



City of Vaughan – Collection RFP Planning
CIF Project Number 965

Final Report
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Prepared for:
Resource Productivity and Recovery Authority

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Prepared by: Kate Dykman – Manager, Solid Waste Management, City of Vaughan

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1. Introduction

The City of Vaughan provides curbside collection to single family residents and some multi-residential buildings through a single contracted service. Prior to the start of this project, the collection contract was set to expire and City staff were directed to assess the financial impact of expanding multi-residential service, update the policy and administrative framework used to manage these households and forecast costs for the new collection contract. The City submitted an application to the Continuous Improvement Fund (CIF) through the request for expressions of interest process and received financial and technical assistance to complete this work under CIF project 965.

2. Background

2.1 Community Profile

The City of Vaughan collects residential recycling and other solid waste from over 84,000 single family households and 50 multi-residential buildings containing a total of approximately 6,500 units.

2.2 Waste Management System

Prior to the commencement of this project, the City’s collection contract had been in place for approximately 10 years and was set to expire December 31, 2017. Management of recyclables at the transfer station and processing services are the responsibility of York Region.

Single family residences are provided with weekly collection of recyclables and organics, bi-weekly collection of garbage/bulky waste and seasonal collection of leaf & yard waste, including Christmas trees. The collection contract also includes scheduled fee-based collection for appliances and other metal items.

The City originally grand-parented the above mentioned 50 multi-residential buildings into the current contract and had not added a condominium or private development to collection services since 2007. These buildings are provided with twice per week collection of garbage and weekly collection of recyclables.

2.3 Current Waste Management Diversion Performance

Table 1 below presents the diversion performance of the City in terms of collected materials from both single and multi-residential households during the year 2015.

Table 1: Solid waste collected from single family and multi-residential households 2015

	Units	Blue Box Recycling	Organics	Garbage	Generation	Total Waste Diversion
Single Family	Tonnes	21,211	26,859	27,475	75,545	64%
	Kg/unit	255	323	330	907	
Multi-Residential	Tonnes	413	-	2,990	3,403	12%
	Kg/unit	36	-	257	293	

3. Approach

The objectives of this project were to:

1. Update key documents for multi-residential service:
 - a. Waste collection design standards policy and related application forms
 - b. Multi-residential buildings and details database
2. Forecast collection contract factors and related costs:
 - a. Establish budget for future contract
 - b. Identify factors that influence contract costs
3. Incorporate best practice contract provisions into the upcoming RFP
 - a. Mitigate uncertainty and financial risk to bidders
 - b. Provide flexibility for expected legislative changes

The results and learnings of this project work were then incorporated into the City’s new RFP for solid waste collection services with the goal of reducing service costs.

3.1 Waste collection design standards policy and related application forms

Phil Jensen, a private consultant with waste management policy expertise, was hired to complete a review of multi-residential solid waste collection policies. Following completion of the review, Mr. Jensen updated the City’s waste collection design standards policy and related application forms. The updated documents may be viewed at this [link](#).

Following the City’s legal review of the updated policy, issues were noted requiring an update to the City bylaw. City staff have since updated the waste collection by-law.

3.2 Building Details Database

The Waste Reduction Group (WRG) was hired to complete an update to the City’s multi-residential building database. Consultants from the WRG completed site visits recording key building details, including: address, contact persons, container capacity, current contract details and number of units. This information was provided to the City as an Excel workbook which provides staff with access to building specific details and statistics for the entire housing sector.

3.3 Fairness Monitor for RFP Process

A Fairness Monitor was engaged to provide independent oversight throughout this procurement process to ensure transparency and fairness in the preparation of the RFP and in the evaluation of the proposals.

3.4 Collection Cost Modelling

Prior to completing the competitive bid process, the City planned to complete a financial contract study in order to better understand anticipated pricing for a new collection contract. The CIF had previously developed a collection cost estimating tool which was utilized for this project to model factors that influence collection cost.

This portion of the project included two phases:

- Phase 1: development of a ‘benchmark cost’ for the City’s current collection’s contract using information provided by the City, estimates of various cost generating activities and industry best practice standards.
- Phase 2: development of a ‘forecasted cost’ for the City’s future collection contract using the benchmark information derived in Phase 1, estimates of various cost generating activities and industry best practice standards.

The forecasted costs included best practice contract provisions to mitigate risk related to the contract and therefore reduce service costs. This tool provided City staff with necessary information for budgeting solid waste collection services for future years.

Collection cost category estimates

In calculating the costs of a collection contract using the collection cost model, the ‘benchmark’ and ‘forecast’ models use a schedule type presentation. This schedule lists the various categories, descriptions and financial inputs necessary for calculating respective costs. The sum of all the cost categories produces the cost of a given collection contract. The following is a breakdown of the inputs, estimates and assumptions used in calculating category costs.

3.4.1 Collection vehicles

Given that contractors do not buy new vehicles, equipment or facilities every year, the initial capital costs required to provide service are spread out (amortized) over the term of a given contract (or the service life of the asset) producing an ‘annual cost’. The annual amortized cost of collection vehicles in this model is representative of the annual payments required to make said purchase over the service life of the assets. In the models developed, the following estimates were used in calculating the annual amortized cost of collection vehicles:

Term: 8 years is used as the life of the assets as this is both the maximum contract (included in T05-127) and the best practice.

Rate: The Bank of Canada Prime lending rate is used to calculate the interest on capital purchases for the contract as it reflects the rate available to large stable corporations. The Bank of Canada Prime lending rate has been adjusted between models to accurately reflect the time period in which the work was or will be undertaken.

Price: The cost of collection vehicles was determined using average prices as listed in the Waste Diversion Ontario 2010 – 2015 Datacall submissions by municipalities detailing brand, vehicle model, model year and purchase price.

Vehicles: The number of collection vehicles required to service the contract were estimated using the current collection contractor vehicle use reports for the year and contractor vehicle allocation document. The contractor vehicle allocation documented vehicles by their respective identification numbers and type.

Annual amortized cost of collection vehicle capital: In Excel, the payment function, PMT (rate, nper, pv), was used to calculate the annual amortized cost per collection vehicle. Where: rate = Bank of Canada Prime lending rate; nper = The amortization period in years; pv = the price of the collection vehicle. The PMT amount is then multiplied by the number of collection vehicles required to service the contract to arrive at the annual amortized cost for each type of collection vehicle.

Salvage: The salvage price is the value of a collection vehicle at the end of either the contract or service life. Note the service life does not equal the useful life. As such, the vehicle still has value, in dollars, as it is still a functional piece of equipment at the end of its service. To reflect this in the model, the estimated salvage value at the end of the contract period was amortized over the life of the contract as a ‘contra-cost’ or ‘revenue’; meaning it was a negative amount in calculating the costs of the contract.

The depreciated (salvage) value of collection vehicles was estimated using the Sum of the Years Digits depreciation method (SYD).

Annual amortized salvage value of collection vehicle capital: In excel, the PMT (rate, nper, pv) was used to calculate the annual amortized salvage value per collection vehicle. Where: rate = Bank of Canada, Prime lending rate; nper = The amortization period in years; pv = the price of the collection vehicle. The PMT amount was then multiplied by the number of collection vehicles required to service the contract to arrive at the annual amortized salvage value for each type of collection vehicle.

3.4.2 Collection staff

The number of collection staff are determined using the vehicle use reports and vehicle allocation document.

Annual wages/salary: The annual wage for collection staff was estimated using data from Statistics Canada Table 281-0026. This table provides industry average per hour wage rates for employees paid either by the hour or a salary (excluding overtime). The average wage rate per hour was multiplied by a 40 hour work week and 52 weeks of the year to arrive at an annual amount. The annual amount was then increased by a buffer to account for uniforms, training, benefits and other burdening factors (including CPP and EI).

3.4.3 Fuel

Fuel price: The fuel price has been estimated using the monthly R.A.Q.S. published by MTO. The prices on the R.A.Q.S. are for bulk purchasing ultra-low Sulphur diesel in the GTA. The pricing between models

differs. The fuel pricing included a buffer to reflect variance in pricing. With no fuel adjustment clause included in the contract, it is necessary to budget for the risk associated with variable fuel pricing.

Fuel consumed by collection vehicles: There are three components used in estimating the amount of fuel used by collection vehicles, descriptions below:

Component 1: The amount of fuel consumed in collecting material in the service area. This amount is estimated by considering the number of kilometres of road within the service area and the number of collections per year. The kilometres of road are multiplied by 2 (to account for collection on both sides of the road) and the number of collections per year to arrive at the kilometres of road driven collecting materials in the service area. This number is then multiplied by a standard fuel consumption rate (litres per kilometer) to arrive at the annual fuel consumed in collecting material in the service area.

Component 2: The amount of fuel consumed in driving between the service area and the material transfer point. This amount is estimated by measuring the round trip distance from the transfer point to the geographic center of the service area, then multiplying the round trip distance by 2 (to account for two trips during an average collection day) then the number of collection days in a given year to arrive at the annual amount of fuel consumed driving between the service area and the transfer point.

Component 3: The amount of fuel consumed idling during a collection day is estimated by multiplying the idling per hour rate by the number of annual hours spent collecting materials.

Summing components 1 – 3 arrives at the amount of fuel consumed by collection vehicles annually in servicing the contract.

Annual cost of Fuel: The annual cost of fuel is the multiplication of the fuel price by the annual amount of fuel consumed by collection vehicles.

3.4.4 Maintenance and Repairs

Maintenance: Annual maintenance costs to service collection vehicles are estimated as a percentage factor multiplied by the capital cost of the collection vehicles. The percentage factor represents the costs of materials used in maintaining the vehicles and does not include the costs of wages/salary for mechanics. Items such as tires, lubricants and spare parts are examples of costs included in this factor. It should be noted that this percentage varies widely depending on type of vehicle, hours of use, weather/climate and other factors. The maintenance cost has been observed to increase over the service life of a collection vehicle, such that by the end of the service life the costs for maintenance are double that at the beginning. The maintenance factor has been adjusted to reflect the reality of servicing vehicles at various stages of service life.

3.4.5 Insurance, licensing and other vehicle costs

Annual insurance, licensing and other vehicle costs required for operating collection vehicles are estimated as a percentage factor multiplied by the capital cost of the collection vehicles.

3.4.6 Contractor office overhead, yard & staff

This cost category is difficult to estimate as it relies heavily on assumptions that may not accurately represent the overhead requirements of a given contract due to significant variation between circumstances such as the different costs of real estate in different markets Province-wide, cost of utilities and taxes in different cities etc.

Office overhead: This cost sub-category is representative of the costs to a contractor necessary to furnish and maintain office space. These include maintenance, cleaning, utilities, grounds work, security and other costs that are fixed in nature (such as property taxes, interest payments on capital purchases, etc.).

In calculating the amount of office overhead, a standard rate is used. The standard rate is a cost per square foot of office property. The estimated area of office property required for the contract is then multiplied by the standard rate to arrive at the office overhead amount.

Yard overhead: This cost sub-category is representative of the costs to a contractor to provide and maintain space for the collection fleet (i.e. property taxes, grounds maintenance, etc.). In calculating this cost, a standard rate is multiplied by the estimated amount of yard space required. The square footage of the yard is then multiplied by the standard rate.

Staff – District manager: It is assumed that a district manager of residential collections is required to service the contract. As such, an allocation of this person’s time is then estimated and multiplied by an assumed salary to arrive a cost to service the contract.

Staff – Supervisor: it is assumed a collections supervisor is required to manage the residential collection fleet, deal with issues arising day-to-day and complete other tasks related to managing the contract.

Staff – Administrative/clerical: It is assumed that for every supervisor required to service a contract, there are two (2) administrative/clerical staff required. The number of administrative/clerical staff was then multiplied by the average salary of an administrative/clerical staff person.

Staff – Mechanics: This sub-category accounts for the salary costs of mechanics required to service the collection fleet. An industry standard number of mechanics required to service a collection fleet is a ratio of 8 collection vehicles to one (1) mechanic. Once the number of mechanics required has been established, this amount is multiplied by the average salary of a mechanic to arrive at the total cost for this cost sub-category.

4. Results

4.1 Project Results

4.1.1 Financial Contract Study

The collection cost model exercise provided the City with a budget amount for solid was collection services. While the results of the RFP process yield the actual cost to be billed to the City for services

received, it was necessary to provide the Budget Committee with the overall cost estimate in advance of the RFP results. Additionally, the cost model allowed CIF and City staff the ability to assess the financial impact of different collection factors (vehicle type, term length, contract provisions, etc.).

4.1.2 Development of the RFP

In addition to the terms identified through the cost modelling results, the CIF recommended best practice additions to the contract, including:

- Force majeure
- Cost escalation
- Fuel adjustment
- Carbon credits

Examples of the full provisions recommended may be found in the Appendix of this report.

4.2 Analysis of Results

The City's Request for Proposal (RFP16-307) was released and posted on the City bids and tenders website, Bidding & OPBA on October 5, 2016, with the closing date of November 18, 2016. The RFP package provided details of the contract, including the evaluation criteria used in the assessment of competing proposal bids. Four (4) addenda were issued to answer questions received. Nine (9) potential proponents picked up the documents and five (5) proponents submitted bids. Upon review, bids from the following five (5) proposals were declared compliant:

- 1) Canadian Waste Management Inc.
- 2) GFL Environmental Inc.
- 3) Halton Recycling Ltd. DBA Emterra Environmental
- 4) Miller Waste Systems Inc.
- 5) Progressive Waste Solutions

An Evaluation Committee, comprised of staff from Environmental Services, By-Law and Compliance Licensing and Permit Services, Fleet Management Services and Financial Planning and Development Finance, carried out the evaluation process. The City's RFP package provided details of the contract, including the criteria to be used in the evaluation of competing proposal submissions.

The potential proponents that received 70% or better on their Technical Score were then evaluated on their financial submission. Four (4) of the five (5) submissions proceeded to a financial evaluation. Based on the evaluation criteria, Miller Waste Systems Inc. received the highest score overall and was recommended by the evaluation committee as the preferred proponent.

The Residential Solid Waste Collection contract for the City of Vaughan was awarded to Miller Waste Systems Inc. for a term of eight (8) years (January 2, 2018 to December 31, 2025), with an option to extend the contract for two (2) additional, one (1) year periods.

As part of the process, a Fairness Monitor was engaged to identify any issues or concerns in the preparation and evaluation of the RFP. According to his findings, the Fairness Monitor has reported that

the RFP process has been conducted in a fair, open and transparent manner consistent with the RFP document.

The full Council extract detailing the recommendation and subsequent approval are available. Please contact City staff for a PDF of this information.

4.3 Lessons Learned

Overall, the model was a very useful tool for the City of Vaughan, to prepare the budget forecast and project anticipated costs for waste services. It was also useful to understand whether the proposals received were within a reasonable price range.

4.3.1 Cost Model Learnings

There was nearly a 10% difference between the collection cost model output and the results of the RFP bid process. Further investigation into this difference identified a change in the vehicle fleet composition versus the previous contract. Re-working the model to represent the actual vehicle fleet composition increased the accuracy of the predicted contract amount to within 1% of the actual bids.

Other aspects of costing assumptions that yield significant variation in the contract pricing relate to the timing of Capital costs:

- USD:CD Exchange rate
- Key lending rates
- Size of the contract

Including these assumptions in modeling will improve the accuracy of estimates. Future considerations may also include adding costs like cap and trade (fuel), minimum wage, etc.

4.3.2 Require information as a component of your collection contract

Asking for vehicle listings, vehicle and fuel usage reports and other tracking documentation related to the service in the RFP will be extremely useful data to complete cost modeling exercises.

4.3.3 Other

As part of their contracted duties, the Fairness Monitor was engaged to identify any issues or concerns in the preparation and execution of the RFP. Their report is provided as Attachment 1. According to his findings, the Fairness Monitor has reported that the RFP process has been conducted in a fair, open and transparent manner consistent with the RFP document. Additionally the fairness monitor did not identify any recommendations related to the RFP best practice contract provisions. The full report is available, please contact City Staff to request a copy.

5. Budget

The project costs accrued through the completion of this work are detailed in the table below.

Table 2: Project Budget

Item	Cost
Waste collection design standards policy and related application forms	\$3,275
Building details database	\$9,000
Collection cost modelling	\$3,000
Total	\$15,275

6. Conclusions

The results of the RFP are estimated to save the City approximately \$1 million annually, equivalent to a reduction in cost of nearly 10% versus the previous contract. This result is a significant benefit to the City and its residents as service levels were maintained and the price was reduced.

This project demonstrates the additional policy, documentation and information tracking required for servicing the multi-residential sector effectively. Multi-residential service is complex, and it is crucial City staff understand the unique attributes of each building within their service area (key contacts, types of containers, accessibility for collection vehicles, etc.). By maintaining a database or registry of multi-residential buildings serviced by the City, Staff are able to deal with issues on a timely basis. Further, having a complete registry of buildings within the City limits provides staff with the information necessary to assess the financial impact of expanding service levels.

Cost modelling provides a powerful tool for understanding the financial component of a contract. It also empowers municipalities in making decisions around the financial impact of service level changes or changing provisions within their existing contracts. In moving towards the new extended producer responsibility framework municipalities are encouraged to understand the full cost of providing their residents with Blue Box services. The various cost models that are available or in development by the CIF are here to support municipalities in this endeavour.

7. Appendix – Best Practice Contract Provisions

7.1 Fuel adjustment

(1) The Contractor shall indicate on the Form of Proposal – Part 2: Schedule of Unit Prices, the estimated quantity of fuel that will be consumed annually in the performance of this contract.

(2) The Contractor’s monthly payment will be adjusted to allow for seventy percent (70%) of any difference greater than \$0.10/litre in the average diesel pump price of fuel on the Contract start date. Upon receipt of satisfactory evidence of the actual fuel consumed. The Municipal monthly payment will be adjusted to allow for seventy percent (70%) of any difference lesser than \$0.10/litre below the average diesel pump price of fuel on the Contract start date.

(3) Monthly changes to the agreed starting base price of fuel will be determined by the Ontario Ministry of Transportation Average Diesel Fuel Price Index:

<http://www.raqs.merx.com/public/bulletin/articleView.jsf?articleId=37327652>

Example Calculation:

1000 litres fuel consumed last month and fuel price has increased \$0.15/litre since start of contract.

Calculate price difference above threshold: $\$0.15 - \$0.10 = \$0.05$

Calculate cost adjustment: $1000 \times (\$0.05 \times 70\%) = \35.00 payable to Contractor.

NOTE: All proposals for hauling services must include a price per litre for clear ultra-low Sulphur diesel fuel to be quoted no more than one (1) week prior to the submission of the proposal. This price is to be shown on the Schedule of Unit Prices.

The base price of fuel for the term(s) of the contract and the fuel price tracking method will be agreed upon on or before the start date of the contract.

The Municipality reserves the right to verify any fuel consumption records submitted by the Contractor prior to payment of any fuel price adjustment amounts.

7.2 Escalation

(1) Unit costs will be adjusted annually on the anniversary date of the execution of the Contract. The increase will be equal to 75% of the increase set out in the Consumer price Index for Canada (all items) as published for the previous 12 month period (i.e. if the CPI increases by 2.0% over the 12 month period between May 1, 2016 and April 30, 2017, the unit prices paid to the Contractor will increase by 1.5% as of May 1, 2017). **Any CPI increases will not apply to fuel costs which are calculated separately under the fuel adjustment clause above.** The Consumer Price Index will be equal to the Consumer Price Index for Ontario excluding gasoline, by Statistics Canada as found on:

http://www.statcan.gc.ca/access_acces/getLatest.action?l=eng&catid=62-001-x

7.3 Force majeure

(1) Delays in or failure in the performance of either party under any contract awarded under this proposal shall not constitute default hereunder or give rise to any claim for damages if and to the extent caused by occurrences beyond the control of the party affected, including but not limited to decrees of federal or provincial government, acts of God, fires, floods, explosions, riots, war, rebellion, sabotage and atomic or nuclear incidents (“force majeure”), but lack of finances, strikes or other concerted acts by workers, delay or failure arising out of the nature of the work to be done, or from the normal action of the elements or from any normal difficulties which may be encountered in the performance of the work, having regard to the nature thereof, shall in no event be deemed to be a cause beyond a party’s control.

(2) In the event that the performance of any contract awarded under this proposal, in the reasonable opinion of either party, is made impossible by force majeure, then either party shall notify the other in writing and the Municipality shall either; terminate the contract forthwith and without any further payments being made; or authorize the Contractor to continue the performance of the contract with such adjustments as required by the existence of the force majeure and agreed upon by both parties. In the event that the parties cannot agree upon the aforementioned adjustments, it is agreed by the parties that the contract shall be terminated.

(3) The Contractor acknowledges that the Municipality is subject to the Waste Diversion Act, 2002, (SO 2002, c6) and Provincial Blue Box Program Plan (BBPP), which are outside the control of the Municipality. Repeal, replacement or amendment of either, the WDA and/or BBPP may change the operation of any Contract awarded under this RFP sufficiently to be classified, in the sole discretion of the Municipality, as a “Force Majeure” event.

7.4 Carbon credits

(1) Carbon credits means all credits, benefits, offsets, reductions, rights or indicia relating to (i) the reduction, mitigation or control of greenhouse gas emissions, including, without limitation, carbon dioxide, methane, nitrous oxide, hydro fluorocarbons, or any other gas, matter or substance, or (ii) the generation or creation of energy from sources recognized as renewable, or generated from otherwise wasted resources, directly or indirectly arising out of the production, use, sale, capture, flaring, burning, destruction, processing, conversion, utilization, fueling, storage or sequestration that now or hereafter qualifies for recognition under any domestic, international or foreign emissions reduction or emissions program, scheme or organization or law or governmental authorization.

(2) Any carbon credits resulting from any Work performed under any contract(s) awarded under this RFP shall remain the sole property of the Municipality for their exclusive use.