City of Edmonton

Waste Services – 2017 Cost of Service Study

Executive Summary

October 19, 2018

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1.1 Project Overview

In May 2018, the City of Edmonton (the "City") retained the consulting firm of Grant Thornton LLP ("Grant Thornton", "We") to perform a Cost of Service Study (COSS) for its Waste Services Utility ("Waste Services", "Waste", the "Utility"). The COSS used the Utility's 2017 operational and financial results to determine if costs had been properly allocated to the appropriate customer classes. The purpose of this study was to:

- Perform Cost Allocation Analysis: this required allocating costs to Programs (i.e. Collections vs. Processing and Disposal), Functions (i.e. detailed work activities performed by Waste Services), and Customer Class (i.e. Single Unit, Multi-Unit and Non-Residential) using agreed upon allocation methodologies. In order to accurately allocate costs to customer class, an up-to-date understanding of Waste Service's Regulated and Non-Regulated activities was required. This work was conducted in collaboration with The City's Waste Services and Financial Services staff.
- Perform Cost Recovery Analysis: this required comparing the revenues received for each customer class to their allocated costs and determining the implications of the cost recovery results. This allowed us to identify potential opportunities for improvement.

To meet these objectives, a standard cost of service methodology was followed. The methodology utilized was a 4-step process, as highlighted below:

1. Determine total revenue requirement;
2. Functionalize capital costs (i.e. depreciation and debt interest) and operating costs / revenues;
3. Confirm customer classes and cost allocation drivers and assumptions; and
4. Allocate functionalized costs to customer classes and perform cost recovery analysis.

1.2 Context

In order to effectively carry out this project, it was important to understand the financial context of the Utility. Waste Services has been a partial Utility (i.e. partially funded by tax levy) since 1995 and became a full Utility (i.e. entirely funded through customer rates) in 2009. As a Utility, Waste Services is governed by the Waste Management Utility Fiscal Policy ("Fiscal Policy"); Policy Number C558A[1], first introduced in 2011 and further updated in 2014. In 2012, Waste Services staff recognized that while this fiscal policy sets the criteria for allocating full costs to the Utility, it does not provide guidance on how to allocate costs to the Non-Regulated programs (services competitively offered to Non-

[1] The City of Edmonton, Financial Services and Utilities, "Waste Management Utility Fiscal policy; Policy Number C558A", adopted September 2014.

Residential customers). In 2012, the Price-Setting Principles for Non-Regulated Waste Services (the "Non-Regulated Price Setting Principles")[2] report was received and approved by Utility Committee and provided guidance for allocating costs to the Non-Regulated programs.

The Non-Regulated Price Setting Principles helped provide the framework in developing a cost allocation approach referred to as the "Incremental Cost Approach", whereby variable cost associated with the Non-Regulated Programs were allocated to Non-Residential customers but costs associated with indirect Operating and Maintenance (O&M), Overhead, Depreciation, and Debt Interest were treated as "sunk costs" and thus allocated only to Residential customers[3].

Since 2012, Waste has used an Incremental Cost Approach for the purpose of internal cost allocation, rate filing and establishing rates. The Incremental Cost Approach forms the basis of the cost allocation methodology behind this COSS.

1.3 Summary of Findings

The following sections summarize the methods used to perform the COSS and the main results.

1.3.1 Revenue Requirement

Based on review of Waste Services' 2017 financial results, minor adjustments were made in order to determine the cost of service for a 'normal' or "test year"[4]. These adjustments were determined in conjunction with representatives from Financial Services. The 2017 test year's total revenue requirement was calculated to be $202,426,161, as summarized in **Table 1** below. Section 2.1 of the Fiscal Policy states that; "The target combined Cash Position of the Utility is the Pay As You Go required as identified in the Capital Plan plus an amount derived to mitigate the risk exposures". Based on this policy, the 2017 total revenue requirement calculated includes cash reserve amounts totalling $8,129,000, which includes funds from Pay As You Go (PAYG) of $5,954,000 and Risk Allowance of $2,175,000.

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[2] City of Edmonton, Infrastructure Services, "Price-Setting Principles for Non-Regulated Waste Services" 2012IS3568, 2012.

[3] The only exception was Construction and Demolition, as a facility built to specifically service Non-Residential customers, the depreciation and debt interest associated with the facility was allocated exclusively to Non-Residential customers.

[4] As later described in the report, adjustments included the removal of one-time Greenhouse Gas Revenue attributable to 2015 and 2016 in the amount of $1,805,000, and the addition of $5,291,551 of "Post Closure" costs to account for the annual required contribution towards the Post Closure Fund.

Item		2017 Amount ($'s)
Single Unit & Multi-Unit Residential Rate Revenues	$	175,262,446
Operating Expenses:		
Operating and Maintenance Expenses (net of recoveries)	$	146,568,394
Overhead Expenses	$	17,580,563
Depreciation Expense	$	20,778,412
Debt Interest Expense	$	9,369,793
2017 REVENUE REQUIREMENT - BEFORE CASH RESERVE AMOUNTS	**$**	**194,297,161**
Cash Reserve Amounts:		
Pay-As-You-Go	$	5,954,000
Risk Allowance	$	2,175,000
2017 TOTAL REVENUE REQUIREMENT	**$**	**202,426,161**
Net Gain (Loss) Before Non-Rate Revenues	$	(27,163,716)
Non-Rate Revenues	$	33,594,206
Net Gain (Loss) After Non-Rate Revenues	$	6,430,490

Table 1: Summary of 2017 Total Revenue Requirements

In the 2017 test year, Waste Services collected $6,430,490 in excess of the total costs[5].

1.3.2 Functionalization of Revenues and Cost

The next step in the process was to allocate revenues and costs to a Program; Collections or Processing and Disposal. Subsequently, costs were allocated to the relevant Function; which represent distinct activities performed in the delivery of waste management services.

With the exception of Cash Reserve amounts, which includes Pay As You Go and Risk Allowance, all revenue requirements were allocated based on Program and Function. The specific Functions identified within each Program are briefly described below. The purpose of identifying Functions is to ensure that the full extent of the activities performed by Waste Services are included in the COSS.

1.3.2.1 Collections Functions

The Collections Program, also referred to as "Collection Services", includes the provision of direct collection services for waste and recyclables for all Residential (Single Unit and Multi-Unit) and Non-Residential customers. It also includes the management of drop-off centres for the collection of waste, recyclables and household hazardous waste which are intended to serve Residential households.

The costs within the Collections Program have been allocated to the following Functions; Direct Collection, Big Bin Events, Recycling Depots, Eco Stations and Reuse Centre.

1.3.2.2 Processing and Disposal Functions

The Processing and Disposal Program, renamed in 2018 to Sustainable Waste Processing Services, provides for processing and disposal services through a range of integrated facilities and programs at the Edmonton Waste Management Centre (EWMC) and contracted landfills. These facilities and programs support all waste hauled by City-managed and contracted collection services as well as Non-

[5] In the absence of the Post Closure normalization adjustment (i.e. if entire $10,880,810 was included) the resulting Net Gain (Loss) After Non-Rate Revenues would be $841,231.

Residential customers. The purpose of these activities is to re-direct specific waste streams away from landfill disposal and into reusable and marketable products. Other waste streams which cannot be recovered are hauled to area landfills for disposal.

The costs within the Processing and Disposal Program have been allocated to the following Functions; Integrated Processing and Transfer Facility (IPTF), Material Recovery Facility (MRF), Organics, Post Closure, Haul and Disposal, Construction and Demolition (C&D), Aggregate Recycling (Aggregates).

1.3.2.3 Indirect Activity Functions

Indirect Activities are a series of identified Functions that are required to support the entire Edmonton EWMC, or are focused on innovation, research, and development for which Edmonton residents are deemed to be the beneficiaries.

1.3.2.4 Overhead Activities

There are also overhead activities which support the Utility. In considering these activities, the following three categories were identified; Community Relations, Shared Services and Billing Charges.

1.3.3 Customer Classes, Cost Allocation Drivers and Assumptions

This section defines the Customer Classes served by the Utility to which all costs are ultimately allocated to, describes the two major services offered by Waste (Regulated and Non-Regulated), and discusses the cost allocation drivers and assumptions for the 2017 test year.

1.3.3.1 Customer Classification

Waste Services provides services to Residential and Non-Residential customers. Within the Residential sector, Waste Services provides services to both Single Unit and Multi-Unit customers in the form of **Regulated** services. Regulated services are defined by the Fiscal Policy as "activities that are core to the services provided by the Utility". The Non-Residential sector is comprised of commercial, industrial and institutional customers. Services focused on these customers are deemed as **Non-Regulated** and are defined by the Fiscal Policy as "activities that are not essential to the provision of core services by the Utility". In 2017, Waste Services operated four main Non-Regulated Programs for Non-Residential customers; Commercial Collections, C&D, Commercial Self-Haul and Aggregates.

We first confirmed the customer classes from property assessment records or other means including site verification using the Waste Management Bylaw[6] definitions as follows:

- **Single Unit Residential ("Single Unit"):**
  - A class of building containing no more than one dwelling unit:
  - Row housing where each dwelling unit is on a separate tax parcel; or
  - A mobile home located in a trailer park;

[6] The City of Edmonton Bylaw 17555 – Waste Management Bylaw

- **Multi-Unit Residential ("Multi-Unit"):**
  - A class of building containing more than one dwelling unit, except for row housing where each dwelling unit is on a separate tax parcel; or
  - A class of property containing more than one building with dwelling units on a single tax parcel

  As determined from property assessment records or other means including site verification.
- **Non-Residential Premises ("Non-Residential"):** any property, or self-contained portion of a property, that does not contain a dwelling unit (i.e. private commercial, institutional, or industrial businesses).

1.3.3.2 Regulated and Non-Regulated Services

Through facilitated discussions with Waste Services and Financial Services, costs of service were separately determined for Single Unit, Multi-Unit and Non-Residential Customer Classes. With respect to which activities Waste Services performs that are Regulated versus Non-Regulated, the following principles were noted:

1. Regulated Programs: are activities and services provided by Waste Services that are:
   a. Focused on collection, processing and disposal activities for Residential customers (i.e. both curbside collection and self-haul Residential customers);
   b. Services that the City can provide given rights enabled to it through the Alberta Municipal Government Act (i.e. other providers are not permitted to provide); and
2. Non-Regulated Programs: are non-core services provided to Non-Residential customers. In 2017, Waste Services operated four main Non-Regulated Programs:
   a. Commercial Collections;
   b. C&D;
   c. Commercial Self-Haul; and
   d. Aggregates

1.3.3.3 Cost Allocation Methodology - Cost Drivers and Assumptions

Key Waste Services and Financial Services representatives were engaged to help identify and confirm the most appropriate cost drivers to allocate revenues and revenue requirement across Program and Function and ultimately to Customer Class. The main three cost drivers identified were; tonnage[7], percentage of direct O&M and customer unit counts. These cost drivers, along with a number of key assumptions, were used to form a cost allocation methodology consistent with the Incremental Cost Approach.

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[7] Tonnage metrics used include; EWMC – Total tonnage, EWMC – Collections tonnage, EWMC – Processing and Disposal tonnage (i.e. C&D, MRF, IPTF), Residential – Collections tonnage, Residential – Processing and Disposal tonnage (i.e. MRF and IPTF).

Refer to **Appendix A** for the cost allocation methodology and key assumptions, and **Appendix B** for the detailed listing of all cost drivers and tonnage summary, made to support the cost of service analysis.

1.3.4 Cost Allocations

1.3.4.1 Allocating Costs to Program and Function

Waste Services' total cost by Program[8] (i.e. total costs before cash reserve amounts and non-rate revenue) is illustrated in the charts below. Processing and Disposal represents the majority of Waste Services' costs at 63%, while Collections makes up the remaining 37%.

2017 Total Costs by Service Program

Collections	$ 71,952,998
Processing and Disposal	$ 122,344,163
	$ 194,297,161

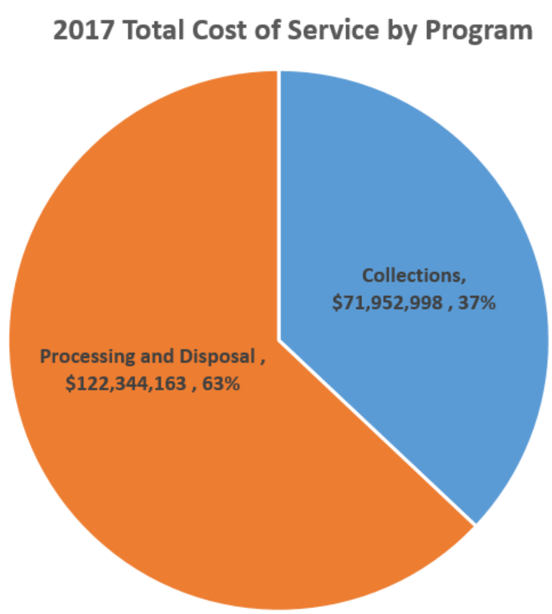

Figure 1: 2017 Total Costs by Service Program

Individual costs were then allocated to the various functions within each of the Collections and Processing and Disposal Programs.

[8] Cash Reserve Amounts are included in the Total Revenue Requirement (**Table 1**), but have been excluded from these analyses. The totals in these figures reconcile to the Total Revenue Requirement Before Cash Reserve Amounts of $194,297,161.

The following table and chart presents the breakdown of Collections Program's costs by function[9]:

2017 Total Collections Costs by Function

Direct Collections	$ 52,378,326
Big Bin Events	722,038
Recycling Depots	2,263,027
Eco-Stations	12,251,045
Reuse Centre	732,245
Indirect Activities	3,606,318
	$ 71,952,998

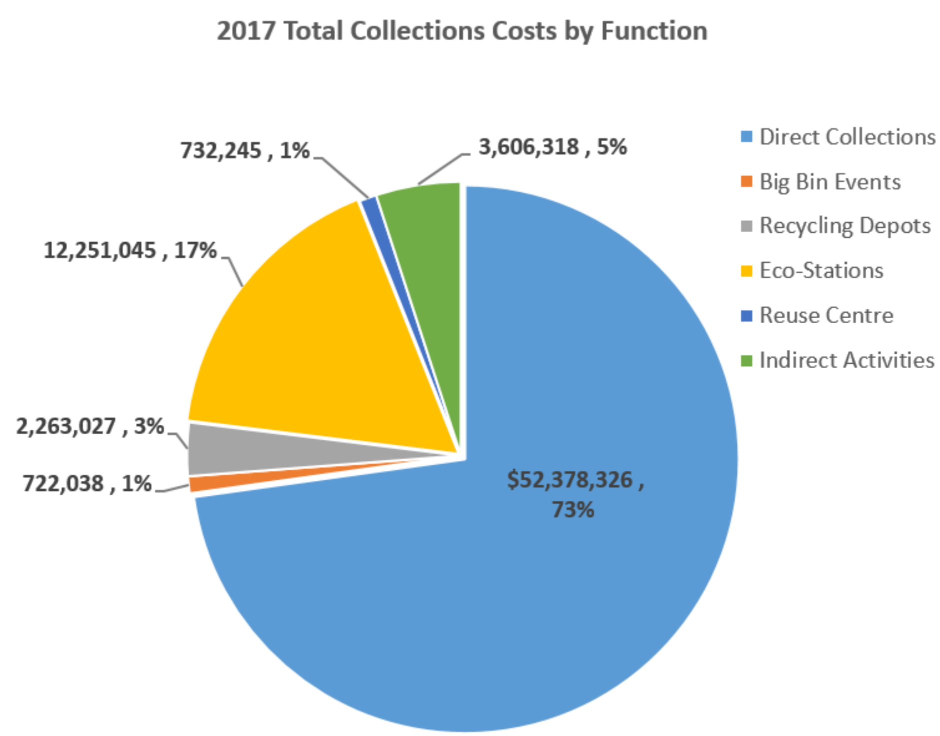

Figure 2.1: 2017 Collections Costs by Function

From the above chart, Direct Collections account for the largest proportion of service Program costs with 73% of the Program's total costs. Eco Stations rank second with 17% of the total, while Indirect Activities rank third, at 5% of the total.

[9] *Ibid*

The following table and chart presents the breakdown of Processing and Disposal program's cost by function[10]:

2017 Total Processing and Disposal Costs by Function

C & D Operations	$ 7,623,090
IPTF	22,391,854
MRF	10,579,207
Organics	24,511,427
Post Closure	6,094,213
Biofuels	(30,677)
Aggregates	897,065
Haul and Disposal	25,084,881
Indirect Activities	25,193,102
	$ 122,344,163

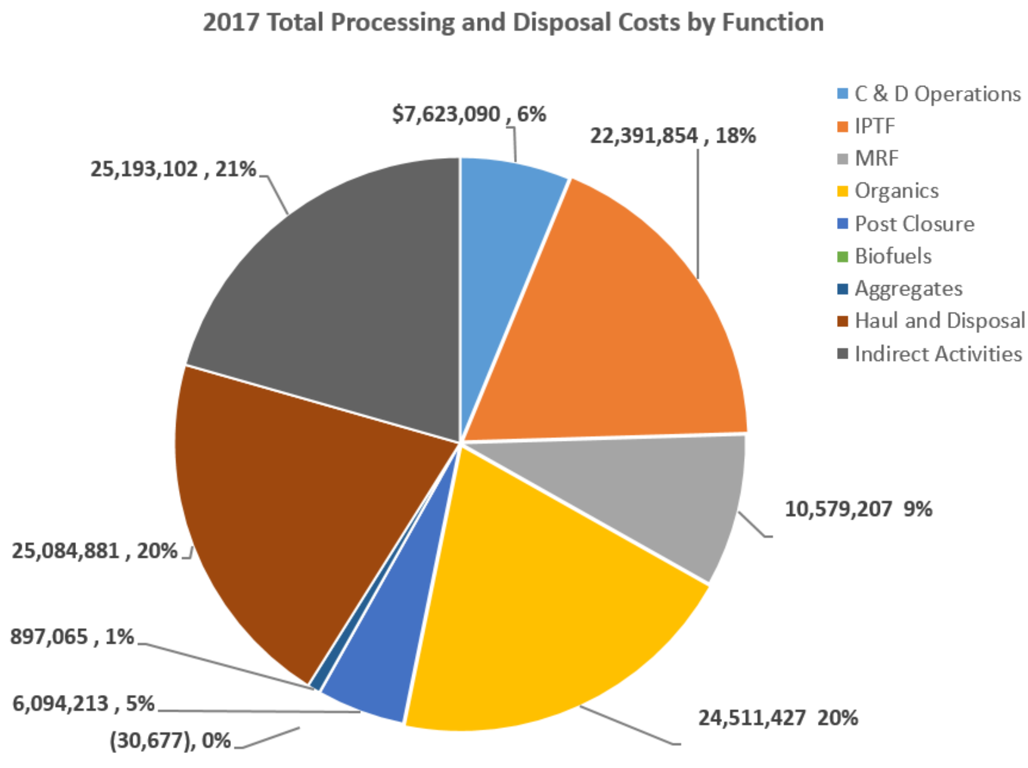

Figure 2.2: 2017 Processing and Disposal Costs by Function

From the above chart, the top three Processing and Disposal Program's costs are Indirect Activities[11] with 21% of the Program's total costs followed by Organics and Haul and Disposal each accounting for 20% of the Program's total costs. Biofuels shows a negative amount as a result of the net internal recoveries.

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[10] *Ibid*

[11] Indirect Activities are a series of identified Functions that are required to support the entire EWMC, or are focused on innovation, research, and development for which Edmonton residents are deemed to be the beneficiaries. These functions are described in detail in **Section 4.2.1.3**.

1.4 Cost of Service Results

To support this COSS, a review of the financial results and operational processes was performed. The 2017 financial results were reviewed and minor adjustments were made in order to determine the revenue requirement for the 2017 "test year". This was required to support the specific cost and revenue analysis. The results are presented below in **Table 3**.

The following are the key findings from the 2017 COSS:

- In the 2017 test year, Waste Services collected $6,430,490 in excess of the total costs;
- Single Unit cost recovery is 103.5%;
- Multi-Unit cost recovery is 109.7%;
- The combined cost recovery for the Regulated portion of Waste Services' business that provides service to Residential customers is 105.3%;
- In contrast, the cost recovery for the Non-Regulated portion of Waste Services' business that provides service to Non-Residential customers is 86.4%.
    - To address Non-Regulated program losses and achieve target cash balances, the Waste Services Utility was given authorization, through the 2015 Operating Budget process, to draw on a short-term loan from the City of Edmonton Financial Stabilization Reserve (FSR) over four years beginning in 2015. The FSR loan was intended to fund Non-Regulated losses as opposed to applying regulated revenues or increasing rates to Residential customers.

	Total Revenues	Total Revenue Requirement	Difference	Cost Recovery Ratio
Single Unit	$133,404,987	$128,903,700	$4,501,287	103.5%
Multi-Unit	$56,123,719	$51,153,688	$4,970,031	109.7%
Non-Residential	$19,327,946	$22,368,773	($3,040,828)	86.4%
Total	**$208,856,652**	**$202,426,161**	**$6,430,490**	**103.2%**

Table 3: Cost Recovery Performance - 2017 COSS - Incremental Cost Approach

1.4.1 Comparing 2017 and 2010 Cost Recovery Performances

To evaluate how the Utility performance has changed since the time of the previous COSS in 2010[12], we compared the 2017 Incremental Cost Approach results **(Table 3)** to those of the previous COSS in 2010[13]. The results are summarized in the table below in **Table 4**.

The key findings from comparing the studies are:

[12] It should be noted that at the time of the previous COSS in 2010, Waste Services had recently completed its transition to a full utility and many of the Programs were quite new in their implementation. Since that time, Waste Services has created many new cost centres, improving the accuracy with which revenues and costs can be allocated to Programs, Functions and Customer Classes.

[13] The 2010 COSS was performed using an approach resembling the Incremental Approach described herein, including selective allocation of indirect O&M, Overhead, Amortization and Debt Interest to Non-Residential customers.

- Overall, Waste Services has improved cost recovery from 94.6% in 2010 to 103.2% in 2017.
- While there continues to be a revenue requirement deficiency for the Non-Residential customer class, this recovery has improved from 69.4% in 2010 to 86.4% in 2017.
- Single Unit cost recovery went from 94.4% in 2010 to 103.5% in 2017.
- Multi-Unit cost recovery went from 103.6% in 2010 to 109.7% in 2017.

	Total Revenues	Total Revenue Requirement	Difference	Cost Recovery Ratio
Single Unit	$71,855,000	$76,157,000	($4,302,000)	94.4%
Multi-Unit	$37,347,000	$36,037,000	$1,310,000	103.6%
Non-Residential	$8,455,000	$12,189,000	($3,734,000)	69.4%
Total	**$117,657,000**	**$124,383,000**	**($6,726,000)**	**94.6%**

Table 4: Historical Cost Recovery Performance - 2010 COSS

1.5 Cost of Service Summary

The following are key summary observations based on the analysis completed for this study.

Reclassification of Multi-Unit customers receiving Single Unit service: In 2017, Waste Services identified 24,895 Multi-Unit customers receiving Single Unit services but only being charged Multi-Unit rates (i.e. Multi-Unit households were receiving hand-collection services consistent with Single Unit households but only paying 65% of the Single Unit rate).

- The Multi-Unit revenues collected for the 24,895 identified households totalled $8,720,221 and were re-allocated to the Single Unit Customer Class to contribute towards the associated Single Unit costs.

- Further analysis should be considered to improve the accuracy of tracking and billing of Single Unit and Multi-Unit customers[14].

Recovery from Multi-Unit customers relative to Single Unit customers: On the whole, Residential customers recover 105.3% of their costs, with Multi-Unit customers recovering 109.7% of their costs and Single-Unit customers recovering 103.5% of their costs.

- Collectively, Residential customers were considered to have recovered their costs[15] (105.3% combined cost recovery).

- Single Unit and Multi-Unit customers were considered to have recovered their costs relative to each other[16] (6.2% gap in cost recovery). Waste Services should consider narrowing this gap further

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[14] Waste Services is currently working towards reclassifying the identified Multi-Unit households as Single Unit.

[15] A ratio of 100% suggests that a customer is appropriately covering its cost of service, though due to the assumptions involved to allocate costs, a reasonable +/- % range near 100% is deemed acceptable as per industry practice. A common range used within industry is +/- 10%. As Waste Services matures the accuracy of its cost and tonnage tracking among customer classes and gathers additional information beyond the 2017 test year, it would be reasonable to narrow the +/- % target range to account for the increased precision of cost allocation to each customer class.

[16] *ibid*

by taking into account potential impacts to customer tonnage and determining Single Unit and Multi-Unit rates independently as discussed below.

  - In 2017, Multi-Unit customer rates were determined using a proportional method (i.e. charged a percentage (65%) of the monthly fee paid by Single Unit customers). An analysis of the 2017 residential tonnage indicates that Single Unit customers contribute more to Residential tonnage than in the past (72% in 2017 vs. 67% in 2010). With the availability of the tonnage data and the identification of the cost allocation drivers herein, Waste Services should consider revisiting the proportional method and determine Single Unit and Multi-Unit rates independently in order to achieve cost recovery ratios of 100% on a forecast basis.

On an aggregate basis, the Non-Regulated Programs do not fully recover their costs: Non-Regulated Programs recover 86.4% of their costs using an Incremental Cost Approach.

- Further analysis should be considered to improve the cost of recoveries of Non-Regulated Programs on an aggregated and program specific basis.

  - Cost recoveries can be improved by increasing Non-Regulated Program rates. However, the Non-Regulated Programs operate in a competitive market and may have limited flexibility to substantially increase rates while remaining competitive.

  - Alternatively, the costs associated with Non-Regulated Programs can be reduced. This can be achieved, for example, by reducing the level of service for Non-Regulated Programs, where possible.

- Furthermore, the provision of Non-Regulated Program services extend beyond the financial considerations to include environmental impacts, through the recovery of resources and increased landfill diversion.