

CITY OF KINGSTON SOLID WASTE DIVISION

# Waste Recycling Strategy

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2010-2013

City of Kingston Solid Waste Division

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*Notwithstanding this support, the views expressed are the views of the author(s), and Waste Diversion Ontario and Stewardship Ontario accept no responsibility for these views.*

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## 1. Introduction

This Waste Recycling Strategy was initiated by the City of Kingston Solid Waste Division to develop a plan to increase the efficiency and effectiveness of its recycling programs and maximize the amount of blue box material diverted from landfill. Specifically the purpose of this plan is to increase the capture rate of recyclables and thereby increase the overall diversion rate for the City of Kingston, moving towards the City's goal of 65% waste diversion by 2012.

In 2008, Waste Diversion Ontario (WDO) reported the City of Kingston's diversion of Blue Box materials to be 62% and an overall waste diversion rate of 47%<sup>1</sup>. For 2010, staff had set a goal of 63% capture of Blue Box materials. Please note that the diversion rate for Blue Box materials for 2009 is not listed as it will not be available from WDO until early 2011.

Kingston is responsible for managing residential solid waste including recycling, garbage, organics, and household hazardous waste. In addition, commercial properties within the Downtown Kingston Business Improvement Area may opt in for garbage collection for a fee.

City staff collect recycling from residential properties within the borders of the City of Kingston (pre-amalgamation), market all recyclable material, collect garbage and organics from residential properties (six units and less), collect garbage from some multi-residential properties, collect leaf and yard waste in the fall and operate the Kingston East landfill site.

Through contractors, the City collects recyclable material from the former townships that were amalgamated into the City of Kingston, processes recyclable material, and operates a residential yard waste drop off depot and a household hazardous waste depot.

The City also contracts the collection of recyclables for Loyalist Township and processing of recyclables collected in both Loyalist and South Frontenac Townships.

Kingston faces a number of waste management challenges, which this Waste Recycling Strategy will help address. In particular, Council direction to achieve 65% waste diversion by 2012, an environmentally conscious public that demands increased services and results, and WDO requirements for a Waste Recycling Strategy (WRS). These are all drivers behind the creation of Kingston's WRS.

This Waste Recycling Strategy was developed with support from City of Kingston Public Works Services & Solid Waste Division staff and using the *Guidebook for Creating a Municipal Waste Recycling Strategy* as developed by WDO's Continuous Improvement Fund (CIF).

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<sup>1</sup> In this report, when Waste Diversion Ontario refers to blue box diversion rate, they are in fact referring to capture rate of recyclable materials. Please see the glossary in Appendix D for a full explanation of terms.

## 2. Overview of the Planning Process

This Waste Recycling Strategy was prepared through the efforts of the City of Kingston Public Works Services & Solid Waste Division staff.

In order to prepare an effective Waste Recycling Strategy, a curbside waste audit was conducted over two weeks by AET Consultants Inc. Ten homes in ten different neighbourhoods (totaling 100 homes) had their recycling and garbage collected from the curb by audit staff. Each respective home's garbage and recycling was then sorted into different categories according to waste type. The purpose of a waste audit is to see what, if any, recyclable material residents are placing in the garbage. By sorting through the recycling stream as well, the capture rate of recyclables can be determined. The capture rates in the table below represent the percentage of recyclables that Kingston is collecting through the recycling program out of the total recyclables available in the recycling and garbage streams.

$$\text{Capture rate} = \text{Weight of recyclable material in the recycling stream} / (\text{Weight of recyclable material in the recycling stream} + \text{Weight of recyclables in the garbage stream})$$

In the table below, please find the capture rates for the respective recyclable materials that the Solid Waste Division collects, as reported by AET Consultants Inc:

<b>Recyclable material</b>	<b>Total in garbage stream over 14 day study period (kgs)</b>	<b>Total in recycling stream over 14 day study period (kgs)</b>	<b>Capture rate (%)</b>
Coloured glass- other	0.13	9.80	99
Newspaper	23.64	324.78	93
Clear LCBO glass	1.15	12.59	92
Corrugated cardboard	9.15	91.51	91
Magazines & catalogues	11.92	56.20	83
Steel	7.66	23.39	75
Clear glass- other	13.82	36.18	72
Aluminum	4.83	9.68	69
Telephone books	1.77	3.85	69
Molded pulp	2.12	4.06	66

<b>Recyclable material</b>	<b>Total in garbage stream over 14 day study period (kgs)</b>	<b>Total in recycling stream over 14 day study period (kgs)</b>	<b>Capture rate (%)</b>
# 1 PET (clear plastic bottles & jars)	15.26	28.70	65
Boxboard	37.83	66.24	64
Gable top & aseptic containers	7.54	11.00	59
# 2 HDPE (coloured plastic bottles & jugs)	10.33	10.33	50
Mixed fine paper	37.43	33.06	47
# 4 LDPE & # 5 PP (plastic tubs & lids)	5.36	4.78	47
Coloured LCBO glass	12.06	9.52	44
# 6 PS (Styrofoam)	14.78	6.11	29
Books	11.44	3.42	23
Film plastic	39.99	8.08	17
<b>Total recyclables capture rate</b>	<b>284.61</b>	<b>760.40</b>	<b>73</b>

From the table above, the total recyclables capture rate for the City of Kingston is 73%. It is important to explain why there is a discrepancy between the recyclables capture rate from the AET Consultants waste audit and the Blue Box diversion rate (61.84%) from WDO as mentioned in the Introduction. While both rates are measuring the ratio of recyclable material that is recycled versus the total amount available, the two ratios are calculated differently.

The WDO ratio comes from the manufacturers of recyclable material reporting the quantity of their products that were distributed into the Kingston market as compared to quantity of recyclable material that was processed through the Kingston Area Recycling Centre (KARC). In addition, the WDO rate takes into account the multi-residential recycling program, which is excluded from the capture rate calculated from the AET Consultants waste audit. The calculation for the AET Consultants waste audit capture rate is explained on the previous page.

Understanding the difference between the two calculations, the more reliable indicator of recycling program success, as it pertains to this WRS, is the methodology used in the AET Consultants waste audit. The AET Consultants waste audit focuses strictly on single-family homes and is based on a representative sample of actual recyclable material and garbage placed at the curb for collection.

The information from the waste audit, in addition to recyclable material tonnage reports, was used as baseline data in the formulation of the WRS.

Additionally, as a part of the City's Integrated Waste Management Study, a report was issued for public comment regarding different methods to increase waste diversion. Amongst these methods were various changes to the recycling process, as well as other program changes that would encourage residents to make better use of the recycling program (e.g. bag limit reductions, clear garbage bags, etc). The comments garnered from this public report were taken into consideration when planning this WRS.

Several internal meetings were held amongst City of Kingston staff to discuss and formulate the Waste Recycling Strategies goals, objectives and initiatives.

The next steps in the implementation of this Waste Recycling Strategy will involve the ongoing evaluation of the initiatives contained within the plan. This will be done at set time periods and milestones, as contained in Section 9.

To allow the public the opportunity to provide input towards the Waste Recycling Strategy, comments taken from a public report as part of the City's Integrated Waste Management Study were taken into consideration. In addition, public comments received at the City's Environment, Infrastructure and Transportation Policies Committee will be considered.

### 3. Study Area

The study area for this Waste Recycling Plan includes the City of Kingston and will address residential properties with six units or less, but will also incidentally address certain issues (e.g. the recyclability of specific materials) that are pertinent to residents of multi-residential buildings that receive collection from the City of Kingston.

### 4. Public Consultation Process

Before the creation of Kingston's Waste Recycling Strategy, a public open house was held by Solid Waste Division staff for proposals to increase waste diversion as a part of Kingston's Integrated Waste Management Study. At the open house residents were able to speak with staff and provide their input on the proposals for increasing waste diversion. Hard copies of the report were available at locations throughout the City and electronic copies were available on the City's website. Those who were unable to attend the open house were able to provide comments via a poll and comment section on the City of Kingston's website or mail them directly to Solid Waste Division staff.

From the open house and comments received from the public, it was evident that Kingston residents were in favour of more 'carrot' approaches to waste diversion (e.g. recycling) than 'stick' approaches. Chief among the 'carrot' or soft approaches, as it relates to recycling, was an increase in promotion and public education for the recycling program. This public preference for promotion and education on Kingston's recycling program is also evident through comments received from the public by Solid Waste Division staff, as both new and long term residents of Kingston frequently comment on the unique

nature of Kingston's program as compared to other cities in Ontario. As a result, a major initiative within this Waste Recycling Strategy will be a promotion and public education plan.

The public have an opportunity to provide input to the Waste Recycling Strategy at the Environment, Infrastructure and Transportation Policies Committee, when it is being presented. Comments taken from a report as part of the City's Integrated Waste Management Study were also taken into consideration when formulating the WRS.

## 5. Stated Problems

Management of municipal solid waste, including the diversion of recyclable materials, is a key responsibility of all municipal governments in Ontario. The factors that encourage or hinder municipal recycling endeavors can vary greatly and depends on a municipality's size, geographic location, population and existing waste infrastructure. The key drivers that led to the development of this Waste Recycling Strategy include:

- Council's goal to achieve 65% waste diversion by 2012.
- Public pressure from Kingston residents to improve the recycling program, with a focus on increased service, promotion and results.
- WDO requirements for a Waste Recycling Strategy in order to receive maximum funding.
- The City of Kingston's corporate goal to become Canada's most sustainable city.
- To increase revenue through greater capture of recyclable material.

## 6. Goals and Objectives

This Waste Recycling Strategy has identified a number of goals and objectives for the City of Kingston which are presented on the next page. Please note that the objectives regarding capture rates for specific materials use information taken from Stewardship Ontario Efficiency & Effectiveness Fund Project 96 regarding the Range of Curbside Capture Rates. In the case of all materials, with the exception of aluminum, the objective capture rate for Year 1 & 2 objectives represents the 'Good' range of capture. For the full Range of Curbside Capture Rates, please see Appendix A. Municipalities included in the study were London, Muskoka, Quinte, Bluewater and Hamilton.

**Table 2: Waste Recycling Goals and Objectives**

<b>Goals</b>	<b>Objective: Year 1 (2011)</b>	<b>Objective: Year 2 (2012)</b>	<b>Objective: Year 3 (2013)</b>
To maximize capture rates of recyclable material through existing programs and targeted promotion and education at specific materials.	<p>To increase capture of mixed fine paper to 58%.</p> <p>To increase capture of boxboard to 69%.</p> <p>To increase capture of # 1 PET to 81%</p> <p>TO increase capture of # 2 HDPE to 79%.</p> <p>To increase the overall recyclable capture rate to 76%</p>	<p>To increase capture of tubs &amp; lids to 49%.</p> <p>To increase capture of # 6 PS to 50%.</p> <p>To increase capture of film plastic to 33%.</p> <p>To increase capture of aluminum to 76%</p> <p>To decrease the percentage of LCBO glass in the garbage<sup>2</sup> to 30%*</p> <p>To increase our overall recyclable material capture rate to 77%.</p>	<p>To increase capture of mixed fine paper to 64%.</p> <p>To increase capture of boxboard to 76%.</p> <p>To increase capture of # 1 PET to 90%.</p> <p>To increase capture of # 2 HPDE to 87%.</p> <p>To increase capture of tubs and lids to 54%.</p> <p>To increase capture of # 6 PS to 56%.</p> <p>To increase capture of film plastic to 37%.</p> <p>To decrease the percentage of LCBO glass in the garbage to 22%.</p>
To increase participation in the recycling program from its current rate of 92%.	To increase participation to 93%.	To increase participation to 94%.	To increase participation to 95%.

\* This percentage can be found by taking the inverse of the 'good' capture rate for glass as found in Appendix A. Currently, Kingston's capture rate for LCBO glass is 63% (as determined by merging the number for Clear LCBO glass and Coloured LCBO glass in Table 1).

<sup>2</sup> The objective differs for LCBO glass as our stated objective does not concern increasing our capture rate. Rather, we would prefer residents returned LCBO glass for its container deposit refund, ahead of placing it in their blue box for recycling; processing glass for recycling results in increased costs for the Solid Waste Division.

This Waste Recycling Strategy has also identified two broader community goals to which it can contribute. These broader community goals are presented below.

<b>Table 3: Community and Corporate Goals and Objectives</b>	
<b>Goals</b>	<b>Objectives</b>
To help City of Kingston reach its corporate goal of becoming Canada’s most sustainable city.	To increase the capture rate of recyclable materials that is being placed in the garbage.  To increase the diversion of waste from landfill.
To enhance service and value for residents of Kingston.	To increase resident knowledge of recyclable items through a dedicated promotion and education plan.

## 7. Current Solid Waste Trends, Practices and System and Future Needs

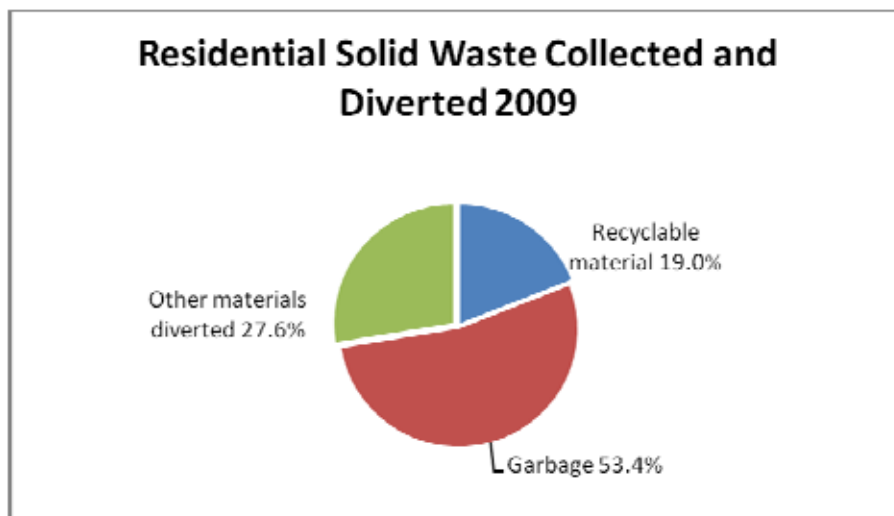
### *Community Characteristics*

In 2009, Kingston had a population of 118,930. The municipality is home to 50,299 total households. Of these, 30,278 are in properties with six units or less and 12,021 are multi-family households. Kingston is also home to Canadian Forces Base Kingston, which houses approximately 350 six unit or less properties that receive waste collection from the City of Kingston.

### *Current Waste Generation and Diversion*

In 2009, Kingston generated 46,099 tonnes of residential solid waste. Of this, 8,759 tonnes, or 19 %, was diverted through the recycling program. Currently, the largest volume of material recycled is papers, while the least is metals. The following chart & table summarizes the 2009 garbage collection and recycling diversion rates.

**Figure # 1: Residential Solid Waste Collected & Diverted 2009**



<b>Table 4: Residential Solid Waste Collected and Diverted in 2009</b>		
<b>Residential Waste Stream / Recycling Material</b>	<b>Tonnes</b>	<b>Percent of Total Waste</b>
Papers (newspapers, magazines & catalogues, cardboard, boxboard, fine papers, polycoat)	6 710	14.6%
Metals (aluminum and steel)	489	1.1%
Plastics (containers, film, tubs and lids)	652	1.4%
Glass	908	2%
<b>Total recyclable material diverted</b>	<b>8 759</b>	<b>19%</b>
<b>Total other material diverted (hazardous waste, organics, backyard composting, deposit return, grasscycling, tires, scrap metal)</b>	<b>12 715</b>	<b>27.6%</b>
<b>Total garbage</b>	<b>24 625</b>	<b>53.4%</b>
<b>Total waste generated</b>	<b>46 099</b>	<b>100%</b>

While the diversion rate of recyclable material may appear to be low, this number does require some explanation. Diversion rate is calculated by taking all waste diverted from landfill (through recycling, composting, hazardous waste collection, etc.) and dividing it by all waste generated, including non-divertable waste (garbage):

$$\text{Diversion rate} = \text{diverted material} / (\text{diverted material} + \text{non-diverted material}) \times 100$$

In Kingston's case, 19% represents the recycling portion of our total waste diversion rate of 47%. Diversion rates do not wholly reflect the efficiency and effectiveness of a recycling program as the rate takes into account all waste generated within a system.

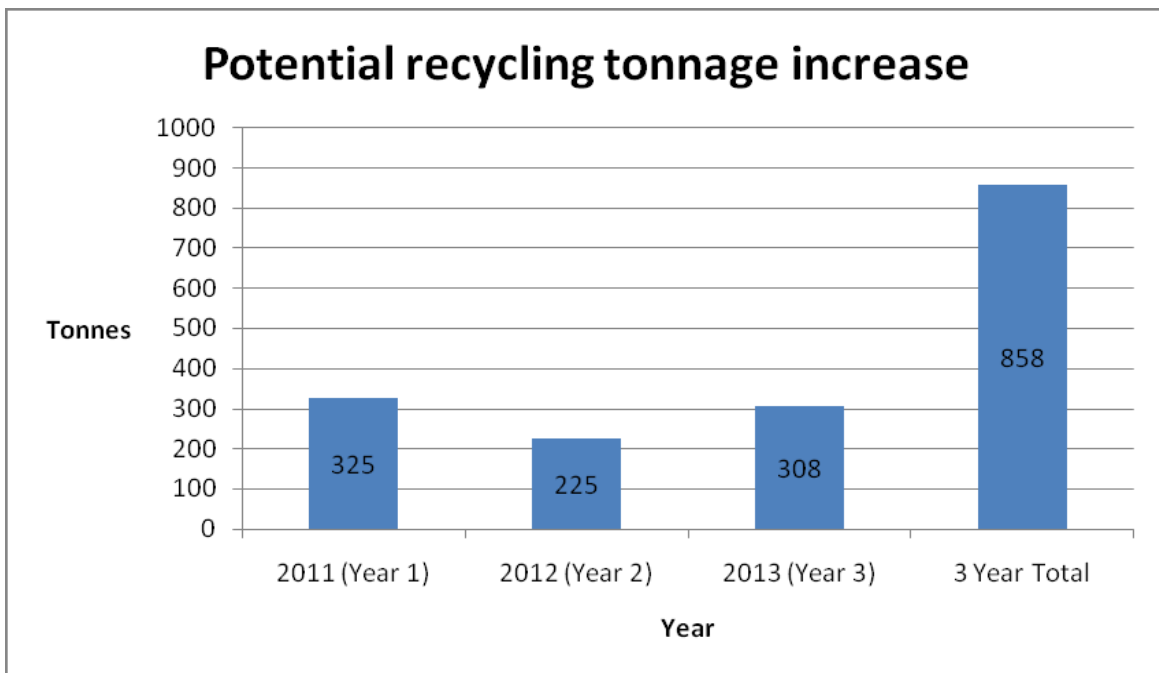
A more accurate measure for a recycling program's efficiency and effectiveness is capture rate (as explained in Section 2); capture rate only concerns the recycling and garbage streams. Capture rate also takes into account fluctuations in overall generation of recyclable material. For example, tonnages of newspaper have been decreasing overall as newspapers are becoming smaller. Even though we have

been consistently capturing over 90% of newspaper, the fact that overall tonnages are decreasing (whether or not newspaper is being placed in the recycling or garbage) means our portion of the waste diversion rate achieved through newspaper has decreased.

*Potential Waste Diversion*

Section 6 identifies specific materials with objectives to increase their associated capture rates. As shown on table 5, a total of 4 891 tonnes of these specific materials are in the waste stream. 2 321 tonnes are currently recycled. If the target capture rates are met for the year 1 & year 2 objectives an additional 550 tonnes of material can be diverted, representing an increase to 48% waste diversion; if year 3 objectives are met, an additional 308 tonnes can be diverted from landfill, representing an increase to 49% waste diversion.

**Figure # 2: Potential recycling tonnage increase**



<b>Table 5: Current and Potential Diversion for Target Materials</b>				
<b>Material</b>	<b>Total Available in Recycling &amp; Garbage Streams in 2009 (tonnes)*</b> <i>* based on AET audit results</i>	<b>Recycled in 2009 (tonnes)</b>	<b>Potential Increase If Year 1 &amp; 2 Objective Capture Rate is Met (tonnes/year)</b>	<b>Potential Increase If Year 1, 2 &amp; 3 Objective Capture Rate is Met (tonnes/year)</b>
Mixed fine paper	1433	672	159	245
Boxboard	560	356	29	68
# 1 PET	464	303	73	115
# 2 HDPE	222	111	64	82
# 4 LDPE & #5 PP	186	88	5	13
# 6 PS	150	44	30	40
Film plastic	635	107	103	128
Aluminum	234	162	16	16
LCBO glass	1007	478	71	151
<b>Total</b>	<b>4891</b>	<b>2321</b>	<b>550</b>	<b>858</b>

To determine what the increased tonnages of a specific recyclable material would be if the objective capture rate is met (as found in the two columns on the far right of the table above), the following formulas were used:

**To determine the amount of recyclable material available overall:**

*Weight of material recycled in 2009 / Capture rate = Total material available in waste stream*

**E.g. For mixed fine paper:**

$$672 / 0.47 \text{ (or 47\%)} = 1433$$

**To determine the potential increased tonnages for a recyclable material:**

*Total material available in waste stream x Target capture rate – weight of material recycled in 2009 = Potential increased tonnage*

**E.g. For mixed fine paper:**

$$1433 \times 0.58 \text{ (or 58\%)} - 672 = 159$$

### *Existing Programs and Services*

Currently, Kingston has the following policies in place to manage the garbage stream:

- Bag limits of 2 bags of garbage per week.
- A partial user pay system in which residents can pay for bag tags to set out garbage above the 2 bag limit. Bag tags are \$ 2 each.

Collection services of regular waste are provided to the residents using municipal collection, while recycling services are split between municipal collection and contracted collection. A recycling depot is available at KARC for residential drop off. Disposal and recycling services are paid for primarily through the municipal tax base. Once recyclable materials have been collected, they are taken directly to the Material Recovery Facility (MRF) located at the KARC.

In 2009, the total net annual recycling costs for Kingston was \$ 2 524 805; this amounts to \$ 288 per tonne. As the table below shows, net annual recycling costs for Kingston are below average for its WDO municipal grouping.

<b>Table 6: Net Recycling Costs in 2009 (per tonne)</b>	
Kingston	\$ 288.23 <sup>3</sup>
Municipal grouping: Rural regional	\$ 331.29

## 8. Planned Recycling System

### *Overview of planned strategies*

Kingston reviewed a number of options for consideration in its Waste Recycling Strategy. The options were then scored on a series of criteria, which included:

- Percentage of waste diverted: will this strategy decrease waste going to landfill?
- Proven results (best practice): is this strategy a best practice as recognized by WDO?
- Reliable market / end use: will this strategy capture recyclables that have an established market?
- Economically feasible: will this strategy be cost-effective?

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<sup>3</sup> Kingston's net recycling cost per tonne for 2009 is provided by Waste Diversion Ontario's 2009 Municipal Datacall information.

- Accessible to public: will this strategy be accepted/understood by the public?
- Ease of implementation: will this strategy be easily implemented with existing programs?

A summary of the options reviewed and their scoring matrix are provided in Appendix B.

Once scored, a timeline was developed for the implementation of the various strategy options. A review of these strategies, including their timeline for implementation, the associated costs and the monitoring techniques for each is reviewed below.

**Initiative # 1:** Promotion and education campaign targeted at specific recyclable materials.

**Overview:** Efforts will be taken to educate residents of Kingston on the recyclability of specific items, as outlined in section 6 of this WRS. These recyclables have been identified as being below the ‘good’ capture rate as identified by Stewardship Ontario Efficiency and Effectiveness Fund Report 96 (see Section 7 and Appendix A for more details). A dedicated promotion and education plan will be developed by Solid Waste Division staff to increase residents’ knowledge of the recyclability of these items using mixed media approaches (e.g. newspaper advertisements, point of sale display ads, public space messaging and social media applications).

**Implementation:** Promotion and education efforts will be ongoing through the year in 2011 for mixed fine paper, boxboard, and # 1 & #2 plastics; in 2012 for tubs & lids, # 6 plastic, film plastic aluminum and LCBO glass; and in 2013 for all recyclable items listed above.

**Cost:** \$ 10 000 has been included for the promotion and education campaign as a part of the 2011 Solid Waste Division draft budget for public education and system promotion under the Integrated Waste Management Study – System Enhancement Component Options.

**Monitoring:** Conducting a curbside waste audit in late 2011, similar to the one conducted in September 2010, will be the best indicator of the success of the promotion and education campaign, in regards to the capture of specific recyclable materials outlined in section 6. Monthly tonnage data can also be analyzed to track any additional capture of recyclables.

Separate monitoring techniques will be used to track the effectiveness of the promotion and education tools. This can include surveying via the City’s website, and the potential for conducting focus groups with residents to examine the recall and effectiveness of specific promotion tools (e.g. newspaper advertisements, truck signage, etc.). Tracking the number of inquiries to the City’s Customer Service line is currently done on a monthly basis and will be continued during 2011.

**Initiative # 2:** Reducing the garbage container limit to one container per household

**Overview:** A report will be forthcoming to the EITP Committee in 2011 recommending the reduction of the garbage container limit from two containers to one container. The reduction of the bag limit may increase the capture rate of recyclables, as residents would be more inclined to dispose of items through

the recycling program as opposed to disposing of recyclable items in the garbage and having to pay for any potential garbage containers over the one container limit.

**Implementation:** Early to mid 2011, pending Council approval.

**Cost:** \$ 10 000 has been included as part of the 2011 Solid Waste Division draft budget. It would be used in a promotion and education campaign to inform the public of the changing container limit.

**Monitoring:** As a part of ongoing monitoring within the Solid Waste Division, quarterly participation studies will continue to be conducted and will track the number of garbage containers set out for collection at curbside. Tracking the tonnages of garbage collected from curbside will also occur.

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**Initiative # 3:** Reward and recognition program for households exhibiting exemplary waste diversion practices.

**Overview:** Recognized as a best practice, a program will be created that rewards and recognizes residents of Kingston that demonstrate exemplary waste diversion practices. The program would see residents enter into a draw (via the city website, phone number or e-mail) to have their curbside waste audited by Solid Waste staff. Twice a year staff would randomly select homes to participate in the program; these homes would have their curbside waste audited over a two week period. If the homes are meeting the City's capture rate goal of 76% (as based on 'good' range in report in Appendix A) of recyclables diverted from the garbage stream, they would receive a reward (e.g. free bag liners for the Green Bin, a backyard composter, etc.), a special decal for their blue and grey boxes recognizing the household as 'recycling stars' and have their 'waste diversion secrets' published in a newspaper advertisement and the City website. Residents would also be provided with tips on how to increase their capture rate for certain recyclables materials.

This program would not only reward those households that are participating effectively in waste management programs, but also help spread via social diffusion that everyone can easily achieve a high level of waste diversion (e.g. if the Jones' can divert 80% of their household waste, why can't I?).

**Implementation:** Develop and promote the program in early 2011, and carry out the audits during Earth Week (April) and Waste Reduction Week (October).

**Cost:** \$ 3000 has been included in the 2011 draft budget for advertising and promotion of the program, purchasing material that will be needed to conduct the audits (e.g. gloves, digital weigh scale, tarps, etc.) and to cover the cost of the rewards.

**Monitoring:** The number of households that enter the draw for the reward and recognition program will act as an indicator of the success of the program, as well as through surveying participating households to determine the future course of the reward and recognition program.

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**Initiative # 4:** Re-design of curbside messaging tags

**Overview:** When a residents' recycling box is not in compliance with the policies of the Solid Waste Division (e.g. non recyclable materials are placed in a recycling box, Grey Box material is set out on Blue Box collection day, improper box for collection of recyclables, etc.), residents are left with a notice explaining why some, or all, of their material was not collected. While this can be an effective way to inform residents, many often feel like they are being punished for not participating properly. This may stem partially from the presence of the bright orange tag protruding from their box, or the wording on the tag (see Appendix C for a copy of the curbside messaging tag).

The tags are also contain too much wording and can leave the resident confused and frustrated.

The goal of this initiative would be the clarify and simplify the information found on the curbside messaging tags, thereby providing residents with clearer information and providing higher satisfaction with the recycling program as well decreasing the amount of non-recyclable material placed in recycling boxes.

**Implementation:** Mid 2011 (when the current supply of curbside messaging tags is expected to run out)

**Cost:** There are no additional costs for the re-design of the curbside messaging tags. Tags will be re-designed by City staff and printing of tags is done through the City print shop.

**Monitoring:** The primary monitoring tool for this initiative will be tracking the number of inquiries to the City's Customer Service unit to determine the satisfaction with the re-designed messaging tag, as resident frequently call customer service after receiving one of the tags.

**Initiative # 5:** Allow residents to pick up a third recycling box for free at no charge. Currently residents are given two free recycling boxes (one blue and one grey) if they do not already have them.

**Overview:** In order to further increase capture of recyclable material, residents would be allowed to acquire a third recycling box at no charge. Currently, if residents require additional recycling boxes above the one free blue and one free grey box limit, they are charged \$ 6. The new policy would allow residents a choice of a third box, either blue or grey, if they so desired one. Any additional boxes above the three free boxes would cost \$ 6.

By increasing residents' capacity to recycle, the best practice states that residents will recycle more material. Staff has heard from residents that once their recycling box is full, they will throw any excess recyclables into the garbage. By increasing capacity, we can reduce the amount of recyclables that end up in the garbage.

**Implementation:** 2012, as it will be necessary to allot more money in the capital budget for the purchase of additional boxes. This will occur in the 2012 budget proposal.

**Cost:** Estimating that 50% of households will pick up a third recycling box the capital cost for 2012 would be approximately \$100 000 (16 000 households x \$ 6/per box). Funding for this capital expense could be taken from the annual WDO grant.

For yearly operational budget expenditures, it would be necessary to factor in the number of new homeowners picking up recycling boxes, as well as replacing any broken additional boxes distributed under the new policy. Using tracking numbers from 2009, this new policy would represent an estimated \$ 5 000 of additional operating expenditures for the purchase of recycling boxes.

**Monitoring:** Solid Waste staff will track the number of third 'additional' boxes distributed to residents to determine the popularity of the new program and whether changes will need to be made to the distribution policy.

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#### **Initiative #6:** Exploring the potential for recycling 'all plastics'

**Overview:** Waste Diversion Ontario has been working with private recycling companies to create a market for the recycling of 'all plastics'. All plastics is comprised of any numbered (# 1-# 7) food, beverage or packaging plastic. Incorporating all plastics into Kingston's recycling program would see the addition of # 1 non bottle or jar plastic food containers (e.g. plastic egg cartons, plastic berry containers, etc.), # 3 plastic containers (e.g. polyvinyl chloride) and # 7 plastic containers (other plastics) to our recycling program.

The benefit of all plastics recycling includes:

- the capture of plastics that are currently not in Kingston's recycling program,
- the increased capture of recyclables that are being placed in the garbage,
- increased efficiency at the MRF and,
- reduction in the disposal costs of residue from the MRF.

The largest concern with all plastics recycling is the lack of stability in the market for their sale and processing and the small number of companies that are able to process 'all plastics'.

As a part of this initiative, the Solid Waste staff will consult with Waste Diversion Ontario in researching the feasibility of adding 'all plastics' to our recycling program.

**Implementation:** Research will be ongoing through 2011 to determine the feasibility of adding 'all plastics' recycling to the Kingston recycling program.

**Cost:** Staff time for research. Results of the research may indicate a loss of revenue due to a lower value of an 'all plastic' mix that requires additional processing, in conjunction with increased capture rates. A cost – benefit analysis would be required and a budget for promotion and education of any changes would be considered with any recommendation for implementation.

**Monitoring:** Solid Waste staff will speak with other municipalities who currently have or are considering 'all plastics' recycling as well as participate in Waste Diversion Ontario research into the topic.

## 9. Monitoring and Reporting

The monitoring and reporting of Kingston's recycling program is considered a Blue Box program fundamental best practice and will be a key component of this Waste Recycling Strategy. Monitoring techniques have been listed in Section 8 for each specific initiative that will be undertaken in this WRS.

In order to monitor the overall effectiveness of the Waste Recycling Strategy and the goals and objectives contained within it, semi-annual meetings will be held by Solid Waste staff to examine the current goals and objectives and to help define the future goals and objectives of this living document. Successes and lessons learned from the various initiatives contained within this plan will be recorded.

## 10. Conclusion

The City of Kingston's corporate goal of becoming Canada's most sustainable City and its waste management goal of 65% waste diversion by 2012, in addition to funding requirements from Waste Diversion Ontario and resident demands for greater service and results are the major drivers behind the creation of this Waste Recycling Strategy.

Through the compilation of baseline data via curbside waste audits, tonnage summaries and reports, public consultation and internal staff meetings, a series of goals and objectives have been formulated within this Waste Recycling Strategy. An increase in capture rates of specific recyclable materials, an overall increase in capture rates for recyclables and enhancing service and value to the residents of Kingston are the main objectives of this strategy.

In order to achieve the objectives outlined in the strategy, several initiatives will be implemented over the next three years, including the execution of a dedicated promotion and education campaign for residents, a proposed reduction in the garbage container limit, the creation of a reward and recognition program for residents who are exemplary waste diverters and examining the potential to recycle 'all plastics' in the recycling program.

As this Waste Recycling Strategy is a living document, monitoring and reporting of the implementation tools listed above will be ongoing throughout the life of the document. The evaluation tools include conducting curbside waste audits, monthly monitoring of tonnage reports for recyclables being shipped from the MRF and monitoring of inquiries to the City's Customer Service Unit.

Through the creation of this Waste Recycling Strategy, the Solid Waste Division is committing itself to a process of continuous improvement in order to perform our role as stewards to the environment and improve service to the residents of Kingston.

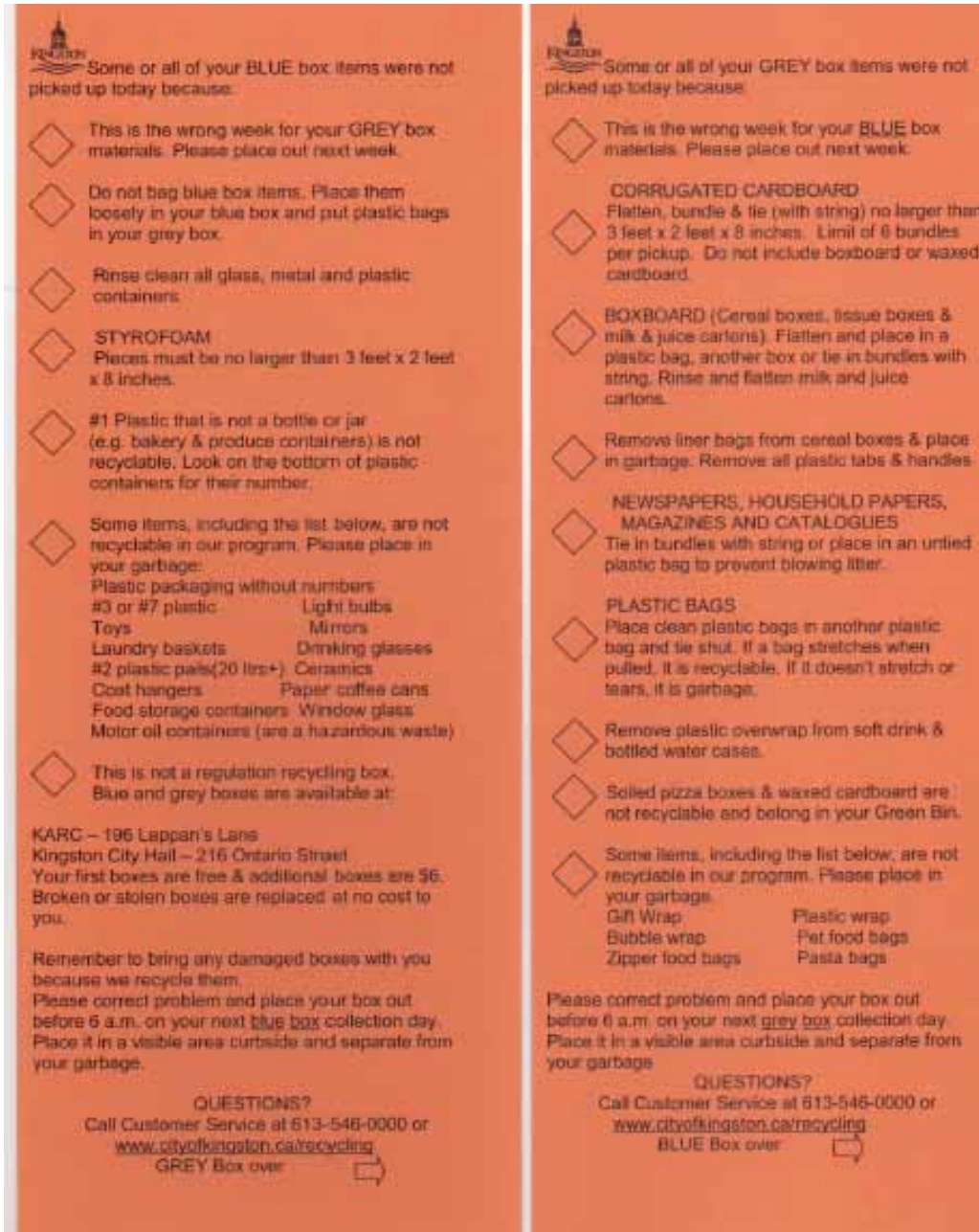
## Appendix A- Range of Curbside Capture Rates

Material	Poor	Average	Good	Very Good	Kingston's 2010 capture rate
<b>Total printed paper</b>	<b>53%</b>	<b>66%</b>	<b>79%</b>	<b>88%</b>	<b>85%</b>
Newspaper	57%	71%	85%	94%	93%
Telephone books/directories	51%	64%	76%	85%	69%
Magazines and catalogues	53%	66%	80%	88%	83%
Mixed fine paper	38%	48%	58%	64%	47%
<b>Total paper packaging</b>	<b>38%</b>	<b>48%</b>	<b>58%</b>	<b>64%</b>	<b>77%</b>
Corrugated cardboard	57%	71%	86%	95%	91%
Boxboard	46%	57%	69%	76%	64%
<b>Total plastics</b>	<b>33%</b>	<b>41%</b>	<b>49%</b>	<b>54%</b>	<b>40%</b>
# 1 PET Beverage Bottles	54%	67%	81%	90%	65%
# 2 HDPE Bottles & Jugs	52%	65%	79%	87%	50%
Overall plastic bottles & jugs	42%	52%	63%	70%	60%
# 6 Polystyrene	33%	42%	50%	56%	29%
# 4 & # 5 Wide Mouth Tubs & Lids	33%	41%	49%	54%	47%
# 4 Polyethylene Bags and Film [Plastic]	22%	28%	33%	37%	17%
<b>Total Metals</b>	<b>35%</b>	<b>44%</b>	<b>53%</b>	<b>59%</b>	<b>73%</b>
Aluminum Food & Beverage Cans	46%	57%	69%	76%	69%
Steel Food & Beverage Cans	49%	61%	74%	82%	75%
<b>Total Glass</b>	<b>47%</b>	<b>59%</b>	<b>70%</b>	<b>78%</b>	<b>71%</b>
<b>Total of all Recyclables Accepted</b>	<b>51%</b>	<b>64%</b>	<b>76%</b>	<b>85%</b>	<b>73%</b>

## Appendix B- Scoring Matrix for Planned Initiatives

Option	Criteria (Score of 5, 5 being the highest, 1 being the lowest)						Total score
	% of waste diverted	Proven results	Reliable market / end use	Economically feasible	Public access	Ease of implementation	
Dedicated promotion & education plan	5	5	4	5	4	2	25
Reduction of garbage bag limit ( to 1)	3	5	2	4	4	3	21
Giving residents 3 <sup>rd</sup> free recycling box	4	5	3	3	3	3	21
Reward & recognition program	2	4	3	4	3	4	20
Re-development of curbside tag	1	3	1	5	5	4	19
Expanding to 'all plastics' recycling	5	2	1	4	4	3	19
Allowing larger recycling boxes	4	5	3	2	3	1	18
Full user pay for garbage	5	5	2	2	2	1	17

**Appendix C- Recycling curbside messaging tag**



NOTE: The tag on the left is for the blue box and the tag on the right is for the grey box. The blue box and grey box information are printed on both sides of one tag.

## Appendix D: Glossary of Terms

**Capture rate:** the amount of recyclables set out for recycling divided by the total amount of recyclables set out for recycling plus recyclables left in the garbage.

**Continuous Improvement Fund (CIF):** an organization that provides grants and loans to municipalities to execute projects that will increase the efficiency of municipal Blue Box recycling and help boost system effectiveness. The CIF is funded by Waste Diversion Ontario, Stewardship Ontario, the City of Toronto and the Association of Municipalities of Ontario.

**Curbside waste audit:** the collection of all curbside waste streams (e.g. garbage, recycling, organics) from a select study area of homes. Waste is separate by a variety of categories to determine if residents are placing specific waste items in the proper waste stream.

**Deposit return:** refers to the system in Ontario whereby alcohol containers can be returned to the Beer Store for a deposit refund. The waste diversion calculations provided by Waste Diversion Ontario take into account the amount of alcohol containers returned to the Beer Store as a part of waste diverted from landfill for the City of Kingston.

**Diversion rate:** a measure of the total quantity of waste that is 'diverted' from landfill (recycling, organics, hazardous waste, backyard composting, deposit return, grasscycling, tires and scrap metal) as a percentage of the total residential waste generated each year.

**Grasscycling:** refers to leaving grass clippings on the lawn when mowing.

**Material Recovery Facility (MRF):** is a specialized plant that receives, separates and prepares recyclable materials for marketing to end-user manufacturers.

**Polycoat:** is a combination of gable top and aseptic containers, which are paper containers or cartons used for the storage of liquids such as juices, milk, soups or alcoholic beverages.

**Participation rate:** the percentage of households on a curbside collection route who set out recyclables at least once in a consecutive two-week period. It measures the percentage of residents participating in the program in general, not necessarily on every given collection day (some households may not generate enough recyclables to set-out the Blue Box on every collection day).

**Stewardship Ontario (SO):** an industry-funded organization which determines the amount of recyclable packaging that each manufacturer has manufactured and end product disposal. Regular studies are performed to determine the value each company is required to pay.

**Waste diversion:** the amount of material within the waste stream that is not disposed of as garbage.

**Waste Diversion Ontario (WDO):** a non-crown corporation created under the Waste Diversion Act (WDA) to develop, implement and operate waste diversion programs for a wide range of materials.

**# 1 PET (polyethylene terephthalate):** a strong, transparent plastic used to make bottles for soft drinks, water, liquor, mouth wash, peanut butter, edible oils and salad dressings, as well as many other food and non-food containers.

**# 2 HDPE (high-density polyethylene):** a strong, coloured plastic used to make bottles for milk, juice, water and laundry products, as well as yoghurt containers, margarine and ice cream tubs.

**# 3 PVC (polyvinyl chloride):** a cheap, durable plastic used mostly in construction, but also used in clothing, upholstery, flexible hoses and tubing, flooring, children's toys and inflatable products such as pool toys and inflatable structures.

**# 4 LDPE (low density polyethylene):** plastic that in its soft form is used to make milk pouches, bread, sandwich and frozen food bags, plastic shopping bags, dry cleaning and trash bags. In rigid form is used to make flexible lids and squeezable bottles.

**# 5 PP (polypropylene):** a light, soft plastic that is used for ketchup bottles, yogurt containers, margarine tubs, cap and lids and some pourable containers (like maple syrup).

**# 6 PS (polystyrene):** a plastic that in its rigid form is used for trays and lids, clear carry out food containers and medicine bottles. In its expanded form, is used for meat trays, egg cartons, foam "clamshell" containers and preparation cups for instant soups and noodles.

**#7 other:** a plastic that can be made from several different polymers, but most commonly polycarbonate or ABS (acrylonitrile butadiene styrene), therefore its properties vary depending on the polymer. # 7 plastic is often used for re-usable beverage bottles, baby bottles and electronic casing.