

# WASTE & RECYCLING SERVICES





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## 1. EXECUTIVE SUMMARY

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Pay-as-you-throw (PAYT) refers to an approach where customers are charged based on waste collected from their homes/ sites. It can be implemented in different ways, with most municipalities choosing program elements best suited to their priorities and needs.

This report provides an overview of PAYT programs offered in other municipalities. The municipalities included represent a wide range of PAYT programs. However, there are some consistent learnings from these programs. Most municipalities introduced a variable cart program in conjunction with rolling-out automated collection, which saves money at the time of implementation. Also, most have a tag-a-bag program which is a requirement to pay for excess garbage set out for collection using either City-branded bags or tags for each extra bag. One critical learning is that as the number of cart sizes that residents can choose increases, so do program costs. The third key learning was that some municipalities have experienced increased diversion rates, while others have experienced significant increases in contamination in their diversion programs.

These key learnings have informed the PAYT program recommended for Calgary.

## 2. INTRODUCTION

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This document summarizes findings from an external scan of select municipalities with PAYT programs for residential solid waste collection. Information included in this report is based on:

1. A technical memo provided to Waste & Recycling Services (WRS) by Tetra Tech in 2015;
2. A review by WRS for recent updates from the municipalities included in the 2015 technical memo; and
3. A scan of two additional municipalities in Canada (City of Toronto and Region of Peel) conducted by WRS.

### 2.1 BACKGROUND

PAYT refers to an approach where customers are charged based on waste collected from their homes/ sites. It can be implemented in different ways, with most municipalities choosing program elements best suited to their priorities and needs. A summary of the most common programs are presented below:

1. **Variable Cart Number/Size:** In this system, residents select a specific size and/ or number of containers for their standard collection period.
2. **'Bag and/or Tag-a-Bag':** Customers purchase bags customised with a municipality's or hauler's logo or tags for their garbage bags. The price of the bag/ tag may recover some or all of the cost of

collection and disposal. For convenience, bags/tags are usually sold online, at convenience and grocery stores and/ or at municipal facilities.

3. **Hybrid Programs:** Customers only pay for waste if they exceed a specified 'base' set-out volume (typically a first cart and/or bag of garbage) . Any waste additional to this fixed fee amount is charged on a per cart/bag/tag system, as described above. This system is a "hybrid" between historical garbage programs and the new incentive-based approach, and minimizes billing and collection changes.
4. **Weight-Based:** With this method, disposal cans or carts are weighed by retrofitted collection trucks, and the customer is charged based on the weight of waste collected. This system is more equitable, and tends to provide a strong diversion incentive. Some studies have shown that weight-based systems can decrease waste disposed by up to 20% more than volume-based<sup>1</sup>.
5. **Set-Out Systems:** Customers only set-out their carts when they have waste/recycling/composting that needs to be picked-up. They are charged a set fee for pick-up only if they set-out their cart or bag for collection.
6. **Other Variations:** Waste drop-off programs, charging by the bag, punch cards or other customer tracking systems are also being used in some communities, particularly rural areas<sup>2</sup>.

There are two intended outcomes of implementing a PAYT program for The City:

1. With The City moving to a customer-centric, service-based model, a PAYT program gives the customer flexibility in choosing the level of waste collection and disposal service they need from The City.
2. This approach also supports our 2025 waste diversion goal. One of the benefits of implementing a PAYT program is that it can be an influencing factor to changing customer behavior, diverting more materials from our landfills by reducing the amount of waste generated, and increasing recycling and composting.

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<sup>1</sup> Dahlen, Lisa, et al. "Pay as you throw: Strengths and weaknesses of weight-based billing in household waste collection systems in Sweden." *Waste Management* 30 (2010): 23-31. ([http://www.researchgate.net/publication/38014779\\_Pay\\_as\\_you\\_throw\\_strengths\\_and\\_weaknesses\\_of\\_weight-based\\_billing\\_in\\_household\\_waste\\_collection\\_systems\\_in\\_Sweden](http://www.researchgate.net/publication/38014779_Pay_as_you_throw_strengths_and_weaknesses_of_weight-based_billing_in_household_waste_collection_systems_in_Sweden))

<sup>2</sup> Skumatz & Freeman – PAYT in the US: 2006 Update and Analyses; Funded by USEPA OSW and SERA; December 2006.

### 3. PAY AS YOU THROW IN OTHER MUNICIPALITIES

This section summarizes how some Canadian and American municipalities have implemented variable pricing. Municipalities covered in the report include:

Table 1: Municipalities reviewed as part of the PAYT municipal scan

Canada	USA
City of Coquitlam	City of Grand Rapids
City of Toronto	City of Minneapolis
City of Vancouver	City of Portland
Region of Peel	City of San Francisco

Additional information on variable pricing in these Canadian and American municipalities is provided in Appendix 1 and 2 respectively.

#### 3.1 CITY OF COQUITLAM

The City of Coquitlam (Coquitlam) implemented a variable cart program program in conjunction with automated collection and every-other-week garbage collection in 2014.

Customers have the option to choose from three cart sizes (120L, 240L and 360L) for both garbage and organics. 240L is the standard cart size offered by Coquitlam. During rollout of this program in 2014, residents were allowed to change their carts for free once and charged \$50 for subsequent changes. Most residents did not change their cart from the standard size offered. Coquitlam does not allow for extra bags of garbage to be set out for collection. There is also a weight limit on the contents of each cart size. Coquitlam allows collection of extra yard trimmings in bags or old garbage cans at no cost.

Garbage is collected every-other-week, while recycling and organics are collected weekly. Recycling services are provided by Recycle BC, the operator of British Columbia’s Extended Producer Responsibility (EPR) program. Recycle BC is a non-profit organization responsible for residential recycling in the province. It is funded primarily through retailers and manufacturers. That is, program costs are covered by the producers of the goods/packaging, not residents. The waste collection fee is only charged for the garbage cart. Organics and recycling are considered no cost services.

At implementation, Coquitlam’s overall diversion rate increased by 8% in a single year compared to the previous four years when diversion rate increased by less than one per cent.

### 3.2 CITY OF TORONTO

The City of Toronto (Toronto) introduced a PAYT program in conjunction with automated cart collection in 2008.

Residential customers have the option to select from four garbage and recycling cart sizes (75L, 120L, 240L and 360L) and one size for organics (100L). 120L is the standard cart size offered for garbage. The fees paid by residents depends on the size of their garbage cart. Customers are charged a \$23.40 fee to switch to a bigger garbage cart, however, switching to a smaller garbage cart or any recycling cart is free. Toronto also allows customers to tag and put out extra bags of garbage, subject to a weight limit of 20kg per bag. Toronto previously sold garbage bags in addition to garbage tags, but has since stopped the sale of garbage bags. Customers may also request an additional garbage cart, however this is not common practice. Residents are also allowed to put out excess recycling, which is picked up for free. Food waste is collected and processed separately from yard waste, with food waste collected in green bins while yard waste is collected in paper bags.

Garbage and recycling are picked up every-other-week, while organics are picked up weekly. Yard waste is collected every other week from mid-March to mid-December and Christmas trees are collected in January. The fee for waste management is applied on the garbage cart only.

The link between the PAYT program and increased waste diversion in Toronto cannot be determined at this time. However, there has been a significant increase in contamination in their recycling program after variable cart pricing was introduced. This was possibly a result of residents placing extra garbage that will not fit in their garbage cart into their recycling carts.

### 3.3 CITY OF VANCOUVER

The City of Vancouver (Vancouver) introduced a variable cart program in conjunction with automated collection in 2005.

Customers were allowed to choose from five cart sizes for garbage (75L, 120L, 120L, 240L and 360L) and four cart sizes for organics (120L, 180L, 240L and 360L) during rollout of the automated carts. The annual cost of garbage collection is linked to the size of cart. Customers are also allowed to switch their cart sizes for free once a year and are charged \$25 if they request an additional switch in the year. In addition to the flexibility offered with the cart sizes, Vancouver also allows customers to put out extra bags of garbage if needed, provided an “extra garbage sticker” is purchased and placed on each extra bag.

Garbage is collected every-other-week, while organics and recycling are collected weekly. Like Coquitlam, recycling services for Vancouver residents are provided by Recycle BC, the operator of British Columbia’s EPR program.

The link between PAYT and increased waste diversion in Vancouver cannot be determined as it was implemented with other programs such as automated collection containers and the green bin program.



### **3.4 REGION OF PEEL**

The Region of Peel (Peel) introduced both variable cart sizes and alternating every-other-week garbage and recycling collection in 2015. Peel does not have variable pricing as waste collection in Peel is tax funded.

Customers have the option to choose from three cart sizes (120L, 240L and 360L) for both garbage and recycling, while 100L carts are offered for food waste. The standard cart sizes offered are different for each type of residential dwelling: 360L is the standard for single family homes; 240L for semi-detached homes; and 120L for row/town homes. 90 days after the initial rollout of variable carts, residents were allowed free cart exchanges. Subsequent cart exchanges cost \$25. Peel also allows residents to set out extra garbage for collection, provided a tag is attached to the extra garbage bag and it meets weight and size limitations. There are also "exemption periods" when excess garbage is collected for free with no limit set on the amount of excess. There is no limit on the amount of yard waste provided it is set-out in paper bags or plastic containers. Residents are also allowed to request an extra cart for recycling.

Garbage and recycling are collected alternately every-other-week, while organics (food and yard waste) are collected weekly.

There has been a significant increase in recycling contamination with variable cart sizes. Currently Peel's recycling contamination is approximately 20 per cent and the region is investigating enforcement approaches.

### **3.5 CITY OF GRAND RAPIDS, MICHIGAN**

The City of Grand Rapids (Grand Rapids) started a PAYT program in 1973. In 2012, Grand Rapids transitioned from a fixed collection schedule to a variable cart set-out program for garbage collection, which allows customers to set out their garbage cart only as needed on collection day. With this model, the carts are tracked by a Radio Frequency Identification tag (RFID), which links customer cart sizes to the customer account.

Grand Rapids currently offers customers a choice from three cart sizes for garbage (120L, 240L, 360L), two cart sizes for recycling (240L and 360L), while a 360L cart is offered for yard waste. Customers are allowed one free cart swap every year and are charged an extra \$15 for any additional change requested. Grand Rapids does not offer a residential green cart program. Grand Rapids collects excess garbage and yard waste through the use of City-branded bags that customers can purchase.

Garbage is collected weekly, while recycling is collected every other week. Yard waste is also collected weekly, but only on a seasonal basis. Residents pay for garbage and yard waste collection, but recycling collection is offered at no additional cost to the customer. Customers are required to set-up and pay into an account with Grand Rapids for waste, recycling or yard waste and this account is debited each time their garbage or yard waste cart is tipped (the price for waste collection is per tip). The truck has a stopper that prevents carts from being tipped when the account balance is zero. Customers are responsible for managing their account balance.

While Grand Rapids has had success with this option from a garbage reduction and waste diversion standpoint, it has also had some challenges with its costing and revenue forecasting for the variable cart set-out program which include; balancing fixed operating costs of driving the trucks for garbage collection every week with the number of carts set out weekly.

### **3.6 CITY OF MINNEAPOLIS, MINNESOTA**

The City of Minneapolis (Minneapolis) implemented a PAYT program and automated cart collection in 1995.

Customers can choose between two cart sizes for garbage (120L and 360L) and one standard size for organics depending on the number of dwelling units per property (120L for two dwelling units or less and 240L for more than two dwelling units). Minneapolis offers a 360L cart as a standard cart size for recycling, but also has 240L size carts for customers who prefer a smaller cart size. Yard waste is collected separately from organics either in paper bags, compostable bags or reusable containers. Customers are allowed to set out extra bags of garbage and recycling, however there is a limit on the amount of material per set out (garbage: up to two bags and recycling: up to one box or bag). For organics, only two pizza boxes can be set out as excess and occasional excess of other organic items can be taken to a drop off location. If customers consistently set out excess materials for any of the carts, they receive an additional cart and their monthly fee is revised to include fees for the additional cart.

Garbage is collected weekly, while recycling and organics are collected every-other-week. Minneapolis recently began yard waste collection which is collected weekly. Waste collection rates are charged only on garbage, but includes the costs for organics and recycling.

### **3.7 CITY OF PORTLAND, OREGON**

Unlike other municipalities, The City of Portland (Portland) operates a franchising system with private haulers that service Portland through a subscription service. The haulers introduced a PAYT program in 1992 through manual collection before implementing variable cart sizes and a food scraps collection program in 2008-2009.

Portland provides customers with four cart sizes for garbage (75L, 130L, 230L and 340L) and one cart size for organics and recycling (230L). Some customers still use cans.

Portland has every-other-week garbage collection (implemented in 2011) and an every-four-week collection option for customers using the 130L cart. The every-four-week option was originally intended to give low generators a way to have less frequent garbage collection. However, there are challenges with truck routing when materials are collected so infrequently. Portland and haulers would prefer to phase out the every-four-week collection; however, it remains due to the political support for reduced frequency of service. All of their program costs are recovered through the charge on garbage.



After implementing every-other-week garbage collection in 2011, garbage generation was initially reduced by 38%. As of 2015, Portland had a 70% diversion rate.

### **3.8 CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA**

The City and County of San Francisco (San Francisco) implemented a PAYT program in 1989 with manual collection. Automated collection carts were introduced in 1997 as a pilot program, with a full program roll-out between 1999 and 2001. All of San Francisco's waste collection services are provided by their legislated hauler, Recology.

Customers are provided with standard cart sizes for garbage (60L), recycling (240L) and organics (120L) respectively. Customers also have the option to choose from three additional black cart sizes (120L, 240L and 360L), and two additional blue cart sizes (240L and 360L), depending on their needs. To encourage garbage reduction and waste diversion, the standard garbage cart sizes were reduced in 2017 from 75L to 60L, while the recycling cart size was increased from 120L to 240L. Customers are allowed to set-out extra recycling, however the hauler may charge additional fees for this service.

Garbage, recycling and organics are collected weekly. The waste collection fee for garbage is higher compared to recycling and organics. In addition to the waste collection fee, an "Excess Trash Premium" is charged on the 240L and 360L garbage cart sizes.

Waste diversion increased following the roll-out of the three-cart program, however it is not clear if the diversion rate increased as a result of introducing variable cart sizes.

## **4. SUMMARY**

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There are three key learnings from reviewing PAYT programs in other municipalities.

1. Most municipalities introduced a variable cart program in conjunction with rolling-out automated collection, which saves money at the time of implementation. Also, most have a tag-a-bag program.
2. As the number of cart sizes that residents can choose increases, so do program costs in terms of inventory management, cart maintenance and switching carts.
3. The impact of a PAYT program on diversion is mixed. Some municipalities have experienced increased diversion rates, while others have experienced significant increases in contamination in their diversion programs.

These key learnings have informed the PAYT program recommended for Calgary.

## APPENDIX 1: VARIABLE PRICING IN SELECT CANADIAN MUNICIPALITIES

Municipality	Coquitlam, BC	Toronto, ON	Vancouver, BC	Peel, ON
<b>General Information</b>				
<b>Service(s) Provided</b>	Waste/Recycling/Food-Yard	Waste/Recycling/Food-Yard	Waste/Recycling/Food-Yard	Waste/Recycling/Food-Yard
<b>Hauler</b>	Contractor	City	City (garbage and organics), Recycle BC (recycling)	Region
<b>Variable Carts</b>	Y	Y	Y	Y
<b>Variable Set-Out/Subscriptions</b>	N	N	N	N
<b>Billing Structure</b>	Utility Tax	Utility - Monthly/Quarterly Billing and Annual Tax Rebates	Property Tax	Property Tax (No Variable Pricing)
<b>Cart Change Policy</b>	\$50 per change	\$23.40 per change to a larger cart size. No fee on changes to smaller carts or recycling carts	Up to one change per year, \$25 per additional exchange, property tax adjusted accordingly	\$25 per change
<b>Available Cart Sizes</b>				
<b>Garbage Sizes/ Fee</b>	120L (\$244/yr)	75L (\$254.66/yr. - \$227.01 rebate)	75L (\$84/yr)	120 L
	240L (\$323/yr)	120L (\$309.14/yr. - \$163.76 rebate)	120L (\$96/yr)	240L
	360L (\$457/yr)	240L (\$419.85/yr - \$72.41 rebate) 360L (\$486.99/yr - \$0 rebate)	180L (\$114/yr) 240L (\$131/yr) 360L (\$165/yr)	360L
<b>Organics/ Fee</b>	120L (incorporated in garbage fee)	100L (No fee - only food waste collected in bin)	120L (\$119/yr)	100L (No fee - only food waste collected in bin)
	240L (incorporated in garbage fee)		180L (\$140/yr)	
	320L (incorporated in garbage fee)		240L (\$161/yr) 360L (\$203/yr)	
<b>Recycling/ Fee</b>	N/A (bins and bags used to collect recycling)	75L (No fee)	N/A (bins and bags used to collect recycling)	120L
		120L (No fee)		240L
		240L (No fee)		360L
		360L (No fee)		
<b>Extra Set Outs</b>				
<b>Excess Permitted</b>	Y, yard trimmings only	Y	Y	Y
<b>Description</b>	Allowed in the fall and spring	<b>Garbage:</b> Must be tagged. Weight must not exceed 20kg <b>Recycling:</b> Allowed for free <b>Food Waste:</b> Residents are encouraged to request an additional bin if excess generated <b>Yard Waste:</b> No limit set	<b>Garbage:</b> Provided garbage bag is used and an "extra garbage sticker" is placed on the bag. <b>Organics:</b> Allowed seasonally for leaf set out in paper bags	<b>Garbage:</b> Must be tagged and not weigh more than 20kg. Free pick ups offered after Victoria day, Labour day and Christmas holidays <b>Recycling:</b> Collected for free in clear or blue transparent recycling bags <b>Yard Waste:</b> Collected for free in compostable bags or labelled bins
<b>Fee</b>	No fee	\$5/ garbage tag sold online, at Shoppers Drug Mart and Canadian Tire	\$2/garbage sticker sold at Safeway, Community Centre and City Hall	\$1/ tag sold online, phone, or City partnership centers in Brampton, Caledon or Mississauga



## APPENDIX 2: VARIABLE PRICING IN SELECT U.S. MUNICIPALITIES

Municipality	Grand Rapids, MI	Minneapolis, MN	Portland, OR	San Francisco, CA
<b>General Information</b>				
<b>Service(s) Provided</b>	Waste/Recycling/Yard	Waste/Recycling/Food-Yard	Waste/Recycling/Food-Yard	Waste/Recycling/Food-Yard
<b>Hauler</b>	City	City	Franchised to 15 haulers	Legislated one hauler
<b>Variable Carts</b>	Y	Y	Y	Y
<b>Variable Set-Out/Subscriptions</b>	Y (Truck drives around weekly to pick up garbage set out, customers pay only if their cart is tipped).	N	Every other week. Customers using 130L cart can request every four week collection.	N
<b>Billing Structure</b>	Utility - Load a pre-paid account	Utility - Monthly billing	Utility - Monthly billing	Utility - Monthly billing (A base fee of \$15 is charged per dwelling unit)
<b>Cart Change Policy</b>	Not available	Can change, and bill adjusted accordingly	\$12.25 delivery charge/cart (if second or more delivery for composting and recycling or second or more delivery within a one year period for garbage). Also charged if customer requests a clean cart	Can change, and bill adjusted accordingly
<b>Available Cart Sizes</b>				
<b>Garbage Sizes/ Fee</b>	120L	120L (\$24/yr)	75L (\$325.60/yr)	60L (\$75.12/yr)
	240L	360L (\$60/yr)	130L (\$381.60)	120L (\$150.24/yr)
	360L		230L (\$451.80)	240L (\$300.48/yr)
			340L (\$529.80/yr)	360L (\$450.72/yr)
		Note (some customers still use cans but are being grandfathered in)		
<b>Organics/ Fee</b>	360L (yard waste only, no food scraps collection)	120L (up to two dwellings or less) (No fee)	230L	120L (\$75.12/yr)
		240L (for more than two dwellings) (No fee)		240L (\$150.24/yr)
<b>Recycling/ Fee</b>	240L	360L (No fee)	230L	120L (\$75.12/yr)
	360L	240L (available on request) (No fee)		240L (\$150.24/yr)
				360L (\$225.36/yr)
<b>Extra Set Outs</b>				
<b>Excess Permitted</b>	Y	Y	Y	Y
<b>Description</b>	<b>Garbage:</b> Allowed to use city branded bags. <b>Yard Waste:</b> Allowed to use city bags or tags for bundles or carts.	<b>Garbage:</b> Up to 2 bags <b>Organics:</b> Up to 2 pizza boxes <b>Recycling:</b> must weigh less than 40LBS	Can set out additional garbage with cart for a fee	Can leave additional garbage, organics or recycling for collection
<b>Fee</b>	<b>Garbage:</b> \$3/bag <b>Yard Waste:</b> \$2.50/bag or tag (for bundled items)	Free, however if customer continually sets out extra items, an additional cart is provided to the customer and waste collection fees (where applicable) are adjusted to include the extra cart	<b>Garbage:</b> \$5/extra bag or can <b>Yard Debris:</b> \$3.75 per extra bag or can <b>Extra composting:</b> \$12.35 <b>Extra recycling:</b> \$3.75	Charged by hauler based on amount

