

# **A Waste Recycling Strategy for Clarence Rockland**

November 7, 2013

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**"This project has been delivered with the assistance of Waste Diversion Ontario's Continuous Improvement Fund, a fund financed by Ontario municipalities and stewards of blue box waste in Ontario. 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."**

# 1. Introduction

The City of Clarence-Rockland (the City) has retained exp Services Inc. to assist them with the development of a Waste Recycling Strategy (WRS). The WRS will focus primarily on the residential sector, although it will also provide options for how recycling is managed among the City's small businesses.

While the City is not in imminent need of additional landfill capacity (the estimated lifespan of the landfill is until 2033), the City wishes to explore recycling options that will maximize the potential of this finite resource.

The goal of WRS is to develop a WRS that will help to ensure the City manages its recyclables in a way that is economically prudent, environmentally sound, and meets the waste management needs of its residents.

This WRS was developed with support from the Continuous Investment Fund and by using the Continuous Investment Fund's *Guidebook for Creating a Municipal Waste Recycling Strategy*.

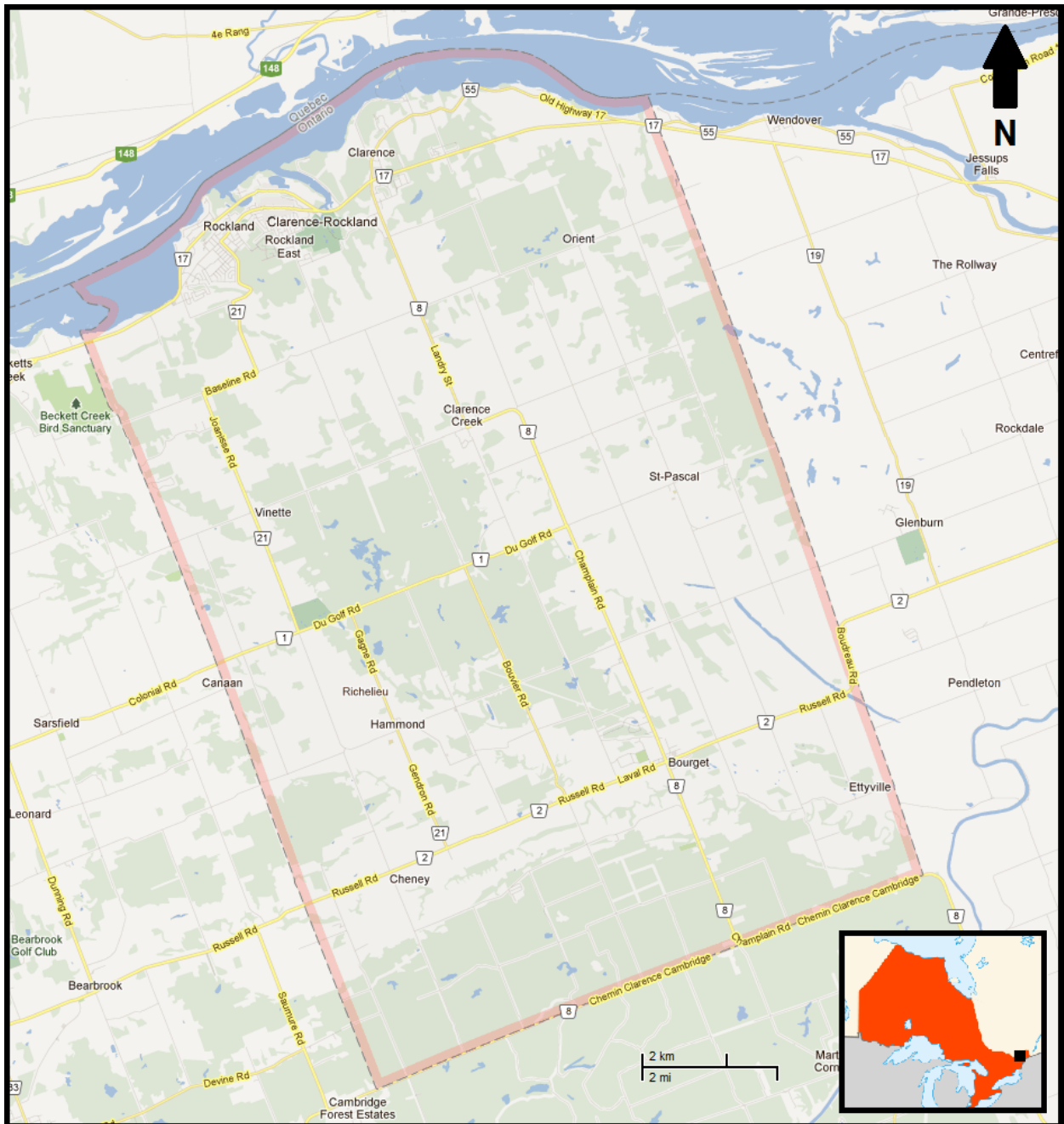
# 2. Overview of the Planning Process

This WRS was completed on behalf of the City by exp Services. In developing the WRS, staff with exp met with Clarence-Rockland municipal waste management staff to review the City's current solid waste management program, its constraints and challenges, and to discuss possible options for improving recycling operations.

# 3. Study Area

The study area for this WRS includes the City of Clarence Rockland (see Figure 1). This WRS primarily addresses the residential sector, although options for the business sector have also been considered.

Figure 1: City of Clarence-Rockland.



## 4. Stated Problem

Management of municipal solid waste, including the diversion of blue box materials, is a key responsibility for all municipal governments in Ontario. The factors that encourage or hinder municipal blue box recycling endeavors can vary greatly and depends on a municipality's size, geographic location and population.

The key drivers that led to the development of this WRS include:

- Implementation of best practices to maximize available WDO funding.
- Maximize the use of the City's landfill, a highly-valued municipal asset.
- Improve the cost-effectiveness of the City's blue box program.
- Maximize the delivery of recycling services available to residents.

## 5. Goals and Objectives

This WRS has identified a number of goals and objectives for the City. These are presented below.

**Table 1: Waste Recycling Goals and Objectives**

<b>Goals</b>	<b>Objectives</b>
To maximize diversion of residential/municipal solid waste through the blue box/recycling program	<ul style="list-style-type: none"><li>• Increase the waste diversion rate by 3 to 4 percentage points through recycling activities.</li><li>• Achieve a target public participation rate of 75% by 2015 for collection of accepted blue box materials.</li></ul>
To improve the cost-effectiveness of recycling in our community	<ul style="list-style-type: none"><li>• Maintain or reduce the cost of recycling services per person served.</li></ul>

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

### 6.1 Community Characteristics

The City of Clarence-Rockland is located in south-eastern Ontario, approximately 30km east of the City of Ottawa. Located in the United Counties of Prescott and Russell, the City is comprised of seven smaller towns and villages that include: Bourget, Cheney, Clarence, Clarence Creek, Hammond, Rockland and Saint-Pascal-Baylon. The City was formed In January 1998 when the Town of Rockland amalgamated with Clarence Township. The City is predominately rural, with Rockland being the main urban area. Figure 1 illustrates the City and its member towns and villages.

The City is considered a `Rural Collection South` jurisdiction, based on Waste Diversion Ontario's (WDO) municipal groupings. Through its Physical Services division, the City is responsible for providing waste services to all residents and to some industrial, commercial and institutional (IC&I) establishments.

In 2011, the City had an estimated population of 24,791<sup>1</sup>, and waste collection services and diversion programs were provided to 8,861 total households, which included 7,089 single family homes and 1,772 multi-residential family units. In addition to this, the City provides recycling bin and garbage bin collection services for 332 small commercial establishments. The City provides the following services and facilities using private contractors and municipal services:

- Two stream curbside recycling collection;
- Recycling bin collection for multi-residential units and small commercial establishments;
- Weekly collection of residential waste at curbside and from apartment dumpsters;
- Depot drop-off for leaf and yard waste (at either transfer station or landfill site);
- Scrap metal depot drop-off (at landfill site);
- Scrap tire depot drop-off (at landfill site) ;
- Curbside Christmas Tree collection;
- Bi-weekly bulky goods curbside collection;
- Waste Electrical and Electronic Equipment (WEEE) depot drop-off (at landfill site);
- Drop-off of construction and demolition (C&D) waste at the landfill site (where some is diverted for reuse by landfill site staff);
- Municipal Hazardous Special Waste (MHSW) depot drop-off (at landfill site);
- Spring Clean-up event; and
- Fall Give Away Weekend.

The City also operates a landfill site in the community of Bourget and a transfer station in Rockland.

In addition to these programs and facilities, the City encourages residents and IC&I establishments to further increase diversion through backyard composting, grasscycling and the Ontario deposit-return program.

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<sup>1</sup> City of Clarence-Rockland, 2011 WDO Datacall Submission

## 6.2 Current Waste Generation and Diversion

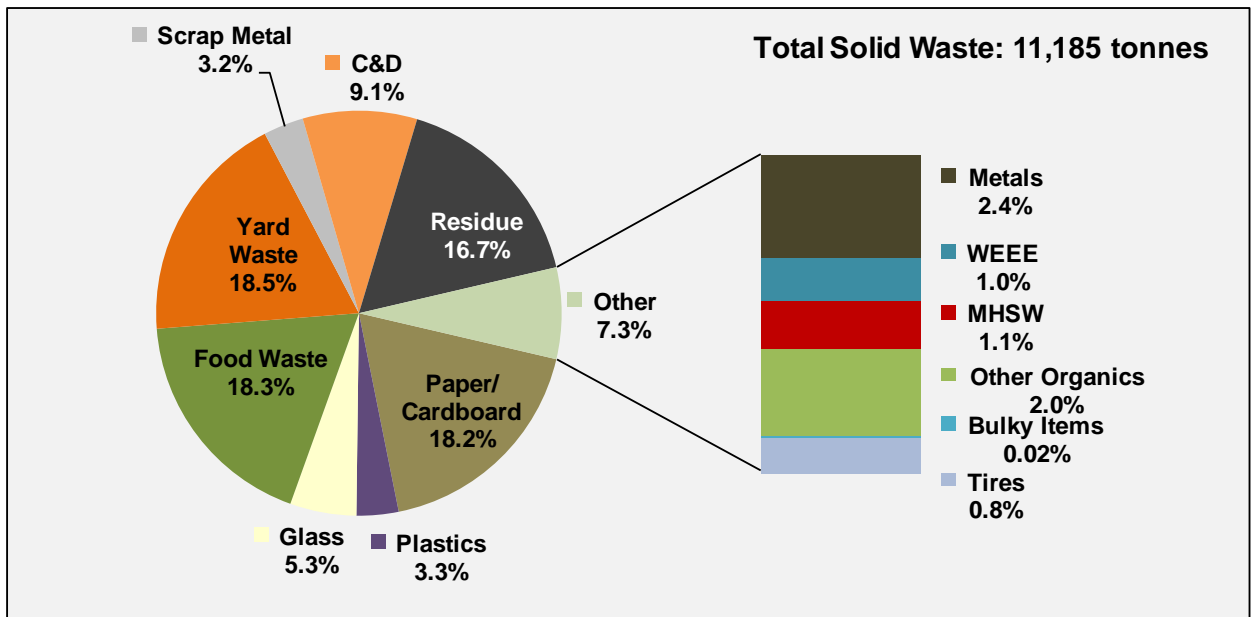
In 2011, the City of Clarence-Rockland generated an approximately 11,185 tonnes of solid waste. Of this, about 37% (or 4,136 tonnes) was diverted from disposal. To better understand where the City's waste is going and how much more can be diverted, an estimate of its waste composition (i.e., a waste composition profile) was prepared.

A waste composition profile provides a snapshot in time of what is inside a waste stream, including garbage, recyclables, household organics such as food waste and yard waste, hazardous materials, etc. Because no waste audit data was available for the City, waste audit data from a similar community was required. Waste audit data collected by Stewardship Ontario for the Town of North Glengarry was chosen as a proxy for this exercise, as the Town of North Glengarry<sup>2</sup> has similar characteristics in terms of demographics, recycling programs, and is also classified as a "Rural Collection South" municipality by WDO<sup>3</sup>.

The Stewardship Ontario waste audit identifies the composition of the blue box and garbage set out for collection. This audit data was applied to the Clarence-Rockland's curbside garbage and blue box tonnage, which was in turn combined with the diversion data reported in the City's 2011 WDO datacall submission and estimated C&D tonnage to obtain a full picture of the City's waste composition.

As Figure 2 illustrates, the City's waste composition consists mainly of organic materials (38.9%<sup>4</sup>), paper/ cardboard (18.8%), and residue (i.e., garbage) (16.7%).

**Figure 2: Clarence-Rockland Waste Composition Profile (2011)**



Note: "Residue" is comprised of non-recyclable glass, metals, plastics and paper, textiles, diapers and sanitary products and pet waste.

<sup>2</sup> WDO Waste Audit results from North Glengarry.

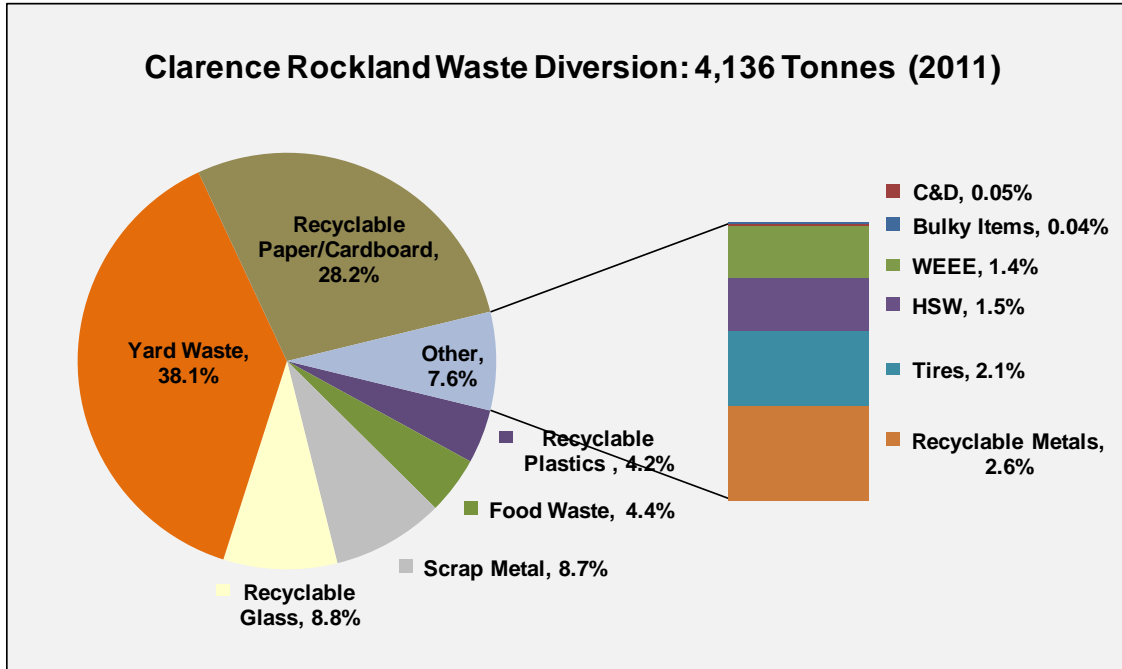
<http://www.stewardshipontario.ca/stewards/library/single-family-waste-audit-program>

<sup>3</sup> It is an accepted practice for a community to use waste audit data from another similar community as a proxy for its own if no waste audit has been completed. Some waste management plans also use national or provincial averages to estimate waste composition.

<sup>4</sup> Includes yard waste (18.5%), food waste (18.3%) and "other organics" (2.0%), which includes materials such as tissues and paper towels.

In 2011, approximately 4,136 tonnes of solid waste was diverted from disposal in Clarence-Rockland. As Figure 3 shows, the diversion of yard waste and recyclable paper/cardboard were the largest contributors to this diversion.

**Figure 3: Material Diverted from Disposal (2011)**



### 6.3 Composition of Recyclable Waste Diverted

Based on the waste diversion results for Clarence-Rockland as posted online by WDO, in 2011 approximately 1,810 tonnes of recyclable material was diverted from disposal in Clarence-Rockland through the City's blue/black box program and the Ontario deposit-return program<sup>5</sup>. This included:

- 1,673 tonnes through the Blue/Black Box program; and
- 137 tonnes through the Deposit-Return program (most of which was glass).

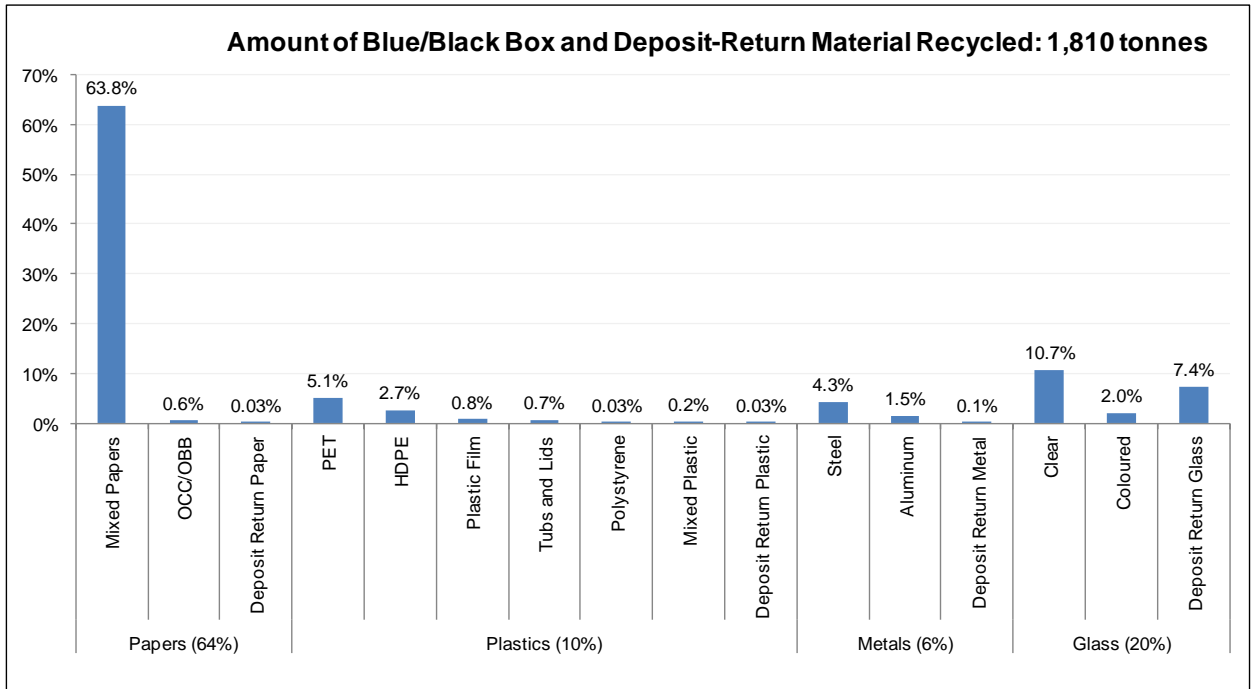
Most of the material recycled through the two programs Blue/Black Box program was recyclable paper (64%)<sup>6</sup>, while recyclable metals was the least amount (6%). A detailed breakdown of the types of recyclable material returned through the Blue/Black Box and the deposit-return programs in Clarence-Rockland is provided in Figure 4.

<sup>5</sup> Some of this tonnage would include material from the City's IC&I customers, but this material is not tracked separately from the residential sector. However, it is assumed that the proportion from the IC&I sector would be small.

<sup>6</sup> Includes mixed papers, old corrugated cardboard/old box board and deposit-return paper.



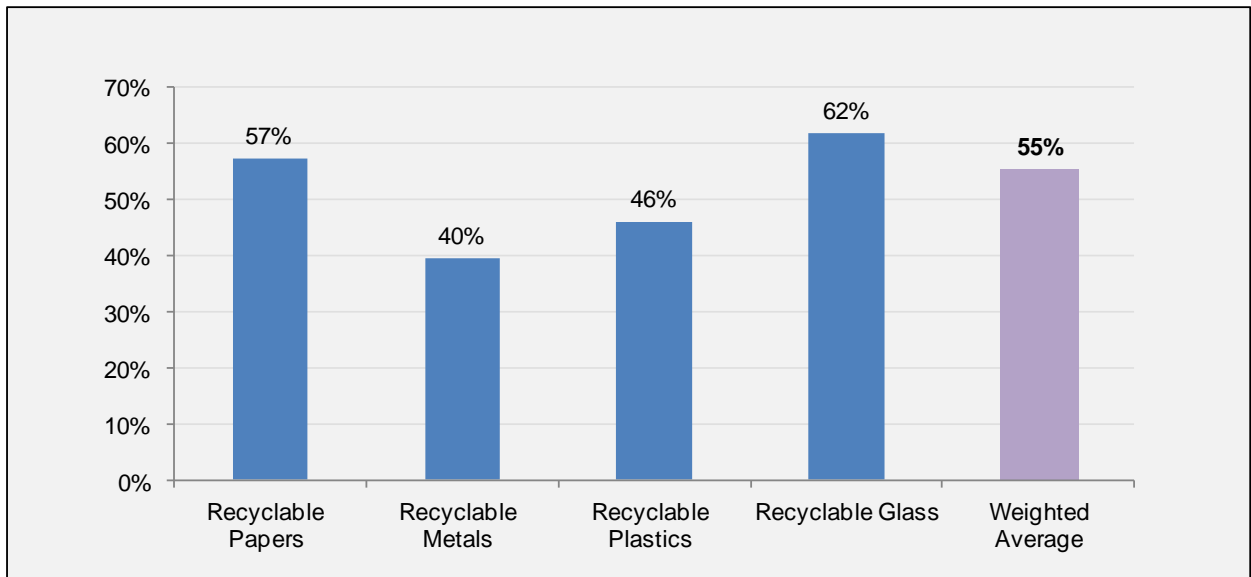
**Figure 4: Distribution of Blue/Black Box and Deposit-Return Recyclables Diversion (2011)**



Based on the waste composition profile, the total amount of material available in Clarence-Rockland that potentially could have been recovered through the Blue/Black Box and Deposit-Return programs was about 3,699 tonnes. Therefore, in 2011 the City achieved a recycling rate of about 55% for the materials that could have been diverted through these programs. This is less than the WDO recommended target recycling rate of 70% for “Rural Collection South” municipalities.

Figure 5 shows the recycling rates achieved for the categories of material accepted in the Blue/Black Box and Deposit-Return programs. The City achieved the highest recycling rates for recyclable glass (62%) and papers (57%), while recyclable metals had the lowest recycling rate (40%).

**Figure 5: Recycling Rates of Blue/Black Box and Deposit-Return Materials (2011)**



#### **6.4 Potential Waste Diversion**

Based on the City's chosen target recycling rate of 75%<sup>7</sup>, a total of approximately 2,454 tonnes of blue box recyclable materials are available for diversion, of which approximately 644 tonnes are still currently in the waste stream. Estimates of blue box material available for diversion are listed in the table below.

Achieving the target recycling rate of 75% raise Clarence Rockland's waste diversion rate to by 5.8%, to 42.8%.

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<sup>7</sup> Although the target recycling rate for the City's WDO municipal grouping is 70%, the City has chosen to adopt a 75% recycling rate target for its WRS.

**Table 2: Waste Diversion Analysis (2011)**

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Waste Material	Composition (%)	Amount of Material in Waste Stream (tonnes)	Material Available for Diversion (tonnes)	Material Diverted (tonnes)	Material Remaining in Waste Stream for Diversion (tonnes)	Material Remaining in Waste Stream for Diversion (% of total waste stream)
		{column B x 11,185 tonnes}	Based on target 75% recycling rate  {column C x 75%}		{column D – column E}	{column F ÷ 11,185 tonnes}
<b>Paper/ Cardboard</b>	18.2%	2,035	1,527	1,165 *	361	3.2%
<b>Metals</b> (aluminum, steel, mixed metal)	2.4%	270	202	107 *	96	0.9%
<b>Plastics</b> (containers, film, tubs and lids)	3.3%	374	281	173 *	108	1.0%
<b>Glass</b>	5.3%	592	444	365 *	79	0.7%
<b>Total</b>	29.2%	3,271	2,454	1,810 *	644	5.8%

\* Includes material diverted through the curbside blue box program and through the deposit-refund program.

## 6.5 Existing Programs and Services

The City provides the following services and facilities using private contractors and municipal services to manage solid waste:

- Two stream curbside recycling collection;
- Recycling bin collection for multi-residential units and small commercial establishments;
- Weekly collection of residential waste at curbside and from apartment dumpsters;
- Deport drop-off for leaf and yard waste (at either transfer station or landfill site);
- Scrap metal depot drop-off (at landfill site);
- Scrap tire depot drop-off (at landfill site) ;
- Curbside Christmas Tree collection;
- Bi-weekly bulky goods curbside collection;
- Waste Electrical and Electronic Equipment (WEEE) depot drop-off (at landfill site);
- Drop-off of construction and demolition (C&D) waste at the landfill site (where some is diverted for reuse by landfill site staff);
- Municipal Hazardous Special Waste (MHSW) depot drop-off (at landfill site);
- Spring Clean-up event; and
- Fall Give Away Weekend.

The City also operates a landfill site in the community of Bourget and a transfer station in Rockland.

The City provides single family households with weekly curbside collection of garbage. Currently, there is a 3 bag/container per week limit for households receiving weekly curbside garbage collection. Any additional container or bag placed out for curbside collection is required to have a

City issued “bag tag”. Tags cost \$2 each and can be purchased at City Hall. All garbage is collected by BFI Canada and disposed at the City landfill site. Residents can also bring and dispose of garbage at the landfill site and are subject to tipping fees.

Multi-residential units and some ICI establishments are provided with garbage collection (larger ICI establishments must obtain private waste collection services). Typically, garbage is collected from ICI establishments once per week, although establishments where food is produced are provided with collection twice a week. Additional pick-ups are provided for a fee. This service is provided to approximately 332 multi-residential buildings/ICI establishments.

In 2011, the City’s Blue/Black Box recycling program diverted 1,673 tonnes of material from disposal. Residents receive curbside collection of recyclable materials in two streams. Container products made of glass, metal and plastic are collected in the “blue box” stream and recyclable paper products are collected in the “black box” stream. Each stream is collected bi-weekly on alternating weeks.

Container products collected in the blue box stream include:

- Glass food and beverage bottles and jars;
- Metal food and beverage bottles and cans;
- Aluminum cans, foil and packaging;
- Empty aerosol cans;
- Clean, empty paint cans (without lids);
- Gable top and Tetra-Pak cartons;
- Any plastic container labelled #1 - #6; Lids and caps from containers; and
- Plastic bags.

Recyclable paper products are collected separately in the “black box” and include the following materials:

- Newspapers and flyers;
- Magazines and catalogues’
- Corrugated cardboard ;
- Phone books;
- Boxboard (such as cereal and cracker boxes);
- Fine paper;
- Books; and
- Molded pulp (such as egg cartons, toilet paper rolls).

The City currently does not include polystyrene foam or polystyrene crystal (both plastic #6) packaging in their recycling program:

The City also provides recycling bin collection services to all multi-residential buildings and some IC&I establishments (about 332 customers receive this service).

Collection and processing of all recyclable materials is currently contracted out to BFI Canada up until 2015. Recyclable materials are processed at the Metro Waste Recycling facility located in Ottawa, Ontario or the Manco facility in Napanee, Ontario.

In 2011, the total net annual recycling costs for Clarence Rockland (excluding WDO grant for blue box recycling) was \$311,344. This amounts to \$173 per tonne, or \$12.56 per capita. As the table below shows, net annual recycling costs for {your municipality} are {above average/average/below average} for its WDO municipal grouping.

**Table 3: Net Recycling Cost (per tonne per year)**

Clarence Rockland	\$173
Municipal Grouping: Rural Collection - South	\$506

## 6.6 Anticipated Future Waste Management Needs

Solid waste generated rates in Clarence Rockland are expected to grow over the next 10 to 15 years. The Table below depicts the expected growth rates for solid waste generation and blue box material recovery, based on an annual population growth rate of 3.5%<sup>8</sup>.

**Table 4: Anticipated Future Solid Waste Generation Rates and Available Blue Box Material**

<b>Year</b>	<b>2011</b>	<b>2017</b>	<b>2023</b>
<b>Population</b>	24,791	30,474	37,461
<b>Total Waste (tonnes)</b>	11,185	13,749	16,901
<b>Blue Box Material Available (tonnes)</b>	<b>2,450</b>	<b>3,011</b>	<b>3,701</b>

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<sup>8</sup> City of Clarence Rockland. *Enjoy a Great Business Partnership!* <http://en.clarence-rockland.com/siteengine/activepage.asp?PageID=176>.

## **7. Planned Recycling System**

### **7.1 Overview of Planned Initiatives**

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

- Potential diversion – how much waste the option could potentially divert from disposal;
- Potential environmental benefits – this could include reductions in global greenhouse gas emissions from recycling or composting, conservation of natural resources, or avoidance of landfilling of toxic items, among other benefits;
- Potential cost – the anticipated cost of the option; and
- Ease of implementation – how simple or challenging it would be to implement the option, considering technical, public participation and environmental approval challenges.

A discussion of the options reviewed and their scoring are provided in Appendix A. Implementation of the initiatives will be explored during the development of the City's upcoming Long Term Solid Waste Management Strategy.

Once scored, the top ranking Waste Recycling Strategy options were organized into Priority Initiatives and Future Initiatives. The estimated cost for implementing the priority initiatives is estimated to be approximately \$13,500, while implementation of the future initiatives is estimated at \$620,000. Both sets of options are estimated to either generate additional revenues or to reduce overall costs. The Table below presents the Priority Initiatives and Future Initiatives and their estimated costs

**Table 5: Priority and Future Initiatives**

<b>Priority Initiatives</b>	<b>Implementation Costs</b>	<b>Operation Costs</b>
Enter multi-municipal partnerships	<i>Completed within existing budget</i>	<i>Completed within existing budget</i>
Increase user pay	<i>Completed within existing budget</i>	-\$1,382,316 <sup>a</sup>
Ban blue box materials from landfill	\$1,000 (education about ban for public, staff)	\$3,000 (for enforcement)
Introduce bag limits	<i>Completed within existing budget</i>	<i>Completed within existing budget</i>
Conduct targeted/expanded education	\$11,500 <sup>b</sup>	<i>Completed within existing budget</i>
<b><i>Estimated Total Cost (Priority Initiatives)</i></b>	<b>\$13,500</b>	<b>-\$1,379,316</b>
<b>Future Initiatives</b>	<b>Implementation Costs</b>	<b>Operation Costs</b>
Reduce garbage collection frequency <sup>c</sup>	<i>Completed within existing budget</i>	-\$49,397 <sup>c</sup> (savings)
Implement clear garbage bags policy	<i>Completed within existing budget</i>	<i>Completed within existing budget</i>
Enhance collection of recyclables	\$35,000	<i>Completed within existing budget</i>
Introduce public space recycling	\$10,000 <sup>e</sup>	\$7,500 <sup>e</sup>
Enhance and enforce waste disposal by-law	<i>Completed within existing budget</i>	\$3,000 (for enforcement)
Add additional materials into recycling program	<i>Completed within existing budget</i>	\$13,000
Asses automated or semi-automated collection	\$575,000 <sup>b</sup>	-\$45,000 <sup>b</sup> (savings)
<b><i>Estimated Total Cost (Future Initiatives)</i></b>	<b>\$620,000</b>	<b>-\$70,897 (cost savings)</b>

Notes:

- a) Assumes each household sets out an average of 1.5 bags of garbage per week. Based on 8,861 households setting out an average of 1.5 bags of waste weekly, with a cost per bag tag of \$2.00.
- b) Mid-range of estimated cost or savings.
- c) Although in the top six, reducing garbage collection frequency would be considered a future initiative as it requires a municipal composting program to first be in place.
- d) Assumes savings of 10% on garbage collection costs.
- e) Assumes \$2,000 for each container for capital cost, with annual operating cost of \$1,500 per container. Assumes 5 containers installed

## 7.2 Contingencies

Even the best planning can be delayed by a variety of foreseen and unforeseen circumstances. Predicting and including contingencies can help to ensure that these risks are managed for minimum delay. The table below identifies contingencies for possible planning delays.

Risk	Contingency
Insufficient funding	<ul style="list-style-type: none"> <li>• Raise/implement user fees</li> <li>• Explore and apply for other funding sources</li> <li>• Delay lower-priority initiatives</li> <li>• Increase proportion of municipal budget to solid waste management</li> </ul>
Public opposition to planned recycling initiatives	<ul style="list-style-type: none"> <li>• Improve public communications</li> <li>• Engage community/stakeholders to discuss initiatives/recycling plan</li> </ul>
Lack of available staff	<ul style="list-style-type: none"> <li>• Prioritize department/municipal goals and initiatives</li> <li>• Hire summer student to help with planning</li> </ul>

## 8. Monitoring and Reporting

The monitoring and reporting of the City's recycling program is considered a Blue Box program fundamental best practice and will be a key component of this WRS. Once implementation of the WRS begins, the performance of the Waste Recycling System will be monitored and measured against the baseline established for the current system. Once the results are measured, they will be reported to Council and the public.

The approach for monitoring the City's waste recycling program is outlined in the table below.

Topic	Tools	Frequency
Recyclables recovered	Measuring of recyclables at transfer station	Each load
Total Waste Disposed	Annual estimate of total waste disposed (tracking of loads dumped, topographical landfill survey)	Annually
Diversion rates achieved (by type and by weight)	Formula: (Blue box materials + other diversion) ÷ Total waste generated * 100%	Annually
Program participation	Customer survey (e.g., telephone); monitoring set-out rates	Every 1 to 3 years
Customer satisfaction	Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office	Every 1 to 3 years
Opportunities for improvement	Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office	On-going
Planning activities	Describe what initiatives have been fully or partially implemented, what will be done in the future	Annually
Review of Recycling Plan	A periodic review of the Recycling Plan to monitor and report on progress, to ensure that the selected initiatives are being implemented, and to move forward with continuous improvement	Every 5 years



## **9. Conclusion**

This WRS provides the City of Clarence Rockland with a blueprint for advancing its blue box recycling program to one that maximizes waste diversion while effectively managing the associated costs. The next steps will be to introduce the new initiatives into the follow year budget which will allow the recycling options to be incorporated with the City's waste management program in an integrated fashion.

# **Appendix A: Review of Waste Recycling Options and Scoring**