



**Calgary**

City Auditor's Office

# **Waste and Recycling – Blue Cart Contamination Prevention Audit**

**October 17, 2019**

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The City Auditor's Office conducted this audit in conformance with the *International Standards for the Professional Practice of Internal Auditing*.

## Executive Summary

Waste and Recycling Services (WRS) has provided residential blue cart recycling services in the City of Calgary (The City) for the past 10 years since 2009. WRS collects recyclable materials weekly from over 325,000 households and takes them to a Material Recovery Facility (MRF), which is operated under contract. In 2018, 48,000 tonnes were diverted through the Blue Cart Program alone. WRS reporting for Q2 2019 shows 54% of residential waste was diverted through the Blue and Green Cart Programs. Diversion of waste through the Blue Cart Program is a key step towards achieving Council's goal of 70% waste diversion by 2025. The success of the Blue Cart Program is impacted by participation levels and by the level of contaminants collected in the carts.

Contaminants are materials that are not accepted by the Blue Cart Program, which could harm WRS and MRF personnel, damage equipment and reduce the quality and marketability of recyclables. Starting with China in 2017, there has been a movement of regulatory changes to reinforce banned substances and reduce acceptable contamination rates, which has decreased global markets for recyclables.

Our audit objectives were to determine if WRS:

1. Has effective processes to evaluate and report on the effectiveness of activities and programs implemented to reduce contamination; and
2. Contamination reduction activities are designed and operating effectively.

WRS monitors contamination levels and utilizes an established mix of contamination prevention activities including education programs, communication campaigns, and tagging of visibly contaminated carts by Collection Services. Despite these ongoing activities The City has experienced an upward trend in contamination levels following the change from weekly to bi-weekly black cart collection, which began in July 2017. WRS recognized this trend in their risk register and responded with two new initiatives this year. First, WRS implemented an expanded Cart Spot Check Program to include all households over the next two years. Second, WRS is planning the Customer Understanding Project, which is expected to provide a better understanding of household awareness and behaviours and support targeted contamination prevention activities.

WRS is collecting data that may feed into an evaluation framework to report on the effectiveness of activities and programs implemented to reduce contamination. Additional goal setting and evaluation processes are needed to determine if contamination prevention activities are making an impact and achieving value for money.

Our recommendations are directed to support WRS contamination reduction objectives by improving the rigour with which prevention activities are evaluated to continuously improve cost effectiveness. Two recommendations are classified as higher risk priority:

1. Define the appropriate level of contamination for hazardous household waste (HHW) and overall contamination, and establish associated SMART goals and metrics.
2. Develop a process to escalate and remove HHW identified by the Cart Spot Check Program or Collection Services to protect the health and safety of workers.

WRS has agreed to all four recommendations and has committed to set action plan implementation dates no later than February 1, 2021. The City Auditor's Office will follow-up on all commitments as part of our ongoing recommendation follow-up process.

## 1.0 Background

Waste and Recycling Services (WRS) has provided residential blue cart recycling services in the City of Calgary (The City) since 2009. WRS collects recyclable materials from over 325,000 households<sup>1</sup> and takes them to the Material Recovery Facility (MRF), which is operated under contract. Diversion of waste through the Blue Cart Program is a key step towards achieving Council’s goal of 70% waste diversion by 2025.

The success of the Blue Cart Program is impacted by participation levels and by the level of contaminants collected in the carts. Contaminants are materials that are not accepted by the Blue Cart Program, which harm WRS and MRF personnel, damage equipment, and reduce the quality and marketability of recyclables.

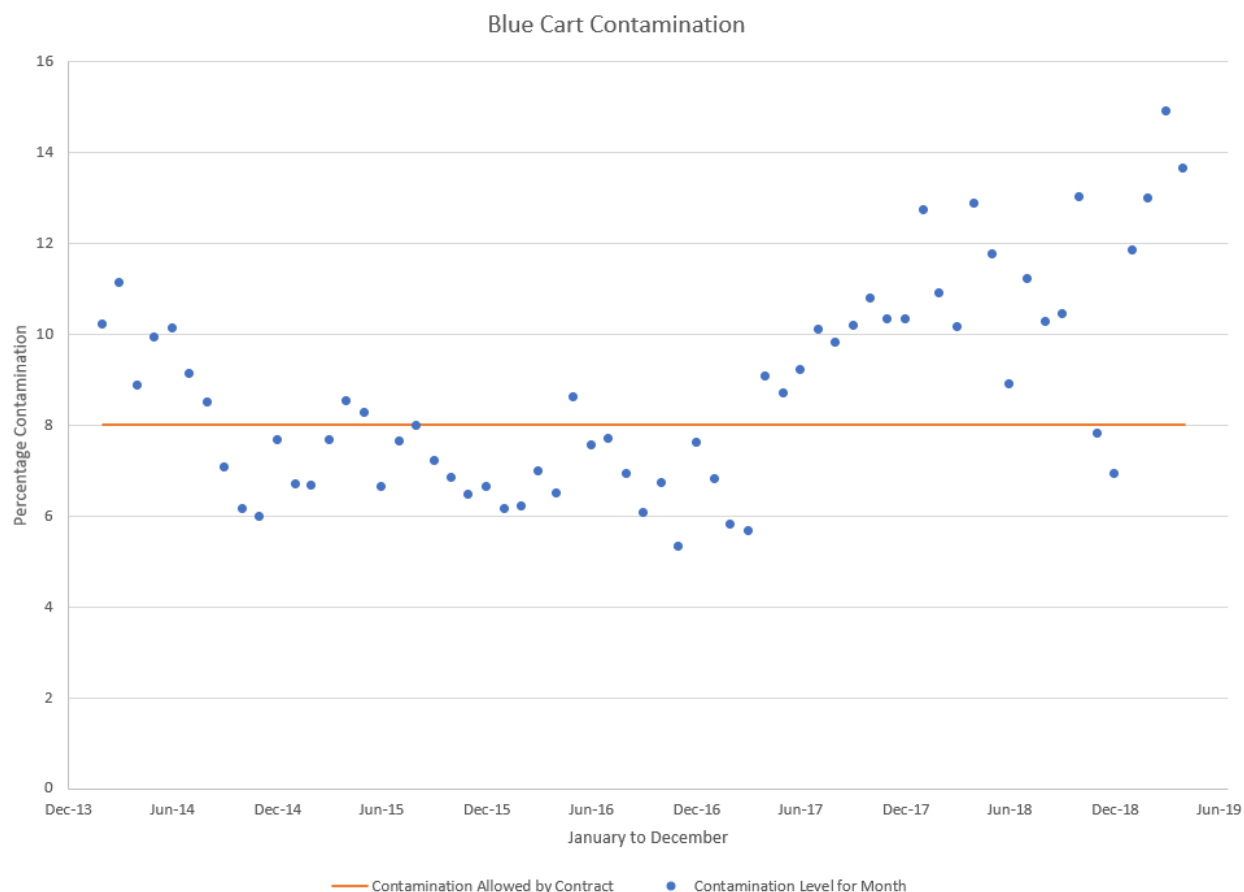
Examples of contaminants falling into each category are as follows:

Category	Examples
<b>Harm to personnel</b>	Bear spray, needles, lancets, propane tanks, jerry cans, batteries (all kinds) and other chemicals
<b>Damage to equipment</b>	Scrap metal, batteries (all kinds), propane tanks, hoses, electrical cords, electronics, and other chemicals
<b>Reduced quality and marketability of recyclables</b>	Bagged garbage, loose garbage, bagged recyclables, loose plastic bags, non-recyclable plastics, plastic pouches, Styrofoam, food, and yard waste in the recycling, wet materials, textiles and clothing, toys, oversized plastics

The basis for measuring contamination varies depending on whether it is measured at the end of the MRF sorting process (residue measurement) or at the beginning of the process (inbound measurement). Residue measures will be significantly lower than actual contamination at the beginning of the process since some contaminants will be included in recyclables for sale, which impacts marketability. The City pays additional costs when contamination (residue measurement) exceeds 8%.

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<sup>1</sup> Waste and Recycling Services - One Calgary Service Plan (2019- 2022)



Graph 1: Blue Cart Contamination Measures (Residue Measurement)

The above graph includes The City’s residue contamination percentage levels from 2014 (based upon available data) and shows a concerning upward trend which started subsequent to the change from weekly to bi-weekly black cart collection, which began in July 2017. WRS recognized this emerging trend and incorporated contamination risk in their Infrastructure and Performance Management group risk register.

In 2017 China announced the National Sword Program, which was designed to improve the quality of recyclable material being imported by Chinese recyclers. New standards included banned substances and low contamination rates (.5%). A number of countries also implemented new restrictions for plastic imports (Malaysia, India, Taiwan, Vietnam and Thailand) and paper (Taiwan). These changes decreased global markets for recyclables and increased the need to reduce contamination to ensure high-quality end products.

WRS’ Outlook for 2018–2025 (UCS2018-0153) identified that targeted education and communication programs support high program participation and low contamination. Furthermore, Outlook for 2018-2025 identified the need for WRS to identify a progressive enforcement strategy to complement these programs. The following descriptions provide additional detail on four WRS activities that contribute to reduced blue cart contamination:

### 1. Education

Educators attend various events and perform community outreach that provide education opportunities for the use of all WRS programs including everything related to carts, landfills, and waste reduction. In 2018 expenditures of \$199,480 were assigned to Blue Cart Programs. The budget for 2019 is \$269,177.

### 2. Communication

WRS maintains their website, creates brochures and runs mass communication campaigns, such as the Recycle Right campaign. Although campaign objectives may include reducing blue cart contamination, generally the objective is to provide an integrated message on the proper use of all cart-based programs. In 2018, expenditures of \$456,835 were assigned to Blue Cart Programs. The budget for 2019 is \$500,000.

### 3. Enforcement

Although Community Standards Peace Officers can issue fines under Section 9.2(1) of the Waste and Recycling Bylaw (20M2001) when contaminants are placed in blue carts, WRS does not pursue enforcement of compliance. WRS has implemented the following processes to identify blue cart contamination and notify households:

- WRS Collection Services may spot contamination when collecting blue cart contents. The Blue cart is tagged to notify the owner and the contents may not be collected. The operator records the information to create a service request to The City's 311 Service for tracking purposes.
- In 2019 WRS implemented the Cart Spot Check Program, which is a revised field audit process that is expected to benefit all cart programs. The estimated annual budget is \$332,000. Under the program, carts are pro-actively inspected for contaminants. Carts with contaminants are tagged and may not be picked up by Collection Services. The tags include information for the household on corrective action required.
- The data from the Cart Spot Check Program is intended to inform the development of communication, education and enforcement plans to reduce contamination across all residential cart programs.

### 4. Targeted Programs

WRS implemented a Household Hazardous Waste (HHW) Drop-Off Program where households can safely dispose of HHW rather than putting HHW in their black or blue carts. Drop-offs are located at three landfills and six fire stations throughout The City. HHW is recycled or safely treated and disposed of at the Swan Hills Waste Treatment Center. Other targeted programs are e-waste drop-offs, textiles drop-off and other diversion opportunities provided at the three City Landfill Throw 'n' Go facilities.

This audit was included in our 2019 annual audit plan due to the importance of an effective recycling program to support the Citizen Priority of a Healthy and Green City, and Council's goal of 70% waste diversion by 2025. Further, preventing contaminants from entering the Blue Cart Program protects the health and safety of workers and the quality of recyclables for market.



## 2.0 Audit Objectives, Scope and Approach

### 2.1 Audit Objective

The audit objectives were to determine if:

- WRS has effective processes to evaluate and report on the effectiveness of activities and programs implemented to reduce contamination; and
- WRS contamination reduction activities are designed and operating effectively.

The audit objective was achieved by evaluating WRS processes against the following criteria:

- SMART (Specific, Measurable, Attainable, Relevant and Timebound) objectives are established;
- Metrics to measure success are established;
- Target audience is identified and segmented;
- Barriers and motivators to effective recycling are understood;
- Target intervention mix<sup>2</sup> is identified;
- Metrics data collected is accurate, relevant, complete and current; and
- Process to evaluate and report on program effectiveness and efficiency is established.

Criteria for specific contamination reduction activities are outlined below:

- Communication
  - Recycle Right campaign objectives are set.
  - Metrics are established to measure the efficiency and effectiveness of the campaign.
- Education
  - Education program objectives are set.
  - Metrics are established to measure the efficiency and effectiveness of education programs.
- Collection Services Cart Tagging
  - Collection Services' roles and responsibilities to identify and report contamination are established. Capacity to carry out these roles has been assessed.
- Cart Spot Check Program
  - Consistent field audit procedures that impact recycling behaviour are established.

We developed these criteria based on management common practices for evaluating performance, social marketing frameworks and recycling best practices.

### 2.2 Audit Scope

Although our audit focused on the Blue Cart Program, recommendations may benefit the Green and Black Cart Programs since most activities outlined above influence behaviour across all cart programs. Blue cart fees were out-of-scope since WRS is working on reducing dependency on tax support as part of One Calgary. The operation of targeted programs, such as the HHW drop-off, was excluded.

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<sup>2</sup> The target intervention mix is the combination of activities/programs established to reduce contamination.

The scope was tailored to specific components of the program. We assessed:

- The most recent implementation of evaluation processes;
- Established prevention activities for the period of June 1, 2018 – May 31, 2019; and
- Planned prevention activities, such as field audits.

### **2.3 Audit Approach**

Our audit approach included:

- Interviews with WRS staff; and
- Reviewing program documentation such as:
  - Plans and objectives
  - Standard operating procedures
  - Internal and MRF reporting
  - Roles and responsibilities outlined in standard operating procedures and/or job descriptions.

### 3.0 Results

#### 3.1 Evaluation Processes

We assessed WRS processes for evaluating and reporting on the effectiveness of activities and programs implemented to reduce contamination using the seven criteria outlined within our audit objectives (see section 2.1). Each of these criteria represents a component of an evaluation framework.

Our results, as detailed below, show some components of an evaluation framework are in place or work is underway to implement them. These existing components will provide the baseline data WRS will need to implement the missing components of the framework. Implementing the missing components, which flow from setting SMART objectives, will allow WRS to better allocate resources by determining if their contamination prevention activities are making an impact and achieving value for money.

	Criteria	Result	Comments	Observation/ Recommendation (Rec.)
1	SMART objectives are established	Not Met	WRS has not established appropriate levels of overall contamination and HHW, and associated SMART goals.	Rec. 1- Section 4.1
2	Metrics to measure success are established	Not Met	WRS cannot establish metrics until SMART goals are defined.	Rec. 1- Section 4.1
3	Metrics data collected is accurate, relevant, complete and current	Met	<p>Currently, WRS collects a range of data to help them gain a better understanding of contamination including:</p> <ul style="list-style-type: none"> <li>• Cart spot checks;</li> <li>• Audits at the MRF on inbound and residual contamination; and</li> <li>• Reporting on HHW tonnage and sample counts of its composition.</li> </ul> <p>Our review of the design of collection processes for the above data noted that data produced was sufficiently accurate, relevant, complete and current given the present purpose of gaining a greater understanding of contamination.</p>	None



### 3.2 WRS Contamination Reduction Activities

We evaluated the effectiveness of education and communication, collection services tagging and the Cart Spot Check Program. The criteria for our evaluation depended on the nature of the activity (see Audit Objectives 2.1). We considered the Cart Spot Check Program and tagging by Collection Services effective. The design of education programs and communication campaigns requires improvement to allow for the evaluation of their success.

#### 3.2.1 Education and Communication

WRS education programs include participation in English as a Second Language training, school tours, public events (e.g. home and garden show) and offering public tours of the facility. Communication is provided under the Recycle Right communication campaign and consists of various media buys including television, online ads, and transit shelter posters. The current objective of WRS' education programs and communication campaigns are broader than blue cart contamination. These programs and campaigns encourage participation in all three cart programs and provide guidance on how to properly use the carts (e.g. cart placement and appropriate contents).

We compared the education programs and communication campaigns against the UK Government Communication Service (GCS) Evaluation Framework 2.0 (see Appendix A). This framework advocates setting SMART communication objectives and metrics for each stage of a communication campaign, as shown in the table below. Alternative metrics are shown in Appendix B.

Stage	Example Metric	Measurement Method
Inputs (what we put in, our planning and content creation)	Total spend to date e.g. design work, media buys	Dollars
Outputs (What is delivered/target audience reached)	Estimated total reach	Absolute number and proportion of the target audience
Outtakes (What did the target audience think, feel or consider doing)	Issue awareness	Same as above
Outcomes (Result of the activity on the target audience)	The number and proportion of the target audience that has changed behaviour	Same as above

Although education programs and communication campaigns are occurring there is no formal evaluation process (see Observation 4.3), such as the GCS Evaluation Framework. An evaluation process will help to determine if the communication or education is effective, achieving satisfactory results, and providing value for money invested. Recommendation 3 is intended to guide WRS in implementing such a process.

### **3.2.2 Collection Services Cart Tagging**

Residential Collection Operators are responsible for tagging and rejecting contaminated carts as part of their regular collection routes. This responsibility is reflected in Collection and Unloading Standard Operating Procedures, job descriptions (Job Evaluation Questionnaires) and route design. We confirmed tagging was occurring during the audit period (June 1, 2018-May 31, 2019) through a review of internal service requests that are initiated by Collection Operations when contamination is identified. There were 377 blue carts identified during the audit period as contaminated by Residential Collection Operators. We noted 79 (20%) of 377 service requests did not indicate the cart was tagged, which could be due to a failure to tag the cart or complete the service request form appropriately. We recommended improved guidance and training to ensure consistency of tagging practices and prevention of contaminated recyclables from entering the recycling stream (recommendation 4). Overall, given that cart tagging is conducted using existing Collection Services resources, we considered the process was designed and operating effectively.

### **3.2.3 Cart Spot Check Program**

WRS' expanded Cart Spot Check program is designed effectively since consistent procedures covering the areas of tagging, data collection, reporting and follow-up are in place. These areas are identified by the Massachusetts Department of Environmental Protection's Recycling IQ kit, as good practice guidance for conducting spot checks. Consistent data collection procedures support data accuracy and management's plan to visit all homes by the end of 2020 will result in a representative data set. As a result, we expect management to be able to rely on this data for future decisions related to contamination prevention.

Additionally, we reviewed the preliminary data collected and confirmed that spot checks were occurring as planned, including revisits to approximately 20% of households checked. Based on initial results, revisits identified a lower incidence of tagging for contamination indicating a positive influence on behaviour in the short term.

Carts containing HHW are turned by personnel conducting spot checks to indicate the cart should not be collected. However, we noted there is no process to escalate and remove HHW prior to the next collection. This observation is addressed in Section 4.2 as part of enforcement approach.

We would like to thank the staff from Waste & Recycling Services for their assistance and support throughout this audit.

## 4.0 Observations and Recommendations

### 4.1 Targets for Appropriate Contamination Levels

WRS has not established SMART goals and associated metrics for appropriate levels of overall, and HHW contamination. Goals should balance the cost-benefit of prevention activities and mitigating the risk of poor quality recyclables and harm to the health and safety of employees. Established goals should then guide the determination of the appropriate target mix of contamination prevention activities and provide a basis to report on whether activities are reducing contamination and providing value for money invested.

#### Establishment of Goals

WRS has not articulated the target level of blue cart HHW contamination and associated SMART goals and metrics. Target levels of overall blue cart contamination are currently based on The City's contract with the MRF. We reviewed the contract and noted The City incurs additional charges where residual contamination exceeds 8%. This target was formalized in 2014 prior to the introduction of every other week black cart collection in 2017. In 2018, residual contamination exceeded 8% in 10 of 12 months. WRS should use a risk-based approach to determine appropriate target levels of contamination, taking into consideration whether 8% or less residual contamination is appropriate. The determination should include broader consideration of whether residual contamination is the appropriate metric in terms of relevance, accuracy, timeliness, and cost of data collected.

Once appropriate target levels are determined SMART goals and associated metrics can be established.

#### Target Mix

WRS has established a mix of intervention activities to prevent contamination that includes communication, education, and tagging of carts through the expanded Cart Spot Check Program and by Collection Services. Once goals are established, WRS should review the current target mix and determine the most effective mix and resource investment to achieve contamination and HHW goals. The results of the Customer Service Project and the Cart Spot Check Program should be considered in the analysis.

#### Reporting

The Manager of Infrastructure and Program Management receives information on residue contamination levels from the MRF monthly. The Program Management Leader also receives metrics on HHW tonnage. Neither forms part of overall WRS performance measures reported to management. However, management indicated information on contamination is verbally shared with the Director of WRS.

Recommendation 1

The Manager of Infrastructure and Program Management:

- i. Using a risk-based approach, determine the appropriate target levels for overall blue cart contamination and HHW contamination and establish associated SMART goals and metrics. As part of this process consider if residual contamination is an appropriate measure.
- ii. Establish and implement the target mix of contamination prevention activities to achieve SMART goals, considering the results of the Customer Service Project and Cart Spot Check Program.
- iii. Implement a process to evaluate and report on progress towards SMART goals on a defined frequency. The process must include Director level reporting on HHW contamination, both on a periodic basis and when levels exceed predefined thresholds that indicate an elevated safety risk.

Management Response

Agreed.

Action Plan	Responsibility
<ol style="list-style-type: none"> <li>1. Develop an overall Blue Cart Program contamination target levels, as well as, separate specific targets for HHW contamination within the program.</li> <li>2. Establish SMART goals and metrics for contamination management and measurement within the Blue Cart Program including metrics aimed at determining the effectiveness of contamination prevention activities.</li> <li>3. Considering the findings from the Customer Understanding Project and Cart Spot Check Program, to be completed later in 2019, establish and implement a mix of contamination prevention activities to achieve the Blue Cart Program SMART goals for contamination management.</li> <li>4. Determine a process for evaluating and reporting on progress toward the Blue Cart Program SMART goals for contamination management; work with the WRS Management Team to define the Management and Director level reporting frequency.</li> </ol>	<p><u>Lead:</u> Manager, Infrastructure and Program Management</p> <p><u>Support:</u> Leader, Program Management; Waste Diversion Specialists; Performance Management Technologists; WRS Business Planning &amp; Performance; WRS Management Team</p> <p><u>Commitment Date:</u> March 31, 2020</p>



## 4.2 Enforcement Approach

WRS' blue cart contamination enforcement approach does not include escalation when HHW or persistent contamination is identified through the Cart Spot Check Program or during weekly collection. An enforcement approach that ensures removal of identified HHW and considers the issuance of fines authorized within Section 9.2(1) of the Waste and Recycling Bylaw (20M2001) would contribute to preventing the most serious contamination from entering the blue cart recycling stream.

WRS currently identifies contamination through the Cart Spot Check Program and weekly collection by Residential Collection Operators. Carts that contain unacceptable levels of contamination, including HHW, are tagged and either not collected or turned, indicating the cart should not be collected (Cart Spot Check). There is no process to escalate and remove HHW prior to the next collection. Also, there is no agreed series of steps to escalate serious persistent contamination to Bylaw Services for enforcement, including consideration of fines.

### Recommendation 2

The Manager of Infrastructure and Program Management develop and document an enforcement approach, which includes processes for escalating:

- Hazardous waste identified for resolution/removal prior to the next collection; and
- Serious persistent contamination to Bylaw Services, including consideration of issuance of fines.

### Management Response

Agreed.

Action Plan	Responsibility
<ol style="list-style-type: none"> <li>1. Develop and implement an appropriate bylaw enforcement approach (including escalation and issuance of fines) as it relates to contamination and misuse of the Blue Cart Program.</li> <li>2. In collaboration with WRS Collection Services develop and implement a follow-up process for Blue Carts identified to contain Household Hazardous Waste to prevent carts from being collected while containing HHW.</li> </ol>	<p><u>Lead:</u> Manager, Infrastructure and Program Management</p> <p><u>Support:</u> Leader, Program Management; Community Standards – Bylaw Enforcement; WRS Collection Services (Leader, Business and Operational Performance; District Superintendents; Foremen); WRS Management Team</p> <p><u>Commitment Date:</u> June 1, 2020</p>

## 4.3 Evaluation of Communication and Education Effectiveness

There is no formal process for measuring and evaluating the success of education programs and communication campaigns. An evaluation process will help to determine if the communication or education is effective, achieving satisfactory results, and providing value for money invested. Based upon the UK Government Communication Service's Evaluation Framework this process should include SMART objectives, and appropriate metrics, including

inputs (resources used), outputs (audience reached), outtakes (audience reaction- what the audience think, feel or consider doing) and outcomes (the result of the activity on the audience).

The current objective of WRS' education programs and communication campaigns (Recycle Right) is broader than blue cart contamination. Programs and campaigns encouraged participation in all three cart programs and provided guidance on how to properly use the carts (e.g. cart placement and appropriate contents). WRS has not set measurable, time-bound objectives for the broad programs.

We reviewed education programs and communication campaigns during the audit period to determine whether appropriate metrics were established to measure efficiency and effectiveness.

#### Recycle Right Communication Campaign

- **Inputs** – A budget was established for each communication tactic (activity) and spend was tracked against it, which is a sufficient approach.
- **Outputs** – Although management informally reviewed reporting on estimated impressions, there were no targets for the absolute number of impressions or measurement of the proportion of the target audience reached. As management obtains more granular information on customer behaviour and awareness from the Cart Spot Check Program and the Customer Understanding Project, the determination of the target audience will become increasingly important.
- **Outtakes** – Management informally reviewed citizen and councillor comments related to the campaign, and interaction with digital advertisements. For communication tactics with a greater level of resource investment, management should identify ways to measure the impact on the comprehension and awareness levels of the audience.
- **Outcomes** – WRS has established four broad outcomes for the communication campaign:
  1. Increase program participation;
  2. Diversion of materials;
  3. Reduce contamination; and
  4. Proper cart placement.

We identified the following areas for improvement:

- These outcomes should be measurable and time-bound. Using the fourth objective as an example, there is no metric to measure proper cart placement, such as the number of rejected carts during a given time period, and no specific target (e.g. 5% reduction) or time to achieve the target.
- Some objectives could be more specific to the communication campaign. For example, instead of reduced contamination, there could be objectives for types of contamination prominently featured in the campaign, such as plastic bags or HHW.
- While increased program participation may be an appropriate objective, alternate objectives may be more appropriate since current participation is high (95%).

Guidance from the UK Government Communication Service recommends allocating approximately 5 to 10% of total campaign expenditure to evaluation. For example, conducting research to measure awareness and message penetration levels.

#### Education Program

- **Inputs** – Although there is an overall education program budget, dollars and/or instructor time are not assigned to individual education programs (e.g. English as a Second Language, public events) or specific sessions/events.
- **Outputs** – While the number of attendees is measured for each session/event, the proportion of the target audience covered is not currently measured. As noted previously, the determination of the target audience will become more important as WRS obtains more granular information on customer behaviour and awareness from the Cart Spot Check Program and the Customer Understanding Project
- **Outtakes** – These are not formally measured. Instructors record comments received for each session, which sometimes addresses engagement and the perception of information absorbed.
- **Outcomes** – Objectives for the overall education program are to encourage waste diversion, use of the program, and reduce contamination. Individual education programs include presentations at English as a Second Language classes, school tours and public events. These objectives are broad and not measurable as outcomes of individual education programs. As a result, formal measurement of education program outcomes is not in place.

#### Recommendation 3

The Program Management Leader develop a process for evaluating the success of communication campaigns and education programs including:

- Documented SMART objectives for education programs and communication campaigns.
- Measures that, at a minimum, consider resources utilized (inputs) and outputs achieved. Where a greater level of resources is invested, measuring outtakes and outcomes should be considered.
- Documented evaluation of whether each outcome was achieved.
- Considering allocating resources specifically for evaluating campaign success.

#### Management Response

Agreed.

Action Plan	Responsibility
<ol style="list-style-type: none"> <li>1. Develop SMART objectives and incorporate within the annual Blue Cart Program "Communication Plan(s)" and " Education Plan(s)".</li> <li>2. Develop a process to measure and evaluate the progress made to achieve the SMART objectives established for the Blue Cart Program communication and education activities. Where appropriate include measures for outtakes and outcomes.</li> <li>3. Determine the appropriate reporting frequency and report on progress toward achieving the identified SMART objectives and communication and education activity effectiveness. Reporting should include both post-activity reporting and annual reporting.</li> </ol>	<p><u>Lead:</u> Leader, Program Management</p> <p><u>Support:</u> WRS Communications Support Staff; Leader, Community and Customer Initiatives; Public Program Coordinators; Educators; Waste Diversion Specialists; Performance Management Technologists; WRS Business Planning and Performance</p> <p><u>Commitment Date:</u> February 1, 2021</p>

**4.4 Consistency of Blue Cart Tagging**

There is no defined guidance on the types of materials and levels of contamination that should result in tagging and non-collection by Residential Collection Operators. Guidance supports consistent practices for rejection of contaminated blue carts. Inconsistent practices could result in the collection of a cart containing contaminated recyclables and/or HHW, which would then enter the blue cart recycling stream. In addition, inconsistent practices confuse customers and could damage WRS' reputation.

Based upon inquiry with management, residential collection operators are responsible for tagging "egregious" contamination. However, the level of contamination and type of materials for tagging is left at the discretion of the operator and is not defined in an SOP.

Based on SOP, where contamination is identified, the operator tags the cart with a Cart Notice and completes a Missed Collection form. Collection Services staff collect the forms and create 311 service requests. We reviewed 377 service requests during our audit period (June 1, 2018-May 31, 2019). We noted 79 (21%) instances where the service request did not indicate the cart was tagged. We could not determine if the instances were due to inconsistent tagging by the operator where contamination was identified or an administrative error in completing the service request. WRS should provide training on the process for tagging carts and creating a service request to ensure consistency.

Recommendation 4

The Manager Collection Services:

- a) Update Standard Operating Procedures (SOP) to clarify Residential Collection Operators' responsibilities for tagging contamination including the type and level of contamination that would result in tagging and non-collection; and
- b) Provide training on the updated SOP and the process for tagging carts, including proper documentation.

Management Response

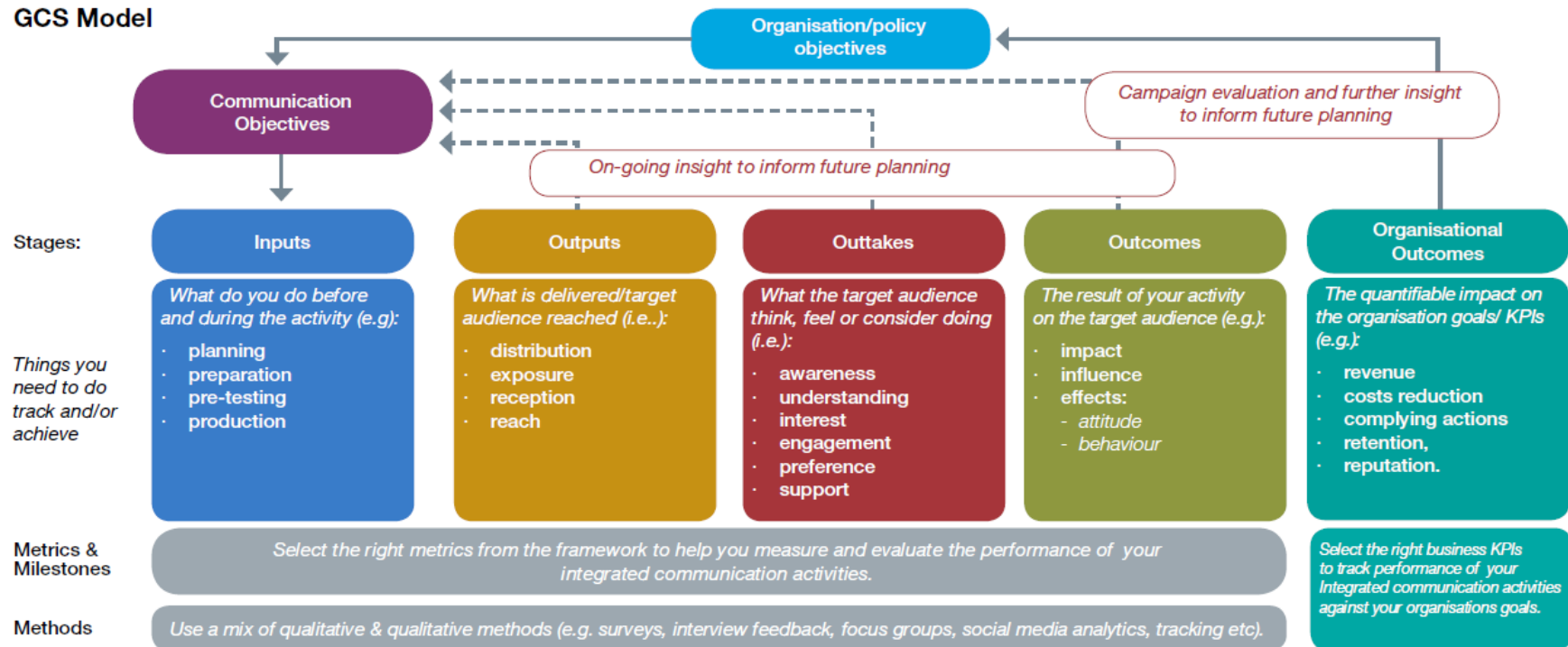
Agreed.

Action Plan	Responsibility
<ol style="list-style-type: none"> <li>1. Develop and implement a guidance document for Residential Collection Operators when tagging carts for contamination including when to leave a cart uncollected. This guidance will consider the extent and type of contamination.</li> <li>2. Provide training on the new guidance document to Residential Collection Operators, including: responsibilities and clarified processes.</li> </ol>	<p><u>Lead:</u> Manager, Collection Services</p> <p><u>Support:</u> Leader, Business and Operational Performance; District Superintendents; Foremen; Leader, Program Management; Waste Diversion Specialists; Performance Management Technologists</p> <p><u>Commitment Date:</u> March 31, 2020</p>

## Appendix A: Communication Evaluation Framework

Diagram illustrating the UK Government Communication Service Evaluation Framework.

### GCS Model



Source: [https://gcs.civilservice.gov.uk/wp-content/uploads/2018/06/6.4565\\_CO\\_Evaluation-Framework-2.0-v11-WEB.pdf](https://gcs.civilservice.gov.uk/wp-content/uploads/2018/06/6.4565_CO_Evaluation-Framework-2.0-v11-WEB.pdf) (pg. 30)

## Appendix B: Metrics for Evaluating a Behaviour Change Campaign

Metric	Definition	Measurement method
Inputs		
Total spend to date	Aggregate total spend so far	\$
Spend to date	How much money has been spent on digital media	\$
Spend to date	Sum of one-off set up costs (manual from PASS) and periodic offline media spend updates	\$
What is your theory of change (including evidence base)?	Implementation of behavioural science in planning effective communication	Binary – yes/no is in place? Yes/no – current evidence base
Content creation	Infographics, videos etc.	Volume by type
Outputs		
Estimated total reach	Aggregate audience reach	Absolute number and proportion of target audience
Reported online reach	The estimated reach as reported by digital platforms	Absolute number and proportion of target audience
Estimated offline reach	Reported audience reach for offline media	Absolute number and proportion of target audience
Outtakes		
Cost per outcome	The unit cost per behaviour change	\$
Engagements/ interactions	The % of impressions generating an interaction (share/like/comment)	Actions which involve active engagement (e.g. typing, not just 'one-click' endorsements)
Completion/ registration rate	The proportion of contacts/ impressions that go on to complete sign-up/ registration	%
Cost per completion/ registration	Unit cost of registration/ completion	\$
Unprompted campaign issue awareness e.g. spontaneous recall metric	The number and proportion of target audience that has unprompted campaign issue awareness	Absolute number and proportion of target audience
Experience of different messages that relate to aspects of theory of change	The extent to which different groups agree/disagree with messages related to theory of change	5 point scale (agreement/ disagreement with aspects of message)
Outcomes		
Behaviour change (#, %) e.g. number of licensed anglers vs baseline	The number and proportion of target audience that has changed behaviour	Absolute number and proportion of target audience
Stated/intended behaviour change	The proportion of target audience that claim they will act in accordance with campaign aim	Absolute number and proportion of target audience
Advocacy e.g. agreement with value for money statement	The number and proportion of target audience that agree with the campaign message (have positive sentiment)	5 point scale recommended (strongly agree/slightly agree/ don't know etc.)
Current ROI	Unit benefit multiplied by number of behaviour changes	\$

Source: [https://gcs.civilservice.gov.uk/wp-content/uploads/2018/06/6.4565\\_CO\\_Evaluation-Framework-2.0-v11-WEB.pdf](https://gcs.civilservice.gov.uk/wp-content/uploads/2018/06/6.4565_CO_Evaluation-Framework-2.0-v11-WEB.pdf) (pg. 8-9)