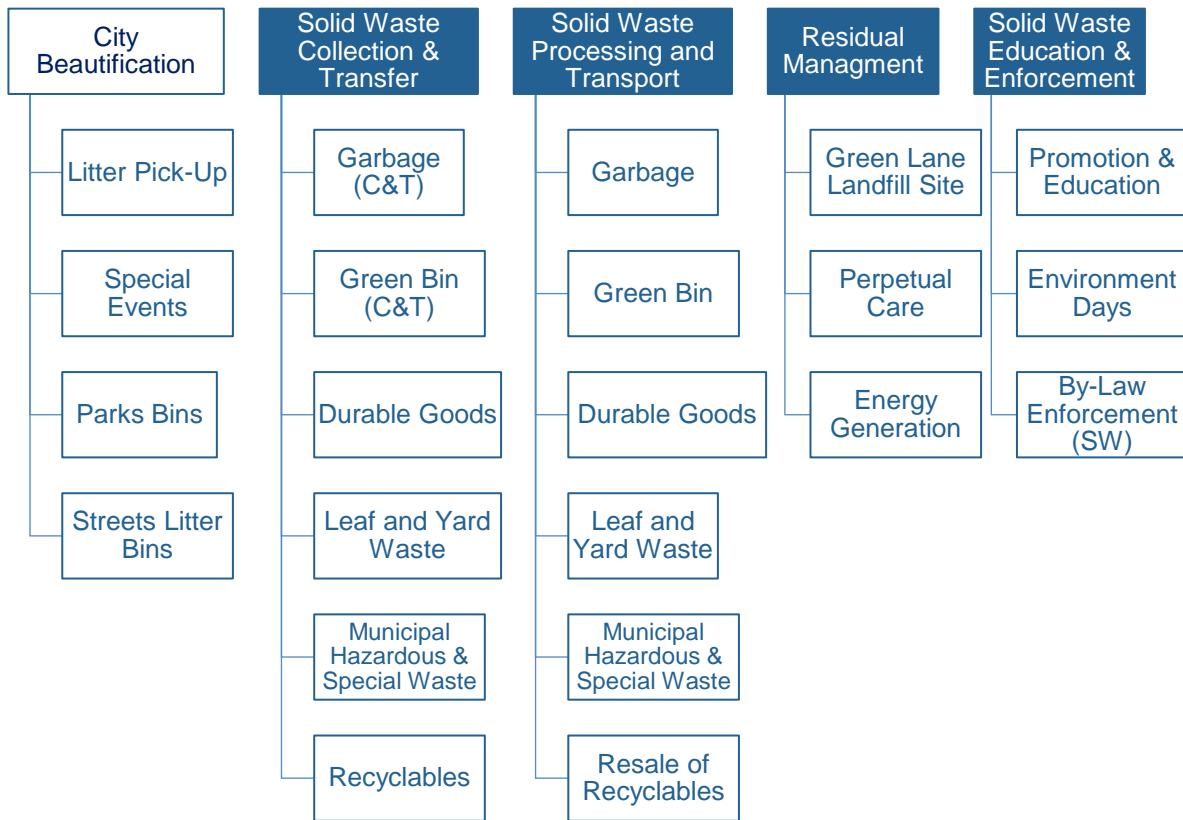




WASTE MANAGEMENT SERVICES

PROGRAM MAP

Solid Waste Management Services



Shaded boxes reflect the activities covered in this report

Solid Waste Management Services is responsible for collecting, transporting, processing, composting and disposal of municipal and some private sector waste. This includes garbage, Blue Bin recyclables, Green Bin organics, litter, yard waste, over-sized and metal items, as well as household hazardous waste and electronic waste. Solid Waste Management Services’ goal is to be a leader in providing innovative waste management services within the City of Toronto in a safe, efficient, and courteous manner, creating environmental sustainability, promoting waste diversion and maintaining a clean city.

Solid Waste Management Services oversees, manages and operates:

- 7 transfer stations (six with household hazardous waste depots);
- 2 Operating Green Bin Organics Processing Facility
- 4 Collections Yards and 1 Litter Collection Yard
- Green Lane Landfill and 160 Closed Landfills
- Over 600+ vehicles / equipment.
- 1.5 million Residential bins (Green Bin/Garbage/Blue Bin).

SUMMARY OF PERFORMANCE MEASUREMENT RESULTS

Question	Indicator/Measure	Internal Comparison of Toronto's 2017 vs. 2016 Results	External Comparison to Other Municipalities (MBNC) By Quartile for 2017	Chart & Page Ref.
How much solid waste is recycled/diverted away from landfill sites?	Percentage of Solid Waste Diverted - Residential (Community Impact)	Stable Overall diversion rate was stable (Community Impact)	2 Overall diversion rate was higher compared to others (Community Impact)	34.1 34.2 pg. 5/6
How much waste from houses is recycled/diverted away from landfill sites?	Percentage of Waste Diverted – Single Unit homes/houses (Curbside) – (Community Impact)	Stable Diversion rate for single unit houses/homes (curbside) was stable (Community Impact)	1 Highest diversion rate for houses compared to others (Community Impact)	34.1 34.3 pg. 5/6
How much waste from apartments is recycled/ diverted away from landfill sites?	Percentage of Waste Diverted – Multi-Residential – (Community Impact)	Stable Multi-residential diversion rate was stable (Community Impact)	1 Highest multi-residential diversion rate compared to others (Community Impact)	34.1 34.4 pg. 5/7
How much does it cost to collect a tonne (all property classes) of garbage?	Operating Cost for Residential Garbage Collection per Tonne (all property classes)– (Efficiency)	Increase Operating cost of waste collection for all housing increased (Efficiency)	2 Lower operating cost of solid waste collection for all housing types compared to others (Efficiency)	34.5 34.6 pg. 7/8
How much does it cost to collect a tonne (all property classes) of garbage?	Total Cost for Residential Garbage Collection per Tonne (all property classes) – (Efficiency)	Increase Total cost of waste collection for all housing types increased (Efficiency)	2 Lower total cost of solid waste collection for all housing types compared to others (Efficiency)	34.5 34.6 pg. 7/8
How much does it cost to dispose of a tonne (all property classes) of garbage?	Operating Costs for Solid Waste Disposal per Tonne (all property classes) – (Efficiency)	Increase Operating cost of solid waste disposal increased (Efficiency)	3 Higher operating cost of solid waste disposal compared to others (Efficiency)	34.7 34.8 pg. 9/10
How much does it cost to dispose of a tonne (all property classes) of garbage?	Total Costs for Solid Waste Disposal per Tonne (all property classes) – (Efficiency)	Increase Total cost of solid waste disposal increased (Efficiency)	3 Higher total cost of solid waste disposal compared to others (Efficiency)	34.7 34.8 pg. 9/10

Question	Indicator/Measure	Internal Comparison of Toronto's 2017 vs. 2016 Results	External Comparison to Other Municipalities (MBNC) By Quartile for 2017	Chart & Page Ref.
How much does it cost to recycle a tonne (all property classes) of solid waste material?	Net <u>Operating</u> Costs for Residential Solid Waste Diversion per Tonne (all property classes) – (Efficiency)	Decrease Net operating cost of solid waste diversion decreased (Efficiency)	4 Highest operating cost of solid waste diversion compared to others (related to high diversion rate for houses & green bin program) (Efficiency)	34.9 34.10 pg. 10/11
How much does it cost to recycle a tonne (all property classes) of solid waste?	Net <u>Total</u> Costs for Residential Solid Waste Diversion per Tonne (all property classes) – (Efficiency)	Decrease Net total cost of solid waste diversion decreased (Efficiency)	4 Highest total cost of solid waste diversion compared to others (related to high diversion rate for houses & green bin program) (Efficiency)	34.9 34.10 pg. 10/11
What is Toronto's Service Quality Rating for Garbage Collection or Garbage Disposal?	Citizens First Survey Service Quality Score for Garbage Collection or Garbage Disposal (Customer Service)	Increase The CF8 (2018) Service Quality Score increased compared to CF7 (2014) (Customer Service)	N/A	34.11 pg.12
What is Toronto's Service Quality Rating for Recycling Collection (Blue/Black Bin)?	Citizens First Survey Service Quality Score for Recycling Collection (Blue/Black Bin) (Customer Service)	Increase The CF8 (2018) Service Quality Score increased compared to CF7 (2014) (Customer Service)	N/A	34.12 pg.13

SUMMARY OF OVERALL RESULTS

Internal Comparison of Toronto's 2017 vs. 2016 Results	Internal Comparison of Toronto's 2017 vs. 2016 Results	External Comparison to Other Municipalities (MBNC) By Quartile for 2017	External Comparison to Other Municipalities (MBNC) By Quartile for 2017
Service Level Indicators (Resources) N/A	Performance Measures (Results) <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 100px;"> <div style="background-color: #008000; width: 100%; height: 10px; margin-bottom: 2px;">4 - Favourable</div> <div style="background-color: #ffcc00; width: 100%; height: 10px; margin-bottom: 2px;">3 - Stable</div> <div style="background-color: #ff0000; width: 100%; height: 10px;">4 - Unfavorable</div> </div> <div style="width: 100px; text-align: center;">63.6% favourable or stable</div> </div>	Service Level Indicators (Resources) N/A	Performance Measures (Results) <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 100px;"> <div style="background-color: #008000; width: 100%; height: 10px; margin-bottom: 2px;">2 - 1st quartile</div> <div style="background-color: #92d050; width: 100%; height: 10px; margin-bottom: 2px;">3 - 2nd quartile</div> <div style="background-color: #ffff00; width: 100%; height: 10px; margin-bottom: 2px;">2 - 3rd quartile</div> <div style="background-color: #ff0000; width: 100%; height: 10px;">2 - 4th quartile</div> </div> <div style="width: 100px; text-align: center;">55.6% in 1st and 2nd quartiles</div> </div>

For an explanation of how to interpret this summary and the supporting charts, please see the Guide to Toronto's Performance Results. These quartile results are based on a maximum sample size of 16 municipalities.

COMMUNITY IMPACT

Diversion rates are an important measure to determine progress towards the goal of diverting solid waste away from landfill sites. Volume based user rates for garbage collection services, provides an incentive to reduce divert more materials.

34.1 –HOW MUCH OF TORONTO'S SOLID WASTE IS DIVERTED AWAY FROM LANDFILL SITES?

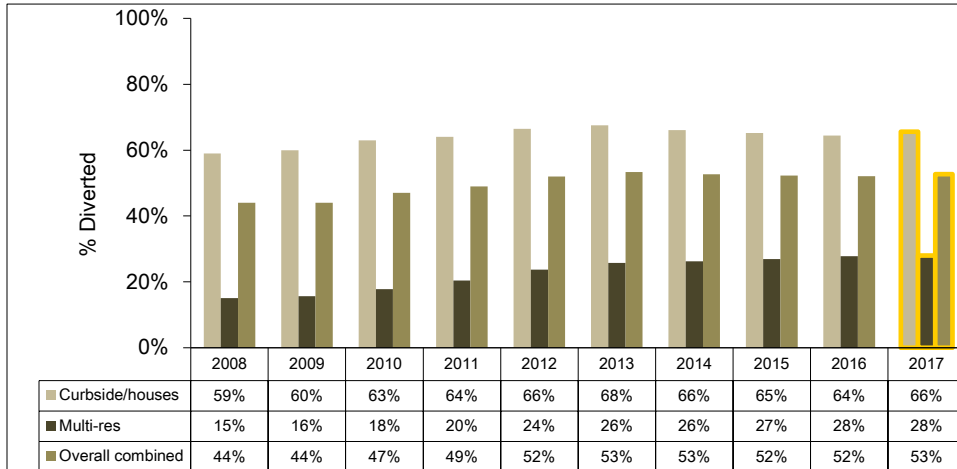


Chart 34.1 provides Toronto's residential diversion rates, by type of housing.

Chart 34.1 (City of Toronto) Percentage of Residential Solid Waste Diverted

In 2017, the combined diversion rates for curbside and multi-residential units have remained relatively stable since 2012. It should be noted that 47 per cent of Toronto's total housing stock served by Solid Waste Management Services is multi-residential homes. This presents challenges in reaching higher diversion rates, as participation in waste diversion programs in multi-residential buildings may be less convenient for residents if space for multiple waste bins is limited or if they are required to take additional steps to bring their waste to a Blue Bin and Green Bin located outdoors.

34.2 - HOW DOES TORONTO'S COMBINED RESIDENTIAL DIVERSION RATE COMPARE TO OTHER MUNICIPALITIES?

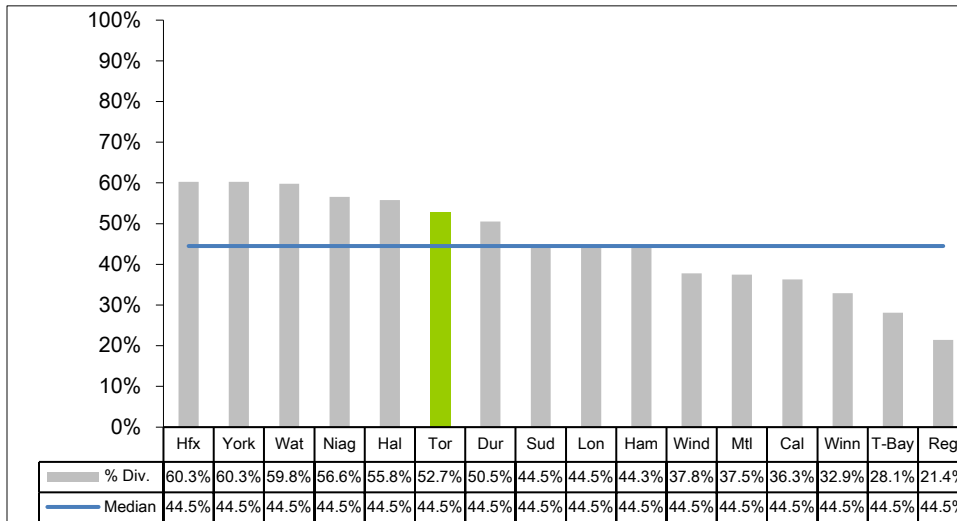


Chart 34.2 compares Toronto's 2017 overall combined diversion rate (both single unit homes/houses and multi-residential buildings) to other municipalities.

Chart 34.2 (MBNC 2017) Percentage of Residential Waste Diverted

Toronto ranks sixth of sixteen (second quartile) in terms of having the highest diversion rate.

34.3 – HOW DOES TORONTO'S DIVERSION RATE FOR HOUSES COMPARE TO OTHER MUNICIPALITIES?

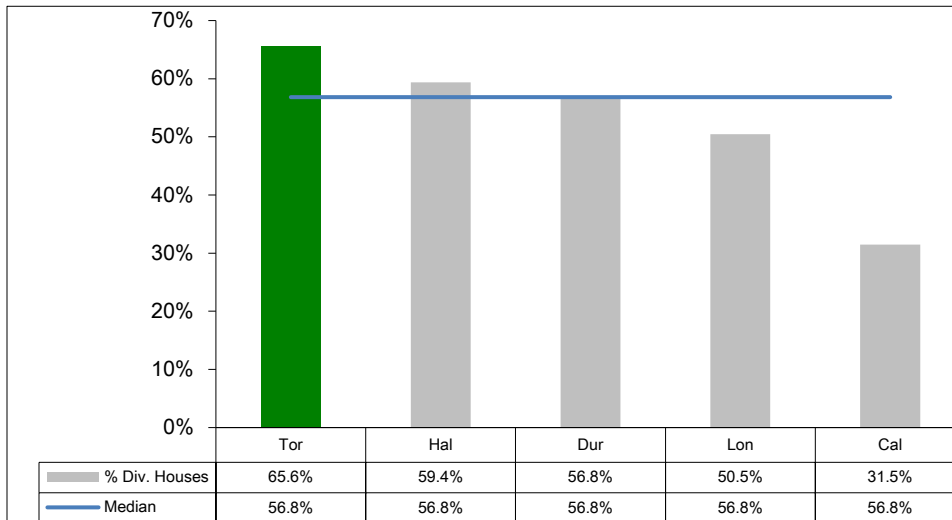


Chart 34.3 shows the percent residential waste diverted for houses compared to other municipalities.

Chart 34.3 (MBNC 2017) Percentage of Residential Waste Diverted for Houses (Curbside)

Toronto had the highest/best diversion rate of the MBNC municipalities in 2017 for single family homes/houses.

34.4 – HOW DOES TORONTO'S DIVERSION RATE FOR MULTI-RESIDENTIAL HOUSING COMPARE TO OTHER MUNICIPALITIES?

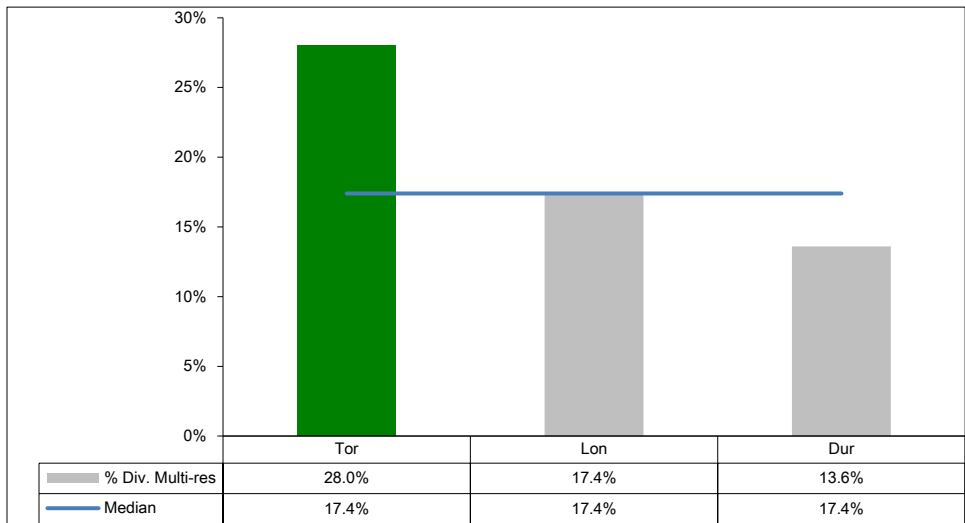


Chart 34.4 compares Toronto's 2017 multi-residential (apartments) diversion rate to other municipalities.

Chart 34.4 (MBNC 2017) Percentage of Residential Waste Diverted for Multi-Residential (Apartments)

Toronto ranks first of three municipalities (first quartile) in terms of having the highest diversion rates. Note that not all municipalities are able to split their diversion rates between single and multiple family households.

EFFICIENCY

In solid waste management there are three main activities where efficiency can be compared on a cost per tonne basis: Collection; Disposal; Diversion

34.5–HOW MUCH DOES IT COST TO COLLECT ONE TONNE (FOR ALL PROPERTY CLASSES) OF GARBAGE IN TORONTO?

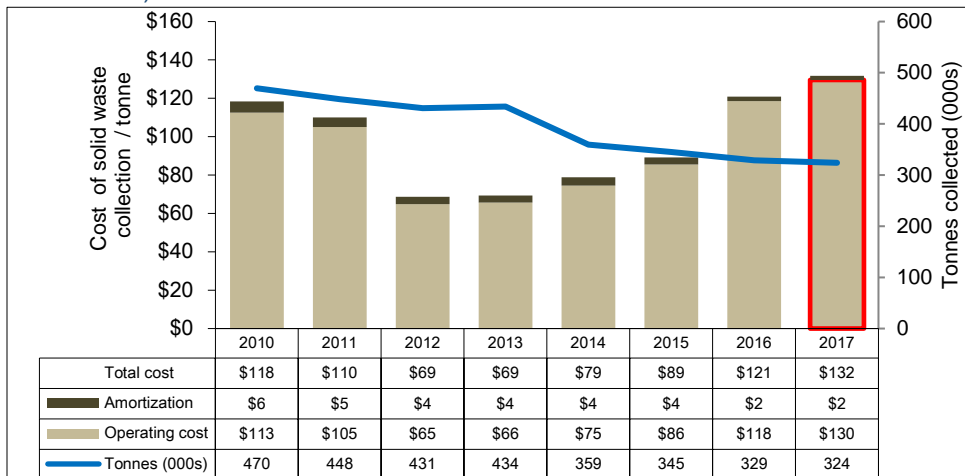


Chart 34.5 provides Toronto's operating and total (operating plus amortization) cost of solid waste collection per tonne for all property classes, which are plotted as bars relative to the left axis.

Chart 34.5 (City of Toronto) Operating Cost of Solid Waste Collection per Tonne and Tonnes of Solid Waste Collected for all property classes

The operating cost, as well as the total operating cost per tonne increased in 2017.

The reason for this increase in operating cost is on account of tonnes that were redirected to alternate landfills in 2017. Operating costs also increased due to the fact that there was a decrease in the revenue from the sale of recyclable materials which were net off the cost.

The tonnage of waste collected was relatively stable in 2017. The longterm trend shows that the City manages and sends less waste to landfill by weight. The City continues to see a decline in garbage and Blue Bin recycling tonnes, in part due to the changing nature of products and packaging, specifically the light-weighting of packaging materials. One challenge with weight-based performance measures is that they do not necessarily reflect performance and overall changes in the waste system, as the weight of recyclables continue to decrease but the volume remains the same.

The tonnes of waste (in thousands) collected over this 8-year period are also provided as a line graph relative to the right axis on Chart 34.5. It shows a decrease of 31 per cent, or 145,645 tonnes, over the period from 2010 to 2017, arising from the success of the City’s diversion programs. The longer term trend has seen the cost per tonne increase each year since 2012 as fixed costs are spread over lower tonnes of materials (i.e. light-weighting of packaging) and higher volumes of waste (i.e. more units of lighter materials managed).

34.6 – HOW DOES TORONTO'S COST OF GARBAGE COLLECTION (FOR ALL PROPERTY CLASSES) COMPARE TO OTHER MUNICIPALITIES?

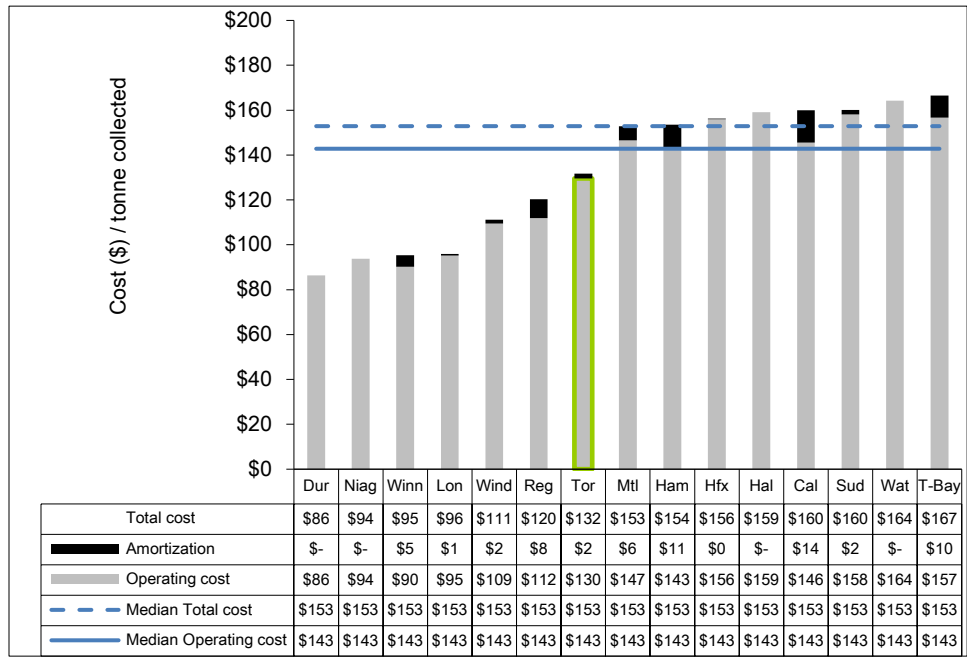


Chart 34.6 compares Toronto's 2017 operating and total (operating plus amortization) collection costs per tonne for all property classes to other municipalities.

Chart 34.6 (MBNC 2017) Operating Cost of Solid Waste Collection per Tonne for all property classes

Toronto ranks seventh of fifteen (second quartile) in terms of having the lowest operating cost per tonne and the lowest total cost per tonne collected.

Toronto provides bi-weekly curbside collection and multi-residential front-end bulk-lift collection. Collection operations are provided through a combination of municipal staff and contracted services. Overall costs in relation to other municipalities are lowered by the significance of multi-residential collection (bulk-lift), which is typically less expensive than curbside collection.

34.7–HOW MUCH DOES IT COST TORONTO TO DISPOSE OF ONE TONNE (ALL PROPERTY CLASSES) OF GARBAGE?

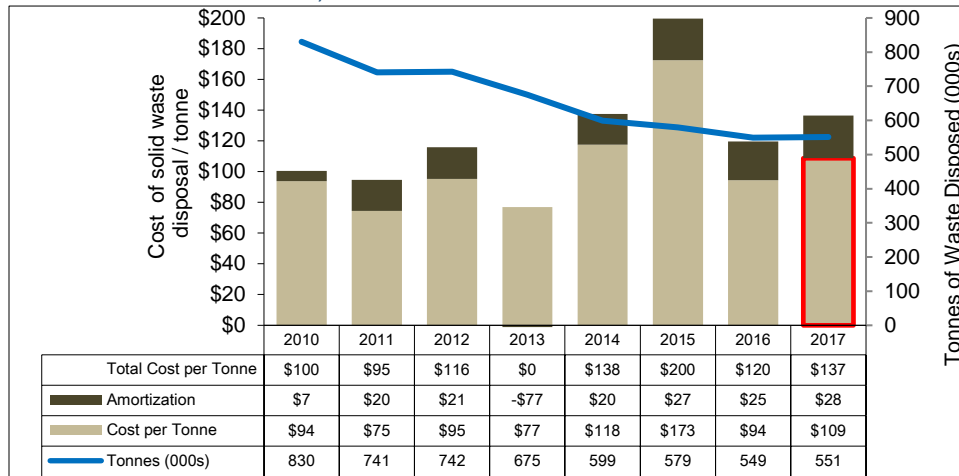


Chart 34.7 summarizes Toronto’s operating and total (operating plus amortization) cost of solid waste disposal per tonne for all property classes, plotted as bars relative to the left axis.

Chart 34.7 (City of Toronto) Cost of Solid Waste Disposal per Tonne and Tonnes of Solid Waste Disposed for all property classes

Tonnes disposed (in thousands) are also plotted as a line graph relative to the right axis. The City of Toronto has revised its methodology with respect to what is included and excluded in this Chart. This includes total tonnes managed at City Transfer Stations and all non-City of Toronto materials accepted at Green Lane Landfill.

In 2017, both the operating cost and the total operating costs per tonne to dispose garbage (including amortization) increased from the previous year.

In 2017, the disposal cost per tonne have increased due to contracted services increasing by 4.7M due to waste being disposed at Ontario Landfill. During 2016, no waste was disposed at Ontario landfills.

The volume of waste disposed decreased by 34 percent between 2010 and 2017 (279,150 tonnes) due to enhanced diversion programs and the reduction of commercial waste now handled by other service providers. As a result, fixed costs are spread over lower volumes.

34.8 – HOW MUCH DOES IT COST TORONTO TO DISPOSE OF ONE TONNE (ALL PROPERTY CLASSES) OF GARBAGE COMPARED TO OTHER MUNICIPALITIES?

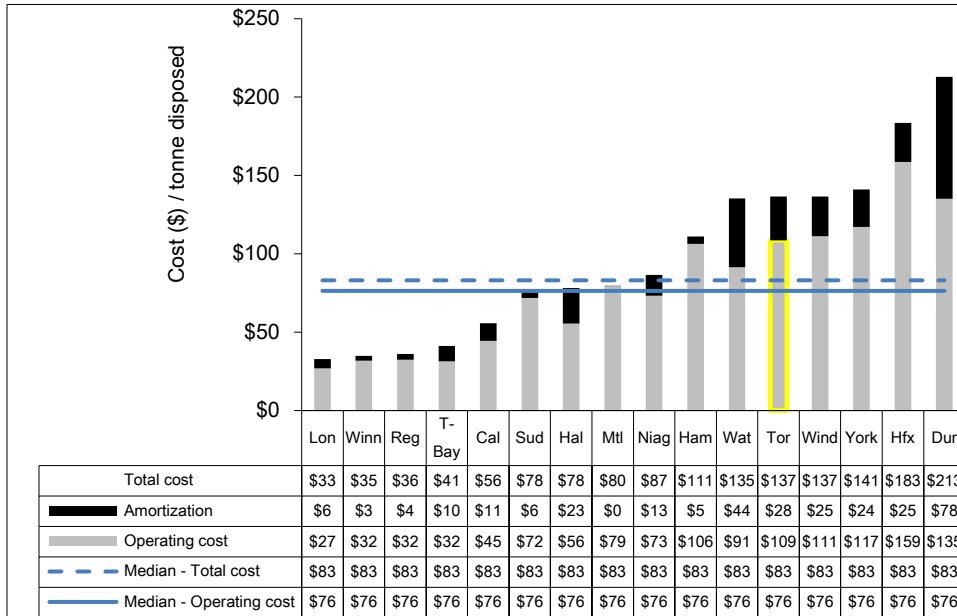


Chart 34.8 compares Toronto's 2017 solid waste disposal costs per tonne for all property classes to other municipalities, with amortization costs per tonne for all property classes shown as stacked bars.

Chart 34.8 (MBNC 2017) Cost of Solid Waste Disposal per Tonne for all property classes

Toronto ranks twelfth of sixteen (third quartile) in terms of having the lowest operating cost per tonne of solid waste disposal and having the lowest total cost per tonne disposed for all property classes.

34.9 – HOW MUCH DOES IT COST TORONTO TO DIVERT OF ONE TONNE (ALL PROPERTY CLASSES) OF SOLID WASTE MATERIAL?

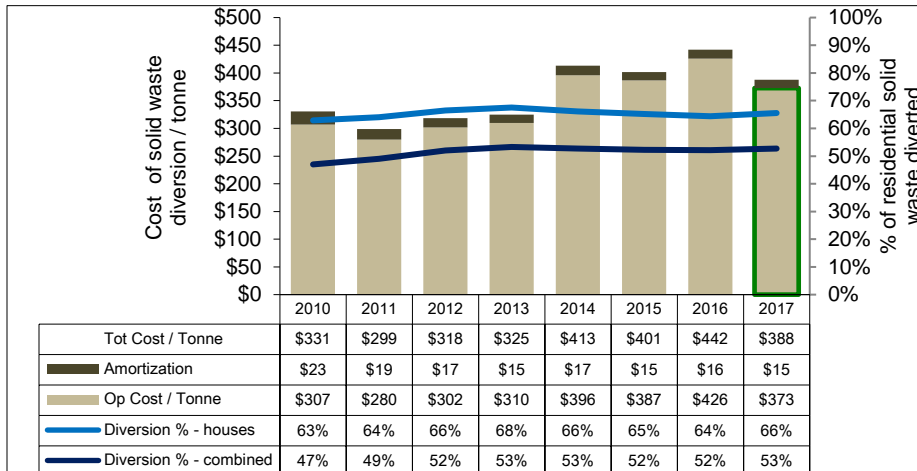


Chart 34.9 shows Toronto's operating and total cost (operating cost plus amortization) of solid waste diversion per tonne for all property classes from 2010 to 2017. It is contrasted against the City's overall/ combined diversion rate (houses and multi-residential apartments) and the diversion rate for houses only, reflected as line graphs relative to the right axis.

Chart 34.9 (City of Toronto) Net Operating Cost of Solid Waste Material Diversion per Tonne for all property classes and Percentage of Residential Solid Waste Diverted

In 2017, recyclables such as paper and containers have lower collection and processing costs and high market values (revenues from the sale of diverted materials are offset against costs for this measure). Although Toronto marketed less tonnes of fibre in 2017 compared to 2016, an adjustment to Consumer Pricing Index resulted in receiving higher revenues from the sale of this material.

In recent years, enhanced diversion programs such as the Green Bin organics program have increased diversion rates, but they also are more costly to collect and process, and typically have lower market values compared to Blue Bin recycling materials. Generally, as diversion rates rise, so will diversion costs on a per tonne basis, as has been the experience in Toronto.

In 2017, total cost per tonne and operating cost per tonne decreased by 12% from the previous year. The decrease is mainly due to sale of recyclable materials \$18.9M, this was net off against the direct cost. In prior years, the sale of recyclable materials \$20M were not net off against the direct cost. The 2017 diversion rates for houses and combined were stable.

34.10–HOW DOES TORONTO'S COST OF SOLID WASTE PER TONNE (ALL PROPERTY CLASSES) DIVERSION COMPARE TO OTHER MUNICIPALITIES?

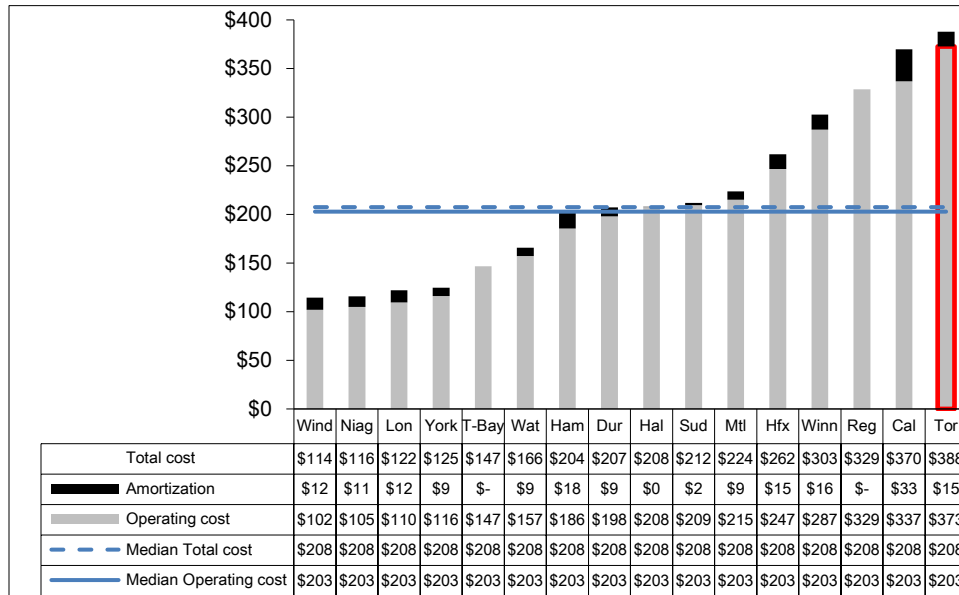


Chart 34.10 compares Toronto's 2017 diversion costs per tonne (all property classes) to other municipalities.

Chart 34.10 (MBNC 2017) Net Operating Cost of Solid Waste Material Diversion per Tonne for all property classes

Toronto ranks sixteenth of sixteen municipalities (fourth quartile) with the highest operating and total cost per tonne diverted. However, these diversion programs have also resulted in Toronto having the highest diversion rates for single-family homes/houses (Chart 34.3). Organics (Green Bin) materials also comprise a larger proportion of Toronto's diverted materials and these tend to be more costly to process than other types of recyclables.

Toronto's Green Bin program differs from many others in that it accepts diapers and sanitary products and allows materials to be placed in plastic bags. The acceptance of these additional items and subsequent removal of plastic materials from the Green Bin stream means that Toronto requires a process with greater associated costs. These differences should be considered when comparing Toronto to other municipalities, as many other green bin programs from those jurisdictions do not accept these materials.

CUSTOMER SATISFACTION: CITIZENS FIRST (CF) SERVICE QUALITY SURVEY RESULTS

One way to measure satisfaction of a public service is to through the use of surveys. The Citizens First surveys, conducted every 2 to 3 years by the Institute for Citizen-Centred Services, provides a comprehensive overview at how citizens view their government services.

Citizens First 8 (CF8) is the most recent survey and was conducted between December 2017 – February 2018. A total of 401 Toronto residents were surveyed in CF8. The final data are weighted for Toronto by age and gender. Based on this sample size, Toronto's results have a margin of error of $\pm 4.9\%$ for a result of 50% at the 95% confidence interval. However, data based on sub-groups is subject to a greater margin of error.

The Service Quality Score (SQR) relates to how Toronto residents rate their municipal services. Respondents were requested to provide a score on a 5-point scale where 1 means 'very poor' and 5 means 'very good'. In order to remain consistent with results from previous years, all the results are scaled from 0 to 100.

Rating	Very Poor 1	2	3	4	Very Good 5
Score	0	25	50	75	100

The survey respondents were asked the following question: Please rate the quality of [*Garbage Collection or Garbage Disposal*]. If you did not use this service in the past 12 months, select 'Does Not Apply'.

34.11–WHAT IS TORONTO'S SERVICE QUALITY SCORE FOR GARBAGE COLLECTION OR GARBAGE DISPOSAL?

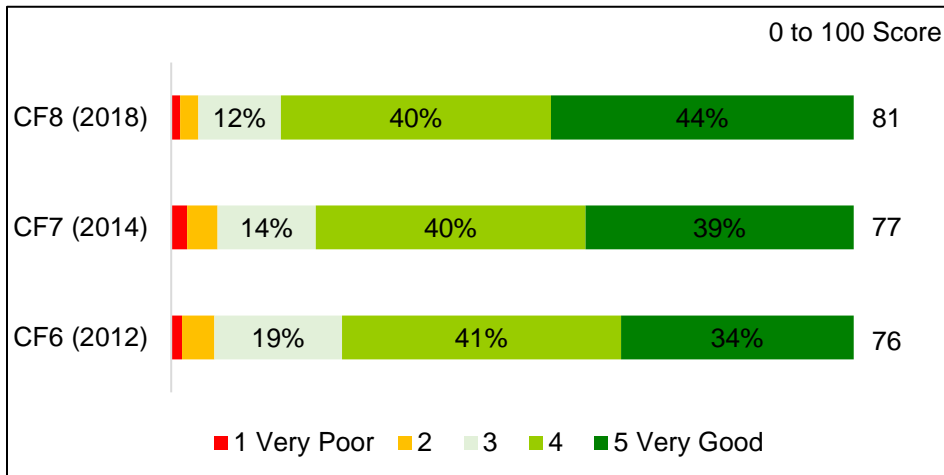


Chart 34.11 (Citizen's First 7 and 8) Service Quality Score for Garbage Collection or Garbage Disposal

Chart 34.11 displays the Service Quality Score for Toronto's Garbage Collection or Garbage Disposal services. In CF8 (2018), Toronto's Garbage Collection or Garbage Disposal services scored 81 out of 100, an improvement from 77 in 2014 results.

The vast majority (84%) of all CF8 survey respondents who have used the Garbage Collection or Garbage Disposal services in the past 12 months rated Toronto's Garbage Collection or Garbage Disposal services at a "4" or "5," or as either "good" or "very good."

34.12–WHAT IS TORONTO'S SERVICE QUALITY SCORE FOR WHAT IS TORONTO'S SERVICE QUALITY RATING FOR RECYCLING COLLECTION (BLUE/BLACK BIN)?

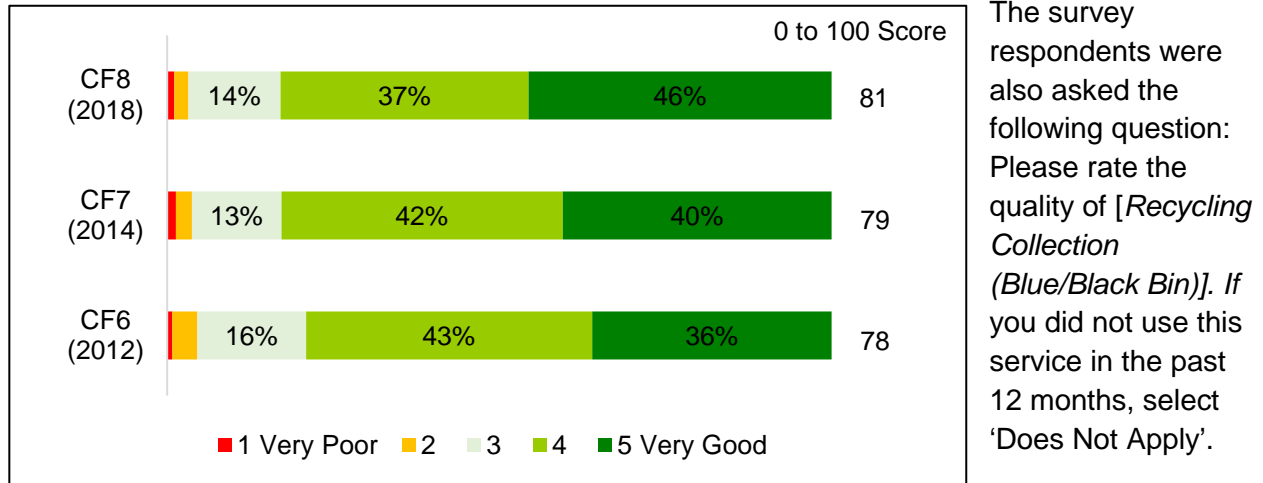


Chart 34.12 (Citizen's First 7 and 8) Service Quality Score for Recycling Collection (Blue/Black Bin) Services

Chart 34.12 displays the Service Quality Score for Toronto's Recycling Collection (Blue/Black Bin) services. In CF8 (2018), Toronto's Recycling Collection (Blue/Black Bin) services scored 81 out of 100, an improvement from 79 in 2014 results.

Of all CF8 survey respondents who have used the Recycling Collection (Blue/Black Bin) services in the past 12 months, 83% rated Toronto's Recycling Collection (Blue/Black Bin) at a "4" or "5," or as either "good" or "very good."

2017 ACHIEVEMENTS AND 2018 PLANNED INITIATIVES

The following initiatives are intended to further improve the efficiency and effectiveness of Solid Waste Management Services in Toronto:

2017 Initiatives Completed/Achievements

- Received Municipal Waste Association (MWA) Awards for Promotion & Education.
- Completed of Green Bin 2.0 Rollout.
- Conducted Residential Contamination Pilot Project (SF and Multi-Res).
- Developed Coffee Pod Testing Methodology.
- Arranged for Renewable Natural Gas (RNG) Consultant Retainer.
- Energy Vision Award for work to convert Biogas to RNG
- Implemented Mayor's Towering Challenge.
- Completed of Full Asset Inventory and Condition Assessment.
- Completed of Perpetual Care Reserve Fund Study for Green Lane Landfill.
- Implemented Mobile App for Parks and Nights Collection.
- Completed 10+ capital projects.
- Initiated 10+ new capital projects.
- Received Solid Waste Association of North America (SWANA) Awards for the Long Term Waste Management Strategy and Green Lane Landfill Management.
- Launched Online Store to purchase bag tags and payments service for commercial customers.
- Rolled-out monthly billing for front-end collection service customers (Multi-Residential, Schools and Non-Residential Customers).
- Established the Municipal Resource Recovery and Research Collaborative (M3RC) and began working to amend the existing Blue Box Program Plan under the Waste Diversion Transition Act, 2016.
- Implemented the Talent Growth Plan, to offer staff career growth opportunities and address succession planning within the Division.

2018 Initiatives Planned

- Planning and implementation of the Long Term Waste Management Strategy.
- Commissioning of Dufferin Organics Facility.
- Review of opportunities for decommissioned Dufferin Material Recycling Facility.
- Fleet governance and inventory.
- Development of Renewable Natural Gas infrastructure at the Dufferin Solid Waste Management Services Facility.
- Continued rollout of Compressed Natural Gas vehicles.
- Full automation of organics collection.
- Deliver new 10 Year residential bin maintenance contract.

- Non-compliance project for night collection, in which staff identify property owners that set out untagged garbage bags, and initiate non-compliance notification, after which time further instances of untagged bags initiate a revenue recovery process for clean up and collection of untagged bags.
- Development of new Key Performance Indicators.
- Implementation of business intelligence technology.
- Textile waste diversion research.
- Ongoing monitoring and maintenance plan for the perpetual care closed landfill sites.
- Ongoing installation of landfill gas control and leachate control as legislated, as well as ongoing engineering, development and monitoring of the Green Lane landfill site

Factors Influencing the Results of Municipalities

The results of each municipality included in this report can be influenced to varying degrees by factors such as:

- **Diversion Efforts:** Nature and extent of a municipality's diversion efforts, i.e. enforcement of various programs, impacts the type and amount of material included in waste collection.
- **Financial:** Municipal solid waste services funded through property taxes or user-pay systems, i.e. pay as you throw, rate-based.
- **Education:** How municipalities promote, manage and enforce garbage collection, disposal, recycling and diversion programs and services.
- **Geography:** Urban/rural population, seasonal population, socio-economic factors and the mix of single-family residences and multi-unit residential buildings that impact service provision.
- **Government Structure:** Services can be provided by a single-tier or a two-tier system (combination of Regional and Municipal service).
- **Infrastructure:** Distance to transfer facilities; accessibility of local landfill sites with available capacity; the number of active landfill sites; soil conditions on the landfill site(s) and surrounding sites, and; the number of sites under perpetual care.
- **Organizational Form:** Different service levels and standards; difference in the age of infrastructure; frequency of pick-ups; hours of operations; average number of people per household; residential vs. commercial and industrial service.