City of Kingston
Information Report to Environment, Infrastructure & Transportation Policies Committee
Report Number EITP-19-003

To: Chair and Members of the Environment, Infrastructure and Transportation Policies Committee

From: Jim Keech, President & CEO, Utilities Kingston
Resource Staff: Sheila Kidd, Deputy Commissioner Operations, Transportation and Infrastructure Services

Date of Meeting: March 6, 2019
Subject: Waste Diversion Rate and Integrated Waste Management Plan Update

Executive Summary:

The Solid Waste Services Department (SWSD) is responsible for the operation of an integrated solid waste management system that includes the planning and delivery of waste services and the operation of waste management facilities.

This report provides information on the status of the City of Kingston’s waste diversion rate, an update on past strategies that have been implemented, and information on the next steps to update the strategies in the Integrated Waste Management Plan (IWMP), to achieve a 65% waste diversion rate by 2025.

In 2006, the residential waste diversion rate was 45% and Council set a goal to divert 65% of waste from landfill by 2012. To achieve the goal, Council directed staff to develop an Integrated Waste Management Plan (IWMP). The plan defines the goal, connections between waste streams and the preferred waste management approaches; covering all aspects in an integrated, cost effective manner.

An IWMP was developed and approved by Council in 2007-2009. Throughout 2009-2018, the preferred approaches and several other service level enhancements were implemented or initiated. The most notable include a green bin organics program, curbside waste audits, a 1-bag limit for garbage and feasibility studies to convert the 4-stream recycling program to 2-stream. Redesigned public communication, education, and promotion plans were also implemented to encourage participation in the diversion programs. There has also been a
focus on the impacts of legislation changes and key strategies that the City must consider to align with provincial regulations.

The 65% diversion goal was not achieved in 2012 and the average diversion rate for 2012-2014 was 54%. In 2015, Council reset a long-range goal of diverting 65% of residential waste from landfill by 2025, with an interim goal of 60% by 2018. The interim goal of 60% waste diversion was achieved in 2015, 2016 and 2017. It is expected (results not released until fall 2019) that the 2018 waste diversion rate will remain at 60%.

The preferred approaches and enhancements to achieve and sustain 60% waste diversion have been implemented, and the waste diversion rate is not expected to increase with the status quo. Voluntary participation of the diversion programs, as well as the level of effort that residents are willing to put into reducing and diverting waste in the existing integrated system has peaked and flatlined.

To achieve a goal of 65% waste diversion, changes to service levels, programs, and policies will be required. Throughout 2019-2020, staff will continue to develop the future strategies and approaches, and update the IWMP to achieve the goal of 65% waste diversion by 2025. Examples of service level and policy changes that could be implemented are included in the Options/Discussion section of this report. These will form the basis for public consultation.

With input from the public on potential waste programs, service levels, and policies, staff will identify the preferred strategies, update the plan and present it to Committee and Council for consideration. Recommendations during the development will be brought forward to the Environment, Infrastructure and Transportation Policies Committee as required.

**Recommendation:**

This report is for information purposes only.
March 6, 2019

Page 3 of 11

Authorizing Signatures:

ORIGINAL SIGNED BY PRESIDENT & CEO, UTILITIES KINGSTON
Jim Keech, President & CEO,
Utilities Kingston

ORIGINAL SIGNED BY CHIEF ADMINISTRATIVE OFFICER
Lanie Hurdle, Acting Chief Administrative Officer

Consultation with the following Members of the Corporate Management Team:

Peter Huigenbos, Acting Commissioner, Community Services Not required
Desirée Kennedy, Chief Financial Officer & City Treasurer Not required
Deanne Roberge, Acting Commissioner, Corporate & Emergency Services Not required
Options/Discussion:

This report provides information on the status of the City of Kingston’s waste diversion rate, an update on past strategies that have been implemented, and information on the next steps to update the strategies in the Integrated Waste Management Plan (IWMP) to achieve a 65% waste diversion rate by 2025.

Part of the future work includes consultation with the public on potential waste programs, service levels, and policies that could be implemented to achieve the 65% waste diversion goal. This report provides an overview of the potential options that will be presented during the consultation phase.

Background Information

The Solid Waste Services Department (SWSD) is responsible for the operation of an integrated solid waste management system that includes the planning and delivery of waste services and the operation of waste management facilities. An ‘integrated’ system refers to the combination and interaction of strategies to reduce and manage waste; including all aspects of waste generation, transfer, sorting, treatment, recovery, and disposal. The City’s integrated system is based on the three R’s: reduce, reuse, and recycle. The system promotes waste reduction and consists of diversion programs (i.e. blue/grey box, green bin) with landfill disposal for residual waste (i.e. garbage).

The core services include weekly curbside collection of garbage, recycling and organics from residential properties, garbage collection from commercial properties in the downtown area, and the operation of the Kingston Area Recycling Centre (KARC). Services provided at KARC include drop-off depots for recyclables, yard waste and household hazardous waste, and residents are able to pick up recycling boxes, green bins, composters, bag tags, etc.

The level of service and details regarding the use of waste services and facilities is approved through the City’s Solid Waste Management By-law Number 2014-5. Any new or changes to service levels (i.e. frequency of waste collection, etc.) provided to the defined eligible properties are approved via amendments to this by-law.

Under the by-law, all of the services provided, including the use of diversion programs, are voluntary, meaning that eligible properties for waste services are not required to participate. Some schedules in the by-law prohibit the disposal of certain recyclables and organics in the garbage stream, but not all. To simplify, a resident is allowed to dispose of recyclables and food waste organics in the garbage stream.

In 2006, Council directed staff to develop an Integrated Waste Management Plan (IWMP) to establish a long-term strategy aimed at reducing waste and to complement and improve the existing system. At that time, the residential waste diversion rate was 45% and Council had set a goal to divert 65% of waste from landfill by 2012. This goal was not achieved. An IWMP was developed and approved by Council in 2007-2009. The plan defines the long-range goals and
objectives, identifies the waste management hierarchy to be considered in future decision making, and specifies the preferred management approaches. As work continued, in 2015, City Council reset a long-range goal of diverting 65% of residential waste from landfill by 2025, with an interim goal of 60% by 2018. At that time, the waste diversion rate had a three-year average of 54%. Council also directed staff to implement enhancements to the integrated waste management system.

The IWMP relies on data to monitor the progress towards the target diversion rate and identify opportunities to increase participation in the diversion programs. Additional information about the data collected is provided below.

**Waste Diversion Rate**

Diversion rates are provided by the Resource Productivity and Recovery Authority (RPRA) after municipalities submit their annual waste data. The diversion rate is generally provided in the fall of the following year. The chart below indicates Kingston’s diversion rates over the last 12 years:

![Historic Waste Diversion Rates (%)](chart.png)

The spike in 2014 is related to a backlog of yard waste resulting in an unusually high quantity of yard waste that was transferred in that year.

The 2017 data submitted to RPRA shows that 41,760 tonnes of waste was managed by the City; of that, 16,405 tonnes was landfilled (garbage) and 25,355 tonnes was diverted through available diversion programs. This represents a 60% waste diversion rate.
In order to achieve a 65% diversion rate without increasing the total amount of waste being generated in the system, 1,800 tonnes of the existing landfilled garbage would need to be diverted. To put this into perspective, each household in Kingston would need to divert an additional 40 kg of waste per year. Based on the waste composition data below, the average household could divert up to 155 kg more waste per year by participating in the existing programs.

**Waste Composition Data**

The SWSD completes an annual waste composition audit on approximately 200 single-family households, and consists of the collection and auditing of all waste streams set at the curbside. To measure the capture rate of divertible material, the contents of the recycling boxes and green bins collected are compared to the quantity of recyclables and organics placed in the garbage. Identifying the capture rates of the specific types of recyclables and organics allows the SWSD to target certain divertibles via public education and promotion to raise the awareness that these items are not garbage.

The 2018 data identified that the average home generates a total of 665 kg of waste per year. A total of 337 kg is captured through the recycling and green bin programs for a waste diversion rate of about 51%. Other diversion programs make up the other 9% to equal the 60% waste diversion rate.

<table>
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<tr>
<th>Average Household Waste Generation</th>
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<tr>
<td>Garbage (49%)</td>
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<tr>
<td>Diverted Materials (51%)</td>
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The audit results indicate that, on average, an additional 155 kg of waste per household, per year could be diverted from landfill if the homeowner placed items correctly in the recycling box or green bin.
Only about 162 kg (24%) of the 665 kg generated per household is actually waste that should go to landfill. Residual waste (items with no diversion program) accounts for only 24% of the waste composition.

Based on the results, Kingston has the potential to achieve a 76% waste diversion rate. The largest area for improvement includes the increase capture of organics.

Customer Satisfaction Survey

Since 2016, the SWSD has been conducting an annual customer satisfaction survey that is completed by nearly 1,200 households per year. The survey provides opportunities for residents to provide comments. The average three-year rating for overall satisfaction with solid waste services has been 90% and cumulatively over 7,000 comments have been received. Comments range from residents expressing frustration that the City does not collect large items from the curb to residents asking the City to enforce residents to use their recycling boxes and green bins. It is understood from reviewing the comments that there is a diverse spectrum of opinions on waste management practices in community.

Integrated Waste Management Plan

An IWMP refers to the combination and interaction of strategies to reduce and manage waste. The purpose of an IWMP is to define the community vision for waste management and the strategies to optimize the interaction between the waste streams in an integrated manner; covering all aspects from waste generation, sorting, recovery, disposal, etc. The plan should seek to find cost efficiencies and alignment with external legislative and regulatory bodies that govern waste management activities.

The 60% waste diversion goal was achieved in each year, 2015 through 2017, and it is expected (results not released until fall 2019) that the 2018 waste diversion rate will remain at 60%.
The 60% waste diversion goal was achieved through a combination of the strategies identified in the IWMP aimed at decreasing the overall quantity of garbage generated by homeowners and increasing the capture rate of recyclables and organics.

In 2007-2009, an IWMP was developed and approved by Council. The plan identified the following waste management hierarchy to be considered in waste related decision-making processes:

1. Prevention / Avoidance (reduce overall waste generation through behavioral or technological change)
2. Enhanced Design for Reduction or Reuse
3. Product Reuse
4. Material Recycling, Composting and Anaerobic Digestion
5. Resource Recovery (recovery of fuels and/or materials for secondary use)
6. Thermal Treatment with Energy Recovery
7. Landfill with Energy Recovery
8. Landfill or Thermal Treatment without Energy Recovery

In 2009, Council approved the following preferred waste management approaches:

1. Dual stream recycling collection and processing program i.e. grey box/blue box;
2. A source separated organics and leaf and yard waste collection and processing program;
3. Residual waste processed for material and/or energy recovery; and
4. Remaining garbage disposed of by landfill.

Since then, the following strategies have been implemented or pursued:

1. **Convert to a Dual Stream Recycling System, 2011 – current:** The City has been reviewing the feasibility of upgrading the City’s existing four stream Material Recovery Facility (MRF) and collection system to a two (dual) stream system since 2011. Due to pending provincial legislative/regulatory changes, the project has been paused at various stages to ensure that the correct approach, with little risk to the City is selected. This work has now been completed and staff is presenting a recommendation to the Environment, Infrastructure and Transportation Policy Committee (EITP) to convert to a dual stream recycling system (Report EITP-19-004).

2. **Source Separated Organics and Leaf and Yard Waste System, 2009.** This was implemented in the spring of 2009. Almost 34,000 tonnes of green bin organics have been diverted from landfill since the introduction of program.
3. **Residual Waste Processed for Material and/or Energy Recovery, 2012 – 2016.** In 2012, a Request for Information (RFI) to obtain current and industry relevant experience and system requirements for biological treatment, thermal treatment and refuse derived fuel was released. The results indicated that Kingston does not manage enough residual waste (i.e. waste that goes to landfill) to make an alternative residual processing technology viable and recommended that the City seek additional tonnes from other sources. Similar to item 1 above, with impending changes to the provincial legislation for waste, in 2016, Council approved staff to pause research on the development of a residual waste technology and that the City continue with the current residual waste disposal arrangements (i.e. landfill) until January 31, 2021. Council approved that the next procurement document shall identify the City’s waste management hierarchy and request options for both landfill and non-landfill, alternative residual waste processing technologies.

4. **Remaining Waste Landfilled.** Council approved a one-bag garbage limit per week in 2012, which has reduced tonnage of residual waste sent to landfill. At this time, all waste that cannot be captured in a diversion program is sent to landfill for disposal.

In addition to these approaches, staff has developed and implemented a series of education and promotion programs. These programs included targeted communication and education plans for specific recyclables that had a low capture rate, based on the results of the waste audits. Other enhancements included redesigned communications, education and promotion programs for residents and waste collectors, discounted backyard composters, a scrap metal bin at KARC, public recycling depots, mobile waste diversion trailer, ‘how to’ videos, annual curbside battery collection and attending community events to engage with the public about waste.

The preferred approaches and enhancements to achieve and sustain 60% waste diversion have been implemented. The waste diversion rate is not expected to increase from 60% with the status quo. Voluntary participation of the diversion programs, as well as the level of effort that residents are going to put into reducing and diverting waste in the existing integrated system has peaked and flatlined.

To achieve 65% waste diversion, changes to service levels, programs, and policies will need to be considered.

**Next Steps**

Throughout 2019-2020, staff will continue to develop and finalize the next waste strategies and approaches to achieve the goal of 65% waste diversion by 2025. The next phases include:

- continuing with ‘works in progress’ already included in the IWMP;
- public engagement and consultation on potential waste program, service level and policy strategies that could be implemented;
- identifying the preferred strategies that will advance the City towards its goal; and
- recommending the final plan for Council approval.
Public engagement and consultation will aim to present residents with the City’s waste diversion goal, data and information on waste management policies and programs that could be implemented to achieve the goal. There are several different ways to organize waste programs and policies to develop an integrated system. The key is to integrate the services in a way that best suits the vision and needs of the community, reduces residual waste and is economically feasible. Program and policy decisions must also reflect the availability of infrastructure to support the waste streams managed within the system.

Program and Policy Options for Consideration

The list below provides the approaches that are best suited for integration within the existing waste management system, as they will increase participation of the existing diversion programs and support a neutral to low cost impact on capital and operating budgets. This list, although not exhaustive, will be presented during the engagement and consultation phase with the public.

1. Increase the cost of garbage bag tags to encourage greater participation in the diversion programs;
2. Eliminate the existing one ‘free’ bag per week and explore full user pay options including a policy/program consideration for low income individuals;
3. Prohibit the disposal of recyclables and organics in the garbage stream and enforce the use of clear bags for garbage;
4. Reduce the frequency of garbage collection from weekly to bi-weekly for most eligible properties. This option may allow for bi-weekly collection for yard waste;
5. Limit the number of additional ‘tagged’ garbage bags permitted for collection;
6. Reduce the number of “two bags of garbage” weeks from three per year to two per year;
7. Increase the size of the blue and grey boxes;
8. Mandatory use of green bins at multi-residential properties, or proof of third party contractor for organics collection;
9. Eliminate fees and charges for schools to participate in the green bin organics program; and
10. Provide two size options for green bins: 80 litre or 45 litre.

As previously indicated, to achieve a 65% diversion rate without increasing the total amount of waste being generated in the system, 1,800 tonnes of the existing landfilled garbage would need to be diverted. To put this into perspective, each household in Kingston would need to divert an additional 40 kg of waste per year. Based on the waste audit results, the average household could divert up to 155 kg more waste per year with the existing programs however it will be difficult to achieve this level of participation.

Staff expects that additional options will be identified during the consultation sessions. Staff will ensure that those options are included and considered during the development of the preferred strategies that will be recommended for consideration and approval. Once the preferred strategies and timelines for implementation are approved they will be incorporated into the final IWMP, which will be brought forward for adoption.
Existing Policy/By-Law:

By-law Number 2014-5, Solid Waste Management By-Law is the existing by-law, which identifies the level of service and details regarding the proper use of waste services and facilities. Program or policy changes will be included and approved through amending this by-law.

Notice Provisions:

Not applicable

Accessibility Considerations:

Waste programs and policies implemented will comply with Accessibility for Ontarians with Disabilities Act (AODA) and the City’s Facilities Accessibility Design Standards (FADS) requirements as applicable, particularly in regards to accommodating special requests for residents to participate in the curbside collection programs and accessing solid waste management facilities.

Financial Considerations:

Funds exist within the previously approved Solid Waste capital budget to complete the consultation, review and update to the IWMP.

Contacts:

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Other City of Kingston Staff Consulted:

Jason Hollett, Supervisor, Solid Waste Services

Exhibits Attached:

Not applicable