

**MEMORANDUM OF UNDERSTANDING
BETWEEN
WASTE MANAGEMENT OF WASHINGTON, INC.
AND
THE CITY OF FEDERAL WAY, WASHINGTON**

THIS MEMORANDUM OF UNDERSTANDING (“MOU”) is made this ____ day of _____, 2020 by and between the City of Federal Way (“City”), a Washington municipal corporation, and Waste Management of Washington, Inc. (“WM”), a Delaware corporation, together referenced herein as the “Parties.”

WHEREAS, The Parties executed a Comprehensive Garbage, Recyclables, and Compostables Collection Services Contract on August 5, 2019 (“Contract”); and

WHEREAS, Section 5.3.4 of that Contract specified that the value of recyclables commodities collected from customers shall be credited to or debited from customers; and

WHEREAS, Section 5.3.4 of that Contract directed that “...the Parties shall develop a credit/debit adjustment procedure to return the value of collected Recyclable commodities to Customers in a manner consistent with the [Contract-specified] framework”; and

WHEREAS, The initial calculated commodity value of aggregate recyclables (\$54.07 per ton, equivalent to \$1.00 per single-family customer per month) represents the market value proposed by the Contractor as existed at the time of execution of this Contract, as reflected in the initial Contractor Rates and Section 5.3.4 of this Contract; and

WHEREAS, The City has determined that the proposed \$54.07/ton is a reasonable approximation of the post-processing market value of recyclables at the time of execution of this Contract and that using a third-party market value index during the term of the Contract is a reasonable approach to maximize value to ratepayers; and

WHEREAS, The \$54.07 per ton value shall be carried forward in the initial Contractor Rates regardless of actual recycling volumes, composition, or commodity value while the City and Contractor engage in procedures consistent with this MOU to confirm recycling volumes and composition; and

WHEREAS, Actual values for recycling volumes, composition, and commodity value shall be used to determine Customer commodity credit/debit amounts for incorporation into Contract rates effective as of January 1, 2022, and in each following year, consistent with this MOU; and

WHEREAS, This MOU establishes procedures to acquire data necessary to annually calculate future commodity value of aggregated recyclables based on: an independent commodity value source, the weight and relative mix of recyclables collected under this Contract, and the observed quantity of recyclables collected from customers on aggregate, which in combination will corroborate future changes to commodity value; and

WHEREAS, This MOU, including attachments, outlines the specific procedures to be used to gather the necessary data to calculate the resulting commodity credit/debit, thereby supplanting the initial calculated commodity value of aggregate recyclables;

NOW, THEREFORE, in consideration of the mutual agreements and covenants contained herein, the receipt and sufficiency of which are hereby acknowledged, it is mutually agreed and covenanted, by and between the parties to this MOU, as follows:

1. MOU INTERPRETATION: This MOU further refines and applies the intention of Contract Section 5.3.4. Both Parties recognize and accept that changes in the industry, recycling markets, or other events may necessitate a revision of this MOU from time to time.

2. COMMODITY VALUE PUBLICATION: The Parties have further investigated sources of independently published market values of recyclable commodities and determined that “RecyclingMarkets.net” provides the most suitable approximation of the markets and grades of materials collected in Federal Way. Therefore, “RecyclingMarkets.net” shall be used as the source of market reporting instead of the “Mill Trade Journal Pacific Northwest/West Regional Market Report” specified by Section 5.3.4 of the Contract. In the event that the publication of this replacement reference is unavailable, unreliable, or otherwise deemed unsuitable, the Parties shall mutually select an alternative as appropriate.

3. FRAMEWORK TABLE (ATTACHMENT A): The attached framework table provides a summary of the various aspects of the commodity credit/debit, including the composition of single stream recycling, the market price reference, collection tonnages by sector, and the basis for the calculation of the monthly credit/debit for customers. The summary references the specific procedures for determining composition and the credit/debit calculation, which are addressed in greater detail in Attachments B.1, B.2, and C of this MOU.

4. PROCEDURES FOR COMPOSITION TESTS (ATTACHMENTS B.1 and B.2): Attachment B.1 contains a detailed protocol for developing a statistically significant sampling program to determine the composition percentage of marketed materials collected from Federal Way customers. Attachment B.2 contains a sampling sheet indicating the commodity categories to be used for the sampling. The sampling shall be conducted quarterly during 2020 and early 2021 to determine the composition used for the first commodity value adjustment to be effective January 1, 2022. WM shall provide sorting services in-house and shall separately contract with a Third Party Observer (TPO) approved by the City to monitor the initial round of six (6) sorts. WM’s payment to the City’s Third Party Observer for the initial sampling sorts shall be limited to no greater than \$30,000. Any work requested of the Third Party Observer in excess of that amount shall be arranged and funded by the City.

5. CREDIT/DEBIT CALCULATION (ATTACHMENT C): Attachment C contains examples of how customer credits/debits are calculated, based on composition, commodity value, and collected tonnage by sector. The spreadsheet provides the calculation of the credits to be provided to customers at the start of the contract, as well as a hypothetical example of a future calculation.

6. CHANGES TO PROCEDURES: Composition Retest:
Retests may be conducted if a change in composition, perceived by either Party, has sufficient impact to the current credit/debit value due to circumstances outside either Party’s control such as the following: market availability or categorization; the list of acceptable materials; state or local laws including container redemption laws; consumer product containerization; or any other change that is suspected to materially affect recyclables composition.

The results of the retest shall be used to calculate average commodity value for the following year, provided that either party may request an additional test if they believe the first test is inaccurate, in which case the results shall be averaged and then used to calculate average commodity value for the following year.

Prior to future retests being initiated by either Party, the Parties agree to coordinate on scheduling, targeted commodities, TPO participation, and data analysis. All future composition retests shall be conducted at WM’s JMK recycling facility. The Party requesting the composition retest shall be responsible for the

cost of the TPO assigned to oversee a given composition retest. The requesting Party shall also be responsible for the cost of sampling and data collection at the JMK facility, conducted in accordance with the procedures set forth herein. It is impractical to itemize costs for use of the JMK facility for composition retests, therefore the Parties agree that the rate charged to the City for participation of JMK audit staff and use of related equipment shall be no more than \$150 per hour for all future composition retests requested by the City. This hourly charge shall accrue based on the actual time the TPO is physically stationed at the JMK facility and engaged in observing that composition retest.

Allocation of Credit/Debit: In the event that the City wishes to change how credits/debits are allocated to customers, the City may revise Attachment C accordingly, provided that the underlying calculations of composition and market value are retained, such that the total dollar amount of credit/debit is unchanged, and only the allocation of the credit/debit shall be modified. WM shall adjust the credit/debit included on future invoices, in conjunction with Section 5.3.1 of the Contract.

7. ENTIRETY: This MOU contains all of the agreements of the City and WM with respect to any matter covered or mentioned in this MOU, subject to the terms and conditions of the Contract.

8. ATTACHMENTS: The following attachments are part of this MOU: (A) Framework Table; (B.1) Procedures For Composition Tests; (B.2) Composition Sort Categories; (C) Credit/Debit Calculation.

IN WITNESS WHEREOF, the City and WM have executed this Memorandum of Understanding as of the day and year first written above by their duly authorized representatives.

[signature page follows]

ATTACHMENT A
Federal Way Recycling Commodity Adjustment Framework Table

Aspect	Initial Value	Adjustment Reference	Adjustment Timing	Notes
Composition of Marketed Recyclables	N/A	RecyclingMarkets.net published commodity categories.	<p>One week of daily (Monday through Friday) sorts of single-family residential routes per calendar quarter. Five Quarters of samples shall be sorted, starting with Q1, 2020.</p> <p>The initial results shall be used until either party requests a resampling and reset of commodity composition.</p>	<p>Sorted residual not conforming to specified categories in MOU Attachment B.2 is excluded from composition percentages used to calculate commodity value, as this is a commodity adjustment for <u>marketed</u> commodities.</p> <p>Sorting methodology is outlined in a separate document titled “Procedures For Composition Tests”, provided as Attachments B.1 and B.2 of this Memorandum of Understanding.</p> <p>The composition results from the single-family sorts shall be used to calculate market value for all sectors (single-family, multifamily, and cart-based commercial recycling) unless both parties determine that significant variances justify applying a substantially similar sorting process to each collection sector, in which case those sector-specific results shall be used to determine separate composition values for each sector for the purposes of calculating market value. For these additional sector-specific tests, the requesting party shall be responsible for TPO costs, and WM shall be responsible for sampling and sorting costs.</p>

Market Value of each ton of marketed material.	The initial contract year average value per ton shall be \$54.07 per ton.	Reported individual commodity values per RecyclingMarkets.net, based on material categories used in the “Procedures For Composition Tests”, provided as Attachments B.1 and B.2 of this Memorandum of Understanding.	Adjusted annually. Rolling monthly average of October 1 – September 30 values for following January adjustment, based on last reported data for each month.	Calculation of average per-ton commodity value for each year will be based on the most recent composition values (as may be changed from time to time, as described above), and the reported material values, per the examples provided in Attachment C of this Memorandum of Understanding.
Tonnage	6,271 tons initial tonnage	To be based on total tons of all collected recyclables loads, delivered to the Contractor’s recycling processor.	Adjusted annually. Sum of recycling tons for October 1 – September 30, divided by 12 months to determine the amount of the monthly credit/debit for following year starting in 2022.	Annual recyclables material tonnage will be based on the actual scale weights of Federal Way tons of recyclables delivered to WMI’s processing facility(ies), as reported for single-family residential, multifamily and commercial cart sectors, subject to audit. If the City believes that the reported tonnages for any collection sector are inaccurate or inconsistent, the City may audit one or more recycling routes to confirm the tonnage delivered to the Contractor’s recycling facility and the number of garbage customer drive-bys performed by that route. The City and Contractor will work to resolve the discrepancy and make adjustments to the reported tonnage as needed to ensure accuracy.
Revenue to be Credited/Debited	\$339,069 initial value.	Calculated.	Adjusted annually effective January 1, 2022. For Single-Family Residential customers the	Single-family: Calculated from the Commodity Market Value. Collected Tonnage, and monthly weight of recyclables per customer.

			<p>credit/debit shall appear on their first invoice, regardless of the month service begins. The monthly credit/debit shall be prorated similar to other rate components.</p> <p>Commercial and Multi-family accounts shall have credit/debit posted to the "parent" Garbage account. However, the City may elect to apply credit value to enhanced technical assistance or promotion, or may offset a debit value via the Administrative Fee.</p>	<p>Multi-family: Calculated per the Commodity Market Value, Collected Tonnage, and Cubic Yards of service.</p> <p>Commercial Carts: Calculated per the Commodity Market Value, Collected Tonnage, and Cubic Yards of service.</p>
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ATTACHMENT B.1.

Procedures for City of Federal Way Recycling Composition Tests

INTRODUCTION

These procedures are intended to be used to determine the composition of recyclables collected in the City. These tests are intended to provide data that will be used for the revenue-sharing formula that is part of the Contract between the Parties. These procedures are intended primarily for testing single-family residential recyclables but are also applicable to cart-based collections of commercial recyclables (commercial recyclables collected from dumpsters may not work well with these procedures due to the presence of larger items that would not be sampled well by this method).

As a result of discussions and a tour of WM's JMK recycling facility (one of the processing facilities WM uses for recyclables collected in the City) on December 9, 2019, which included representatives of the Parties and independent consultants, the Parties agreed to use Waste Management's typical audit procedures and staff for these tests with oversight by a Third-Party Observer (TPO). The following is based on this approach, and any significant changes in the following approach shall be discussed and mutually agreed to before such changes are implemented.

LOADS TO BE SAMPLED

It is anticipated that testing of the single-family residential recyclables will be conducted daily for one week each quarter for five quarters. This will result in a total of 25 samples over a 15-month period. A sixth sampling shall be conducted of Cart-based commercial recyclables during a multi-day period that coincides with weekly service routes for this customer type during the 15-month period. Care will be taken to avoid testing recyclables generated during the major holidays (Super Bowl weekend, Memorial Day, Labor Day, July 4th, Thanksgiving, Christmas and New Year's Eve). The first four quarters of single-family residential samples shall alternate between the A and B weeks, and between the first and second loads of each route (this assumes that there are two loads from each route, but the first and only load can be taken if there is only one load). The fifth quarter shall repeat the same loads that were sampled in the first quarter, which will provide an opportunity to compare the results of the same routes one year apart (bearing in mind that the number of samples involved are too small to draw any firm conclusions). For example, the following schedule could be used (or some variation on this):

- Quarter 1: Week A, first loads
- Quarter 2: Week B, first loads
- Quarter 3: Week A, second loads
- Quarter 4: Week B, second loads
- Quarter 5: Week A, first loads

For the target load, WM shall inform the driver that he/she will take that load directly to JMK (instead of taking it to the Auburn RNW facility). Communication with the driver, JMK staff and the TPO will be critical to ensure that:

- The load is delivered to JMK.
- JMK personnel are prepared to pull a sample of it when it arrives.
- The TPO is on-site when the truck arrives in order to be able to observe sampling and sorting activities.

The driver shall be informed before leaving to start collections that the load must be brought to JMK. The driver shall:

- Confirm that the truck is empty before beginning collections.
- Tally the total number of customers on the sampled route (total customers, not setouts) that make up the load to be sampled.
- Provide notice to supervisor when the truck is about an hour from being ready to drive to JMK.
- Notify JMK personnel upon arrival that this load is to be sampled.
- Notify JMK, TPO, and audit staff if there are any problems or unusual aspects of the load (such as materials from multi-family or commercial sector carts being included in it).
- For each load, according to its route segment(s), provide TPO/audit staff: the total number of garbage customers passed by, the number of set outs that make-up that load, and the load's weight.

The load should be tipped in the normal receiving area, in a relatively clean area (not on top of other recyclables) and sampled immediately.

The load shall be sampled in the same manner as the method normally used for audits, which is using the sorting table as a sampling scoop. The sample shall be taken in such a way to try to include materials from the center of the pile (generally by pushing into the pile about midway along the length). It is understood that this method results in sample sizes of about 200 pounds. If it turns out this leads to lower sample sizes, where more than 10% of the samples are under 150 pounds, then this approach shall be revised to sample more materials from a load. An occasional sample under 150 pounds is acceptable, provided this shall not exceed 10% of the samples. The full sorting table/sampling scoop shall be carried directly to the audit area for manual sorting to take place.

If a load is missed (for example, the driver forgets to bring it to JMK, mechanical problems with the truck, or the load is rejected due to contamination by commercial carts or excessive levels of residuals, etc.), then that route shall be sampled two weeks later instead. All costs related to missed sampling shall be paid for by WM.

SORTING METHODS

Standard sorting methods shall be used for the sample, using the definitions developed for the City (see the Sample Data Form for Federal Way). To summarize the sorting method:

- Materials shall be separated into cans or other containers, placing each type of material into a separate container.
- Sorting shall continue until only pieces less than 2" in size remain. Materials under 2" will be placed in the Residuals/Garbage category.
- When sorting a sample has been completed, the containers shall be weighed and the weights recorded on the Sample Data Form. The tare weights of the containers shall also be noted, and then net weight calculated and recorded at that time or later.
- The TPO shall be provided with a copy of the data form and WM shall retain the original.
- Data shall be entered later into redundant spreadsheets by both the WM auditor and TPO.

DATA MANAGEMENT AND RESULTS

The weights of each sample shall be entered into a spreadsheet and the composition (in terms of percentages by weight) calculated for each sample. A simple average of the percentages of all samples will be the primary result, and will be used in the future along with commodity values to determine revenue-sharing amounts.

For example, using theoretical data from the first week:

Date	MWP	Aseptics	OCC	Al Cans	Al Foil	Tin Cans	Metal	Glass	PET	N HDPE	C HDPE	3-7	Garbage	TOTAL WEIGHT
5/4/2020	45	2	35	4	2	6	5	10	15	15	15	12	20	186
5/5/2020	51	1	40	5	1	8	2	12	12	12	12	12	22	190
5/6/2020	53	1	45	5	1	9	2	15	12	12	12	12	18	197
5/7/2020	37	2	55	8	2	12	3	35	10	15	10	5	20	214
5/8/2020	47	1	48	6	1	11	2	23	12	16	16	4	17	204

In this example, the percentages for each sample (disregarding the amounts of Aseptics and Residuals/Garbage) and the average of those percentages are:

Date	5/4/2020	5/5/2020	5/6/2020	5/7/2020	5/8/2020	Average of First Qtr.
Weight	186.0	190.0	197.0	214.0	204.0	198.2
MWP	27.4%	30.5%	29.8%	19.3%	25.3%	26.5%
OCC	21.3%	24.0%	25.3%	28.6%	25.8%	25.0%
Al Cans	2.4%	3.0%	2.8%	4.2%	3.2%	3.1%
Al Foil	1.2%	0.6%	0.6%	1.0%	0.5%	0.8%
Tin Cans	3.7%	4.8%	5.1%	6.3%	5.9%	5.1%
Metal	3.0%	1.2%	1.1%	1.6%	1.1%	1.6%
Glass	6.1%	7.2%	8.4%	18.2%	12.4%	10.5%
PET	9.1%	7.2%	6.7%	5.2%	6.5%	6.9%
N HDPE	9.1%	7.2%	6.7%	7.8%	8.6%	7.9%
C HDPE	9.1%	7.2%	6.7%	5.2%	8.6%	7.4%
3-7	7.3%	7.2%	6.7%	2.6%	2.2%	5.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

In this example, the far right column is only the average for the first quarter, but after five quarters the average of 25 samples will be calculated and these figures will be used to determine the market value of the recyclables collected in the City.

INTERPRETATION OF DATA AND PROCESS

The statistical certainty of the results shall be calculated by both the TPO and the auditor after the fourth quarter data has been collected, and provided to the City within two weeks of the completion of the fourth quarter sort. Adjustments may be made to the fifth quarter sampling if mutually agreed to be the City and WM. Sampling modifications may include steps such as examining the results to determine if specific areas or routes were creating real-life differences (and hence greater variability) in the composition of the recyclables collected. Statistical certainty shall be expressed using confidence intervals. Confidence intervals are the range of values for which one can be confident (to a given degree, such as 90% confident) that the true value falls within. The confidence limits are sometimes shown as a “plus or minus value”, such as “25% mixed waste paper +/- 3%.” For this study, a confidence interval of 90% shall be applied, so that in this example one would be 90% confident that the true value for mixed waste paper falls between 22% and 28%.

The calculation of confidence intervals for this study shall be determined by first calculating the standard deviation of the results (percentages) for each material and for all samples. The standard deviation is then converted to the standard error of the mean (SEM) by dividing the standard deviation by the square root of the number of samples. The SEM’s are multiplied by a factor of 1.64 to create a “plus or minus figure” that is then added or subtracted from the average composition values to derive the upper and lower confidence limits, respectively. The factor of 1.64 is determined by the choice of a 90% confidence interval.

ATTACHMENT B.2.
Composition Sort Categories
Sample Data Form - Recycling Composition Test

Sample #: _____ Route/Area: _____		Date: _____	
Total # of Customers: _____ Load weight: _____		Time: _____	
MATERIALS	WEIGHTS	TARES	COMMENTS
Mixed Paper (grade PS 54)			
Aseptics (PS 52)			
Corrugated Containers (PS 11)			
Metals, Aluminum Cans (Baled, picked up)			
Metals, Aluminum Foil			
Metals, Steel Cans, Scrap Metal (ferrous and non-ferrous) (Baled, picked up)			
Glass (3 Mix)			
Plastics, PET (Baled, picked up)			
Plastics, Natural HDPE (Baled, picked up)			
Plastics, Colored HDPE (Baled, picked up)			
Plastics, Commingled #3-7 (Baled, picked up)			
Residuals/Garbage			

Definitions

Mixed Paper = newspaper, office paper, computer paper, magazines, junk mail, telephone books, paperboard boxes, egg cartons, gift wrap without foil, catalogues, advertising supplements, kraft paper and paper bags, and all other types of recyclable paper.

Aseptics = milk cartons, drink or juice boxes and frozen food packaging. (These will be counted as a residual, but sorting data will be maintained in case market capacity develops)

Cardboard = all non-waxed corrugated cardboard boxes, unless wet or food-stained.

Metals, Aluminum Cans = aluminum cans.

Metals, Steel Cans and Ferrous and Non-Ferrous Scrap Metal = clean tin food cans and tin lids 3" or larger. All ferrous and non-ferrous scrap metal, free of wood, rubber and other contaminants (must be at least 90% metal). All clean aluminum trays, pie tins and other food containers. Dirty aluminum foil and trays should go into residuals.

Glass = all colors of glass bottles.

Plastics, PET = all types of PET bottles, including colored, and PET tubs.

Plastics, HDPE natural = all types of non-colored HDPE bottles and tubs.

Plastics, HDPE colored = all types of colored HDPE bottles and tubs.

Plastics, #3-7 = bottles and tubs made from plastic types 3-7.

Residuals/Garbage = film plastic and plastic bags, shredded paper, all materials under 2", paper cups, automotive fluids bottles, other empty containers for hazardous material, clothing, diapers, tires and other rubber products, carpet, construction and demolition wastes, furniture, mixed materials, window glass, glassware, ceramics, all aerosol cans and propane bottles, all bagged materials, wet or food-stained cardboard and other paper, waxed cardboard, tin cans with food (where food is greater than 50% by weight of the emptied container), plastic bottles with food or beverage (where contents are greater than 50% by weight of the empty container), etc.

Note: These definitions strive to be as inclusive as practical, based on existing conditions and declared MRF sorting capabilities. These definitions may be refined from time to time with the approval of the City, based on changes to MRF sorting capabilities, manual sorting capabilities, changes in recyclables feedstock (packaging), as well as changes in commodity markets and the industry standards regarding commodity specifications.

ATTACHMENT C Credit or Debit Calculation

Commodity	<u>Per Proposal</u>			<u>Hypothetical 2022 Adjustment</u>		
	Waste			Waste		
	Characterization Percentage	JMK Average Price/ton	Calculated Commodity Value (2018)	Characterization Percentage per 2020-2021 sorts	Recycling Markets High Price/ton	Calculated Commodity Value (for 2022 rates)
Mixed Paper - PS 54 (including NP)	58.7%	\$ 10.48	\$ 6.15	31.2%	\$ 5.00	\$ 1.56
Corrugated Containers - PS56	24.6%	\$ 114.75	\$ 28.18	30.0%	\$ 120.00	\$ 36.00
Aluminum Cans (Baled)	0.9%	\$ 1,300.00	\$ 11.05	1.9%	\$ 1,300.00	\$ 24.70
Steel Cans (Baled)	1.3%	\$ 176.00	\$ 2.22	2.8%	\$ 70.00	\$ 1.96
Scrap Metal (Mixed)	0.0%	\$ 200.00	\$ -	0.9%	\$ 200.00	\$ 1.80
3 Mix Glass	11.3%	\$ (22.00)	\$ (2.49)	20.0%	\$ 15.00	\$ 3.00
PET (Baled)	2.2%	\$ 190.00	\$ 4.22	4.8%	\$ 300.00	\$ 14.40
Natural HDPE (Baled)	0.5%	\$ 700.00	\$ 3.15	3.8%	\$ 300.00	\$ 11.40
Colored HDPE (Baled)	0.5%	\$ 348.00	\$ 1.74	1.8%	\$ 300.00	\$ 5.40
Commingled #3 - 7 (Baled)	0.2%	\$ (89.00)	\$ (0.15)	2.8%	\$ 50.00	\$ 1.40
	100.0%		\$ 54.07	100.0%		\$ 101.62
Commodity Value	\$ 54.07			\$ 101.62		
Total Tons (per City Enspire Report)	6,271			6,579		
	\$ 339,069			\$ 668,549		
Tonnage as reported - Enspire						
	2018 per Proposal			9/2020 - 8/2021 Tonnage		
Residential Tons	4,072	\$ 220,171	65%	4,275	\$ 434,459	65%
MF Tons	1,893	\$ 102,353	30%	1,954	\$ 198,606	30%
Com'l Tons - carts	306	\$ 16,545	5%	349	\$ 35,484	5%
	6,271	\$ 339,069	100%	6,579	\$ 668,549	100%
Initial Rebate Calculation						
	Annual Total		Rebate per Month	Revised Rebate eff. 01/2022		Rebate per Month
	Annual Total	Customers/Yds		Annual Total	Customers/Yds	
Total Customers/MF Yards/Com'l Carts						
Credit per residential account	\$ 220,171	18,376	\$ 1.00	\$ 434,459	19,294	\$ 1.88
Credit per MF Recycling Yard	\$ 102,353	7,954	\$ 1.07	\$ 198,606	8,212	\$ 2.02
Credit per Com'l Cart (up to the first two carts only)	\$ 16,545	609	\$ 2.26	\$ 35,484	695	\$ 4.25
	\$ 339,069			\$ 668,549		
Credit per MF Recycling Yard is calculated using the total monthly recyclables collection service volume for all Multi-family accounts						
Credit per Com'l Cart is calculated based on the total monthly recyclables collection service volume for all "embedded" (no-charge) cart-based Commercial accounts (based on 0.48 yards per 96-gallon Com'l Recycling Cart)						

ATTACHMENT C (CONTINUED)
Applying Composition and Commodity Value Data to Customer Rates

This example illustrates how the composition data and commodity values are applied to customer rates, using the single-family sector as an illustration. Application to multifamily and commercial sectors will be similar, except that values will be applied on the basis of recycling container volume.

The composition data shall be determined through procedures that have been developed for this process. In summary, the composition of single-family residential recyclables shall be determined by sorting samples from different areas and routes within the City. Each sample is sorted into the agreed-upon marketable commodities, with weights recorded on approved forms and the data then entered into a spreadsheet to calculate the percentage breakdown for each sample and the averages for all samples. The end result of this step will be a simple average for each material for all samples taken together. “Simple average” means no special weight or preference is given to any one sample for the averaging process. Table 1 illustrates this process. Data from samples #5-23 are not shown for the sake of brevity. Results for Residuals and Aseptics are disregarded in the Adjusted Average column.

Table 1

MATERIALS	Sample Results							Average	Adjusted Average
	1	2	3	4	Etc.	24	25		
Mixed Paper (PS 54)	24.9%	24.5%	28.6%	32.3%	...	17.9%	29.2%	26.2%	31.2%
Aseptics (PS 52)	1.0%	0.5%	0.8%	0.5%	...	0.8%	1.1%	0.8%	NA
Corrugated Containers	24.5%	30.1%	17.9%	17.9%	...	33.4%	27.6%	25.2%	30.0%
Aluminum Cans and Foil	1.8%	1.5%	1.6%	1.1%	...	1.6%	1.8%	1.6%	1.9%
Steel Cans	2.1%	1.9%	3.2%	1.7%	...	1.9%	3.5%	2.4%	2.8%
Scrap Metal	1.0%	0.8%	0.5%	0.8%	...	0.5%	1.0%	0.8%	0.9%
Glass – 3 Mix	17.7%	16.3%	21.3%	15.2%	...	15.6%	14.6%	16.8%	20.0%
Plastics, PET	4.5%	3.0%	3.7%	5.3%	...	5.1%	2.4%	4.0%	4.8%
Plastics, Natural HDPE	3.5%	2.5%	3.4%	3.7%	...	3.6%	2.7%	3.2%	3.8%
Plastics, Colored HDPE	1.5%	1.6%	1.5%	1.7%	...	1.7%	1.3%	1.6%	1.8%
Plastics, Commingled #3-7	2.5%	2.4%	2.5%	2.5%	...	2.8%	1.2%	2.3%	2.8%
Residuals/Garbage	15.0%	14.9%	15.0%	17.3%	...	15.1%	13.6%	15.2%	NA

In Table 2, the calculation of a weighted average results from multiplying the market value for a specific material by the percentage that it contributes to the total to arrive at a dollar amount. Then those amounts are summed to arrive at the average total value per ton. For example, the market value for mixed paper (\$5.00 per ton) is multiplied by the percentage that it contributes (expressed as a decimal 0.312) to calculate its portion of the overall total value per ton of mixed recyclables (or \$1.56/ton).

Table 2

MATERIALS	Adjusted Average	Market Value/ton	Contribution to Total Value
Mixed Paper (PS 54)	31.2%	\$5.00	\$1.56
Corrugated Containers	30.0%	\$120.00	\$36.00
Aluminum Cans and Foil	1.9%	\$1,300.00	\$24.70
Steel Cans	2.8%	\$70.00	\$1.96
Scrap Metal	0.9%	\$200.00	\$1.80
Glass – 3 Mix	20.0%	\$15.00	\$3.00
Plastics, PET	4.8%	\$300.00	\$14.40
Plastics, Natural HDPE	3.8%	\$300.00	\$11.40
Plastics, Colored HDPE	1.8%	\$300.00	\$5.40
Plastics 3-7	2.8%	\$50.00	\$1.40
Total Value			\$101.62

Market Values shall be updated annually, while the composition figures generated through sampling in 2020 and 2021 shall be used until superseded by future sampling data.

Once the sample data and market data are compiled, the following two factors shall be applied to calculate the impact to rates.

1. Conversion of the tonnage to a monthly weight. For example, single-family residential customers with every-other-week service would have the aggregate sample weight multiplied by a factor of 2.17 (4.33 weeks/month divided by 2 = 2.17) to calculate the monthly weight per account. The single-family customer count on the last date of each August shall be used to distribute the credit/debit, to coincide with the annual rate adjustment process.
2. Calculating the per customer (or per cubic yard) factor to allow the aggregate commodity value to apply to customers in a given sector. This is based on the total number of customer accounts that generated the samples, allowing the process to also serve as a check on the aggregate reported total tonnage of recyclables collected per sector. Cubic yards will be based on account data on the last date of each August, to coincide with the annual rate adjustment process.

For a hypothetical and simplified application of these factors (using rounded numbers): assume a total of 10 tons of collected materials are delivered to the recycling processing facility for sampling. These 10 tons were collected from route segments that have a total of 1,000 garbage accounts (recycling cart set-out rate does not figure into this calculation).

The overall sample/sort test results show that:

- 85% of the items were sorted into marketable recyclables

- 5% was sorted into non-marketable and/or non-contract items (such as milk cartons and aseptics)
- 10% was residual

In this example, non-marketable items total 15% by weight. Therefore, the commodity adjustment for this sector is based on 8.5 tons (or 17,000 pounds) of marketable recyclables.

The calculated value based on the average market price data is then applied back to the 1,000 garbage customer accounts that were the source of the recyclables.

First, the weight of recyclables per account has to be converted to a monthly total. In this example for the single-family residential sector, the 17,000 pounds divided by 1,000 customers equals 17 pounds per collection cycle per garbage account. To calculate a monthly total, this figure is multiplied by a factor of 2.17 which equals 36.89 pounds of marketable recyclables per garbage account per month.

Following are two examples showing how the per account credit/debit shall be calculated for the commodity adjustment:

If the net value per ton of recyclables is a positive value:
 \$100 (or \$0.05/pound): $36.89 \text{ pounds} \times \$0.05 = \$1.84$ “credited” to each garbage customer every month

If the net value per ton of recyclables is a negative value:
 -\$100 (or -\$0.05/pound): $36.89 \text{ pounds} \times -\$0.05 = -\$1.84$ “debited” from each garbage customer every month

For single-family residential accounts, the monthly commodity adjustment figure is then multiplied by three to determine a quarterly amount, which then appears on the quarterly invoice.

The overall methodology is similar for applying commodity value to single-family residential, multi-family, or commercial sectors, as long as the full value (credit or debit) of each sector’s recyclables is distributed to that customer base.

The credit or debit per single-family residential account and per cubic yard of multi-family or commercial recycling service shall be calculated annually. The calculated debit or credit shall be applied to customer accounts even if the number of accounts or the cubic yards of service have changed since the credit or debit was calculated.