

2019 Waste Management Benchmarking and Performance Monitoring Report

Overview

The 2019 Waste Management Benchmarking Report is comprised of three (3) key areas for performance measurement:

1. Resource Productivity & Recovery Authority (RPRA) Residential Waste Diversion Rate
2. Blue Box Recycling Plan Performance Measures and Targets
3. Municipal Benchmarking Network Canada (MBNC) Performance Measures

For each area/parameter, Niagara's target, the current value and how it compares to the target and other municipal comparators (where available) are described. The parameters reflect industry standard measurements for program or system performance, cost effectiveness and efficiencies.

Benchmarking and Performance Results

1. RPRA Residential Waste Diversion Rate

Niagara's Target:	56% by 2016, increasing to 65% by 2020
2019 Value:	55%
Variance to Target:	Target not achieved
Benchmarking Result:	Niagara is above the provincial and comparator group averages of 50% and 52%, respectively.

The RPRA residential waste diversion rate is calculated based on tonnes diverted in the following main categories:

- Recyclables material stream, which consists of marketed Blue Box material, electronics, scrap metal, construction/demolition material, asphalt shingles and other miscellaneous categories;
- Green Bin organics and leaf, yard and branch material; and
- Other material, which is primarily comprised of a RPRA calculated tonnage credit for grasscycling/grass ban, deposit-return, tires and backyard composting.

In 2019, Niagara generated 198,840 tonnes of residential solid waste, which was an increase of approximately 0.2% compared to 2018. However, as illustrated in Table 1, using the RPRA methodology, which allocated additional multi-residential disposal tonnages to Niagara, the 2019 and 2018 adjusted tonnages were higher at 201,678 and 198,921 tonnes, respectively.

Table 1 - Residential Material Diverted as a Percentage of Total Solid Waste Generated in 2019 vs. 2018

Residential Waste Stream	2019 Tonnes	2019 Percent of Total Waste	2018 Tonnes	2018 Percent of Total Waste
Total Generated	201,678	100%	198,921	100%
Waste Disposed ⁽¹⁾	90,963	45%	87,786	44%
Material Diverted	110,715	55%	111,135	56%

Notes:

1. Waste Disposed tonnes were adjusted by RPRA, using their revised tonnage methodology, which allocated additional multi-residential disposal tonnages.

For comparison, Tables 2A and 2B provide the RPRA residential generation rate per capita for Niagara's comparator municipal groups which are the Large Urban and Urban Regional groups. The Large Urban group is defined by RPRA as municipalities with a population greater than 250,000 and a population density greater than four (4) residents per hectare. The Urban Regional group is defined by RPRA as municipalities with a population greater than 250,000 and a population density less than four (4) residents per hectare.

The majority of municipalities have seen increases at least once in 2013, 2014, and 2017. However, most municipalities saw a decrease in 2015, 2016 and 2018. In 2019, over half of these municipalities decreased slightly from their 2018 level.

Table 2A - RPRA Residential Generation Rate Per Capita – Large Urban Municipal Group

Municipality	2019 Kg/Cap.	2018 Kg/Cap.	2017 Kg/Cap.	2016 Kg/Cap.	2015 Kg/Cap.	2014 Kg/Cap.	2013 Kg/Cap.
Halton Region	357	364	372	375	389	413	406
Hamilton	401	394	415	397	405	419	411
London	388	383	409	399	407	405	401
Peel Region	361	362	360	361	362	368	366
Toronto	281	285	283	280	296	310	317
York Region	316	318	314	316	326	336	328
Large Urban Average	326	328	330	327	337	349	348

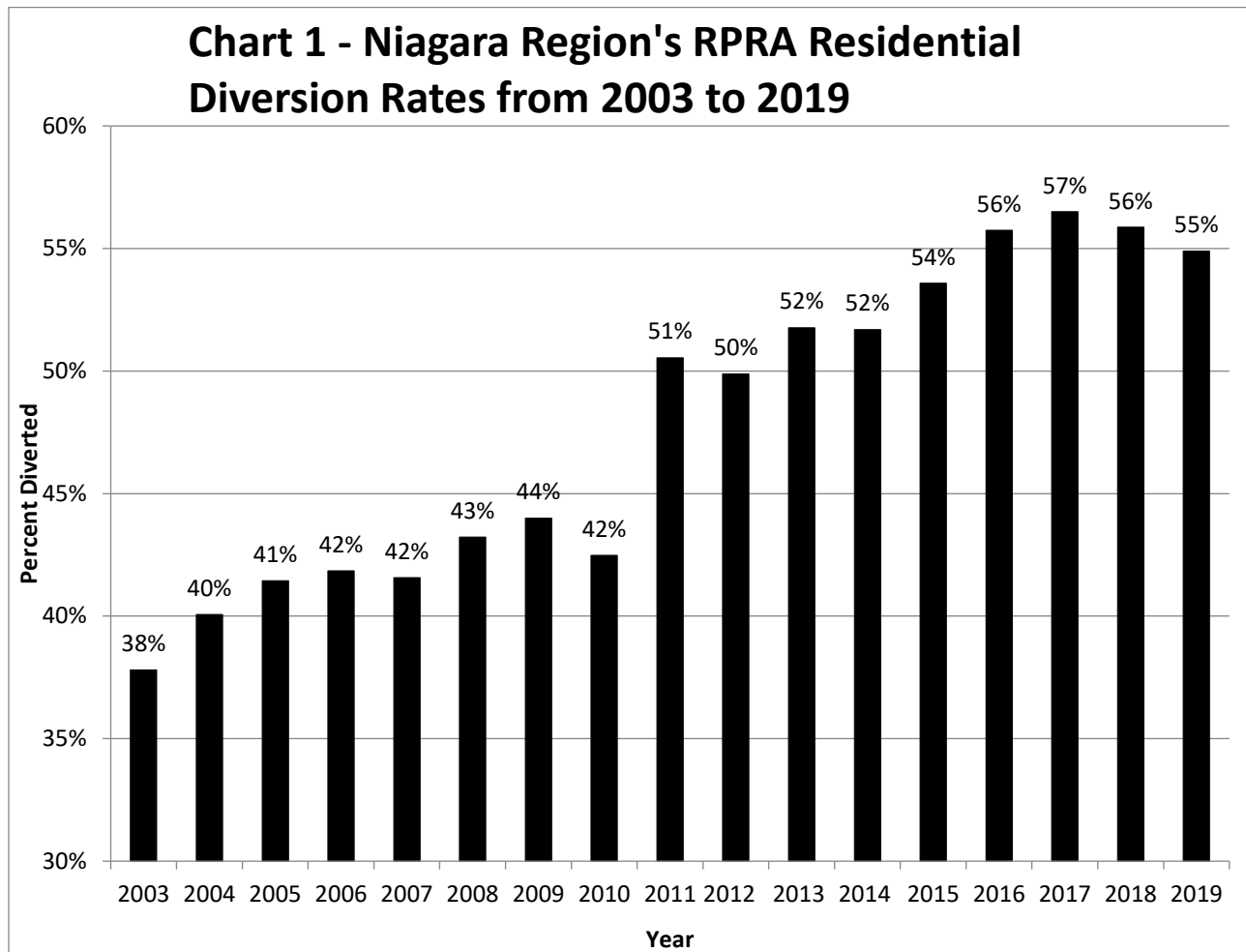
Table 2B - RPRA Residential Generation Rate Per Capita – Urban Regional Municipal Group

Municipality	2019 Kg/Cap.	2018 Kg/Cap.	2017 Kg/Cap.	2016 Kg/Cap.	2015 Kg/Cap.	2014 Kg/Cap.	2013 Kg/Cap.
Durham Region	373	383	376	377	380	385	378
Essex-Windsor	408	406	404	391	399	395	399
Niagara Region	421	421	439	427	435	442	437
Ottawa	354	355	362	352	362	367	372
Simcoe	473	457	476	473	475	465	461
Waterloo Region	331	327	329	330	347	346	354
Urban Regional Average	380	380	385	379	387	389	390

The overall trend in Chart 1 shows an improvement in Niagara's RPRA residential waste diversion performance between 2003 and 2019. Niagara's 2019 diversion rate of 55% increased by 13% compared to 2010, primarily due to the new collection service levels that were launched on February 28, 2011, as part of this collection contract.

The services and associated policies that increased diversion, through enhanced programs and behavioural change incentives, included:

- Collection of both Blue and Grey Box material every week;
- Multi-residential recycling program;
- Green Bin organics program expansion to Wainfleet and West Lincoln and to multi-residential buildings up to six units across the Region;
- Reduction in garbage limits for households - one (1) garbage container (bag/can) limit per residential unit (to a maximum of twelve containers);
- Increase in the cost of the garbage tags from \$1.00/tag to \$2.00/tag to reflect full cost recovery;
- Initiation of a partial construction and demolition (C&D) depot diversion program; and
- Addition of plastic containers and rigid plastic packaging with the numbers 3 and 7 and non-numbered to the Blue Box Program (all plastic containers and rigid packaging are now accepted).

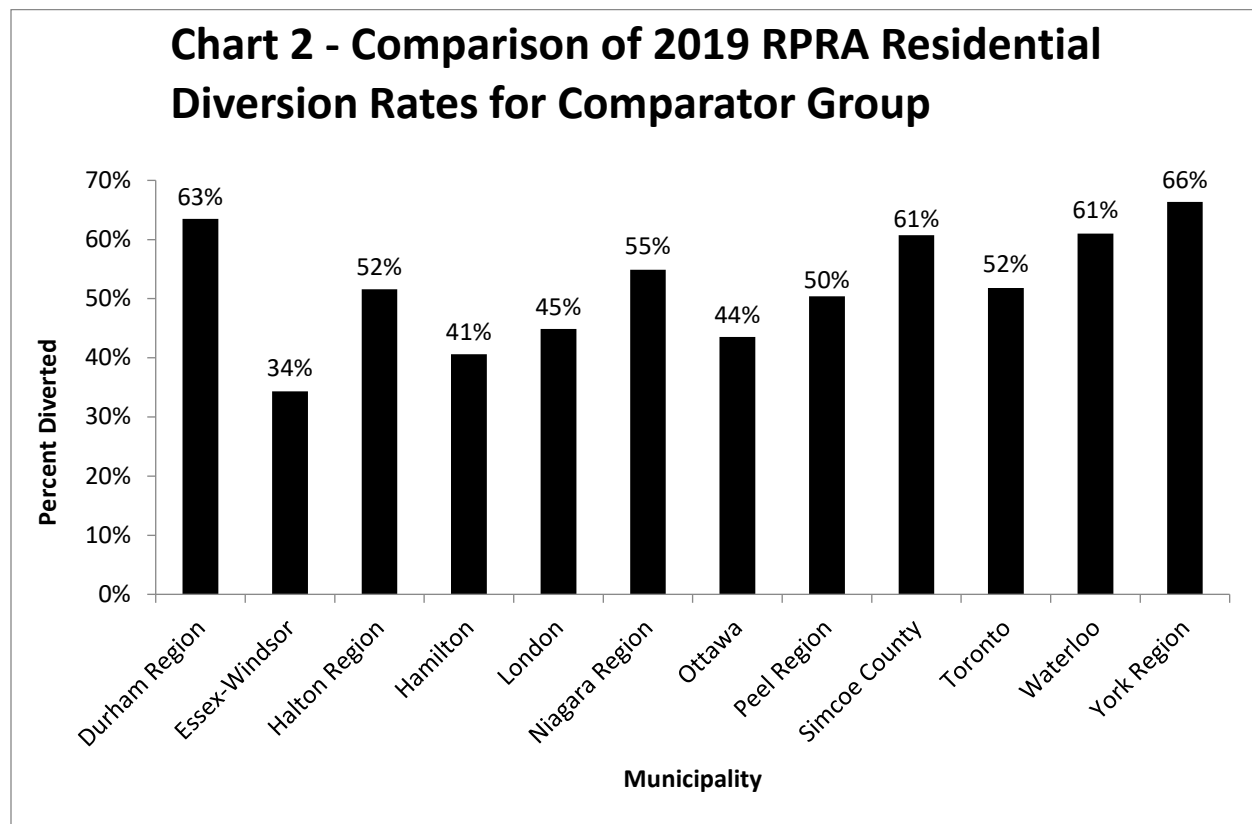


The 2019 diversion initiative that was implemented included the following:

- Mattress recycling program at the Region's landfill drop-off depots.

Notwithstanding the implementation of the above-noted initiative, there was a slight decrease in the diversion rate in 2019 compared to 2018. One of the primary factors contributing to a reduction in the diversion rate of 1% (actual reduction was 0.9% but due to rounding is shown as 1% change) was an increase in the Blue Box residue rate, which was due in large part to a lack of an end market for low-value mixed plastic.

Chart 2 below illustrates the 2019 RPRA residential waste diversion rates for Niagara and its eleven municipal comparators, which have a population greater than 250,000.



York, Durham and Waterloo have some of the highest diversion rates, which are generally attributable to every-other-week garbage collection. Simcoe County's diversion rate was also reported to be one of the highest at 61%, with a weekly one container garbage limit parallel to Niagara's program in 2019, and a very strong C&D depot recycling program.

Niagara is above the 2019 provincial average of approximately 50% diversion and higher than the average of the municipal comparator group, which is approximately 52%. In terms of ranking, Niagara is the 5th highest rate in the comparator group.

For comparison, Table 3 provides the residential diversion percentage by diverted material stream for the six (6) top performing municipal comparators, including Niagara, based on the 2019 RPRA data.

Table 3 - RPRA Residential Diversion Percentage by Material Stream in 2019 for the Top Seven Performers in Niagara Region's Comparator Group

Municipality	Deposit Return	Reuse	On-Property¹	Blue Box	Other²	Organics	MHSW	2019 Diversion Rate
York Region	1.74%	0.00%	4.37%	14.09%	12.12%	33.70%	0.32%	66.34%
Durham Region	1.48%	2.84%	5.33%	16.26%	15.63%	21.42%	0.51%	63.48%
Waterloo Region	1.66%	0.00%	6.69%	17.07%	3.34%	31.93%	0.29%	60.99%
Simcoe County	1.15%	0.14%	3.45%	16.39%	17.04%	22.01%	0.53%	60.71%
Niagara Region	1.31%	0.69%	5.32%	17.31%	6.75%	23.01%	0.51%	54.90%
Toronto	1.96%	0.00%	4.33%	12.64%	3.58%	29.05%	0.24%	51.80%
Halton Region	1.55%	0.00%	4.65%	13.52%	4.43%	27.13%	0.33%	51.61%

Comparator Group Average 51.96%

RPRA Ontario Average 49.71%

Notes:

1. On property includes backyard composting and grass-cycling
2. Other includes recyclables such as Waste Electrical and Electronic Equipment (WEEE), tires, and construction and demolition (C&D) materials

In Table 3, the organic material stream shows a wide range of diversion percentages (lowest being 21.42% in Durham to the highest at 33.70% in York), with the majority of the municipalities being above Niagara's rate of 23.01%. York, Halton, Toronto and Waterloo's higher organics diversion rate may be attributable to providing every-other-week garbage collection.

Another significant observation from Table 3 is that Simcoe County and Durham Region have an exceptionally strong C&D depot diversion program (included in Other

Recyclables) of 17.04% and 15.63%, which are anomalies compared to the other top performers.

The experience in the top performing municipalities, supplemented by the results of historical waste audit data for Niagara's low density residential sector, demonstrate good potential for future diversion growth in Niagara's organics program and/or potential for food waste reduction through the Ontario Food Collaborative.

Future increases in Niagara's residential diversion rate are expected to trend towards meeting the target of 65%, with the implementation of the service level changes, which will begin October 2020. However the 65% diversion target will likely not be realized until a full year of every-other-week garbage collection has been in place.

Planned 2020-21 diversion initiatives include:

- Increase in the cost of the garbage tags from \$2.00/tag to \$2.50/tag to reflect full cost recovery (February 2020);
- Implementation of every-other-week garbage collection, and a four (4) bulky item limit per collection, as part of the new waste collection contract (October 2020);
- Implementation of a communication strategy and public education campaign for the new waste collection contract (summer 2020);
- Implementation of waste management web/mobile application for collection day look up, collection day reminders, notifications, and item search tool (October 2020);
- Continuation of the multi-residential textile and WEEE diversion programs (2020-21);
- Continued participation in the Ontario Food Collaborative and implementation of a Niagara Region specific food waste reduction strategy (2020-21).

Provincial policy changes (i.e. extended producer responsibility and organics diversion strategy), will also instigate more substantial diversion rate increases, particularly in the organics program area.

Niagara Region is reviewing other methods to measure its waste diversion, which may be applied in future years. Metrics, such as the reduction of waste on a per capita basis, are being reviewed. Reduction (e.g. reducing avoidable food waste and reuse efforts) is difficult to measure using the traditional RPRA diversion rate calculation.

2. Blue Box Recycling Plan Performance Measures and Targets

The Blue Box Program's specific goals, which align with Council's objective of 65% diversion from disposal, are to increase the diversion of residential Blue/Grey Box materials from disposal and extend the life of existing landfills.

Key Blue Box Program objectives, which are related to the targets and benchmarking exercise, include the following:

- Optimizing collection and processing, in order to improve Niagara's performance factor (ratio of the program's net cost per tonne and its recycling rate) relative to other municipalities, which increases the program funding amount,
- Continuous improvement, including monitoring and reporting of Blue Box diversion successes against recycling targets;
- Facilitating the achievement of the various Blue Box Program performance measurement targets;
- Increasing program participation and recovery of Blue Box materials, while lowering residue rates; and
- Increasing level of customer (Regional service user) satisfaction.

The following section discusses Niagara's progress in achieving these goals and objectives. Niagara's 2019 program results are compared to:

- Targets set in the 2016-2021 Niagara Region Blue Box Recycling Plan; and
- Eleven comparator municipalities that have a population greater than 250,000 for the RPRA parameters and the RPRA provincial average.

The performance measures were defined in previous RPRA best practice requirements. The measures are based on outputs from the annual RPRA datacall process and data collected from curbside waste composition studies/audits, which are completed intermittently when introducing program changes.

Baseline Blue Box Program data from 2015 and 2016 curbside waste audits, and in some cases historical trends, were used as a general basis for developing targets for the performance measures. Targets have also been established considering approved program changes, targeted communications and processing facility improvements. Other municipal data were also used as a reference for developing targets for some measures.

RPRA Performance Measures

The RPRA utilizes a standard methodology (Generally Accepted Principles or GAP analysis) for municipal waste management reporting and residential waste diversion

calculations. The performance measures, which are an output of the RPRA datacall process, are described below with associated Niagara targets. Data from eleven comparator municipalities that have a population greater than 250,000 are referenced for comparison and benchmarking purposes.

2.1. Blue Box Residue Rate

Niagara's Target:	4.2% in 2015, decreasing to 4.0% by 2019
2019 Value:	7.8% (based on residential tonnes disposed)
Variance to Target:	Target not achieved
Benchmarking Result:	Niagara is well below the Province-wide multi-stream (two or more streams) residue rate of 12.6% for 2019. The average single stream residue rate is higher at 29.6% for 2019.

Blue Box residue rate is defined as the percentage of collected Blue Box material that is rejected during processing. Residue typically includes non-recyclable material such as take-out coffee cups and other contaminants. The residue is then disposed resulting in less revenue, as the material cannot be sold to recycling end markets.

Niagara Region achieved a residential Blue Box residue rate of 1.8% in 2011 and 2012, and 1.7% in 2013 and 2014. The 2015-19 residue rates increased from 4.5% to 7.8%. Niagara Region experienced challenges with marketing curbside collected plastic film (e.g. stuffed grocery bags) due to challenges with contamination, market surpluses, lack of demand from the domestic end market and lower cost of virgin material. The volume of bagged recyclables entering Niagara Region's MRF has been increasing over time. Bagged material creates challenges and can result in higher residue rates as it takes away from time spent removing contaminants from the line.

2.2 Net Cost per Tonne Marketed

Niagara's Target:	\$313/tonne in 2018, and remaining below the average of the comparator group for each year.
2019 Value:	\$291/tonne
Variance to Target:	Target achieved

Niagara's Target:	\$313/tonne in 2018, and remaining below the average of the comparator group for each year.
Benchmarking Result:	Niagara had the third lowest net program cost in 2019 (\$291/tonne)

A key performance indicator for the Blue Box Program is the net program cost per tonne marketed, as calculated by RPRA. This parameter includes the net cost for Niagara's Recycling Centre (i.e. processing), collection contract and program support (e.g. staff, promotion and education, etc.). The net cost reflects the revenue from the sale of recyclables.

As part of the Region's 2016-2021 Blue Box Recycling Plan, this target was re-evaluated and updated in 2018, considering more recent market conditions (i.e. lower revenues from the sale of recyclables, China's Green Fence restrictions).

As shown in Tables 4A to 4C (i.e. Large Urban and Urban Regional Municipalities), Niagara's net residential Blue Box cost per tonne marketed was approximately \$291 in 2019, which was a 31% increase compared to 2018. The main reason for the increase in 2019 was due to the decrease in revenue from the sale of recyclables. However, Niagara had the third lowest net program cost in 2019 and the fourth lowest net program cost in 2018 (\$222/tonne). Niagara was well below the 2019 comparator group average of \$392/tonne and the 2019 Province-wide average of \$450/tonne.

Niagara has a cost effective program in comparison to other jurisdictions.

Table 4A - RPRA Net Program Cost Per Tonne Marketed in 2019 vs. 2018 – Large Urban Municipalities

Municipality	2019 Blue Box Tonnes Marketed	2019 Total Net Cost	2019 Net Cost Per Tonne Marketed ³	2018 Net Cost Per Tonne Marketed ³
Halton Region	28,377	\$9,535,728	\$336.03	\$237.17
Hamilton	33,149	\$12,821,715	\$386.79	\$350.95
London	21,707	\$8,783,177	\$404.63	\$321.28

Municipality	2019 Blue Box Tonnes Marketed	2019 Total Net Cost	2019 Net Cost Per Tonne Marketed ³	2018 Net Cost Per Tonne Marketed ³
Peel Region	74,042	\$37,625,248	\$508.16	\$367.50
Toronto	99,785	\$62,185,833	\$623.20	\$641.96
York Region	53,555	\$25,148,969	\$469.59	\$371.99
Large Urban Total:	310,614	\$156,100,671	N/A	N/A

Table 4B - RPRA Net Program Cost Per Tonne Marketed in 2019 vs. 2018 – Urban Regional Municipalities

Municipality	2019 Blue Box Tonnes Marketed	2019 Total Net Cost	2019 Net Cost Per Tonne Marketed ³	2018 Net Cost Per Tonne Marketed ³
Durham Region	41,207	\$15,992,444	\$388.10	\$341.75
Essex-Windsor	19,941	\$6,655,049	\$333.73	\$213.79
Niagara Region	34,912	\$10,159,441	\$291.00	\$221.50
Ottawa	55,232	\$13,263,337	\$240.14	\$204.55
Simcoe	25,690	\$12,942,449	\$503.80	\$287.46
Waterloo Region	34,960	\$7,448,395	\$213.05	\$199.90
Urban Regional Total:	211,942	\$66,461,116	N/A	N/A

Table 4C - Average Net Cost Per Tonne Marketed in 2019 vs. 2018 – Comparator Groups

Comparator Group Simple and Weighted Averages for Net Cost Per Tonne Marketed in 2019 vs. 2018	2019	2018
Large Urban Simple Average ⁽¹⁾	\$454.74	\$381.81
Large Urban Weighted Average ⁽²⁾	\$502.56	\$426.07
Urban Regional Simple Average ⁽¹⁾	\$328.30	\$244.83
Urban Regional Weighted Average ⁽²⁾	\$313.58	\$243.88
Comparator Group Simple Average ⁽¹⁾	\$391.52	\$313.32
Comparator Group Weighted Average ⁽²⁾	\$425.91	\$354.22
Ontario Grand Total Weighted Average ⁽²⁾	\$449.59	\$373.52

Notes:

1. Simple average of per tonne values.
2. Weighted averages are group total costs or revenues divided by total group tonnage.
3. Niagara's program includes a wide range of materials which, in some cases, is greater than those collected by other municipalities and will increase the net cost per tonne marketed.

Waste Composition Studies and Visual Audit – Program Monitoring Parameters

Waste composition studies and curbside visual audits are typically completed to measure performance changes as a result of introducing a program change or when industry stewardship funding becomes available for these activities.

A waste composition study is defined as a formal, structured process used to quantify the amount and type of waste, recyclables and organics being generated and diverted. A waste composition study, which included 170 low-density residential (LDR) household set-outs, was conducted across all twelve local area municipalities in the fall and winter of 2010, and in the spring and summer of 2011, after the start of the new collection contract and service levels. A follow-up, four (4) season waste composition study was completed in 2015/2016. Both studies received CIF funding.

Visual curbside audits, which have been completed since 2007, provide data regarding participation rates. As part of an earlier “It Takes Three Campaign” properties were randomly audited by Waste Management interns to determine if recyclables that had been set out at the curb were being properly sorted and prepared for pick up. Door-to-door visits to each audited home have occurred in 2012 and 2013 to promote the ‘Blue Box Ins and Outs’ campaign. The “Gold Star Recycler” program was carried out in conjunction with the audits in order to provide a visible and tangible reward, a form of thanks and public recognition for residents’ waste diversion efforts. Curbside visual audits were not completed in 2015 and 2016, due to a reallocation of intern resources.

In 2017 and 2018, curbside visual audits of Blue and Grey Recycling Boxes were completed at approximately 1,000 LDR households. Those audit results meeting 'perfect' or 'near-perfect' criteria were given an "I'm a Gold Star Recycler" recycling box and an informative door hanger to encourage and reward their proper set-out practices.

In 2019, curbside visual audits of Blue and Grey Recycling Boxes were completed at 1,250 LDR households, as part of the ‘Recycling Matters’ campaign. The audits looked for contaminated and improperly prepared recycling materials. Promotional and educational materials were distributed to homes based on the visual results of the recycling observed at the curb. Residents who obtained a “Good” audit result were provided with a door hanger thanking them for successful participation. Residents who obtained a “Poor” audit result were provided with a door hanger on proper sorting and preparation practices. If a resident had “poor” audit results in each of the three consecutive weeks, a warning letter was issued by Niagara Region’s By-law Enforcement staff, and the address was monitored for compliance in subsequent weeks. Unacceptable materials and highly contaminated recycling boxes observed during the curbside audits were tagged as uncollectable.

Key performance measures, which are based on the curbside visual audits and waste composition studies, are identified below.

2.3 Blue Box Participation Rates

Target:	82% from 2016 to 2021
2019 Value:	90%
Variance to Target:	Target achieved

The Blue Box participation rate is defined as the percentage of LDR households on a curbside collection route which set out recyclables at least once in a consecutive two (2) week period.

As illustrated in Table 5, the trend has been towards an improved Blue Box participation rate, which is attributable to the introduction of new services in 2011, the targeted social marketing and education campaigns and program maturity.

Based on the 2015/16 Region curbside waste audit and the 2017 visual audit results, the Blue Box participation rate decreased, compared to the participation rates measured as part of previous visual audits completed, as part of the 'Blue Box Ins and Outs' campaign.

However, the 2019 Blue Box participation rate improved from 2018. Minor audit variations may be attributable to the season and the number of households not setting out any material due to being away.

Table 5 - Blue Box Participation Rates

Curbside Waste Audits and Visual Audits	Average Participation Rate
2006 - Stewardship Ontario Waste Audits	57%
2004/07 – Niagara Region Curbside Waste Audits	60%
2010 – Niagara Region Curbside Waste Audits	71%
2010 - 'It Takes Three' Visual Audits	70%
2011 – Niagara Region Curbside Waste Audits	74%
2011 - 'It Takes Three' Visual Audits	73%
2012 - 'Blue Box Ins & Outs' Visual Audits	83%
2013 - 'Blue Box Ins & Outs' Visual Audits	88%
2014 – 'Blue Box Ins & Outs' Visual Audits	85%
2015/16 – Niagara Region Curbside Waste Audits	82%
2017 – 'Blue Box Ins & Outs' Visual Audits	62%

Curbside Waste Audits and Visual Audits	Average Participation Rate
2018 – ‘Blue Box Ins & Outs’ Visual Audits	72%
2019 – ‘Recycling Matters’ Visual Audits	90%

2.4 Blue Box Set-Out Rates

Target:	2.0 boxes (or containers) set out per hhld per week from 2016 to 2021
2019 Value	Estimated 1.5 boxes (or containers) were set out per hhld per week
Variance to Target:	Target not achieved

Although this parameter was not measured in 2019, it is anticipated that the 2019 Blue Box set-out rate remained the same as the 2016 rate as no significant program changes have occurred over the last few years.

The Blue Box set-out rate is defined as the average number of Blue/Grey Boxes or other recycling containers placed at the curb for pick-up, on a per household basis, per week. The average number of full container equivalents, in addition to the actual number of containers set-out, are included in Table 6 for the waste audits conducted between 2004 and 2016.

The average Blue Box set-out rate was at its lowest in the 2010 audits, at one (1) container per household, per week, and appears to be an anomaly compared to the other audit periods. The 2011 to 2016 set-out rates did improve compared to 2010, but are still generally in line with the 2006/2007 data. The larger Blue/Grey Box capacity may explain why there is little improvement in this parameter overall.

Table 6 - Blue Box Set-Out Rates

Audit Period	No. of Boxes (or other Containers) Per Household Per Week	No. of Equivalent Full Boxes (or other Containers) Per Household Per Week
Fall 2004	1.3	Not measured

Audit Period	No. of Boxes (or other Containers) Per Household Per Week	No. of Equivalent Full Boxes (or other Containers) Per Household Per Week
Summer 2005	1.2	Not measured
Spring 2006	1.4	1.3
Summer 2006	1.5	1.5
Fall 2006	1.5	1.5
Winter 2007	1.5	1.4
Fall 2007	1.6	1.3
Fall and Winter 2010	1.0	1.0
Spring and Summer 2011	1.6	1.4
Summer 2012	1.6	Not measured
Summer 2013	1.6	Not measured
Summer 2014	1.5	Not measured
Summer 2015	1.5	1.4
Fall 2015	1.3	1.1
Winter 2016	1.4	1.2
Spring 2016	1.5	1.3

Monitoring Plan

Niagara Region's 2016-2021 Blue Box Recycling Plan was completed in 2016, as part of WMPSC-C 1-2017.

Blue Box Recycling Plan Summary

Based on the recommendations outlined in the KPMG Blue Box Program Enhancement and Best Practices Assessment Project Report, positive diversion results in other jurisdictions and stakeholder input, improvements to the Regional Blue Box Program have been implemented and other drivers to increase participation/capture rates, as part of the 2016-2021 Blue Box Recycling Plan. Every effort is being made to ensure the program is performing well (i.e. operated efficiently and in a cost-effective manner).

3.0 MBNC Performance Measures

A subset of MBNC parameters, which are related to cost effectiveness, are used in this benchmarking review. In 2019, Niagara had the lowest cost per tonne of the majority of its eight (8) comparator municipalities for the following parameters:

- Garbage Collection Cost per Tonne;
- Garbage Disposal Cost per Tonne;
- Diversion Cost (Collection and Processing) Cost per Tonne; and
- Solid Waste Average Operating Cost per Tonne

On an annual basis, Niagara's Garbage Collection, Disposal and Diversion Cost per Tonne parameters are typically lower than the MBNC average, which demonstrates the programs are cost effective.

Table 7 contains the results for Niagara Region's eight (8) comparator municipalities that participated in MBNC and are included in the RPRA comparator group (not all the RPRA municipal comparators participate in MBNC). There is a considerable amount of variation between the results of these municipalities, which may be related to differences in their waste management programs (i.e. bi-weekly vs. weekly garbage, no Green Bin program, single vs. dual stream recycling).

Table 7 - MBNC 2019 Performance Measures (for All Property Classes)

Municipality	2019 Garbage Collection Cost per Tonne	2019 Disposal Cost per Tonne	2019 Diversion Cost (Collection & Processing) Cost per Tonne	2019 Average Operating Cost per Tonne
Durham Region ⁽¹⁾	\$161.35	\$172.75	\$264.66	N/A

Municipality	2019 Garbage Collection Cost per Tonne	2019 Disposal Cost per Tonne	2019 Diversion Cost (Collection & Processing) Cost per Tonne	2019 Average Operating Cost per Tonne
Halton Region	\$153.37	\$40.15	\$224.85	\$205.27
Hamilton	\$137.41	\$83.24	\$252.83	\$204.93
London	\$102.42	\$25.33	\$148.09	\$75.66
Niagara Region	\$97.66	\$91.13	\$163.63	\$159.50
Toronto	\$98.96	\$93.95	\$415.47	\$262.03
Waterloo Region	\$168.94	\$122.73	\$173.12	\$186.43
Windsor	\$98.06	\$121.18	\$166.70	\$198.15
York Region ⁽²⁾	N/A	\$142.16	\$144.28	N/A
MBNC Average ⁽³⁾	\$127.27	\$99.18	\$217.07	\$184.57

Notes:

1. Durham Region does not report Average Operating Cost per Tonne, as they do not have complete responsibility for all collection throughout the entire Region
2. York Region does not report local municipal garbage collection information
3. MBNC average applies to Niagara Region and its eight (8) comparator municipalities

Conclusion

Continued improvements to Niagara's waste management programs and program performance have occurred over the last several years. Niagara has met the majority of the established targets and is generally performing better than its comparator group and/or Provincial averages. Niagara's 2016-2021 Blue Box Recycling Plan outlines potential changes to further improve performance in waste management program areas.

The implementation of Niagara's policy change (i.e. EOW garbage collection) in Q4 of 2020 will have a positive impact on Niagara's waste diversion rate in future years.

Benchmarking and performance reports will be completed annually, in order to compare changes in performance over time, results against targets and results against other municipal comparators. Every effort is being made to ensure Niagara's waste management system is operated efficiently and cost-effectively.