Service Contract Administration Booklet" and "Managed Competition in Indianapolis: The Case of Indianapolis Fleet Services" (2005).

total cost of service. The study further references the City of Toronto's data that costs for The City's privately contracted waste collection areas increased much more quickly than public collection costs.

**Quote:**

"The City of Phoenix uses the "go away" cost analysis. Under this approach, the primary factor is the impact of contracting on the department budget. The city's bid is determined by evaluating what city costs would "go away" if a private firm were awarded the contract and then calculating the city's cost of providing those go away elements. This process has gained credibility over a period of time as having the best evaluation of the impact on the taxpayers receiving the services. " – Managed competition: A tool for achieving excellence in government[13].

[13] Jensen, R. (1995). Managed competition: a tool for achieving excellence in government. Retrieved June 2018, from https://msu.edu/course/prr/371/Privatization%20and%20Downsizing/competion.html

## 1.7 Collections Industry Strategic Analysis

This section provides a strategic analysis of the waste collection industry's competitive dynamics, including an analysis of competitive advantages between WRS and the private sector. Strategic industry analysis is performed to:

1. Assess the level of competitiveness across the waste collection industry private sector; and
2. Evaluate how well the private sector is positioned to compete vs. WRS.

### 1.7.1 Industry Competitive Dynamics

From a variety of waste collection industry research, the following observations are made:

1. **It functions as an Oligopoly[14]:** the market share is dominated only by a few, large companies. These companies compete across national / international market locations. Additionally, the market is particularly prone to consolidation, as there are significant barriers to entry for new / smaller market players.
   - Over the mid-to-long term, oligopolies tend to moderate the degree of price competition amongst market players.
2. Competition **is focused on integrated price leadership and service quality differentiation:** Entities compete for contracts both within local markets and across regions (multipoint) primarily on:
   - Price (Integrated Cost Leadership – leverage economies of scale and scope); and
   - Service Differentiation (reliability, timeliness, and environmental).

In the short-term, the industry can feature intense rivalry and price competition. It has been observed that companies will "low-ball" contracts in order to win the work and gain entry to the local market.

In the mid-to-long term, however, it has also seen a tendency to deploy a "fat-cat" pricing strategy. In this scenario, the market leaders will develop similarly price-oriented strategies, rolling out disciplined price increases in order to maintain positive revenue even against rising costs. This is consistent with the oligopoly market structure.

Based on this, there is promise that WRS may elicit an aggressive bid from a vendor wanting to win the work but may not be likely to maintain these initial cost savings. Caution is advised for future contracts given this oligopoly structure.

### 1.7.2 Market Trends

Similarly, a review of a variety of market research, news articles, and industry thought leadership papers has identified the following market trends for the collections industry:

1. The market is generally growing across North America, as the amount of collection services demand generally grows with the population and economy.
2. Within this market, there is generally growing demand for:

[14] Karen Joyce, "Waste Collection Services Competitive Analysis", 2015

- Automated cart-based collection systems;
- Curbside recycling and organics collections; and
- Enhanced environmental outcomes (i.e. limiting greenhouse emissions).

3. There has been a general trend for municipalities outsourcing (at least) portions of their residential collection network.

4. There is a general shortage of qualified truck drivers across North America, which has led to repeated instances of curbside collections instability and unreliability within select cities.
   - It is noted that the 2018 labour study completed by The City indicates that the demand for drivers within Alberta is currently lower than historical levels. However, it is further noted that this demand can increase sharply upon an upswing in the provincial economy.

These market trends suggest that, in the medium-to-long term, the private sector may be at risk to the general industry labour shortage. This will put pressure on the private sector entities with lower total wage and benefit packages to reliably provide collection services for large contracts. In addition, the general growth of the market and increased trends in municipalities choosing to outsource will tend to decrease the level of price competition within the market.

### 1.7.3 WRS' Competitive Position

In review of the collections industry, key organizational resources were identified upon which companies use to compete and win within their selected markets. These key resources included the following:

1. Development and deployment of technology.
2. Vertical integration / market synergies.
3. Attraction and retention of skilled labour.
4. Fleet management practices.

Based on these sources of competitive advantage, an analysis of WRS vs. a potential private sector entity was developed. It is summarized in the following table:

| Resource | Advantage | Comments |
|---|---|---|
| Technology | Private Sector | ▪ Natural Gas Vehicles.<br>– Lower Greenhouse Gases (GHGs).<br>– Improved fuel economy.<br>▪ Route Design / In-Truck Technology.<br>– More efficient beats – more households (HHs) per route. |
| Vertical Integration / Synergies | Neutral | ▪ Both WRS and Vertically-Integrated Private Sector Entities have economies of scale and scope advantages within Calgary. |
| Attraction & Retention of Labour | WRS | ▪ General driver shortage (across North America).<br>▪ Historically The City has had an effective and positive relationship with Union. Identified for offering an attractive total compensation package.<br>▪ WRS trucks feature increasing levels of driver ergonomics. |

| | | |
|---|---|---|
| Fleet Management | Private Sector | ▪ Select large firms can exert higher purchasing power.<br>▪ Private sector can optimize fleet management across their entire operations (including commercial) and increase asset utilization.<br>▪ Larger firms can focus on a greater level of asset standardization, adoption of lean methods, and increased focus on fleet efficiencies. |

The findings from this analysis include:

1. **Short-Term**: it is reasonable to conclude that, in the short-term, the private sector can provide reliable, cost effective services and provide a comparable alternative to internal WRS resources.

2. **Medium-to-Long Term**: the private sector may be challenged by higher labor costs and inability to effectively retain labour to the degree which The City can, which can lead to higher risks of service unreliability.

# Waste & Recycling Services Collection Services Review Attachment 4 – Cost Impact for Alternative Service Delivery and Recommendations

PRESENTED TO
**The City of Calgary**

DECEMBER 2018
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# 1.0 COST IMPACT FOR ALTERNATIVE SERVICE DELIVERY MODEL

The purpose of this section is to estimate the potential impact of WRS adopting an alternative service delivery model. The Mixed Model is likely to hold some potential cost savings relative to WRS' existing Public-Sector Model. Given this analysis, it is beneficial to estimate this cost difference and compare that to the impacts to customer experience, safety, and environment performance.

A discussion of the major residential collection service cost components and the assumptions made in the estimating the differences between WRS' cost structure vs. that of a potential private sector vendor is provided in the following sections.

## 1.1 Alternative Model Description for Cost Comparison

It was found that the Mixed Model is likely to represent the most attractive alternative model upon which to compare against WRS' existing Public-Sector Model. It was found to be superior than the fully outsourced Private Sector Model regarding customer experience, safety, environment, and cost objectives.

Further, it was assumed that an appropriate Mixed Model to serve as a comparison would be approximately one-third of WRS' current residential customers. This was set as a base assumption to best align and minimize the change impact to the current state service delivery model. The existing residential collection services are organized and managed as a set of three residential districts. Within each district, all material types (i.e., black, blue, and green cart) are collected. Although the districts are encouraged to collaborate and share resources upon need, each is separately managed by a Superintendent and supporting Foremen. Given this, it would result in less change impact to the existing collections model should a private sector entity be awarded one of these districts.

Consideration for outsourcing a specific material type across the entire City was not considered. Previous studies have indicated that it is possible to outsource residential collections by material type. However, it was viewed that this method can result in increased logistical and route design challenges. In addition, it was noted that this method may further risk customer service consistency should individual customers be served by multiple haulers.

## 1.2 Efficiency

The number of scheduled customer services (or households) a service provider can achieve with the same number of resources (i.e., trucks, labour, and hours) is a proxy for service efficiency. A service provider with greater efficiency can collect from more households than other less efficient providers. This allows them to require relatively fewer collection trucks and drivers than less efficient providers.

In the external scan, a review of the number of households per collection beat across the variety of municipalities was considered. However, it is dangerous to review the differences in these results to conclude whether a municipality is either less or more efficient. This is due to the several logistics and service level differences that are present between these municipalities, which include:

- Customer excess service levels (e.g., black and green carts);
- Customer set-out frequency;
- Degree of customer cart tagging / communications;

- Total distance per route; and
- Local traffic speed limit and flow conditions.

Based on all these potential variables, it is impractical to draw absolute conclusions from comparing the number of households per collection beat across different municipalities.

However, it is possible to assess whether WRS could increase its efficiency based on existing collection practices. It was noted that WRS has already identified the need to adopt an industry leading route design tool. Internally, it is viewed that this tool will enable WRS to be on-par with current industry leading practices and functionality. However, it is also acknowledged that some private sector entities have been ahead of WRS on both route design and in-truck technology (e.g., turn-by-turn technology).

Based on this, it is reasonable to assume that WRS may now lag private sector efficiency in the range of 5% to 10%. To estimate the costs between WRS and a potential private sector entity, this relative efficiency gain can be used to assume that a private sector entity may need between 5% to 10% less total labour and collection trucks (for the same number of households per collection district) based on this advantage.

It is acknowledged that, upon implementation of the improved route design functionality, WRS may tighten the gap on expected route efficiency between itself and private sector. However, for the sake of the financial cost analysis, an efficiency advantage of 7.5% for the private sector was assumed.

## 1.3 Cost of Labour

A study of the potential differences in labour rates for Class 3 drivers in Calgary and Alberta was conducted by The City[1]. Highlights of the findings from this study were provided to support the potential cost estimates between WRS and a potential private entity. A review of salaries from 16 Alberta private sector organizations, 7 municipalities in Alberta, and results from the Alberta Government Wage and Salary Survey (which is completed every 2 years) was leveraged for this analysis.

It was found that current WRS rates for a Class 3 driver are 10% above the market median (when calculating that range using the +/- 5% methodology). Thus, for the same number of Class 3 drivers, it is estimated that WRS now pays approximately 10% more than the market median.

To be conservative, for this evaluation, it was decided to increase this difference between WRS and a potential private entity to 15% given that this was within the stated 5% to 15% competitive market range quoted and further considers the likelihood that private sector collection companies may feature slightly lower wages relative to other organizations within the sample.

## 1.4 Cost of Fleet

When considering relative differences in total fleet costs between WRS and a potential private sector entity, the following cost components are identified:

- Collection truck purchase cost, which translates to a lease cost;
- Maintenance; and

[1] The City of Calgary, “Collection Services Review – 2018”, September 2018

- Fuel and oil.

To consider the difference in total truck leasing costs on a per-truck basis, differences in the estimated quality per truck (based on the anticipated technical features and functionality), purchasing power, and financing costs were considered. Given WRS's selection for trucks with enhanced driver ergonomics, it is estimated that a potential private sector entity may spend approximately 5% less per truck. Based on discussions with sources from industry collection truck providers, only the largest private sector entity may elicit slight purchasing power (i.e. price discount) savings relative to WRS. However, it is also acknowledged that The City may save on truck financing costs given its access to a relatively lower cost of debt financing as compared to the private sector. Based on these factors, it is estimated that a potential private sector entity may save approximately 5% in truck purchase and leasing costs.

In addition, it is estimated that a private sector entity may have an advantage in total maintenance costs for the same number of collection trucks (despite the observation that fleet maintenance costs have demonstrated increased efficiencies over the current business cycle). Although a labour salary comparison for the same level of mechanics was not performed, it is acknowledged that WRS fleet services are provided from Corporate Fleet Services. In comparison to a large private sector hauler, it is estimated that such a hauler may be able to leverage increased asset utilizations, realize more stringent asset standardizations, and feature leading asset management and lean operational practices. Given these considerations, it was estimated that a private hauler may realize 5% increased maintenance efficiency.

Finally, based on estimated route design and fuel economy efficiency advantages which a private sector entity may be able to provide, it was estimated that it could also save 5% on total fuel and oil costs for a given collection district.

## 1.5 Cost of Miscellaneous Business Expenses

In addition to direct costs for collection driver labour and fleet, there are additional direct business expenses to support the collection services function. These address a variety of administrative needs, including facilities, communications, materials and commodities, supplies, insurance, and security.

To estimate the differences in costs between WRS and a potential private sector entity, it was generally assumed that this would follow overall efficiency advantages of approximately 5% for the private sector.

## 1.6 Contract Administration Costs

It was identified that, should WRS outsource portions of its collection districts, it would be required to design and implement incremental administration resources within its organization structure. Such incremental resources would be required to perform the following activities:

- Perform overall contract management and oversight;
- Triage and manage 3-1-1 customer service requests completion and reporting; and
- Provide regular oversight and quality assurance (i.e., on-site inspectors) for the outsourced collection district.

From input from other municipalities which already outsource significant portions of their collection districts, it was estimated that approximately 8 net-new full-time-equivalents may be required within WRS to accommodate outsourcing of a collection district (note that a detailed review would be required to confirm this estimate).

In addition, it is anticipated that one-time transition and procurement costs will be required to develop the request for proposal, direct the tendering process, and both develop and implement a contract. It is vital for WRS to not

overlook the efforts required to perform this function, as there can be a fine divide between including route completion timeliness incentives vs. desired customer service and service request completion objectives. The one-time costs were estimated at approximately $600,000, which could be expected to be amortized across the contract life-time (assumed to be 8 years).

## 1.7 Avoidance of Corporate HR Allocations

Presently, WRS records internal human resources costs based on a corporate allocation model. These reflect the total Corporate HR costs which are allocated to the Business Unit. These are typically allocated based on the total number of head-count of internal full-time-equivalent employees. Recognizing that through outsourcing one-third of the WRS' total collection routes would significantly decrease WRS' total headcount, it can be reasonably assumed that approximately one-third of the HR costs now allocated to WRS just for its residential collection services employees could be avoided. Based on this, it was estimated that WRS could save approximately $250,000 per year through the avoidance of current Corporate HR allocations.

## 1.8 Private Sector Entity Profit

It is identified that any successful private sector entity needs to earn a profit on its business. This is required to achieve private sector sustainability long-term. As such, WRS should only be interested in outsourcing portions of its business to reliable and sustainable private sector entities, as it cannot risk the consistent provision of its residential collections service.

An industry scan noted that the average private sector profit margin achieved for the collections function is 10%[2]. This is consistent with other previous studies which have provided a generally profit margin range of between 7% to 15%.

## 1.9 Comparative Financial Analysis Summary

Based on the estimated assumptions and discussion above on each applicable cost component between current WRS costs and those from a potential private sector entity, the total cost difference was estimated for one of WRS' three existing collection districts. This is summarized in the following table:

| Cost Element | WRS Current Model Annual $ for One-Third Collection Network | One-Third Private Sector Model Estimate $ | One-Third Private Sector vs. WRS Current Model Difference $ | Comments / Assumptions |
|---|---|---|---|---|
| Labour | $8,928,132 | $6,919,302 | ($2,008,830) | ▪ 15% labour savings<br>▪ 7.5% efficiency savings |
| Fleet Leasing | $3,473,312 | $3,039,148 | ($434,164) | ▪ 5% truck cost savings<br>▪ 7.5% efficiency savings |
| Feet Maintenance | $3,096,871 | $2,787,184 | ($308,687) | ▪ 5% cost savings<br>▪ 5% efficiency savings |
| Fuel & Oil | $1,388,934 | $1,319,488 | ($69,447) | ▪ 5% efficiency & fuel economy savings |

[2] Michael Emgarten, "Waste Management Services Industry, The Henry Fund, Henry B Tippie School of Management, 2014

| | | | | |
|---|---|---|---|---|
| Misc. Business Expenses | $874,031 | $830,329 | ($43,702) | ▪ 5% efficiency savings |
| Contract Transaction Costs | - | $775,000 | +$775,000 | ▪ 8 new WRS FTE's<br>▪ $600k 1-time costs |
| City Corp HR Allocations | $250,000 | - | ($250,000) | ▪ Decrease of ~ one-third allocations |
| Profit | - | $1,489,545 | +$1,489,545 | ▪ 10% contractor profit |
| ***Total Difference*** | ***$18,011,280*** | ***$17,159,996*** | ***($851,284)*** | ▪ ***~ +/- 50% range*** |

Based on this analysis, it is estimated that WRS may save approximately $850,000 per year if it was to outsource one-third of its total residential collection network (i.e., 1 district). However, given that each cost element features its own unique factors and assumptions, it should be acknowledged that this amount may vary approximately +/- 50%. The differences in future WRS efficiencies and actual private sector pricing proposals would dictate actual cost savings.

To analyze these potential savings, their impact on WRS' potential budget and cost per residential household customer summarized in the following table:

| Annual Budget Savings $ | Budget Savings % vs. 1/3 Collection Network | Budget Savings % vs. Entire Collection Network | Household Savings per Month | Household Savings per Year |
|---|---|---|---|---|
| $851,284 | 4.7% | 1.6% | $0.2160 | $2.59 |

However, it is noted that moving to a Mixed Model such as this does pose potential risks to performance in customer experience (particularly for reliability) and safety. These risks are primarily due to the extended arms-at-length control which The City would need to adopt over residential waste collections and the increased risk for the private entity to attract and retain qualified drivers relative to WRS.

## 2.0 SUMMARY

The provision of residential collection service is a highly debated and contested issue across Canada and North America. Successful collection is a balance between achieving several competing objectives, such as customer satisfaction, service reliability, customer responsiveness, environmental management, public and private safety, and costs.

Essentially there are three different service delivery models that municipalities can choose from: In-house, Mixed or Fully Contracted. Each has its own benefits and challenges depending on the desired outcomes. Our analysis demonstrates that WRS' Public Sector Model is likely to achieve stronger levels of customer experience and safety outcomes but may feature higher costs than a model which partially outsources waste collection to a private sector entity.

Waste collection costs for WRS can be divided into four parts: (1) fleet management; (2) labour management; (3) planning and administration; and (4) customer service. Item 3 and Item 4 are parts that are normally undertaken by the municipality whether the service delivery is conducted in-house or contracted out. The "big ticket items" of the

collection costs are fleet management and labour management which combined make up 80% to 85% of the total cost. Fleet management is 40% to 45% of the total cost and includes leasing vehicles, maintenance, and fuel. Labour management is also about 40% to 45% of the total cost that that includes wages and benefits. Item 1 and Item 2 are aspects that can be performed by the public and private sectors.

Many jurisdictions moved towards contracted services because of uncontrollable costs associated with work place injuries and wages. Using automated collection trucks reduces the potential for work related injuries and opens the door to a wider pool of workers. There are a number of communities that are moving from contracted services to in-house collection services because of the flexibility and operational benefits it provides their community such as snow removal and disaster debris management.

Findings from the external scan showed that the lowest cost arrangement does not always represent the best value or service for the community. There are several examples, including Winnipeg, where the low-cost collection contracts were terminated because of quality of service issues such as missed pick-ups, old trucks that break-down and affect traffic and flexibility to address issues.

Labour rates for drivers in Manitoba and Ontario are typically 8% less than in Alberta and 18% behind The City of Calgary rates for drivers. Considering that labour costs make up as much as half of the collection costs, there is a strong likelihood that per household costs will be lower in Manitoba and Ontario than in Alberta. Benchmarking unit costs helps to understand how communities compare across the country. However, it is more important to understand the factors and circumstances for the differences among communities so that program performance can be evaluated and compared to identify leading practices and help communities as a whole identify optimal targets to achieve the most efficient system.

The labour rates in Alberta can be high when the oil and gas industry is thriving. When this occurs, wages for skilled services such as truck drivers escalate rapidly. For this reason, it may be challenging for the private sector to guarantee a unit collection fee for the life of a six to eight-year contract. Private sector haulers are likely to lose drivers to other organizations that will offer higher wages. If the contractor is unable to find drivers for the wages they set in their contract, there is a risk that the contract will not be financially sustainable, or the contractor will not be able to fulfill the terms in the collection contract. WRS pays its drivers slightly above market rates and with better benefits to motivate and retain staff who want to serve The City.

From the efficiency and effectiveness analysis performed, it is noted that WRS has been providing reliable, responsive, and valued collection services. Its history of service consistency, response time to customer service requests, and high citizen satisfaction scores can attest to this. In addition, WRS has demonstrated a commitment towards safety (both for the public and its workforce) and environment outcomes. Finally, it has demonstrated it can drive cost efficiencies across both manpower and fleet maintenance resources.

However, a private entity may well be able to perform the residential waste collection services at a cheaper cost than WRS. Analysis performed indicated that a private entity may be able to achieve approximately $850,000 (+/- 50%) in savings if it was to assume one-third of WRS' entire collection network. However, there are risks to this approach which largely stem from the nature of the contract (as a private entity would be managed at an arms-at-length contract, which can be difficult to define well across a 7 or 8-year duration) and WRS' current advantage in attracting and retaining qualified manpower. There are noted examples from other jurisdictions where these issues resulted in service instability and disruptions.

Finding the most suitable metrics to assess and compare WRS's waste collection program will involve developing benchmarks that will be of interest for other communities. Based on the findings from the collection service review, some options to discuss with other jurisdictions include (1) cost per scheduled collection; (2) customer collections per hour; (3) maintenance cost per vehicle per month (or year); (4) FTE's required per 10,000 scheduled pick-ups,

(5) fleet spare ratio; (6) fleet cost per vehicle; and (7) scheduled collections per vehicle per week. These will need to be defined so that the group of jurisdictions understands the information required to calculate these metrics and the relevance of these benchmarks to their respective organizations.

There is a possibility that elected officials might want to test whether the private sector can propose and provide a comparable or better level of service for better value. WRS can consider issuing a request for proposals for one of its service areas that would be subject to a competitive process. This would include collection of all three streams which mirrors the services provided by WRS. Details of the fleet requirements, collection approach, routing plan, vehicle storage, fuel type, vehicle maintenance and labour expectations would need to be established by WRS.

# 3.0 RECOMMENDATIONS

The purpose of this section is to summarize the individual recommendations as a result of research and analysis presented throughout the main body of this report.

1. **Hours of work:** Drivers work 9.5 hours per day for a total of 38 hours per week. If there is a desire to improve collection rates by extending the shifts to a 10-hour day, the extra 30 minutes could result in 60 to 100 more pick-ups per shift thereby improving the daily efficiency of each collection vehicle.

2. **Additional Collection Day:** Collection trucks are financed and used four days per week. If The City were to use those vehicles on Mondays and Saturdays, there would be no incremental finance charge for using those vehicle on those days. This is a business model used by corporations like WestJet to keep the vehicles in use to maximize revenue. Collecting waste on Mondays or Saturdays could be applied to multi-family and commercial customers.

3. **Alternative Fuel Vehicles:** Fuel and oil make up approximately 8% of the total collection costs. Most jurisdictions are moving towards CNG because of financial and environmental benefits. WRS has some experience testing CNG collection vehicles. A feasibility analysis should be conducted to assess the financial and environmental benefits and concerns to WRS if alternative fuels such as CNG were used in one of the districts or the entire fleet. Electric vehicles are also worth considering as they are being tested across several jurisdictions across North America.

4. **Review Worker Safety Performance Issues:** WRS' safety performance for its drivers has demonstrated a growing number of claims. Through discussions with WRS, this performance is already known and initiatives to improve driver safety are underway. These include improved truck ergonomics, driver safety training, and prevention / physical conditioning techniques. It is recommended that WRS maintain a regular review and update of these safety improvement initiatives to ensure worker compliance with updated safety training protocols.

5. **Continue to Cultivate Employee Retention:** Given the insights from the industry analysis, a key resource which defines how reliable service providers can be is the attraction and retention of skilled labour, particularly for Class 3 drivers. Although it has been identified that WRS has a current advantage in this regard relative to the private sector, it must continue to focus and maintain this advantage should it desire to continue delivering residential collections internally. For WRS, this will necessitate continued investments into driver training, ergonomics, and safety. In addition, it must continue to maintain the historically positive relationship it has had and partner with drivers to ensure that collection objectives and community needs are met.

6. **Adopt Collection Services Objectives:** The residential collection service objectives are intended to serve WRS over the long-term as a description on what this function is intended to achieve. They are agnostic of the

actual service delivery model. As such, it is recommended these objectives continue to live outside of this project and serve as key strategic planning inputs to the future of The City's residential collection services.

7. **Adopt Performance Measures and Operational Indicators and Establish Targets:** To support each of the residential collection services objectives, specific performance measures and supporting operational indicators were identified and reviewed with the WRS Management Team. It is recommended that these be adopted and included within WRS' annual performance measurement planning and review processes. Ongoing measurement and reporting of these will enable an enhanced culture of continuous improvement against each of the overarching objectives. Upon adoption of the performance measures and indicators, further work is recommended to develop desired performance targets. These should reflect a continuous improvement mindset balanced with industry leading practices, current performance levels, and desired levels for improvement.

8. **Review Projected Collection Services Costs per Scheduled Service:** From review of historical collection services costs, it is shown that overall costs decreased on a per scheduled collection basis between 2014 to 2017. However, it can also be seen that black and blue cart collection costs per scheduled collection are projected to slightly increase in 2018. In addition, increases to black cart's miscellaneous administrative/ business expenses have been reported.

   It is understood that costs are in progress of being confirmed due to the recent changes in service levels to both green and black carts. Further, an internal view is that manpower has become lean and additional manpower may be required. It is recommended that WRS focus on the 2018 and 2019 costs per scheduled service metric, confirm appropriate manpower and administrative / business expense requirements, and work to both limit and stabilize these costs across 2019 to 2022 in balance with the priority customer experience, environment, and safety objectives.

9. **Develop Annual Performance Review and Reporting Protocols:** Given the objectives, performance measures, and indicators, it is recommended that WRS establish an annual process devoted to performance benchmarking, performance analysis, and both management and public reporting. It is acknowledged that, over time, political questions will continue whether WRS should continue to serve residents itself or outsource a portion of its collections route. Facing this reality, WRS should adopt a performance measurement and reporting protocol that demonstrates both its commitment to continuous improvement and its comparable performance against other municipalities. This could utilize existing benchmarking initiatives where appropriate to minimize the additional administrative effort required. However, it would also be expected that this would require select other municipalities to participate in sharing their respective performance information.

10. **Continue to Deliver Residential Services:** Given the strategic and efficiency and effectiveness analysis, it is noted that WRS has been providing effective customer experience performance. Overall customer satisfaction has consistently been high for both black and blue services, while both WRS' reliability and responsiveness measures strong performance. In addition, it has demonstrated a commitment to improving both its safety and environment performance over time. Further, pending final cost management adjustments based on the 2017 and 2018 service level changes, it has achieved increased cost efficiencies, particularly in manpower management and fleet maintenance costs.

    Further, it is shown that WRS currently has a competitive advantage for the attraction and retention of skilled labour. From research conducted, this is a primary root cause for unreliable collection services. This would be a key risk should WRS outsource a portion of collections to a private sector entity.

    It is acknowledged that WRS may save approximately 1.6% of its total baseline residential collections budget (i.e., for its entire collection network) if it chose to outsource one-third of its collection network. This equates to

a residential bill impact of between $0.22 (+/-50%) per month. However, based on potential consequences to desired performance outcomes (as noted from other jurisdictions across North America) and the initial changes required, it would introduce new risk to WRS' residential collections. These can include risks to service reliability, responsiveness, and safety outcomes.

Based on this, it is recommended that WRS maintain its internal collections model, with a caveat that it can regularly review, assess, and report on its performance relative to other jurisdictions on a go-forward basis.

# WASTE & RECYCLING SERVICES

## Residential Cart based Collection Benchmarking and Performance Measurement

# Table of Contents

# 1. INTRODUCTION

Monitoring performance of residential cart-based collection is a critical activity, regardless of the service delivery model. To that end, WRS participates in several initiatives to monitor and compare performance. Several existing performance measures and benchmarks support WRS' efforts to continually monitor performance of the residential black, blue and green cart collection system. Use of measures that support all four of the service value objectives, developed for the 2018 Collection Services Review create a balanced representation of overall performance.

# 2. OBJECTIVES

Service value objectives were used throughout the 2018 Collection Services Review to create a balanced look at WRS' performance of residential cart-base collection services. The objectives were: customer experience, safety, environment and costs. They have been defined in Table 1 below:

| Service Value Objectives of Residential Collection | Definition |
|---|---|
| **Customer Experience** | • Deliver consistent and reliable Black, Blue and Green cart collection services.<br>• Respond to inquiries and resolve issues in a timely, accurate and courteous way. |
| **Safety** | • Ensure public and worker safety while protecting public and private property. |
| **Environment** | • Protect air, land and water.<br>• Facilitate waste diversion. |
| **Cost** | • Provide safe; environmentally responsible; reliable and responsive customer experiences at the lowest possible cost. |

**TABLE 1: SERVICE VALUE OBJECTIVES DEFINITIONS**

# 3. CURRENT PERFORMANCE MEASUREMENT PROGRAM

WRS currently participates in several initiatives to monitor and benchmark performance. Four of the initiatives are corporately mandated and include: Municipal Benchmarking Network Canada (MBNCanada) formerly known as Ontario Municipal Benchmarking Initiative (OMBI); accountability reports to Council for One Calgary; and The City's environmental management system (Envirosystem)

and Safety reporting systems. WRS also voluntarily participates in an additional initiative called the National Solid Waste Benchmarking Initiative (NSWBI) to supplement benchmarking opportunities.

Several performance measures or benchmarks currently exist to support WRS' efforts to continually monitor performance of residential cart-base collection system.

## 3.1 CUSTOMER EXPERIENCE

Residential cart-based customer experience focuses on two main purposes, reliability and responsiveness. These were defined to: Deliver consistent and reliable Black, Blue and Green cart collection services and respond to inquiries and resolve issues in a timely, accurate and courteous way.

The ideal performance proxy for reliability is to monitor missed collections. In order to benchmark with other municipalities, missed collections should be normalized for the number of scheduled collections, removing some of the bias between differing program service levels.

Further opportunities exist to improve data gathering for this performance measure by determining when collection has actually been missed by a driver, versus a 'missed collection' for other reasons. Examples of missed collections that are not driver error include: if a cart is not set out on time, cart containing visibly improper materials, a cart not used or emergency road closure; as such, collection was not possible, yet often it is recorded as a 'missed collection'.

MBNCanada and NSWBI provide benchmarking data regarding the number of missed collections for each line of service (garbage, recycling and organics). The existing measures are:

- Missed collection calls received per scheduled collection -residential curbside garbage;
- Missed collection calls received per scheduled collection - residential curbside recyclables;
- Missed collection calls received per scheduled collection - residential curbside organics; and

WRS' response time to complete service requests is a measure of collection responsiveness. On average, WRS response time is between one and two days and is consistent with the results of most other municipalities. Neither MBNCanada nor NSWBI has a benchmark regarding response times for service calls. However, WRS has proposed a performance measure for One Calgary 2019-2022 service plans and budgets that monitors average initial response time for all WRS service requests. From this measure, WRS will monitor its own response time for residential cart-based response time performance.

The consultants have suggested several internal operating measures that will support WRS in its overarching goal of reliable and responsive customer experience. These include: internal employee engagement survey satisfaction results; staff turnover percentage; and truck availability percentage.

## 3.2 ENVIRONMENT

The environment objective is defined as the importance to both protect air, land, and water and facilitate waste diversion.

The City's Envirosystem monitors greenhouse gas (GHG) emissions from operations, reported at the WRS Business Unit level. From this, WRS can calculate greenhouse gas emissions from trucks which deliver residential cart-based collection services. To benchmark results to other municipalities, GHG emissions should be reported per scheduled service.

Envirosystem also monitors spills, by both their frequency and amount. WRS encourages a culture of reporting in this area, as it helps to determine root causes to be addressed. As such, benchmarking on this measure may misrepresent findings when comparing against other municipalities who have not established this culture. It would be important to determine how other municipalities define spills, in order to create a comparable measure.

In addition, WRS has developed a performance measure to track the per cent of residential waste being diverted through cart-based programs for the 2019-2022 One Calgary service plans and budgets. This measure will monitor the percentage of total residential waste diverted from landfill as achieved by both the Blue and Green Cart Programs. Both MBNCanada and NSWBI have similar diversion measures, which allows WRS to benchmark performance with other municipalities. MBNCanada reports on total tonnes of residential solid waste diverted per household and percent of residential solid waste diverted – single family; while the NSWBI reports on the residential curbside diversion rate based on weight.

However, it should be noted that cart-based diversion measures gauge the effectiveness of the overall residential curbside collections programs, and not necessarily the collection service delivery model itself. This acknowledges that although collections drivers can support customer education through activities such as set-out requirements and behaviours, they cannot be held accountable for program diversion.

The consultants have suggested an internal operating measure of total diesel fuel consumption per scheduled service, which would support WRS' environment objective.

## 3.3 SAFETY

The safety objective is defined as the protection of both the public and internal workers, and both public and private property.

WRS reports internally on a variety of safety-related measures at the Business Unit level, which can also be monitored for residential cart-based collection. These include:

- Total number of days lost for all claims;
- Lost Times Claims Frequency; and
- Total Recordable Injury Frequency.

With respect to industry benchmarking, NSWBI has a measure that monitors providing a safe work place, and is reported as the number of WCB claims per 1,000 hours for residential curbside collection of garbage, recycling and organics. NSWBI is considering switching to a new safety measure in the future, at which point WRS could consider that benchmark.

WRS monitors property damage by observing the costs associated with property damage repair for both public and private property. A performance measure of total public property damage per scheduled service is recommended by the consultants for future monitoring.

The consultants have also recommended considering an internal measure of number of public safety incidents per scheduled service.

## 3.4 COSTS

The cost objective is focused on WRS providing safe; environmentally responsible; reliable and responsive customer experiences at the lowest possible cost.

In Action Plan 2015-2018 business plan and budget, WRS had an annual performance measure that reports on black cart collection costs per household. This measure monitors operational efficiency for collection of waste from single-family homes.

In order to benchmark financial performance, it is important to have performance measure definitions that support comparability. As costs can be impacted by program decisions, such as handling of excess or the materials included in a program, it is important to understand what is and isn't included in each benchmark. The consultants recommended financial performance measures where costs are measured per scheduled service, however these are currently not available with either MBNCanada or NSWBI. They also recommended wherever possible, that each measure should be reported individually by material type (garbage, recycling and organics).

While not ideal, existing NSWBI and MBNCanada financial performance measures, do indicate general financial trends across municipalities. These include:

- Residential curbside collection cost per tonne collected material – garbage;
- Residential curbside collection cost per tonne collected material – recyclables;
- Residential curbside collection cost per tonne collected material – organics;
- Residential curbside collection cost per tonne collected material – combined; and
- Operating Cost for Garbage Collection per Tonne.

Several challenges arise in using these measurements as a direct comparison for WRS performance. These include different service levels; such as collection frequencies and handling excess outside the cart, and the inclusion of different levels of internal indirect and overhead costs. However, these do provide a general comparison, particularly for trending patterns over time.

The consultants suggested several internal operating measures that will support WRS in achieving the financial objective. Fleet and manpower costs are the largest cost components of a residential collection services financial analysis and as such, it was identified that indicators that support measurement of these elements are necessary. These include: collection efficiency, average number of households collected per day; fleet availability efficiency, fleet spare ratio; manpower availability efficiency, manpower spare ratio.

# 4. SUMMARY

WRS will continue to benchmark and monitor performance of the residential cart-based collection system. Table 2 is a summary of measures from both existing initiatives and corporate programs that

WRS will use to monitor black, blue and green cart collection services. Use of these measures will support achieving the outcome of providing a safe; environmentally responsible; reliable and responsive customer experiences at the lowest possible cost.

| Objective | Benchmarks and Performance Measures | Operational Indicators |
|---|---|---|
| **Customer Experience** | Missed collections per scheduled service<br>**A**verage service request response time in days | Truck availability<br>Employee engagement satisfaction survey<br>Staff turnover |
| **Safety** | Number of public safety incidents per scheduled service<br>Dollar amount of public damage per scheduled service<br>Corporate safety reporting for residential cart-based collection | Corporate safety reporting for residential cart-based collection |
| **Environment** | GHG emissions (tonnes) per schedule service<br>Percent of residential waste diverted through cart-based programs | Total litres of diesel fuel consumed per household for each Black, Blue, and Green cart program |
| **Cost** | Black Cart: cost per scheduled service<br>Blue Cart: cost per scheduled service<br>Green Cart: cost per scheduled service | Number of households collected per day (separately for Black, Blue, & Green)<br>Vehicle spare ratio<br>Manpower spare ratio |

**TABLE 2: SUMMARY OF BENCHMARKS, PERFORMANCE MEASURES AND OPERATIONAL MEASURES FOR RESIDENTIAL COLLECTION SERVICES.**

Any collection service delivery model has risks and it is important to evaluate and monitor those risks to determine future courses of action. As such, WRS is also committing to participate in either a Zero-Based Review or another Collection Services Review to inform the 2023 to 2026 service plan and budget cycle.