Essex Windsor Solid Waste Authority

Waste Recycling Strategy

2011

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1 Introduction

This Waste Recycling Strategy (WRS) was initiated by the Essex Windsor Solid Waste Authority (EWSWA) to develop a plan to increase the efficiency and effectiveness of local residential recycling programs and maximize the amount of residential blue box material diverted from disposal in the community.

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

This document provides a high-level strategic roadmap on where the EWSWA and its municipal partners can improve the blue box recycling program and achieve the WDO goal of 75% capture rate for Blue Box materials and progress toward the Provincial waste diversion target. Many of these recommendations identify opportunities for improvement to operational practices that are currently ongoing and should be explored in greater detail during the Authority's integrated solid waste management study.

2 Overview of Current Waste Recycling Programs in Essex-Windsor

The EWSWA was created in 1994 to provide waste management programs and facilities within the geographical boundary of Essex County and the City of Windsor (Essex-Windsor). This geographical area includes the County of Essex (comprised of the Town of Amherstburg, the Town of Essex, the Town of Kingsville, the Town of Lakeshore, the Town of LaSalle, the Municipality of Leamington and the Town of Tecumseh) and the City of Windsor. The EWSWA is responsible for administering the Essex Windsor Solid Waste Management Master Plan and its Board is comprised of nine County and City Council Members.

The EWSWA is considered a `Urban Regional` jurisdiction, based on Waste Diversion Ontario`s (WDO) municipal grouping. In 2010, Essex-Windsor had an estimated population of 393,115[1], and waste collection services and diversion programs were provided to 158,270 households by the EWSWA. The households are comprised of 131,603 single family homes and 26,667 multi-residential family units[2].

The EWSWA last developed a Solid Waste Master Plan in 2003. Since the 2003 Master Plan Review, a number of initiatives have been implemented to help increase recycling in Essex-Windsor, including:

- Construction of a new recycling centre, which resulted in paper materials being processed in the old plant while processing container type materials in the new plant. This has accommodated the addition of new materials that residents can recycle.
- Addition of new materials to the blue box program (including gable top containers, Tetra-pak containers, other aluminum packaging and foil, empty aerosol cans, empty paint cans, and tubs and lids labelled #2, #4 and #5).

[1] Statistics Canada, 2010.
[2] 2010 Essex Windsor WDO Datacall.

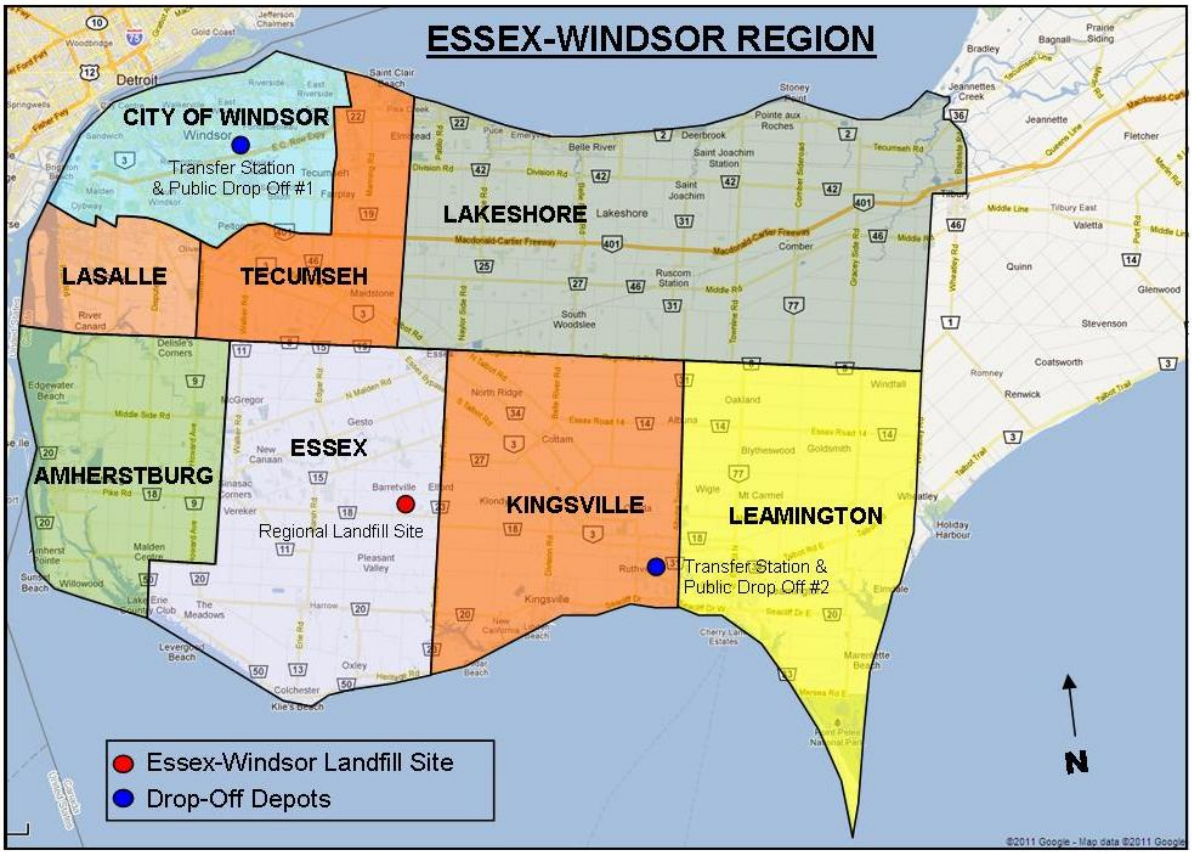
- Implementation of programs to increase the amount of recyclables from multi-residential units, such as apartments.
- Enhancement of the recycling program in municipal offices and other facilities.
- Increased recycling in parks and public spaces.
- Planning for a depot at the Regional Landfill for the receipt of recyclables.

The EWSWA provides the following services and facilities for its recycling program, using private contractors and municipal services:

- Bi-weekly two stream curbside recycling collection;
- Recycling bin collection for multi residential units and industrial, commercial and institutional (IC&I) establishments;
- Drop-off depots; and
- Educational programs and promotion.

Figure 1 illustrates the jurisdiction of the EWSWA and shows the locations of key waste management facilities.

Figure 1: Jurisdiction of Essex-Windsor Solid Waste Management Authority



2.1 Transfer Stations and Public Drop-Off Depots

The EWSWA maintains and operates two transfer stations and drop-off depots for the collection of recyclable material, and other waste material. In 2011, from December through March the City of Windsor public drop-off depot was open Monday to Friday 8:30 a.m. to 3:45 p.m., and Saturday 9:00 a.m. to 12:45 p.m. From April through May the depot was open Monday to Friday 8:00 a.m. to 6:45 p.m., and Saturday 8:00 a.m. to 4:45 p.m. From June through November the depot was open Monday to Friday 8:00 a.m. to 4:45 p.m., and Saturday 8:00 a.m. to 4:45 p.m. It is located at 3560 North Service Road East, in the City of Windsor.

The Transfer Station No.2 drop-off depot in Kingsville was open 8:30 a.m. to 4:15 p.m. Monday to Friday, Saturday from 9:00 a.m. to 12:00 noon from November 1 to March 31, and then from 8:00 a.m. to 4:45 p.m. Monday to Friday, Saturdays 8:00 a.m. to 1:45 p.m. from April 1 to October 31. It is located at 2021 County Road 31 in the municipality of Kingsville.

2.2 Curbside Recycling Program

Residents receive curbside collection of recyclable materials in two streams. Container products and plastics are collected in the “blue box” stream and recyclable paper products are collected in the “red box” stream. Both streams are collected on the same day every two weeks.

Container products collected in the blue box stream include :

- Polycoat containers;
- Gable top containers;
- Aluminum cans, foil and packaging;
- Steel cans;
- Other bottles and containers (#3, #5, #7);
- Clear glass;
- Empty aerosol cans;
- Empty paint cans;
- PET (#1) bottles;
- HDPE (#2) containers;
- Tubs and lids (#2, #4, #5); and
- Coloured glass.

The EWSWA currently does not include the following blue box material in their container stream, due to insufficient marketplace demand:

- LDPE/HDPE film (#2, #4 plastics);
- Polystyrene foam (#6);
- Polystyrene crystal (#6), and
- Mixed plastics (e.g., clamshells and other plastic food containers).

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

- Newsprint;
- Other printed paper (OPP);
- Magazines and catalogues ;
- Phone books
- Corrugated cardboard;
- Boxboard; and
- Other mixed paper.

The EWSWA provides recycling bin collection services to all multi-residential and IC&I buildings in the City of Windsor, provided they supply their own containers. In the County municipalities, the EWSWA provides containers and collection for multi-residential units at no cost. Collection of recyclables in the County is currently contracted out to Windsor Disposal Services (WDS) and collection in the City of Windsor is contracted out to Turtle Island Recycling Corporation. All recyclable materials are processed at the Windsor Essex Recycling Centre, located at 3560 North Service Road East in Windsor.

2.3 Deposit-Return Program

The Ontario Deposit-Return Program is a provincial program run in partnership with the Beer Store that helps to divert eligible wine, beer and spirit containers from disposal in landfills. The program uses deposits on purchased alcohol containers and refunds once returned to any designated return location to encourage participation and increased diversion. Table 1 below summarizes the program's deposit-refund scheme.

Table 1: Summary of the Ontario Deposit-Return Program.

Eligible Containers*	Deposit/Return Amount
• Containers less than or equal to 630mL • Aluminum and steel containers less than or equal to 1L	10¢
• Containers over 630mL • Aluminum and steel containers over 1L	20¢
• Exempt Containers	
• Containers with a volume of 100mL or less (e.g., 50mL minis) • Containers purchased at duty-free stores, U-Vint and U-Brew	No deposit collected or refund offered for these items

* glass bottles, plastic bottles (PET), Tetra Pak containers, bag-in-box, aluminum and steel containers.

2.4 Educational Programs and Promotion

The EWSWA has a comprehensive outreach program that promotes diversion of recyclable material through educational initiatives and promotional material. For example, school and community presentations are conducted throughout the year, with an emphasis on recycling. A waste reduction hotline (1-800-563-3377) is available for residents with questions and concerns regarding waste management in the region. A dedicated waste management website is maintained and operated by the EWSWA (www.ewswa.org) where residents have access to instructions, reports, collection calendars, list of acceptable and restricted items and a newsletter called "Enviro-Tips".

3 Current Waste Composition

In 2010, Essex-Windsor residents generated 153,819[3] tonnes of waste and diverted approximately 38.5% (or 59,229 tonnes) through its various waste management programs (waste figures for

[3] The 2010 Annual Waste Diversion Report for the EWSWA presents the total waste generated in Essex-Windsor to be 151,653 tonnes. In this analysis, an additional 2,166 tonnes have been added to that value to account for material collected through the LCBO deposit-return program but not tallied in the EWSWA's diversion tonnage.

industrial, commercial and institutional sectors are not included). To better understand where Essex-Windsor's waste is going and how much more can be diverted, an estimate of its waste composition was prepared.

A waste composition provides a snapshot in time of what is inside a waste stream, including garbage, recyclables, household organics such as food waste and yard waste, municipal hazardous and special waste materials, etc. To generate this waste composition, the following sources of information were used:

- 2010 WDO datacall and the EWSWA's 2010 Annual Waste Diversion Report – Each year, the EWSWA submits detailed information to the WDO on the amount of wastes that are disposed of and diverted in Essex-Windsor[4]. This information is also discussed in the EWSWA's annual report waste diversion report.
- 2011 EWSWA waste audit – In 2011, the EWSWA conducted an audit of waste collected at curbside. Samples were collected from households over two consecutive weeks and then sorted. The data from this study was used to estimate the composition of materials set out in the garbage and blue boxes in 2010.

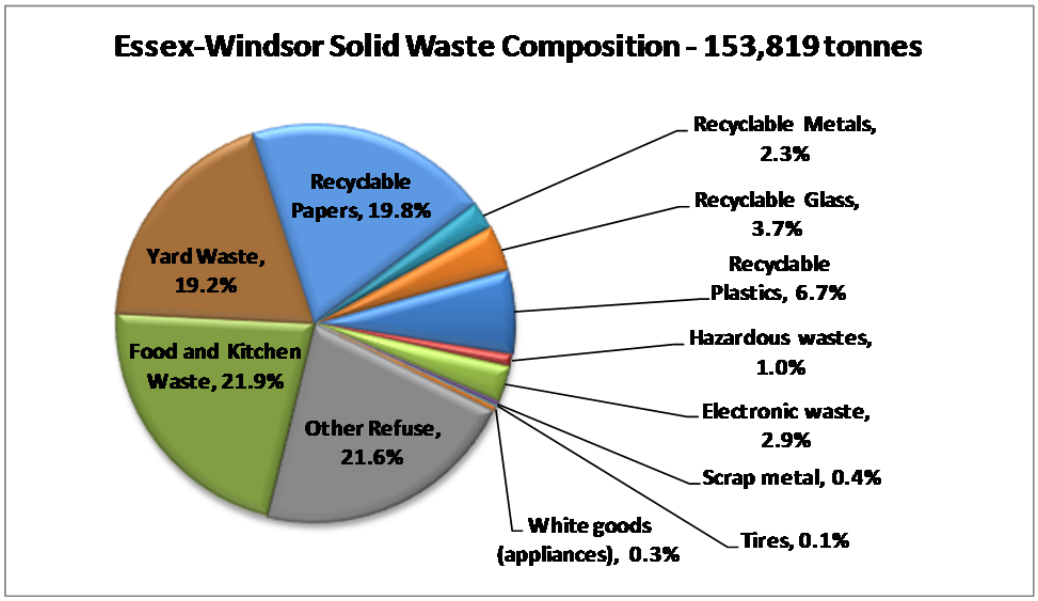
The results of the waste composition have been used to estimate the amount of waste material being disposed that could be otherwise be diverted. There are limitations of the data and assumptions that were made in generating the waste composition, including:

- The waste audit for the EWSWA took place during a single season (spring of 2011). As a result, the audit would not have captured seasonal changes or those materials disposed of infrequently.
- Some materials such as tires and white goods are currently diverted by the EWSWA but were not identified in the waste audit. These are items that are commonly stockpiled by residents until they are either dropped off at a depot or collected via a special curbside collection, and they would not necessarily appear in a stand-alone waste audit. Information on these types of materials have been incorporated into the waste composition using the WDO datacall data.

As Figure 2 illustrates, Essex-Windsor's waste composition consists mainly of organic materials (41%[5]), other refuse (22%), recyclable paper (20%), and other recyclable types of material (18%).

[4] This does not include materials diverted through the private sector, such as thrift store donated goods or retail take-back programs. It does include the LCBO deposit-return program.
[5] Organic materials is comprised of food and kitchen waste (21.9%) and yard waste (19.1%). Food and kitchen waste includes both food waste (19.8%) and paper towels and tissue (2.1%).

Figure 2: Composition of Solid Waste (2010)

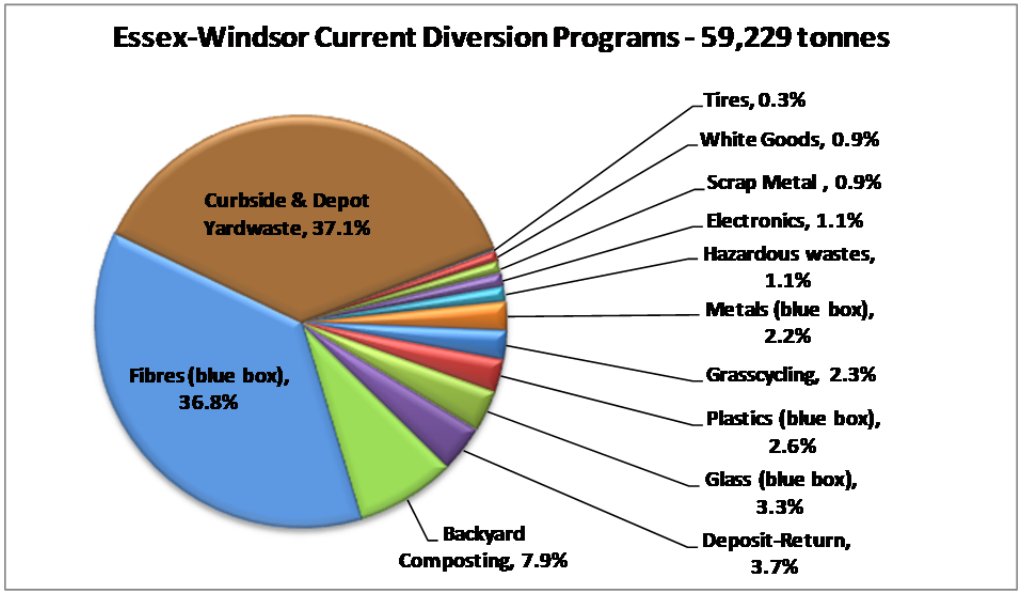


Notes:

- "Other Refuse" is comprised of non-recyclable glass, metals, plastics and paper, textiles, construction material, diapers and sanitary products and pet waste.
- Food waste and kitchen waste includes food waste (19.8%) and paper towelling and tissue (2.1%).
- Figures may not add to 100% due to rounding

Approximately 59,229 tonnes of waste was diverted from disposal in 2010. As Figure 3 shows, yard waste diversion and recyclable paper recycling were the largest contributors to this diversion.

Figure 3: Material Diverted from Disposal by Program (2010)



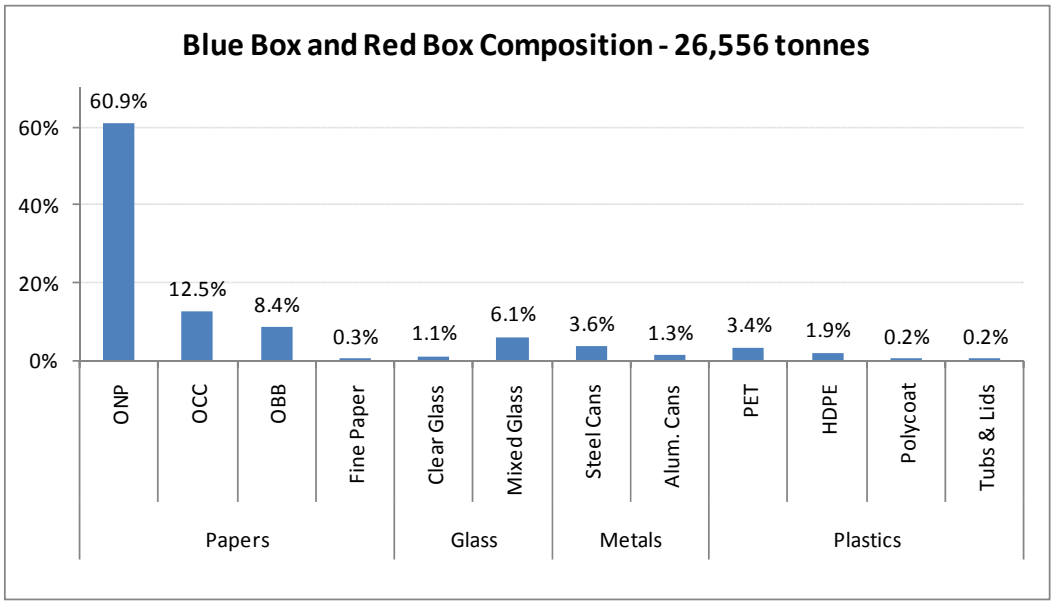
Note: Figures may not add to 100% due to rounding

3.1 Composition of Waste Diverted

3.1.1 Recyclable Material (Blue Box and Red Box) Stream

Based on the 2010 Annual Diversion Report, Essex-Windsor diverted 26,556 tonnes of recyclable material from the Regional Landfill through its blue box program. Recyclable paper accounts for the largest portion of this stream, making up 82% of the category. Recyclable metals make up the smallest portion of this category by weight, at 5%. Plastics also make up a small portion by weight (less than 6%), but they can consume a large volume of space compared to an equal weight of other recyclable materials. A detailed breakdown of the recyclable material stream is illustrated below in Figure 4.

Figure 4: Blue and Red Box Composition (2010)

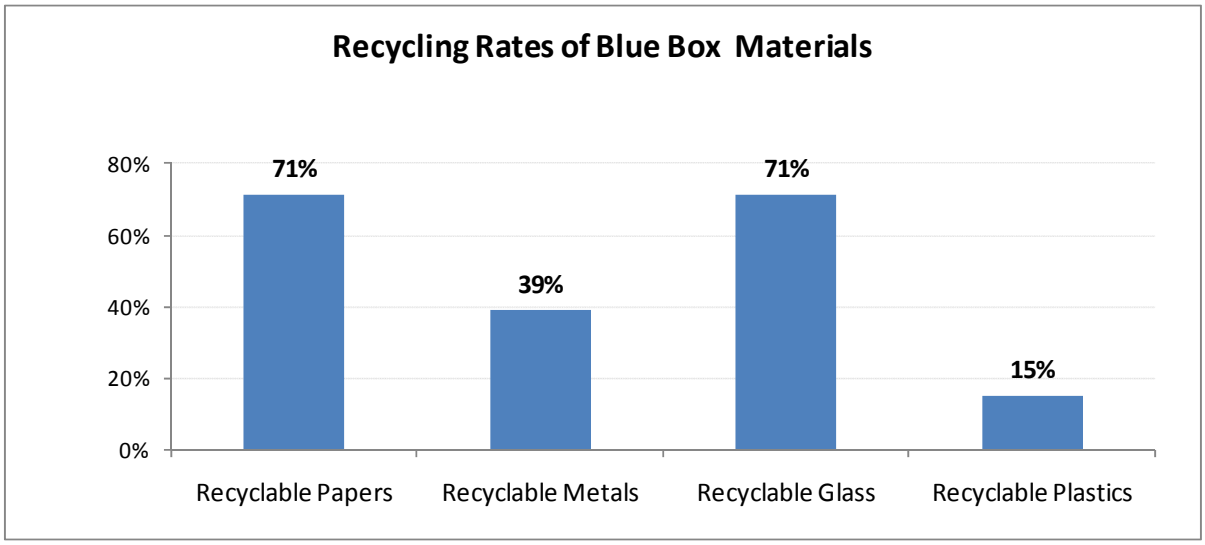


Note: figures may not add to 100% due to rounding.

In addition to the material diverted through the blue box program, another 2,166 tonnes of recyclable containers were diverted from disposal through the stewardship deposit-refund program (i.e., through drop-off at the Beer Store). A large portion of these materials (98%) were glass bottles. The balance of the materials diverted were aluminum containers (1%), steel containers and PET containers (each less than 1%).

Based on the estimated 2010 waste composition, the total amount of Blue and Red Box materials available for diversion in Essex-Windsor is about 50,025 tonnes. Through the EWSWA's blue box program and the deposit-refund stewardship program, about 58% of this material was recycled in 2010 (which is less than the WDO recommended target recycling rate of 75% for Urban Regional municipalities). As illustrated in Figure 5, Essex-Windsor achieved the highest blue box recycling rates for recyclable glass (71%) and papers (71%), while recyclable plastics had the lowest recycling rate (15%).

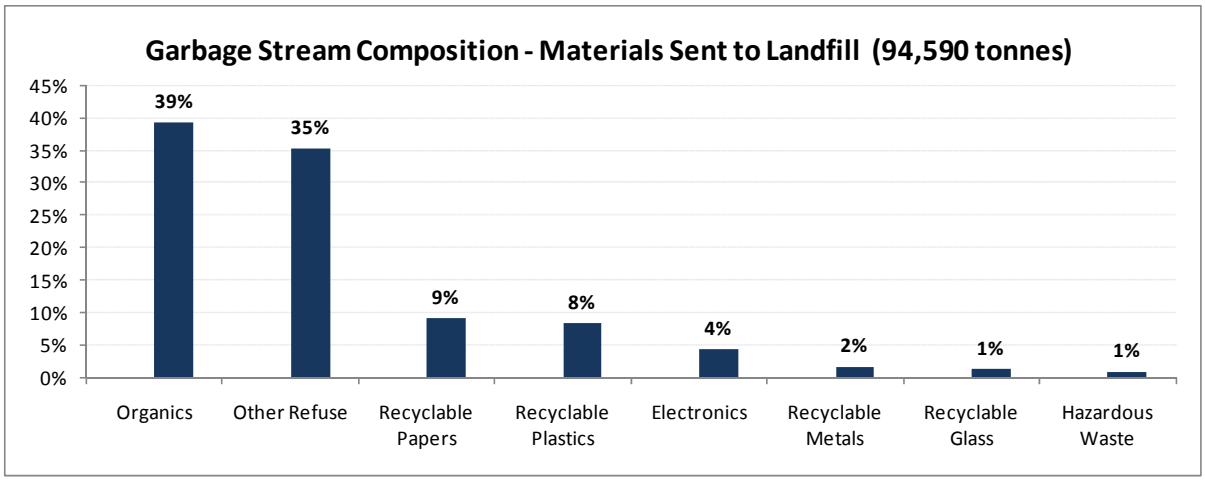
Figure 5: Blue and Red Box Material Recycling Rates.



3.1.2 Garbage Stream

In 2010, Essex Windsor sent 94,590 tonnes of residential curbside collected waste to landfill. Based on the 2011 waste audit, approximately 39% of this material was organics, which consisted mainly of food waste with some yard waste and compostable paper waste (such as tissues and paper towel). Other refuse[6] accounted for 35% of this stream, making it the second largest category. Materials that could have been accepted in Essex-Windsor's recycling program made up 20% of the materials sent to landfill. A detailed breakdown is illustrated in Figure 6 (figures may not add up to 100% due to rounding).

Figure 6: Garbage Stream Composition (2010)



[6] "Other Refuse" includes items such as: non-recyclable/non-compostable paper; PET bottles containing liquid; non-recyclable plastics, metals and glass; diapers; sanitary products; construction and renovation wastes; and other miscellaneous wastes.

3.2 Waste Diversion Analysis

3.2.1 Essex-Windsor's Waste

Building upon the waste composition analysis, a waste diversion analysis was conducted to identify opportunities to increase the effectiveness of Essex Windsor's Blue Box program. Table 2 presents the results of the waste diversion analysis for material that could be accepted through the Blue Box program. The analysis considered the amount of additional material available for diversion assuming a capture rate of 75%[7] could be achieved.

The gap analysis shows that the greatest opportunity for increasing diversion is the recyclable plastics waste stream. Achieving a 75% capture rate of Essex-Windsor's recyclable plastics could divert approximately 6,200 tonnes of waste from disposal and increase its overall diversion rate by 4 percentage points.

In addition, the gap analysis indicates that small gains can be made through additional diversion of recyclable metals, glass and paper. Combined, raising the capture rates of these materials to 75% could add nearly 2 percentage points to Essex-Windsor's current diversion rate.

It is important to note that this table does not take into account the recycling of some of these materials through recyclers other than the EWSWA, such as the Computers for Kids program.

Table 2: Blue Box Materials Available for Diversion

Waste/ Resource Material	Estimated Composition (%) (re: Figure 2)	Total Divertible Material in Waste Stream (tonnes)	75% Capture Rate of Divertible Material (tonnes)	Material Currently Diverted through Existing Programs in 2010 (tonnes)	Potential Additional Diversion (tonnes)	Potential Additional Diversion (% of total waste stream)
Recyclable Paper	19.8%	30,480	22,860	21,773	1,087	0.7%
Recyclable Metals	2.3%	3,473	2,605	1,351	1,254	0.8%
Recyclable Plastics	6.7%	10,323	7,742	1,549	6,193	4.0%
Recyclable Glass	3.7%	5,665	4,248	4,049	200	0.1%
Blue Box Materials in Total Waste Stream	32.50%	49,941	37,455	28,722	8,734	5.60%

3.2.2 Comparison of Essex-Windsor with other Municipalities

Essex-Windsor's waste diversion performance was reviewed against other Ontario municipalities. Figure 7 shows Essex-Windsor's 2010 waste diversion rate as well as the amount of residential waste generated, diverted and disposed compared to other municipalities in its WDO municipal grouping and other selected municipalities. Figures 7 illustrate how Essex-Windsor compares to other municipalities for key waste management indicators. The data used in this section come from the

[7] The Continuous Improvement Fund recommends 75% as a reasonable target for the percentage of blue box materials captured through the municipal recycling program for "Urban Regional" municipalities. This was applied as a target capture rate for all categories of divertible waste.

2010 WDO datacall and from Essex-Windsor's 2010 Waste Diversion Report. Based on the data in the table and the figures, compared to the other municipalities in this sample:

- Essex-Windsor's residential waste diversion rate is below the average of 45%;
- The amount of residential solid waste generated per capita in Essex-Windsor is about average (average = 383 kg/capita/year);
- The amount of residential solid waste diverted per person in Essex-Windsor is below the average of 172 kg/capita/year.

However, it is important to note that most of those municipalities with greater diversion rates use a mix of the following waste management approaches:

- Curbside collection of food and kitchen organics;
- Bag limits, with either full or partial user pay;
- Every other week collection of garbage;
- Expanded blue box collection (where materials such as mixed plastics, plastic film, and other materials are accepted in the blue box); and
- Weekly collection of recyclables.

Figure 7: Comparison of Waste Diversion Rates (2010)

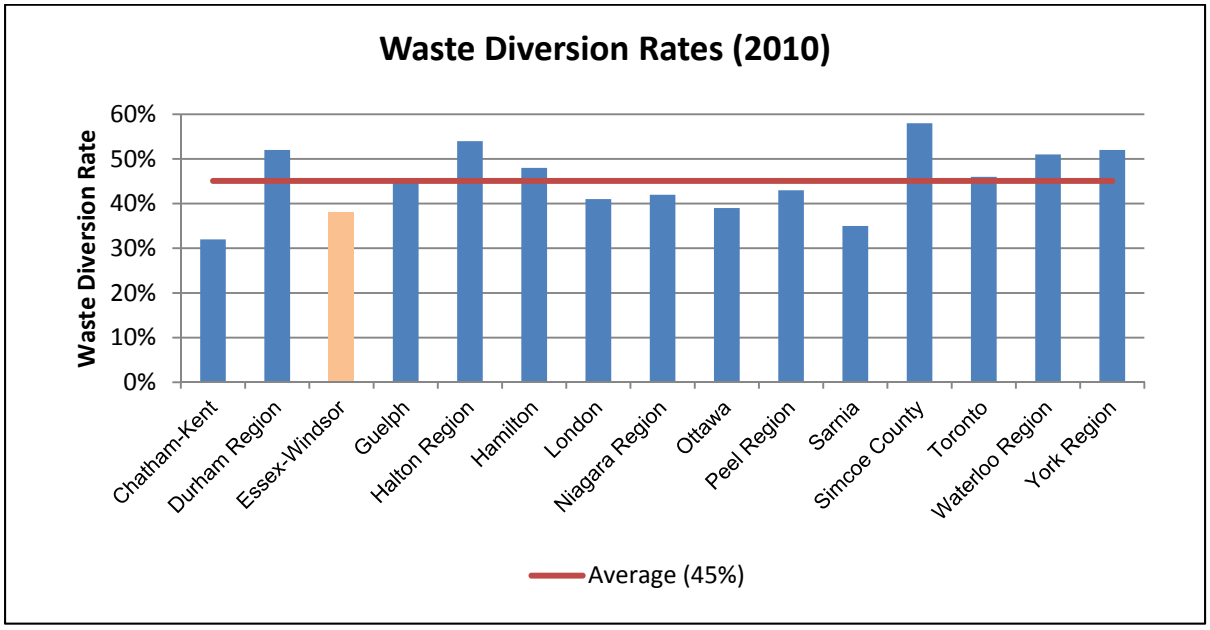
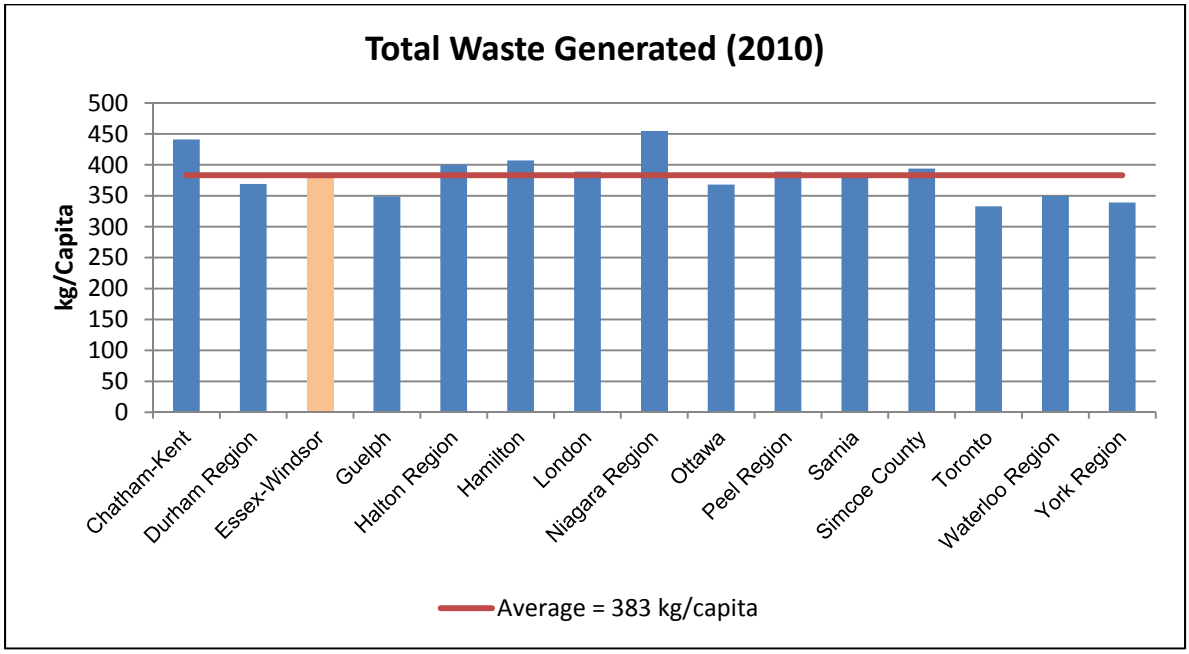


Figure 8: Comparison of Total Residential Waste Generated (2010)



4 Projected Population Growth

In 2008, Essex-Windsor conducted a review of its Official Plan. As a part of that process, population and housing projections were prepared by Lapointe Consulting Inc for the City of Windsor and the County of Essex. These projections form the basis of projecting the EWSWA's waste management costs to 2031.

According to the population and housing projections by Lapointe[8], the Windsor-Essex region is anticipated to grow from a population of 393,115 in 2010 to an estimated 491,821 by 2031. Housing is set to increase as a result of population growth at an average rate of 2,000 residential units annually. Based on current per capita waste generation rates, the total amount of residential waste to be collected curbside in Essex-Windsor is expected to increase by 25.1% (from 94,590 total tonnes per year to 118,340 tonnes per year in 2031). Based on the EWSWA's current waste management system and diversion rates, this corresponds to 118,340 tonnes of waste disposed and 74,101 tonnes of waste diverted annually by 2031. Anticipated future tonnages are represented in Table 3.

[8] Lapointe Consulting Inc. Windsor-Essex and City of Windsor Population and Housing Projections, 2006-2031: Executive Summary. January 2008.

Table 3: Anticipated Future Growth of Waste Tonnages based on Current Practices.

Future Waste Generated, Disposed and Diverted			
	2010	**2021**	**2031**
Population	393,115	442,468	491,821
Total Waste Generated	153,819	173,130	192,441
Waste Disposed (tonnes)	94,590	106,465	118,340
Waste Diverted (tonnes)	59,229	66,665	74,101

5 Cost of Blue Box Program

The EWSWA is responsible for establishing, operating and managing the Regional Landfill, recycling collection and waste diversion for all municipalities with the Essex-Windsor region. Garbage and leaf & yard waste collection remains the responsibility of each individual municipality.

On average, Essex-Windsor's urban Blue Box collection program costs $85 per tonne, which is significantly lower than other municipalities with similar demographics:

- Kitchener/Waterloo: $167 per tonne;
- London: $172 per tonne; and
- Hamilton: $170.

Essex-Windsor's rural Blue Box collection cost is $148 per tonne, which is also significantly lower than municipalities in Southern Ontario with similar programs:

- Simcoe County: $222 per tonne;
- Norfolk: $278 per tonne; and
- Brant County: $392 per tonne.

6 Options to Increase the Diversion of Blue Box Material

Because no two municipalities are exactly alike, approaches to waste management will differ between jurisdictions. Local conditions such as geographic location, density of households, social demographics, fiscal realities, etc will influence what waste diversion options are feasible for a municipality.

In order to select the most appropriate waste management options for Essex-Windsor, it is important to review the options that are available. This section presents a list of possible options for optimizing how residential recyclable waste is managed in Essex-Windsor. The discussions of the options are concluded with recommendations, which are summarized in Section 9.

6.1 Garbage Bag Set Out Limits

In Essex-Windsor, garbage bag set out limits are currently in place for residents of Lasalle (6 bags), Kingsville (5 bags) and Leamington (4 bags); the other municipalities do not have garbage bag set out limits, and residents of those municipalities are therefore able to set out as many bags of garbage as they wish. Bag limits are identified in the KPMG *Blue Box Program Enhancement and Best Practices Assessment Project Final Report* as a fundamental best practice to induce waste diversion, and it is included in the WDO's *Best Practice Questions for Inclusion in the 2009 Municipal Datacall*.

Bag limits are used to limit the number of bags a household can set out at the curb for collection. Having a limit on the number of bags of garbage encourages households to put more of their divertible waste into the appropriate waste streams (e.g., recycling and organics). The KPMG report notes that communities that impose bag limits of less than three bags generally experience a noticeable reduction in the amount of waste sent for disposal and an increase in the amount recycled. The report organizes bag limits into three categories:

- Strict bag limit – no bags of waste are allowed over the set limit.
- Partial bag limit – households can purchase tags for bags in excess of the bag limit. This is also referred to as Partial User Pay.
- Hybrid system – while households can purchase tags for bags in excess of the bag limit, there is a limit to the total number of bags set out at the curb (e.g., a limit of *x* non-tagged bags plus *y* tagged bags).

Bag limits are common in Ontario. For example, more than 100 municipalities have bag limits, and more than 50 of them have bag limits combined with user pay (for more on user pay, see Section 6.2). Of the 14 municipalities in Ontario that have more than 50% waste diversion[9], ten have bag limits. Table 5 (following page) presents a summary of user fees and bag limits from selected Ontario municipalities, including those in EWSWA's municipal grouping, nearby municipalities, and other municipalities from the Greater Golden Horseshoe.

In York Region, the Town of Markham requires a bag tag on all garbage bags over their three-bag limit. However, the Town does not charge for the bag tags, and residents must obtain them from either the Town's Civic Centre or a recycling depot. While Markham places no limit on the number of tagged bags that can be set out, other municipalities in York Region do, setting a maximum bag set out limit (untagged + tagged bags).

The waste audit commissioned by the EWSWA in 2011 also examined set out rates. During the study, garbage was collected from households for a total of 200 instances (100 different households receiving collection on two separate weeks). Of those 200 instances, there were 145 instances where households set garbage out at the curb for collection. As table 4 shows, 75% of those households had set out 2 containers of garbage or less, while 88% had set out three containers or less.

[9] Based on 2009 WDO datacall.

Table 4: Garbage Set-Outs

Number of Containers	Number of Occurrences (145 setouts)	Percent of Occurrences	Cumulative Total
1	67	46%	46%
2	42	29%	75%
3	18	12%	88%
4	11	8%	95%
5	3	2%	97%
6	3	2%	99%
More than 6	1	1%	100%

Table 5: Examples of Bag Limits (5 bags or less) and User Pay in Select Ontario Municipalities

Municipality	Pop.	Residential Diversion Rate	Garbage Bag Limit	User Pay	
				Partial User Pay	Full User Pay
Large Urban					
York Region	1,032,606	57%	Markham, Richmond Hill, Aurora, Newmarket, Vaughan, Stouffville: 3 bags King, East Gwillimbury: 2 bags Georgina: 1 container	Yes (range from free-$2.40)	No
Peel Region	1,220,000	50%	2 Bags (each additional bag tagged)	Yes (Tag Price: $1)	No
Hamilton	525,697	46%	1 container	No	No
London	381,990	42%	4 containers	No	No
Urban Regional					
Simcoe County	322,120	57%	1 container (each additional bag tagged)	Yes (Tag Price: $3)	No
Durham Region	614,960	51%	4 Bags (each additional bag tagged)	No	Yes (Tag Price: $1.50)
Niagara	442,908	44%	1 Bag (each additional bag tagged)	Yes (Tag Price: $1)	No
Essex-Windsor	393,115	35%	LaSalle – 6 containers Kingsville – 5 containers Leamington – 4 containers Other locations – no limits	No	No
Ottawa (City)	908,389	33%	3 Bags	No	No
Medium Urban					
Sarnia	75,208	33%	4 Bags	No	No
Brantford	93,399	30%	5 Bags	No	No
Rural Regional					
Chatham-Kent	108,192	33%	4 Bags	No	No

Estimated Diversion and Cost

- Estimated Additional Diversion: 2% to 6%
- Estimated additional Cost: Minimal (promotion, education and enforcement)

Recommendation

It is recommended that the EWSWA propose to Essex-Windsor's individual municipalities that they move to a garbage bag limit of three bags or containers in the short term, to be reduced to a limit of two bags as new waste diversion programs are implemented, for the following reasons:

- Bag limits are considered a waste management best practice;
- Bag limits have been shown to encourage participation in waste diversion programs and increase waste diversion;
- Bag limits are commonly used in municipalities across Ontario and North America;
- Based on the survey of set out rates conducted in 2011, most households should be able to conform to a three bag limit (and a subsequent two bag limit at a later date).

6.2 Bag Tags or User Pay Garbage Collection

User pay programs, also known as Pay-As-You-Throw (PAYT), unit-based pricing, variable rate and user fee, are becoming an accepted method for financing residential waste management services. By directly charging residents for their waste production, householders are more directly responsible for their waste generation and disposal habits. User pay schemes can be full or partial. In full schemes, residents pay for each unit of waste set out for collection. In partial systems, residents only pay over a set limit (e.g., they can set out one bag without a tag, while subsequent bags must be tagged). Table 5 (previous section) presents some examples of user pay fees in selected Ontario municipalities.

Numerous studies have shown that municipalities introducing user pay programs generally see increased diversion and reduced disposal rates.

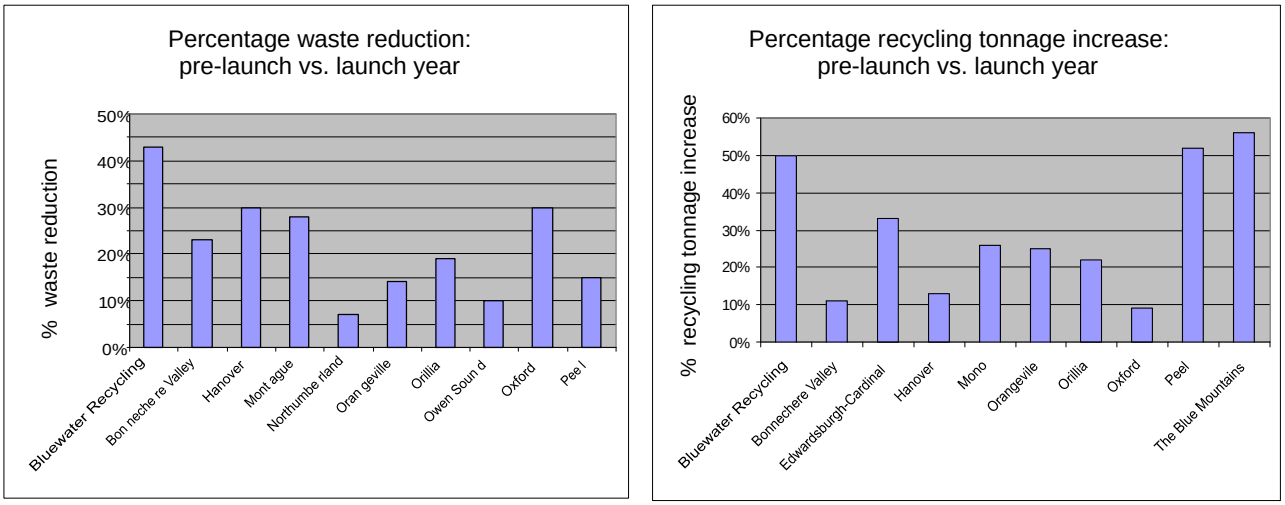
In 2001, EnvirosRIS Ltd. conducted a study on behalf of the City of Toronto on the impacts of bag limits and PAYT programs. The study noted that at that time all user pay/PAYT programs in Canada and the United States were "volume based" systems. Most of the user pay/PAYT communities included in the study used one of two systems: either a tag system or a variable standardized container system. In general, most Canadian user pay programs were found to use the tag system, whereby residents are required to purchase tags that they attach to some or all of the bags/cans of garbage set out for collection. Municipalities included in the research were found to decrease the amount of waste disposed by up to 30% after implementation of their user pay system[10].

The Association of Municipal Recycling Coordinators (AMRC) conducted an analysis of User Pay system costs in Ontario in a project funded by Stewardship Ontario's Effectiveness and Efficiency Fund (E&E Project 191). The analysis studied six municipalities in Ontario with user pay systems (four of which were not included in the 2001 EnvirosRIS study) and found increases in recycling tonnage ranged from 22% to 86% and that decreases in waste tonnage ranged from 6% to 61% after

[10] Enviros RIS. *The Waste Diversion Impacts of Bag Limit and Pay As You Throw Systems in Selected Communities in North America*. April, 2001

implementation of user pay[11]. In Figure 9 below (adapted from AMRC's User Pay Program Implementation Guide, 2005) illustrates the waste decreases and recycling increases experienced by 10 Ontario municipalities after implementing user pay programs.

Figure 9: Changes in Waste Disposed and Recycled after User Pay Implementation



Adapted from Association of Municipal Recycling Coordinators. User Pay Program Implementation Guide. *Revised December 2005.*

Implementing a successful user pay system would require the following elements:

- **Education**: Residents need to receive enough information regarding the program and adequately understand what it entails.
- **Expanding Acceptable Materials in Other Diversion Programs**: To limit the amount of user fees residents incur, Essex-Windsor should provide as many alternatives to waste disposal as possible.
- **Bag Tag Distribution:** In order to succeed, residents must have easy access to bag tags, if that specific option is chosen. Bag tags should be available at convenient locations such as grocery stores, city halls, post offices, municipal buildings, drop off depots and the landfill.

The costs associated with this option are mostly in the form of education and promotion. Promotion and educational costs can be incorporated into Essex-Windsor's current promotional budget. Printing tags and mailing them to residents is a relatively low cost option.

For example, Durham Region has a 4 bag limit and any additional bags must be tagged. The cost of printing tags is approximately $6,500 per 10,000 tags[12].

The Town of Mississippi Mills, near Ottawa, has a full bag tag program where all bags of garbage must be tagged for collection (although the first 40 tags are free of charge for residents). In total, for roughly 5,000 households, the program costs $4,590 per year[13]. Costs associated with bag tags

[11] Association of Municipal Recycling Coordinators. *Analysis of User Pay System Costs in Ontario: E&E Project 191*. September 2006.
[12] Conversation with Durham region Waste Services Co-ordinator, Sept 28th, 2011.
[13] Town of Mississippi Mills Budget Committee Report, 2010.

include education, tag printing, envelopes for mailing of tags and postage. This amounts to roughly $1 per household per year.

Estimated Diversion and Cost

- Estimated increased diversion: 1% to 2%
- Estimated Cost: Based on a cost of 65 cents to print each tag plus an additional 10 per cent administration cost, and assuming each single-family household would require three bag tags on average, the estimated cost to print and distribute bag tags to single-family homes in Essex-Windsor is about $85,000 per year[14]. Does not include revenue offsets.

Recommendation

- Currently, bag tags are not recommended for Essex-Windsor, as there appears to be little public support for such a measure.

6.3 Implementing a Clear Bag Policy for Garbage Collection

A 'clear bag' program refers to the use of a garbage bag that is transparent or see-through. Use of clear bags for garbage encourages waste diversion in a number of ways. Knowing that their neighbours will be able to observe that there are recyclable, organics or hazardous materials in their garbage acts as a form of peer pressure to recycle. Secondly, clear bags can serve as a reminder if people forget to separate out these materials from their garbage, as the clear bag allows residents to see what has been thrown out. Clear bags also prompt people to reflect on their waste disposal habits and encourage them to consider waste diversion options. Lastly, clear bags can also assist enforcement programs by allowing waste collectors to monitor for compliance with existing waste management regulations.

A Stewardship Ontario study that examined 22 municipalities with clear bag programs concluded that this option could have a considerable increase on diversion rates. For example, 13 Nova Scotia municipalities reportedly experienced, on average, a 41% decrease in residential waste, a 35% increase in residential recycling and a 38% increase in residential organics collection. One region from Nova Scotia experienced a 71% increase in tonnes of material collected for recycling. It is important to note that these averages were based on programs with existing recycling programs and organics diversion and therefore most of the gains can be directly attributed to clear bags[15].

Prince Edward Island has a province-wide clear bag program which enabled it to reach a 65% diversion rate in 2003. The recycling tonnage collected doubled and has remained relatively constant after implementing a clear bag program. This increase can be directly attributed to the clear bag program as recycling was made mandatory prior to the clear bag program.

Durham Region initiated a clear bag pilot project in 2009 and found that diversion could increase by 3 percentage points if implemented region-wide. The study also concluded that participation in recycling was unaffected, but it did increase participation in organics diversion by 14%.

[14] Assumes: printing costs similar to Durham Region; distribution of through retailers or municipal service outlets; multi-residential households not included in calculation.
[15] Stewardship Ontario. *The Use of Clear Bags for Garbage as a Waste Diversion Strategy: Background Research on Clear Garbage Bag Programs Across North America*. 2008.

The Municipality of Centre Hastings and Madoc Township conducted a clear bag pilot project in 2008 and concluded that participation in blue box recycling doubled in the first month of enforcement. In total, blue box diversion increased by 9% over the first 6 months of the trial period.

In some programs, residents are allowed to include a 'privacy bag' inside their clear bag. A 'privacy bag' is a small opaque plastic bag into which residents can place materials they wish to keep private.

Unless custom bags issued by the municipality are used, the only costs for implementing this program are enforcement and promotion and education. Promotion and education could be managed through Essex-Windsor's existing promotion and education budget. Enforcement would require training of collections staff in identifying recycling and organics in the waste stream. Additional costs would likely be negligible and could be incorporated with promotion and education.

Table 6 provides a list of selected Canadian municipalities that have implemented or piloted tested clear garbage bags and have reported changes in waste diverted.

Estimated Diversion and Cost

- Estimated diversion increase: 1% to 4%
- Estimated costs: depends on if tied to mandatory recycling and level of enforcement

Recommendations

It is not recommended that the EWSWA or its partners proceed with this option at this time as there is little public support for this option and there are other reasonable opportunities for increasing waste diversion that can be implemented instead.

Table 6: Examples of Programs with Clear Bag Garbage Programs

Municipality or Region	Population	Start Date	Other Waste Management Program Elements	Program Results
Durham Region	614,960	2009 (pilot)	• Recycling • Organics • Bag limit • User pay	• Organics – participation increased 14%
The Municipality of Centre Hastings and Madoc Township		2008 (pilot)	• Recycling	• Recycling – participation doubled, tonnage increased by 9%
Township of Amaranth, Ontario	3,500	January 1, 2005	• Mandatory recycling • Organics	• Disposal rate decreased
Township of East Luther Grand Valley, Ontario	2,526	August 2004	• Mandatory recycling • Organics • Partial user pay	• Increased recycling collected • Increased organics and leaf and yard waste collected
Counties of Antigonish and Guysborough, Nova Scotia	29,290	October 2005 to March 2007 depending on municipality	• Mandatory recycling • Organics • User pay	• Garbage – tonnage decreased by 37% • Recycling - tonnage increased by 71%
Pictou County, Nova Scotia	49,000	January 2, 2006	• Mandatory recycling • Organics • Bag limits	• Garbage – tonnage decreased by 30% • Recycling - tonnage increased by 9% • Organics - tonnage increased by 27%
Counties of Yarmouth and Digby, Nova Scotia	45,007	April 2007	• Mandatory recycling • Organics • Bag limits	• Garbage – tonnage decreased by 25% • Recycling - tonnage increased by 12% • Organics - tonnage increased by 24%
Province of Prince Edward Island	138,000	2002	• Recycling • Organics	• Recycling - tonnage doubled (from 7,161 tonnes in 2001 to 14,415 tonnes in 2003)

6.4 Enhanced Collection of Recycling

According to a recent study by EWSWA, approximately 72% of households participate in the area's recycling program. A potential barrier households may encounter in the EWSWA's recycling program is insufficient storage space for recyclables. This could include either space within the recycling boxes themselves or space to store the additional boxes they may need for recyclables. As recycling bins become full, some residents may opt to place excess recyclables in the garbage rather than use additional recycling bins. This could potentially become a greater issue if the EWSWA adds additional materials to its blue box collection (e.g., mixed plastics – see discussion in Section 6.8).

According to the 2011 waste audit commissioned by the EWSWA, the average blue box in Essex-Windsor is already over 90% full when placed out. While the EWSWA distributed new **red** boxes to residents in 2002 for the collection of paper products only, it has not provided free **blue** boxes to its residents since the inception of the recycling program in 1988. A potential means by which to

increase a resident's container capacity is to appeal to the Continuous Improvement Fund (CIF) to subsidize the cost of new blue boxes for Essex-Windsor. The CIF is an agency created by the WDO to assist municipalities in improving diversion. The CIF has already committed to partially subsidizing new blue boxes for Essex-Windsor at a 50% level, but a condition of that funding is that Essex-Windsor add mixed plastics to the list of materials that residents can place in their blue box. The new blue box would be a larger 22 U.S. gallon box compared to the current 16 gallon box being used for containers. The cost to acquire 130,000 new blue boxes could be covered in part by CIF funding with the balance to be covered by a proposed contribution from EWSWA reserves. The EWSWA reserve contribution has yet to be approved by the Board. The total estimated cost would be $850,000, which would include:

- $620,000 - Cost for 130,000 blue boxes
- $130,000 - Cost to distribute to each household @ $1 per household
- $100,000 - Cost to advertise and promote the addition of mixed plastics

Sources of funding totalling $852,000 for this initiative could include:

- $310,000 - CIF funding for cost of boxes
- $310,000 - EWSWA for cost of boxes (yet to be approved by EWSWA Board)
- $130,000 - CIF funding for distribution of blue boxes
- $100,000 - CIF funding for advertising and promotion costs

In a pilot test in 2008, the EWSWA did examine the possibility of using carts to collect recyclables, but the study found that collection time increased by about three times and that a 15-20% increase in the amount of materials collected would be required to make the carts feasible. Due to the outcome of the study, the EWSWA is not looking to proceed with cart collection.

Another option would be weekly collection of recyclables, which would also improve the overall convenience of the recycling program, as residents would be able to set out their recyclables more often.

To assess the collection costs for this option, the EWSWA could specify larger bins and/or include weekly collection as an option in the recycling collection tender. Table 7 presents sample per tonne collection costs for selected Ontario municipalities, as well as the average amount of recyclables marketed per household

Table 7: Collection Frequency of Recycling

	Average kg of recyclables marketed per HHLD per year	Residential Collection Costs Per Tonne
Dual Stream/Alternating Weeks *(e.g., fibres collected one week, containers the next)*		
Niagara Region	217	$148
Ottawa (City)	171	$186
Average	*194*	*$167*
Dual Stream/Bi-Weekly *(e.g., fibres and containers collected every two weeks)*		
EWSWA	158	$142
Sarnia	95	$175
Chatham-Kent	95	$164
Oxford County	163	$182
Average	*128*	*$166*
Dual Stream/Weekly *(e.g., fibres and containers collected every week)*		
London	157	$185
Hamilton	195	$183
Durham Region	221	$187
Region of Waterloo	183	$191
Simcoe County	180	$230
Brantford	165	$256
Norfolk County	150	$290
Average	*179*	*$217*
Single Stream/Weekly *(e.g., fibres and containers collected every week in single bin)*		
Halton Region	243	$109
Toronto	164	$213
York Region	254	$111
Peel Region	229	$200
Guelph	166	$159
Average	*211*	*$158*

Estimated Diversion and Cost

Larger Blue Bins

- Estimated diversion increase: 2% to 4%
- Estimated costs: $850,000, with $540,000 to potentially be covered with CIF funding

Weekly Collection of Recyclables

- Estimated diversion increase (moving to weekly collection): 2% to 3%
- Estimated costs: to be determined through tender process

Recommendations

Larger Blue Bins

It is recommended that the EWSWA proceed with planning the purchase of larger blue bins for distribution to Essex-Windsor households, as:

- The larger bins will allow households to place more materials in their blue bin, thereby reducing the amount of blue bin overflow that is placed into the garbage;
- Households will need containers larger than the 60 litre (16 gallon) blue boxes currently distributed, if mixed plastics or other materials are introduced into the blue box program;
- It is expected that households will appreciate receiving a larger blue box with no out-of-pocket expense from them; and
- Funding for larger blue boxes is available from the Continuous Improvement Fund, which will increase the cost-effectiveness of the option.

Weekly Collection of Recyclables

It is recommended that the EWSWA continue with its practice of instructing bidders to provide pricing for weekly and bi-weekly collection of recyclables in its collection tender[16], as:

- It will allow the EWSWA to assess the cost-effectiveness of providing weekly recyclables collection; and
- While weekly collection is more expensive, it has been demonstrated to provide increased diversion.

6.5 Expanding Acceptable Materials in Existing Programs

Expanding the amount of materials accepted in a recycling program is one way for Essex-Windsor to divert more materials, but this is contingent on being able to properly process and find markets for these materials. Currently, the Essex-Windsor municipalities accept all mandatory recycling materials (as defined by WDO) and all expanded recycling program materials except mixed plastics, polystyrene packaging and plastic film. If these materials are included in recycling programs, Essex-Windsor's waste diversion rate could increase by nearly 4 percentage points.

Adding Mixed Plastics (e.g., plastic trays and clamshell containers) to Blue Box Program

Currently, the blue box program in Essex-Windsor collects the following plastics for recycling:

- PET bottles (pop, water etc.);
- Narrow neck plastic bottles (detergent, shampoo, ketchup, etc.); and
- Tubs and lids (margarine, yogurt, etc.).

Mixed Plastics constitutes all the other plastics except for plastic bags, styrofoam packaging, and non-food grade plastics such as ABS (piping), fibreglass, and polycarbonates (e.g., the plastics used to make electronics, DVD's, plastic lenses, etc). Examples of mixed plastics include plastic trays, clamshells, and non-bottle containers. According to the 2011 waste audit, these mixed plastics

[16] Next recycling collection tender occurs in 2016

constitute about 16 kilograms/household/year of materials, or about 3,100 tonnes annually (2% of the entire waste stream). The actual amount of mixed plastics that would be collected curbside would be less than this figure, since approximately 75% of Essex-Windsor households actually set out recyclables for collection. Those households may then only put 80% of their mixed plastics in their blue box. Although mixed plastics are not part of the current blue box program, there are approximately 360 tonnes per year that are being processed through the recycling centre. The potential amount of additional mixed plastics that could be recovered is approximately 1,400 tonnes, which would increase the current waste diversion rate by 1 percentage point.

Unlike styrofoam and plastic bags, the addition of mixed plastics can be managed easily within Essex-Windsor's existing MRF by providing one additional sorter. This sorter will not only remove mixed plastics but also be responsible for removing more of the other recyclable materials. This will increase diversion and further reduce the residual levels at the container MRF. There will be no increase in cost for curbside collection. Additional operating costs will include cost for one additional staff at the container MRF for sorting (est. $44,000), which could be offset by the revenues from sale of the recovered mixed plastics (approximately $56,000, assuming a sale price of $40/tonne).

Polystyrene (e.g., Styrofoam)

Even though polystyrene (including expanded polystyrene foam, or EPS) only accounts for less than 1% of the total waste stream (about 400 tonnes), its takes up considerable volume compared to its weight. This added volume can affect costs by requiring more space for storage and vehicle trips for shipping. These issues can be addressed in part if the polystyrene is compacted.

The Town of Markham recently finished a pilot study on polystyrene compaction and recycling and found it could reduce volumes by 90% using a small polystyrene densifier. Densification of EPS involves the use of heat to cause the molecular polymer chains of EPS to retract from their expanded, foamed positions, resulting in a mass reduction of 90:1. The average compression ratio of EPS in a conventional fibre/plastic baler is 15:1. The use of an EPS densifier can yield the following benefits:

- Lower transportation costs to market;
- Enhanced value and broader market for densified material; and
- Elimination of baling EPS, freeing up baling equipment for higher volume materials.

After a three month trial, the Town of Markham found that there would be savings of $1,160 per month if they compacted the EPS rather than shipping it loose, based on collecting 0.9 – 1.8 tonnes per week. Additional secondary financial benefits include reducing transport costs between recycling depots and eliminating labour hours needed to load and unload trailers every week and sometimes twice a week.

Table 8: Cost Findings from Markham Study on Polystyrene Densification

(based on 5.5 tonnes of EPS)

Cost Category	Monthly Operating Costs (Loose)	Monthly Operating Costs (Using Densifier)
Energy Use	-	$40
Maintenance	-	$200
Labour	-	$600
Lease of Densifier	-	$2,200
Freight	$3,600	$0 (free freight if densified)
Shipping Bags	$380	-
Total Monthly Costs	$3,980	$3,040
Revenue from Sale of Material	$0	$220
Net Monthly Cost	$3,980 (or $796/tonne)	$2,820 (or $513/tonne)

Once densified, Markham's material could then be sent to specific polystyrene processing and recycling facilities such as Polyframe Moulding Inc. (PMI) in Port Hope, Ontario. According to communications with management at PMI, the company accepts all loose polystyrene material (identified as the #6 recycling symbol) free of charge (except freight) and provides free freight if the polystyrene is densified[17].

Collection of polystyrene is not common among Ontario municipalities. Table 9 presents a selected list of municipalities that collect polystyrene, their method of collection, and tonnage collected. Of those listed that do collect it, the Town of Markham and another location in York Region do not accept polystyrene in their curbside collection program but instead at a local recycling centre. This process helps eliminate contamination of the polystyrene stream.

Table 9: Programs with Polystyrene Recycling

Municipality	Polystyrene Foam(#6)	Polystyrene Crystal(#6)	Tonnes Marketed	Method of Collection
Large Urban				
Toronto	X		47.67	Blue box
York Region	X		-	Depot (pilot)
Markham (part of York Region)	X	X	NA	Depot only
Hamilton	X	X	9.26	Blue box
Peel Region	X	X	31.08	Blue box
Urban Regional				
EWSWA			-	-
Niagara Region	X	X	4.04	Blue Box
Rural Regional				
Norfolk County	X	X	18.53	Blue box
Oxford County		X	12.41	Blue box

[17] This may depend on the distance between PMI and the municipality wishing to ship their EPS.

Plastic Film (e.g. grocery bags)

Like polystyrene, plastic film (e.g., plastic grocery or shopping bags) is not widely collected in municipal blue box programs. The bags can lead to problems during processing, such as becoming tangled in machinery or contributing to contamination. Plastic film also has a low market value. For example, in 2010, the average monthly market value for plastic film ranged from $18 per tonne to $32 per tonne[18].

To help reduce these processing issues and improve market value for plastic film, the Canadian Plastics Industry Association (CPIA) developed a Best Practices Guide for plastic film recycling. It suggests that residents place these materials in a separate bag and set it near or in the recycling bin during collection days (so that it is not confused with regular garbage). During collection, haulers should squeeze the bag bundles to determine the presence of anything rigid or other contaminant. CPIA then recommends that the hauler place the plastic film in a separate, larger, plastic bag attached to the truck or in a side compartment of the truck. Once this larger bag is filled, CPIA suggests that it be placed within the fibres compartment of the recycling truck, as the fibre compartment provides better compaction of plastic film and the plastic bag bundles would be easy to spot once the truck fibre compartment is emptied. Once delivered to the MRF, workers should separate the bags from the fibre materials and bale or place the bags in a separate pile for recycling.

As Table 10 shows, municipalities that accept plastic film in their blue box request that residents place the bags inside a tied single bag. Other municipalities avoid collecting through their blue box program altogether. To avoid the cost of processing it (the City of Guelph estimated that adding plastic film to its current recycling stream would cost approximately $135 per tonne[19]), municipalities encourage retailers such as grocery stores to establish bins for accepting plastic bags at their retail outlets. Promotion templates are available. For example, figure 11 shows a poster prepared by CPIA and provided by the Region of Durham. Similarly, plastic bags could also be collected via municipal depots.

As an alternative to plastic film recycling, the EWSWA could consider adopting a plastic bag ban in order to limit the amount of plastic film entering its waste stream.

Table 10: Programs with Plastic Film Recycling

Municipality	Tonnes Marketed	Method
Large Urban		
Toronto	38.57	Blue bin (stuff in single bag)
Hamilton	533.94	Container blue box (stuff in single bag)
Peel Region	716.46	Blue box (stuff in single bag)
Urban Regional		
Region of Waterloo	na	Fibres blue box (stuff in single bag)
Niagara Region	207.51	Fibres blue box (stuff in single bag)
Rural Regional		
Norfolk County	24.22	Blue box
Bluewater Recycling	37.69	Blue box (stuff in single bag)
Oxford County	51.62	Container blue box

[18] StewardEdge. *The Price Sheet: Ontario Market Price Trends for January 2012*. 2012.
[19] City of Guelph. *2008 City of Guelph Solid Waste Management Master Plan: Appendix D – Additional Material Cost-Benefit Analysis*. 2008.

Figure 10: Sample Plastics Bag Recycling Poster

Estimated Diversion and Cost

Mixed Plastics

- Estimated diversion increase: about 1%
- Estimated costs: $44,000, to be offset by revenues from sale of recyclables

Polystyrene

- Estimated diversion increase: less than 1% (about 320 tonnes, based on 75% capture rate)
- Estimated costs: $163,000 (using densification) - $229,000 (without densification)

Plastic Film

- Estimated diversion increase: 2.5%
- Estimated costs: If collected at retail, included in promotion and educations

Recommendations

Mixed Plastics

It is recommended that the EWSWA introduce mixed plastics into the blue box recycling program because:

- It will increase the EWSWA's waste diversion rate;
- While there will be a cost for an additional sorter at the Material Recycling Facility, there is an opportunity for revenues to offset some or all of the additional cost and generate revenue;
- It will increase the level of service provided to residents, who have asked for the ability to recycle more materials; and
- It may make sorting of plastics easier for residents.

Polystyrene

It is recommended that the EWSWA pilot test accepting polystyrene (Styrofoam) at its recycling depots and promote the opportunity, as it will:

- Raise service levels for residents by providing them with an opportunity to recycle this material;
- Potentially increase the efficiency and effectiveness of the EWSWA's blue box program by keeping polystyrene out of the blue box stream;
- Help measure the cost-effectiveness of recycling polystyrene in Essex-Windsor and whether a densifier is warranted; and
- Help to confirm the amount of polystyrene waste available for recycling.

Plastic Film

It is recommended that the EWSWA pilot test accepting plastic film (e.g., plastic film) at its recycling depots, engage local retailers to establish a local plastic bag take-back bin at their outlets, and promote these opportunities to residents. This recommendation is being put forward because it will:

- Help raise Essex-Windsor's waste diversion rate;
- Help measure the cost-effectiveness of accepting plastic film at the EWSWA's recycling depots;
- Increase the level of service to residents by providing them with an opportunity to recycle this material; and
- Potentially increase the efficiency and effectiveness of the EWSWA's blue box program by keeping plastic film out of the blue box stream.

6.6 Establishment of Satellite Depots

Satellite Depots

Currently, Essex-Windsor has two depot locations where residents can drop off recyclable items as well as other items for diversion and disposal. The two sites service an area approximately 54 km by 33 km. Satellite depots could be established for non-hazardous recyclables in outlying areas of Essex-Windsor. This would shorten distances residents need to commute in order to drop off

recyclables. The depots would provide residents with an opportunity to get rid of excess recyclables if their bins are full, and the depots could also be used to accept materials problematic when accepted at curbside, such as mixed plastics, polystyrene, or plastic film. In addition, the extra bins would increase the presence of the recycling program and make it more visible for residents. They should be placed in high traffic areas, such as the main street of municipalities within the region or near grocery stores. The cost associated with establishing satellite depots would be about $5,000 to $10,000 per site (assumes depots would be located on municipal property).

Depot best practices should be followed when designing the depot systems, including those described in the following documents:

- Phase 2 of Rural Depot Project: Best Practices of Rural Recycling Depot Programs by Quinte Waste Solutions (Phase 2 of Stewardship Ontario E & E Funded Project Number 45).
- Best Practices Guide for Depot Collection of Polystyrene Cushion Packaging by Environment Plastics Industry Council and Grace Canada Inc. July 2008.

Estimated Diversion and Cost

Satellite Depots

- Estimated diversion increase: 1% - 2%
- Estimated costs: $5,000 to $10,000 per depot

Recommendations

Satellite Depots

It is recommended that the EWSWA assess the feasibility of establishing waste diversion depots in strategic locations across the County as a means to provide greater convenience and increased participation. The assessment should include (but not be limited to):

- Preferred strategic locations, from both an operations perspective and a customer service perspective;
- The types of materials that would be accepted at the depots;
- Whether the depots would be staffed;
- Estimated increase in waste diversion; and
- Anticipated costs.

This recommendation is being put forward because:

- It would provide another opportunity where residents can take their overflow blue box materials and other divertible materials that may not otherwise be collected curbside (depending on what is accepted at the depots); and
- It is a potentially cost-effective way to raise the level of service provided to the residents of Essex-Windsor.

6.7 Mandatory Recycling

Mandatory recycling is a municipal tool to ensure that residents participate in recycling (or other diversion) programs. Mandatory recycling is implemented and enforced through application of a municipal by-law that either:

- Bans recyclable and other materials from disposal in the landfill;
- Prohibits recyclable materials from being placed in the garbage; or
- Both.

The by-law could also specify that all households are provided with recycling containers and are not allowed to opt out.

For example:

- Pictou County, Nova Scotia provides a list of materials in its Solid Waste-Resource Management Bylaw (Clause 3.3) that "no person shall dispose of … in any landfill or incinerator;"
- The Township of East Luther Grand Valley states in its garbage by-law (Clause 6a) that "it is the responsibility of waste generators to ensure that all recyclables and organic material is removed from the Household waste stream prior to placing at the curb for collection;" and
- Section 1903 of the San Francisco Mandatory Recycling and Composting Ordinance requires that "all persons in San Francisco must source separate their refuse into recyclables, compostables and trash, and place each type of refuse in a separate container designated for disposal of that type of refuse. No person may mix recyclables, compostables or trash, or deposit refuse of one type in a collection container designated for another type of refuse…"

For a mandatory recycling approach to be most effective in Essex-Windsor, each municipality would need to implement measures similar to the other municipalities. For example, updates to bylaws should be the same for each participating municipality to ensure consistent messaging.

If this option were to be pursued, the way in which it would be used or enforced would need to be explored further by the EWSWA and its municipal partners and would depend on the needs of the community. For example, a moderate approach to mandatory recycling would see it as a promotion and communications tool, to be enforced only when absolutely necessary (e.g., a household that places large amounts of waste at the curb each week with no attempt at diversion). A more aggressive approach could have haulers checking garbage bags they suspect of containing recyclables and rejecting those bags that do.

There is mixed information on the effectiveness of mandatory recycling. While the research indicates that mandatory recycling programs have higher participation rates, it is unclear if they lead to increased amounts of material recycled. In other words, those who will not recycle unless they are forced to still will not recycle very much.

A key concern the public often has regarding mandatory recycling is the perception that bylaw officers or haulers will be routinely going through their garbage for recyclables, which many feel is an invasion of privacy. However, as noted above, municipalities with mandatory recycling bylaws can use the bylaws selectively, whether in conjunction with education or exclusively with households that persist in not recycling. Those who make efforts to recycle (as evidenced by blue/red boxes at the curb) would not be likely targets of bylaw enforcement activity.

In addition to specific set out procedures, this option would require some additional enforcement by by-law officers and could require additional staff and training. Increasing promotion and education to residents is also an essential part of implementing this option. Costs for this option would be dependent on the level of enforcement required.

Table 11: Ontario Municipalities with Mandatory Recycling

- City of Guelph
- Region of Halton
- Township of Amaranth
- Township of East Luther Grand Valley
- Township of Edwardsburgh Cardinal
- Township of Galway-Cavendish and Harvey
- Municipality of Algonquin Highlands
- Municipality of Dysart
- Municipality of Highlands East
- Municipality of Huron East
- Township of Algonquin Highlands
- Township of Minden Hills
- Township of Rideau Lakes
- Township of Wollaston
- Village of Lucknow

Estimated Diversion and Cost

- Estimated diversion increase: Approximately 2% (3,100 tonnes), or more if used in conjunction with clear bags.
- Estimated costs: to be determined with level of enforcement required.

Recommendation

It is recommended that the EWSWA propose that the Essex-Windsor municipalities and the EWSWA collectively discuss the feasibility of introducing mandatory recycling in Essex-Windsor. This discussion should include (but not be limited to):

- Whether mandatory recycling is introduced in a new or existing municipal by-law;
- The purpose of mandatory recycling in Essex-Windsor and how it would be used (e.g., as an educational tool, degree of enforcement, etc);
- What constitutes “recycling” (e.g., a certain number of blue box set-outs during a period of time, blue box materials prohibited from being placed in the garbage, etc);
- The level of enforcement (e.g., passive or active enforcement, use of fines or refusal of garbage collection service, etc);
- Examples of how mandatory recycling has been implemented in other municipalities, including wording used in other by-laws or policies; and
- The need for it to be consistent across all Essex-Windsor municipalities.

This recommendation is put forth because:

- Mandatory recycling provides additional credence to educational activities;
- It provides municipalities with a legislative backdrop against which other programs can be implemented;
- It provides municipalities with the means to address excessive waste disposal behaviours or absent waste diversion practices; and

- Municipalities have the flexibility to enforce a mandatory by-law as much or as little as they want, depending on what is required and the intent of the by-law.

6.8 Enforcement of Material Bans

Essex-Windsor has already adopted municipal by-laws prohibiting yard waste materials from entering the disposal stream and therefore could consider banning other materials, such as recyclables, to encourage residents to use diversion programs. A gradual, incremental process to implementation (warning first, small fine on second infraction, and progressively larger fines for additional infractions) could help to make the transition easier for residents.

Enforcing current by-laws and regulations more stringently and hiring additional personnel for enforcement is a viable option to increase diversion rates without changing current, well established diversion programs.

Estimated Diversion and Cost

- Estimated diversion increase: Approximately 1% to 2%.
- Estimated costs: to be determined with level of enforcement required; would also include additional promotion and education.

Recommendation

This option is not recommended at this time, in favour of the mandatory recycling option, which would likely be easier to enforce and encourages correct separation of wastes at the source.

6.9 Promotion and Education

Public engagement is an ongoing dialogue with a community to identify and remove barriers to participation and maximize program effectiveness, efficiency and economics. Preferably, public engagement begins at the time that the municipality is first considering a new waste management program, so that the input of the customers can be knitted into the design of the system. As well, as systems expand and change, community engagement provides feedback on existing programs and guidance on new ones. Waste diversion programs can fail or succeed based on their ability to overcome public barriers to participation, so public engagement is crucial. Well-designed programs can fail for lack of public engagement, while poor programs can be made more effective on the strength of good public engagement. Effective public engagement strategies include:

- Meaningful two-way dialogue between the system managers and their customers to identify barriers and opportunities to overcome them;
- Development of an effective and convenient system with an integrated communications program based not only on awareness but on behaviour change; and,
- Testing and fine-tuning the methods, messages and techniques.

The EWSWA currently has a broad promotion and education program that makes use of a wide range of materials and mediums, including collection calendars, fridge magnets, composting booklets, television ads, radio ads, posters, displays at public events, presentations in schools, among other things. The materials cover a variety of diversion topics, including waste reduction and reuse, recycling and composting. This has helped the EWSWA divert nearly 18% of its total waste stream

through the blue box program in 2010. This is below the average of about 21% for its WDO municipal grouping.

Two opportunities for increasing Essex-Windsor's waste diversion rate are to:

- Investigate and identify the barriers to participation in the area's waste diversion programs; and;
- Design and implement a Community-Based Social Marketing campaign to overcome the barriers and increase diversion.

6.9.1 Identification of Possible Barriers

A key step toward the strategic improvement of a municipality's waste diversion rate is the identification of barriers to participation. In 2008, the United Kingdom's Waste & Resources Action Programme (WRAP) conducted a study to examine barriers to recycling at home and identify ways the barriers could be overcome[20]. The study organized the barriers identified into four categories:

- **Situational barriers**, where recyclers would recycle more if they had:
  - Collections of a wider range of materials;
  - Bigger containers;
  - More containers;
  - More space to store their containers;
  - More frequent collections;
  - If the containers were easier to move.
- **Behaviour Barriers**, where current recyclers occasionally:
  - Put materials in the garbage if they are unsure of where it goes;
  - Throw recyclable bathroom wastes in the garbage;
  - Put things in recycling even if they are unsure of it can be recycled;
  - Forget to put recyclables out on collection day;
  - Put recyclables in the garbage when their recycling containers are full;
  - Put recyclables in the garbage rather than clean them for recycling;
  - Are discouraged due to identify theft concerns;
  - Are discouraged by having to store recycles or clean them.
- **Lack of knowledge or understanding:**
  - Lack of understanding on their municipality's recycling program;
  - Lack of understanding on the real benefits of recycling;
  - Not knowing what can or cannot be recycled;
  - Knowing or remembering when their collection dates are.
- **Attitudes and Motivators**, where recyclers would be encouraged to recycle more if they:
  - Saw the practical impact of recycling in their local area;
  - Felt their efforts were more appreciated by the local municipal council;
  - Received an incentive for recycling;
  - Were fined for not recycling.

All of the barriers listed above could potentially be affecting Essex-Windsor's waste diversion rate. Methods for identifying which barriers are specific to Essex-Windsor include:

- A survey of randomly selected residents (e.g., a telephone or door-to-door survey);

[20] Pocock et al. *Barriers to Recycling at Home*. WRAP. August 2008.

- Questionnaires administered at kiosks placed at public events or in public spaces (such as a mall or grocery store); or
- An online survey.

6.9.2 Community-Based Social Marketing

Community-based social marketing (CBSM) is an approach to behaviour change that draws heavily upon research in social psychology that shows that efforts to promote behaviour change are most effective when they are carried out at a community level and involve direct contact with people. CBSM acknowledges that while awareness and knowledge is important, it alone is insufficient to ensure the desired behaviour change. For example, it is widely understood that smoking and fast food are poor heath choices, yet many people still smoke and eat fast food.

CBSM takes a pragmatic, stepped approach to fostering behaviour change. It includes:

- Market research, such as identifying target audiences as well as barriers to desired behaviours;
- Developing approaches and supporting materials to overcome these barriers;
- Implementing the program, with set goals, objectives and monitoring of the results; and
- Evaluating and fine-tuning the approach or program.

CBSM also uses tools that have been identified as being particularly effective in fostering change. Although each of these tools on its own is capable of promoting sustainable behaviour, the tools can often be particularly effective when used together. Key community-based social marketing tools include:

- Prompts (e.g., items that remind people to engage in waste diversion, such as the EWSWA's fridge magnets);
- Commitments, where residents commit or pledge to adopt a sustainable behaviour (e.g., signing a pledge card to recycle something every day);
- Social or community norms (for example, the visual of a street lined with recycling boxes, indicating that recycling is the right thing to do and everyone is doing it); and
- Vivid and engaging communications tools.

Estimated Diversion and Cost

- Estimated diversion increase: about 1% to 2% based on existing programs.
- Estimated costs: $10,000 for CBSM campaign

Recommendations

It is recommended that the EWSWA continue with its qualitative and quantitative research on barriers to recycling in order to better understand how residents recycle, their barriers and motivation for participating in the waste diversion activities, and how to overcome the barriers.

It is also recommended that the EWSWA develop a Community-based Social Marketing campaign to address the barriers identified in the market research. Based on the barrier research, incentives may form part of the Community-based Social Marketing campaign.

These recommendations are put forward because:

- Promotion and education is a best practice;
- It is one of the most cost-effective ways of increasing participation in recycling programs and increasing the amount of waste diverted;
- Increased promotion and education is an option well supported by residents;
- Without sustained promotion and education, waste recycling programs will not work optimally (i.e., participation will drop off, or residents will participate incorrectly, which increases processing costs).

6.10 Incentives and Recognition for Good Diversion Behaviour

Another option for encouraging residents to increase diversion is through incentive programs. One such program is Hamilton's "Gold Box" program. Residents can be nominated or nominate themselves as being model citizens at waste diversion. City staff then come by unannounced during a collection day to conduct a curbside audit of their waste. Households who have most of their waste in their blue boxes and green cart are awarded a gold recycling box. By using the Gold Box, they are helping to demonstrate their willingness to recycle, emphasize that diverting most of their waste is achievable and can be part of the social norm, and motivating others to recycle more as well.

Estimated Diversion and Cost

- Estimated diversion increase: Approximately 1%.
- Estimated costs: To be determined, depending on type of incentive program implemented. Cost items may include cost of tax credits, compost giveaways, free bins, among other costs depending on the incentives.

Recommendation

An incentive program is not recommended for Essex-Windsor at this time, except for continuing with the current practice of subsidized backyard composters.

6.11 Extended Producer Responsibility

Essex-Windsor could promote the integration of environmental costs into the market price of products. The region could also consider establishing and promoting retail "Take it Back" initiatives, where manufacturers and suppliers would be responsible for taking back products at the end of the life cycle. Essex-Windsor should also attempt a communication strategy to inform participants in the product chain, particularly retailers and manufacturers, on how to reduce product packaging and improving recycling where possible.

The effect on diversion rates is variable, as implementing an EPR program requires many agencies and institutions to work together. Given this, several effects have been noticed in Europe where this

option is prominent: reduced quantities of packaging, lighter weight of packaging and total per-capita packaging consumption dropping three percent per year after implementation.[21]

An example of a corporation that has taken steps to reduce its environmental footprint and increase diversion through extended producer responsibility is Wal-Mart, specifically its Bridgewater, Nova Scotia location. This store has reached a 98% diversion rate and has received Nova Scotia's Mobius Award for Environmental Business of the Year. The Bridgewater location has taken the following steps to increase diversion:

- Sorting stations installed throughout the store for staff and customers;
- Plastic crates are used instead of cardboard boxes;
- Recycling and diversion discussions are a regular part of morning staff meetings;
- Out of season clothing is donated to local charities instead of being disposed; and
- Full-time position was created to manage waste programs at the store.

These steps have enabled the store to reduce its refuse collection from one compactor per week to one every four months. Local businesses and institutions should be encouraged to follow these steps or similar ones in order to increase the amount of IC&I diversion.

Cost for implementing this option could be incorporated into Essex-Windsor's promotion and education program. In addition, staff time would be required to promote the program alongside educational material.

Estimated Diversion and Cost

- Estimated diversion increase: about 1%, depending on the materials targeted by the stewardship programs.
- Estimated costs: to be included in existing senior staff activities. Likely to result in cost savings for municipalities as industry funds or assumes responsibility for materials or modifies materials (e.g., thin-walling of aluminum cans).

Recommendations

It is recommended that the EWSWA and local municipalities alike continue with efforts to lobby for increased Extended Producer Responsibility (EPR) because:

- It can be incorporated as part of staff or politicians regular duties with no additional capital expense; and
- It can ultimately result in reduced cost to the municipality for waste diversion programs as product stewards increase funding for programs or assume responsibility for specific waste materials (e.g. LCBO bottles).

[21]Solid Waste as a Resource. Guide for Sustainable Communities, 2004.

7 Consultation

While the public was able to provide feedback at any point during this planning process, there were three key points of engagement with stakeholders and the public:

- Interviews with key stakeholders;
- Posting of planning information on the EWSWA's website (the Options Brief); and
- A pair of public open houses to present and discus potential waste management options.

Stakeholder Interviews

In the Fall of 2011, exp staff contacted and distributed a questionnaire to key stakeholders identified by the EWSWA. The interviews sought to identify key waste management issues within Essex-Windsor and opportunities for addressing them. Five interviews were completed.

The key issues identified included:

- Insufficient amount of waste being diverted from landfill for recycling, and the resulting lost revenue from the sale of recyclables;
- The costs associated with waste diversion programs and how to best fund or offset them;
- Concern over the impact of increased waste management costs on tax rates;
- Ensuring the partnership between the County, the City and the EWSWA works well;
- The current lifespan of Essex-Windsor's landfill;
- Determining the best way to manage Essex-Windsor's waste and the landfill;
- The distance of the landfill from the City and the resulting impact on waste management collection contract costs;
- Identifying the most effective ways to divert waste from disposal;
- Motivating residents to care about waste management issues and to think more about waste diversion opportunities, such as recycling and grasscycling; and
- The need for municipal politicians, managers and leaders to be more educated on the topic of waste management to ensure they can make the correct decisions.

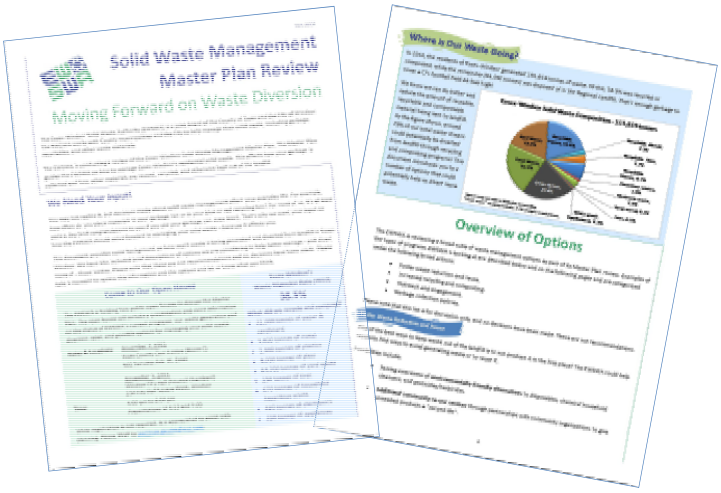
Potential opportunities that the interviewees said could help address these issues and help to improve waste management in Essex-Windsor included:

- Conduct additional research on new technologies;
- Educate the board members on waste management topics such as new technologies and what other similar municipalities have done to address similar waste issues;
- Provide more public education and communications on waste management, not just for residents but also for politicians, senior staff, clerks, and other municipal staff;
- Adopt appropriate new by-laws and enforce them, beginning first with educational steps (such as a warning sticker) and progressing toward stiffer penalties;

- Compact refuse at the transfer stations before shipping it to the landfill, so that fewer trips are made, thereby reducing transport costs; and
- Have satellite depots open to the public on Saturdays.

Options Brief

In October 2011, an options brief was prepared for posting on the EWSWA's website. The options brief provided a status update on Essex-Windsor's progress on waste diversion, promoted the then-upcoming public open houses, and listed the options being considered. Readers were encouraged to read the brief, attend the open houses, and provide their feedback on the options being considered and on how Essex-Windsor should move forward with waste management in Essex-Windsor (feedback obtained has been included with that through the open house).



Public Open Houses

Two public open houses were held to present an overview of Essex-Windsor's waste management status to the public and to discuss with them potential options for updating the EWSWA's Solid Waste Master Plan. Table 12 lists the date and location of the open houses and the number of people that attended (based on the sign-in sheets).

Table 12: Attendance at Public Open Houses

Public Open House 1	Public Open House 2
November 2, 2011 Essex County Civic Centre (Room C) 360 Fairview Ave. W, Essex Attendance: 28	November 3, 2011 Windsor City Hall (Council Chambers) 350 City Hall Square West, Windsor Attendance: 32

Each open house ran from 5:00 pm to 8:00 pm and included presentations at 5:15 pm and 7:00 pm. Participants were provided with a feedback form, which was also available online.

The feedback form asked residents which of a list of possible waste management options the EWSWA should consider for Essex-Windsor. The options receiving the most support included:

- Expanding the list of materials included in the current recycling program;
- Encouraging greater Extended Producer Responsibility;
- Use of bag limits;
- Bi-weekly collection of garbage (in conjunction with weekly collection of curbside food waste organics); and

- Continuing with and innovating the EWSWA's waste management promotion and education programs.

There was little to no support or general opposition to:

- User pay; and
- Clear garbage bags.

There was mixed support with respect to mandatory recycling. Comments supporting that option suggested that a more aggressive approach is needed to enforce collection by-laws and that households that do not recycle should be fined. Comments opposing mandatory recycling said that it is too harsh, likely would not be accepted, and that instead recycling should be made more convenient.

8 Summary of Recommendations

The review of the EWSWA's Solid Waste Management Master Plan included a close look at the waste management programs available in Essex-Windsor, the types of residential waste being diverted and disposed by households, and opportunities for increasing the amount of waste being diverted from disposal. Based on the review of available options and feedback from the public, the following recommendations have been put forward as updates to the EWSWA's Solid Waste Management Master Plan, which should help Essex-Windsor achieve its 60% waste diversion target.

1. **Garbage Bag Set Out Limits** - It is recommended that the EWSWA propose to Essex-Windsor's individual municipalities that they move to a garbage bag limit of 3 bags or containers, to be reduced to a limit of 2 bags in the medium term, for the following reasons:
    - Bag limits are considered a waste management best practice;
    - Bag limits have been shown to encourage participation in waste diversion programs and increase waste diversion;
    - Bag limits are commonly used in municipalities across Ontario and North America;
    - Based on the survey of set out rates conducted in 2011, the majority of households should be able to conform to a 3 bag limit (and a subsequent 2 bag limit as new waste diversion programs are implemented).

2. **Larger Blue Bins** - It is recommended that the EWSWA proceed with planning the purchase of larger blue bins for distribution to Essex-Windsor households, as:
    - The larger bins will allow households to place more materials in their blue bin, thereby reducing the amount of blue bin overflow that is placed into the garbage;
    - Households will need containers larger than the 60 litre (16 gallon) blue boxes currently distributed, if mixed plastics or other materials are introduced into the blue box program;
    - It is expected that households will appreciate receiving a larger blue box with no out-of-pocket expense from them; and
    - Funding for larger blue boxes is available from the Continuous Improvement Fund, which will increase the cost-effectiveness of the option.

3. **Weekly Collection of Recyclables** - It is recommended that the EWSWA continue with its practice of instructing bidders to provide pricing for weekly and bi-weekly collection of recyclables in its collection tender[22], as:
    - It will allow the EWSWA to assess the cost-effectiveness of providing weekly recyclables collection; and
    - While weekly collection is more expensive, it has been demonstrated to provide increased diversion.

[22] Next recycling collection tender occurs in 2016

4. **Mixed Plastics** - It is recommended that the EWSWA introduce mixed plastics into the blue box recycling program because:
    - It will increase the EWSWA's waste diversion rate;
    - While there will be a cost for an additional sorter at the Material Recycling Facility, there is an opportunity for revenues to offset some or all of the additional cost and generate revenue;
    - It will increase the level of service provided to residents, who have asked for the ability to recycle more materials; and
    - It may make sorting of plastics easier for residents.

5. **Polystyrene** - It is recommended that the EWSWA pilot test accepting polystyrene (Styrofoam) at its recycling depots and promote the opportunity, as it will:
    - Raise service levels for residents by providing them with an opportunity to recycle this material;
    - Potentially increase the efficiency and effectiveness of the EWSWA's blue box program by keeping polystyrene out of the blue box stream;
    - Help measure the cost-effectiveness of recycling polystyrene in Essex-Windsor and whether a densifier is warranted; and
    - Help to confirm the amount of polystyrene waste available for recycling.

6. **Plastic Film** - It is recommended that the EWSWA pilot test accepting plastic film (e.g., plastic film) at its recycling depots, engage local retailers to establish a local plastic bag take-back bin at their outlets, and promote these opportunities to residents. This recommendation is being put forward because it will:
    - Help raise Essex-Windsor's waste diversion rate;
    - Help measure the cost-effectiveness of accepting plastic film at the EWSWA's recycling depots;
    - Increase the level of service to residents by providing them with an opportunity to recycle this material; and
    - Potentially increase the efficiency and effectiveness of the EWSWA's blue box program by keeping plastic film out of the blue box stream.

7. **Satellite Depots** - It is recommended that the EWSWA assess the feasibility of establishing waste diversion depots in strategic locations across the County as a means to provide greater convenience and increased participation. The assessment should include (but not be limited to):
    - Preferred strategic locations, from both an operations perspective and a customer service perspective;
    - The types of materials that would be accepted at the depots;
    - Whether the depots would be staffed;
    - Estimated increase in waste diversion; and
    - Anticipated costs.

This recommendation is being put forward because:

- It would provide another opportunity where residents can take their overflow blue box materials and other divertible materials that may not otherwise be collected curbside (depending on what is accepted at the depots); and
- It is a potentially cost-effective way to raise the level of service provided to the residents of Essex-Windsor.

8. **Mandatory Recycling** - It is recommended that the EWSWA propose that the Essex-Windsor municipalities and the EWSWA collectively discuss the feasibility of introducing mandatory recycling in Essex-Windsor. This discussion should include (but not be limited to):

   - Whether mandatory recycling is introduced in a new or existing municipal by-law;
   - The purpose of mandatory recycling in Essex-Windsor and how it would be used (e.g., as an educational tool, degree of enforcement, etc);
   - What constitutes "recycling" (e.g., a certain number of blue box set-outs during a period of time, blue box materials prohibited from being placed in the garbage, etc);
   - The level of enforcement (e.g., passive or active enforcement, use of fines or refusal of garbage collection service, etc);
   - Examples of how mandatory recycling has been implemented in other municipalities, including wording used in other by-laws or policies; and
   - The need for it to be consistent across all Essex-Windsor municipalities.

   This recommendation is put forth because:

   - Mandatory recycling provides additional credence to educational activities;
   - It provides municipalities with a legislative backdrop against which other programs can be implemented;
   - It provides municipalities with the means to address excessive waste disposal behaviours or absent waste diversion practices; and
   - Municipalities have the flexibility to enforce a mandatory by-law as much or as little as they want, depending on what is required and the intent of the by-law.

Outreach

9. **Promotion and Education** - It is recommended that the EWSWA continue with its qualitative and quantitative research on barriers to recycling and other waste diversion programs in order to better understand how residents recycle, their barriers and motivation for participating in the waste diversion activities, and how to overcome the barriers.

   It is also recommended that the EWSWA develop a Community-based Social Marketing campaign to address the barriers identified in the market research. Based on the barrier research, incentives may form part of the Community-based Social Marketing campaign.

   These recommendations are put forward because:

   - Promotion and education is a best practice;

- It is one of the most cost-effective ways of increasing participation in waste diversion programs and increasing the amount of waste diverted;
- Increased promotion and education is an option well supported by residents;
- Without sustained promotion and education, waste diversion programs will not work optimally (i.e., participation will drop off, or residents will participate incorrectly, which increases processing costs).

10. **Extended Producer Responsibility (EPR)** - It is recommended that the EWSWA and local municipalities alike continue with efforts to lobby for increased Extended Producer Responsibility (EPR) because:
    - It can be incorporated as part of staff or politicians regular duties with no additional capital expense; and
    - It can ultimately result in reduced cost to the municipality for waste recycling programs as product stewards increase funding for programs or assume responsibility for waste materials.

The recommendations identified in the WRS will help the EWSWA manage Essex-Windsor's Blue Box program into the future and, if implemented in full, will help to reach the WDO suggested target of 75% capture of Blue Box material and achieve the Provincial waste diversion target. The estimated annual operating cost to implement the recommended suite of updates is approximately $250,000 (net). Similarly, the estimated capital costs of these recommended WRS options is approximately $320,000, when alternative funding sources such as the CIF are factored in.

9 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 impact. Table 13 below identifies contingencies to overcome potential planning issues.

Table 13: Waste Recycling Strategy Contingencies

Risk	Contingency
Insufficient funding	Implement/Raise user fees
	Explore and apply for other funding sources
	Delay lower-priority initiatives
	Increase proportion of municipal budget to solid waste management
Public opposition to planned recycling initiatives	Improve public communications
	Engage community/stakeholders to discuss initiatives/recycling plan
Lack of available staff	Prioritize department/municipal goals and initiatives
	Hire summer student to help with planning (may be available funding)
	Provide volunteer opportunities for students and members of the community
Permit requirements	Identify permit requirements early on in process
	Establish a “permit requirements” checklist

10 Monitoring and Reporting

The monitoring and reporting of the EWSWA recycling program is considered a Blue Box program fundamental best practice and will be a key component of this Waste Recycling Strategy. Once implementation of the strategy 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 the Board and to the public.

The approach for monitoring the waste recycling program is outlined in table 14 below.

Table 14: Recycling System Monitoring

Monitoring Topic	Monitoring Tool	Frequency
Total waste generated (by type and by weight)	Measuring of wastes and recyclables at disposal site	Each load
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	Tracking calls/complaints received to the municipal office	On-going
Report on implemented activities	Describe what initiatives have been fully or partially implemented, what will be done in the future	Annually
Review of Waste Recycling Strategy	A periodic review of the Waste Recycling Strategy 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 as part of the Solid Waste Master Plan update