

Road Map 2.0

The Road to Increased Resource Recovery and Zero Waste

December 2013

- 1990 Blue Box
- 1996 Composting
- 1997 Continuous Improvement System
- 1999 Apartment Recycling
- 2007 Road Map 1.0
- 2014 Road Map 2.0

1990

1996

1997

1999

2007

2014



London
CANADA



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1) INTRODUCTION

1.1 WE WANT YOUR INPUT – HERE'S HOW YOU CAN GET INVOLVED

What can we do? How do we do it? We need to hear from Londoners what their priorities are and how quickly do they want to move with respect to increased recovery and zero waste initiatives. The proposed four-month public engagement period with Londoners includes:

- Information through traditional media, including a summary of the report in the London Free Press
- Social media outreach
- Outreach at community events (e.g., London Home Builder's Association Home Show)
- Feedback opportunities through a variety of means including the City's website

Step 1: Read this Road Map... You are already well on your way by reading this document which provides information on many options being considered by the City to increase waste diversion and resource recovery. Thank you for your interest and for your time.

More information about London's existing programs can be found at london.ca. Looking at other municipal websites is also a good way to learn about programs and service options in other municipalities. To compare how London is doing relative to other Ontario municipalities you can go to the Waste Diversion Organization (WDO) website at wdo.ca where they compile information on materials being recycled and composted by municipalities. Stewardship Ontario's website stewardshipontario.ca has information specific to Ontario Blue Box programs as well as reports on new programs, demonstration projects and waste audits submitted by municipalities, including London.

Step 2: Understand the Options and Tell Us Your Preferences... Once you understand the options for London, the next step is to tell us what you prefer and why. This document will provide the information you need to make informed decisions about the cost of new programs, how much more material can be recycled or composted, as well as the environmental benefits.

Some of the information to help you evaluate the options will come from your own willingness and the willingness of your friends and neighbours to participate and support both current and new programs. Consider for example, if you are willing to support a reduction in the garbage container limit? Or, if you would be willing to spend more time separating recyclables if the City was to add new materials to the program? It is important to consider the impact of these new programs on your daily routine and ask if it is feasible for you to participate.

Step 3: Provide Feedback... We need to hear back from Londoners, especially if you have reviewed this document and considered the options. Opportunities to provide feedback can be found at london.ca/roadmap or by calling 519-661-2500 ext. 5419.

1.2 CONTINUOUS IMPROVEMENT STRATEGY – DELIVERED SINCE 1997

The City of London's Waste Management System is based on a Continuous Improvement Strategy (management philosophy) and Sustainable Waste Management. This strategy, which was approved by Municipal Council in 1997, has been the foundation for going forward. It uses an active framework that recognizes integrated waste management as an important environmental service in the community. By effectively allocating financial and human resources, this environmental service contributes to the protection of human health and the environment. By supporting an integrated system of waste reduction (i.e., not producing waste in the first place), recovery of materials that can be recycled and composted, and ensuring that what remains is handled in an environmentally responsible manner, this strategy provides the mechanism for continuous improvement of the waste management system. Since this strategy was approved over fifteen years ago, the City of London has steadily increased its performance to the current level of 44% waste diversion while having one of the lowest total waste management costs in Ontario for urban centres (based on statistics compiled by the Ontario Municipal Benchmarking Initiative – OMBI).

The nature of continuous improvement is to improve using logical, incremental and measurable steps. It applies to all elements of the waste management system, from administrators and designers, to service providers and system users. Continuous improvement is constantly adapting, by obtaining and using information, and by evaluating changes to make sure that they are effective. It requires:

- a) The ability to pull people and resources together from different levels and areas of the Corporation of the City of London; other levels of government; citizens and community groups; employees and employers; waste management service providers; academia; and industry specialists to freely discuss the information and issues involved, come up with ideas, evaluate them, choose some, and carry them out.
- b) Key information about our programs, projects and policies, from a variety of sources. This is used to evaluate our outcomes (what has been achieved) and our processes (how we go about doing it).
- c) Systematic and transparent ways to measure the outcomes of our changes and progress.
- d) A real desire to improve, even if it means adjusting or changing relationships and doing some things you do not completely agree with.

The current report – *Road Map 2.0 – The Road to Increased Resource Recovery and Zero Waste* – continues from the earlier report - *A Road Map to Maximize Waste Diversion (2007)* - which guided the path to bring us to where we are today. In the next sections we will reflect on our progress since the first Road Map report as we engage on setting a route for the future.

1.3 GUIDING PRINCIPLES SINCE 2007

When A Road Map to Waste Diversion in London was released in 2007 London had reached a significant milestone on the waste diversion road. A 40% waste diversion rate was achieved in 2006 and sustained through 2007. We had come a long way since 1987 when only 4% of residential waste was diverted from landfill. What made the difference? At the provincial level waste diversion became a priority. Ontario's Waste Reduction Action Plan, announced in February 1991, set a goal to divert 50% of waste by 2000 using 1987 as the base year. In London, the introduction of the Blue Box Program in 1990 allowed us to make significant inroads. Moreover it has been the commitment of Londoners to continuously increase the amount of waste that is recycled through the expansion of this program and composted through newer City initiatives.

In 2007, the document *A Road Map to Maximize Waste Diversion in London* was released for public comment and input. This document set the direction for waste management decisions in the coming years. A number of guiding principles were established as a result of this document and the subsequent Business Plan was approved by Council. These guiding principles included:

- Continuous improvement to maximize waste diversion
- Reduce or maintain current costs of City programs
- Support local job creation efforts
- Minimize the negative impact to Londoners
- Align with Provincial direction and the revised Waste Diversion Act

Today, waste diversion programs contribute to the overall diversion rate of 44%, as shown in Figure 1 on the following page. As we go forward towards 60% diversion and beyond, we need to identify the most cost effective programs to divert additional materials that are currently placed in the garbage.

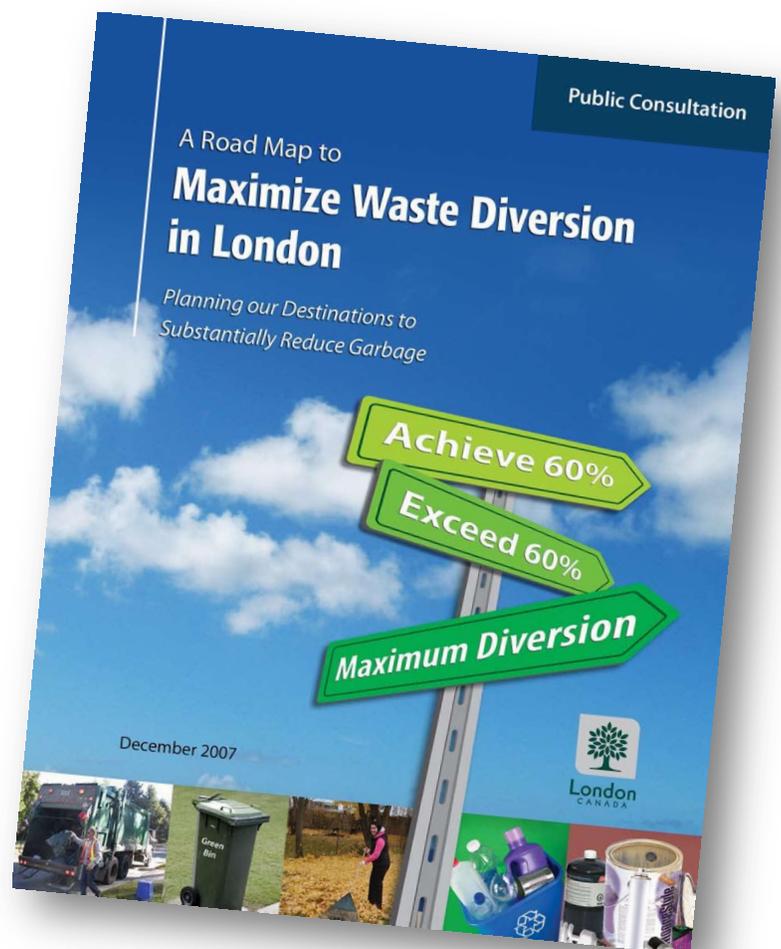
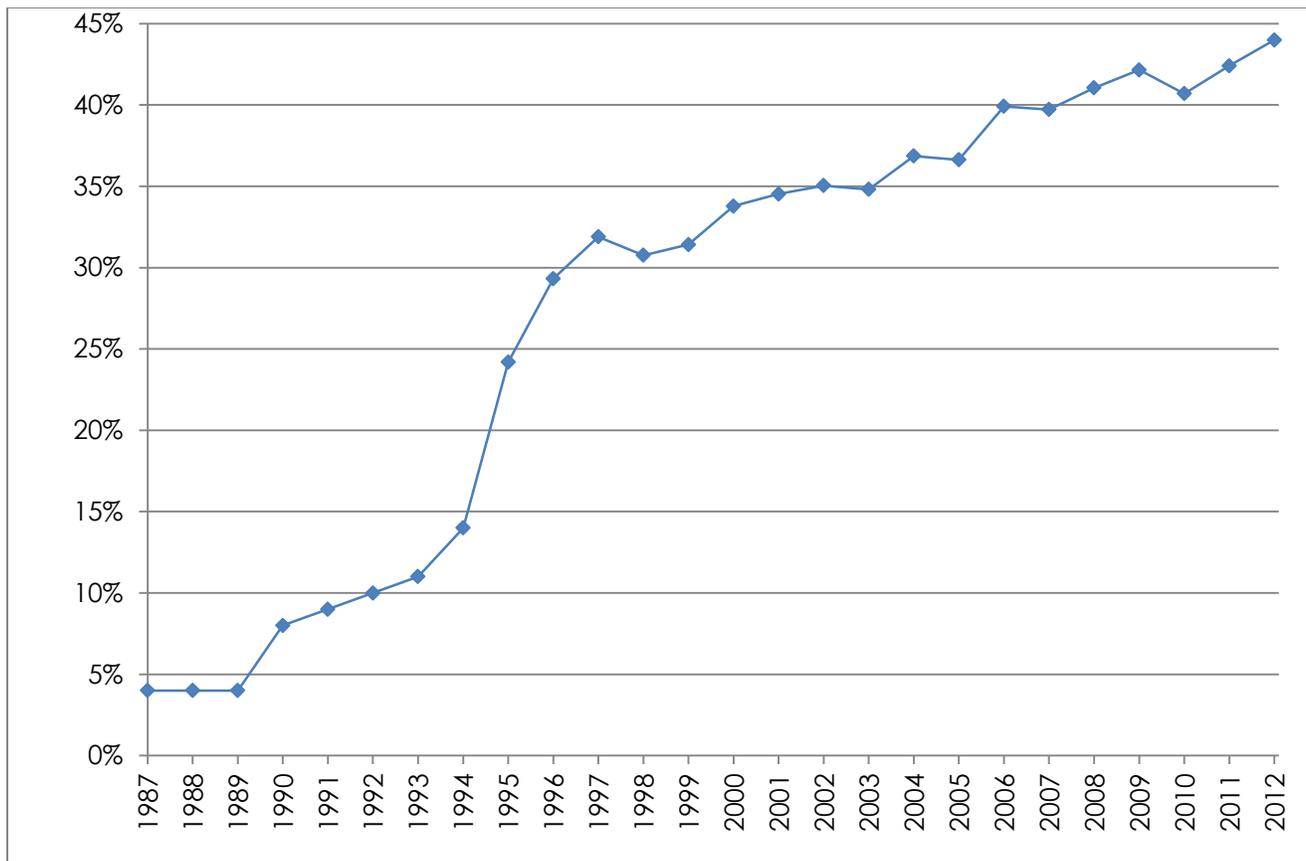


Figure 1 - Historical Diversion Rates 1987-2012

Key Program Changes

- 1990 - Curbside Blue Box pickup introduced City wide
- 1994 - Appliances banned from garbage collection
- 1995 - Added new items to Blue Box
 - Grass clippings banned from garbage collection
- 1996 - Curbside pickup of yard materials
- 2000 - Multi-Residential Building Recycling Program started
- 2002 - Electronics Recycling introduced at EnviroDepots
- 2003 - Public Space Recycling started
- 2005 - Renovation Material accepted for recycling at the EnviroDepots
- 2006 - 4 Container Limit for Garbage introduced for curbside collection
- 2007 - Container limit fully implemented and enforced
- 2009 - Added more items to Blue Box Program
- 2011 - Further expansion of Blue Box Program

2) ROADMAP 1.0

2.1 WHAT HAS BEEN ACCOMPLISHED SINCE 2007?

In 2007 the document *A Road Map to Maximize Waste Diversion in London* was released for public comment and input. This document looked at a wide range of program changes, initiatives and new measures to increase waste diversion.

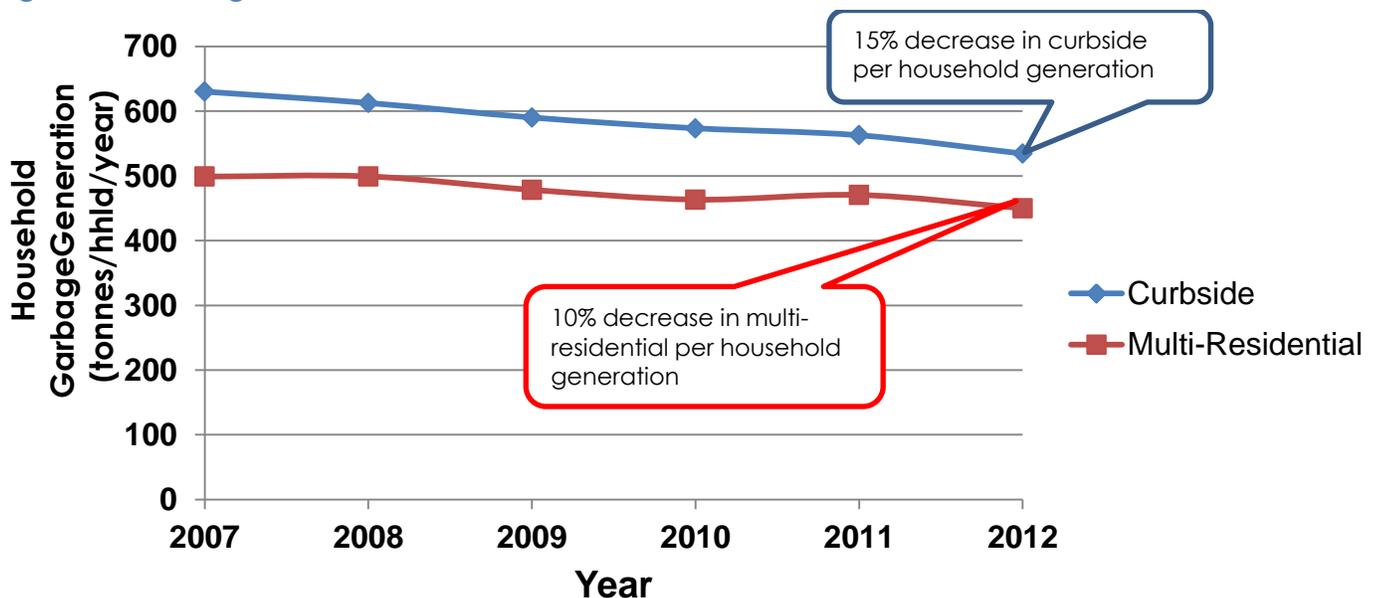
Following extensive consultation the *Interim Business Plan for the Green Bin Program and Zero Waste Initiatives* was developed and approved by Council. The Interim Business Plan required Council approval of each proposed individual program change, initiative or new measure before they could be implemented. The key components of the interim business plan are listed in Table 1 (next page) along with the program changes, initiatives and new measures implemented to date.

2.2 Roadmap 1.0 – HAS IT MADE A DIFFERENCE?

Yes...the programs and initiatives implemented have increased overall waste diversion from 40% in 2007 to 44% in 2012 (see details in Appendix A) as well as resulted in many other system improvements. Four examples are presented below.

a) Decrease in Garbage Generation

Figure 2 - Garbage Generation from 2007 to 2012



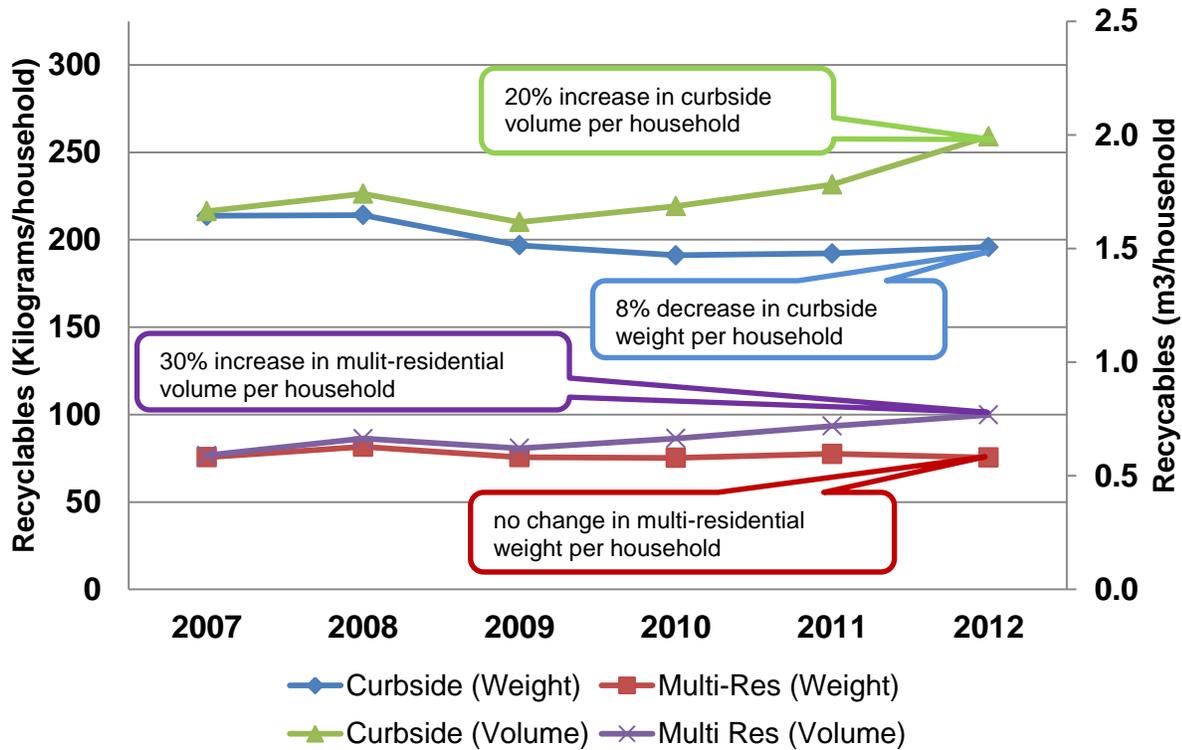
The amount of garbage generated per household has continuously dropped for curbside and multi-residential homes over the last five years. The main reason for this drop is the many initiatives implemented to divert waste. However, other factors besides the new waste diversion initiatives have also contributed to this decrease. These factors include changing

waste composition (see discussion on next page), demographics (smaller households, aging population) and a downturn in the Canadian and local economy.

Table 1 - Measures Undertaken from Roadmap 1.0

Interim Business Plan Component		Measures Undertaken
✓	New Materials Added to the Blue Box Program	<ul style="list-style-type: none"> • milk and juice cartons • drinking boxes • steel paint cans and aerosol cans • #3, #6 and #7 plastic bottles, tubs and jugs • thermoform PET plastic (e.g. clamshell containers) • cardboard cans
✓	New Materials Added to the EnviroDepots	<ul style="list-style-type: none"> • tires, appliances • used clothing and small household items • batteries • fluorescent tubes and bulbs • empty oil containers • vegetable oil (HSW Depot only)
✓	Convenience and Capacity Added to Blue Box Program	<ul style="list-style-type: none"> • delivered 115,000 large capacity Blue Boxes • delivered 35,000 reusable Blue Bags • added 8,000 apartment units to the program (an increase of 25%) • added 1,900 Blue Carts to existing buildings (an increase of 65%) • expanded public space recycling
✓	Convenience and Capacity Added to the EnviroDepots	<ul style="list-style-type: none"> • expansion of Oxford EnviroDepot • expansion of Clarke Road Depot (underway) • proposed EnviroDepot in north end of the City (planning stages) • HSW open 5 days/week, up from 1 day/week • allow small businesses to use HSW Depot
✓	Enhanced Education and Awareness Programs	<ul style="list-style-type: none"> • Many initiatives over the last 5 years including: <ul style="list-style-type: none"> ○ <i>Sort it Right</i> campaign ○ <i>Plastic Containers Are In</i> campaign ○ London Clean & Green expanded
✓	Green Bin Pilot completed	<ul style="list-style-type: none"> • 760 homes participated in pilot project • four season (yearlong) study • seasonal collection schedule studied (weekly Blue Box and Green Bin, weekly garbage in summer and bi-weekly garbage in winter)
✓	Provincial Engagement	<ul style="list-style-type: none"> • Staff are actively involved in provincial processes and organizations to help set direction. Staff currently or in the past have been on the Board of Directors and/or committees for: <ul style="list-style-type: none"> ○ Association of Municipalities of Ontario (AMO) and the AMO Waste Management Task Force (current) ○ Regional Public Works Commissioners of Ontario (RPWCO) and the RPWCO Solid Waste subcommittee (current) ○ Ontario Waste Management Association (OWMA) (current) ○ Municipal Waste Association (MWA) (from 2007 to 2013) • Staff are involved with other organizations (e.g., Recycling Council of Ontario) receiving updates and comments via general membership

Increase in the Volume and Percentage of Recyclables Captured
Figure 3 - Volume of Recyclables Captured



The volume of recyclables captured per household has increased significantly over the last five years while the weight of recyclables has decreased. This is because of changes to the composition of waste over the last five years. Examples of these changes include:

- An increase in light weight and multi material packaging (e.g. more packaging of fruits and vegetables in “clamshell” plastic containers)
- Plastic containers replacing glass, aluminum and steel
- An increase in plastic stand-up pouches for food products replacing plastic containers
- Consumers reading more newspapers and magazines online

This means much more effort is required to recycle a tonne of recyclables than in the past because there are many more items that must be collected and processed.

Percentage of Recyclables Captured

Waste composition studies conducted by Stewardship Ontario in 2007 and 2012 show the percentage of recyclables has increased (see Table 2).

Table 2 – Capture Rates of Recyclable

Material	Capture Rate of Blue Box Materials		2012 vs 2007 Capture
	2007	2012	
Paper	80%	85%	+ 5%
Paper Packaging	55%	56%	+ 1%
Plastics	28%	31%	+ 3%
Metals	50%	56%	+ 6%
Glass	75%	75%	No change

b) More Residents Accessing City Programs

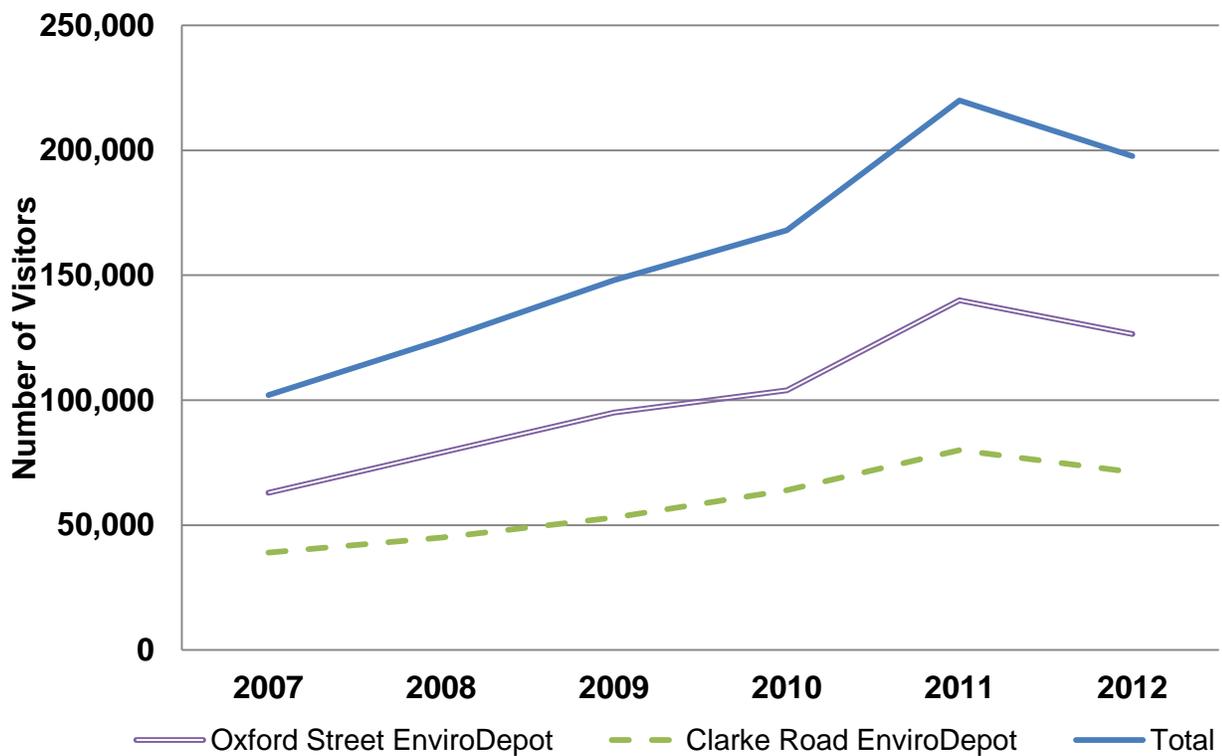
Many more residents are accessing City waste diversion programs. For example, the number of residents using the EnviroDepots since 2007 has doubled. (Figure 4)

The list of materials added at the EnviroDepots, since 2007 are:

- tires, appliances
- used clothing and small household items
- batteries
- fluorescent tubes and bulbs
- empty oil containers
- vegetable oil (HSW Depot only)



Figure 4 – Annual EnviroDepot Visitors



c) More Access to Waste Diversion Programs through other Organizations

Thanks to provincial Extended Producer Responsibility (EPR) programs, residents now have access to recycling programs for tires, electronics and household special waste (e.g. paint, batteries, etc.) at retail locations throughout the city. In addition to 'take-back' type programs (e.g. paint, light bulbs, etc.) recycling is more common in businesses and retail locations, and drop-off for return of plastic bags at many retailers has now become common place. Other diversion initiatives in the London community include:

- Retail take-back programs offered by retailers for a range of items including electronics, batteries, compact florescence light bulbs, paint, plastic bags, printer cartridges, tires and appliances
- Specialized diversion programs offered by businesses that target materials designated by Waste Diversion Ontario, that generate revenue for the businesses through industry steward fees paid by manufacturers (e.g., electronics, batteries)
- Resource recovery of materials banned from garbage collection and disposal, such as construction and renovation materials (e.g. scrap metal, wood)
- Deposit programs: Beer Store and LCBO
- Growth of drop-off locations and pickup for used goods (e.g. Goodwill, Thrift Stores, Canadian Diabetes)

Do you want more information?

Additional details on the City's *A Road Map to Maximize Waste Diversion in London (2007)*, the *Interim Business Plan* or technical information on the City's waste diversion programs can be found at london.ca



3) PLANNING THE NEXT TRIP

3.1 INTRODUCTION

Before deciding on what changes to the current waste management system are appropriate, consideration must be given to:

- What waste is composed of now and in the future
- The current and future role of the City of London
- The role of other public and private organizations
- New, emerging and next generation technologies

3.2 WASTE COMPOSITION NOW AND IN THE FUTURE

The waste stream is constantly changing due to industry introducing new packaging or modifying existing packaging, changing consumer habits and new products in the marketplace. Some of the changes that have occurred over the last five years were previously listed.

These trends coupled with the waste diversion programs implemented under the *Road Map to Maximize Waste Diversion* means what is being collected for recycling and for disposal is different today than in 2007 and will be different in the future.

Details of current and projected waste quantities are presented in Appendix B. What is currently in the garbage is shown on the next page and discussed below.

Single Family Households

Single families make up about 70% of London's households and generate approximately 60,000 tonnes of the residential garbage each year that is landfilled. A large percentage of this waste could be composted or recycled.

A breakdown of what is in the typical garbage bag is illustrated on the page 12. About 10% of single family household garbage is material that should have been placed in the Blue Box. A further 10% of the garbage, including renovation materials and electronics, could have been taken to a Community EnviroDepot and recycled. It may be possible to capture more of these materials with enhanced education programs.



An expanded Blue Box program that accepted additional items such as mixed polycoat (e.g. coffee cups, ice cream containers), metal cookware, batteries, blister packaging (e.g. *rigid plastic around toys, hardware*), film plastic (e.g. plastic bags) and foam polystyrene "EPS" (e.g. meat trays) could reduce garbage a further 5%.

About 45% of landfill garbage is compostable (i.e. organics such as food scraps and non-recyclable paper such as paper towel, paper napkins). Expanding our current organics program of grass, leaves and yard waste to include one or more programs focused on the expanded list of organics by reducing the amount created, composting separated materials and/or recovering the energy content would significantly increase diversion, source reduction, and provide other environmental benefits.

Multi-Residential Households

About 30% of London's households live in multi-residential (apartment/condo) buildings and generate approximately 22,000 tonnes of garbage per year. A breakdown of the garbage collected from multi-residential buildings is presented on page 13.

The garbage from multi-residential buildings is similar to the garbage from single family households. The main difference is a higher percentage of recyclables in the garbage (22% versus 10% for single family) but less of the garbage is compostable (36% versus 45% for single family).

3.3 CURRENT AND FUTURE ROLE OF THE CITY OF LONDON

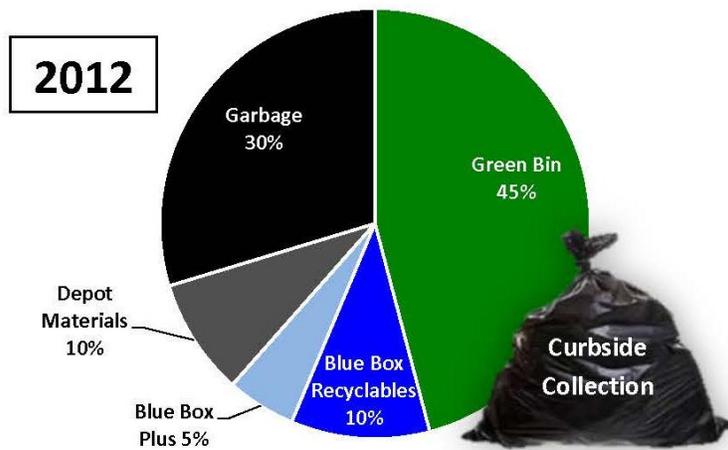
The City of London is the main service provider for the delivery of solid waste collection, processing and disposal services for the residential waste stream in London. The responsibility for management of some residential waste materials is shared with industry as required under the Waste Diversion Act (WDA). The WDA has established a framework for partial funding of designated material groups, which includes Blue Box program materials, electronics, household hazardous waste, and tires. The City also provides some waste management services to the Institutional, Commercial & Industrial (IC&I) sector. In addition to providing services, the City plays a role through input in provincial processes that will have an impact on how we deliver and pay for our programs and services.

The role of the City in the future will be determined in part by a new Ontario Waste Reduction Act and Waste Diversion Strategy. The direction of the new WRA if approved is for industry to play a larger role in waste management. This could result in more funding for City programs or industry delivered services, or a blending of both options. City staff will continue to follow the process of the proposed revised WDA at the provincial legislature.

What's in the Garbage Bag?

Most of what we put in the garbage could be diverted from the landfill through existing and new programs that are discussed in this document. The composition diagrams below and on the next page show just how much – whether you put your garbage out to the curb, or down the chute into a garbage bin.

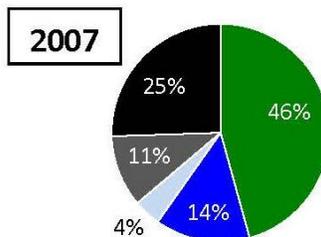
Curbside Collection



For the average London household with curbside collection

70% of materials in the garbage bag could be diverted.

Compared to 2007, this is a **5%** improvement to the composition found in the garbage bag.



Legend

Blue Box:

Items from the existing program that are put in the garbage instead of being recycled.



Blue Box Plus:

Items that are harder to collect and process and have less stable end markets - expanded Polystyrene™ (light weight foam packaging), plastic bags & plastic wrap, polycoat materials such as beverage cups, ice cream tubs.

Depot Materials:

Items that could be dropped off at a depot and recycled – textiles, scrap metal, electronics, household renovation materials.



Green Bin:

Compostable materials - kitchen scraps and non-recyclable paper (soiled paper, tissue, paper towel).

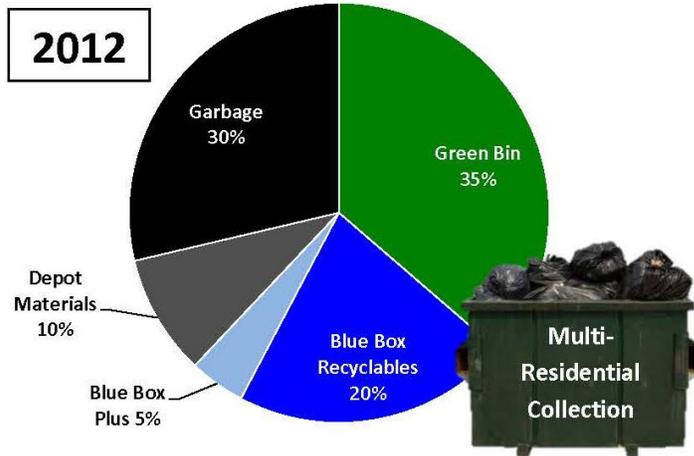


Garbage:



What's in the Garbage Bin?

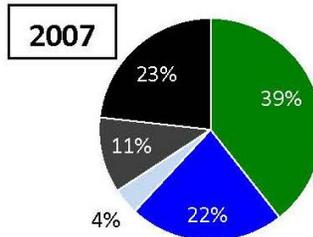
Multi-Residential Collection



For the average London household with bulk bin collection

70% of materials in the bin could be diverted.

Compared to 2007, this is a **7%** improvement to the composition found in the bulk bin.



Legend

Blue Box: Items from the existing program that are put in the garbage instead of being recycled.



Blue Box Plus: Items that are harder to collect and process and have less stable end markets - expanded Polystyrene™ (light weight foam packaging), plastic bags & plastic wrap, polycoat materials such as beverage cups, ice cream tubs.

Depot Materials: Items that could be dropped off at a depot and recycled – textiles, scrap metal, electronics, household renovation materials.



Green Bin: Compostable materials - kitchen scraps and non-recyclable paper (soiled paper, tissue, paper towel).



Garbage:



3.4 ROLE OF OTHER PUBLIC AND PRIVATE ORGANIZATIONS

There are many other organizations that have a role in diverting residential waste generated in the city. The role of these organizations and the potential for partnership opportunities with the City must be taken into consideration when looking at new initiatives.

Community Organizations

There are numerous community organizations that share the City's interest in waste reduction and diversion. These include organizations such as Goodwill, Thames Region Ecological Association (TREA), Waste Free World, Habitat for Humanity Restore and Youth Opportunities Unlimited (YOU) Recycling Services. Working with these groups helps keep the City in touch with resident concerns and provides us an opportunity to promote our programs through a wider community network. The City will continue to explore opportunities to build relationships and partnership initiatives.



Local Business

London businesses represent a large source of waste and resource materials. Their level of engagement in responsible waste management practices will have an impact on some City programs and facilities, such as our landfill lifespan and potential throughput of materials received at waste diversion facilities (e.g. EnviroDepots, Materials Recovery Facility, Household Special Waste Depot).

Through their internal policies and actions, businesses can play an important role in the London community to encourage and support a culture of waste minimization and waste diversion. Londoners are increasingly conscientious about how much waste they are creating as they go about their daily routines, at work, at school, as they shop, dine out, etc. As consumers of products and services Londoners want to have options to minimize their waste. The proposed Waste Reduction Act, which is before the Ontario Government for approval, will have a significant impact on requiring businesses to increase waste diversion activities. There is a potential for the City to play a role to assist with this positive transition.

Waste Management Service Providers

London has many private sector companies that specialize in waste management and waste diversion services. These companies provide services to different levels of government, directly to local businesses and often provide services without charge (or minimal charge) to charity and not-for-profit groups. These companies also represent the opportunity for innovation and creativity with respect to higher levels of waste diversion and resource recovery. Most importantly, these companies contribute to the local economy in the form of job creation and purchase of local goods and services.

Provincial Government

The Ontario Ministry of the Environment (MOE) is responsible for all legislation pertaining to waste management within the Province. Key legislation includes the 3Rs Regulations (under the *Environmental Protection Act*) and the *Waste Diversion Act (WDA)*.

Ontario's 3Rs Regulations were passed in 1994 and outline specific minimum waste management requirements for municipalities, industry and institutions. In 2002, under the *Waste Diversion Act*, Waste Diversion Ontario (WDO) was created to support the development, implementation and operation of waste diversion programs for materials including Blue Box Recyclables, Used Tires, Used Oil, Household Special Waste (HSW) and Waste Electronic and Electrical Equipment (WEEE). WDO also develops industry stewardship models for handling the materials and/or funding of the programs. The City of London is actively involved with WDO programs (i.e., policy reviews, program evaluations).

In early 2013, Bill 91 was introduced into the provincial Legislature. Bill 91 proposes to replace the existing *Waste Diversion Act, 2002* with the proposed *Waste Reduction Act, 2013 (WRA)*. The Province is also proposing a new Waste Reduction Strategy (WRS). If passed by the Legislature, the WRA and accompanying WRS will result in significant changes to how recyclables, organics and residential waste (garbage) are to be managed in Ontario. These changes and proposed direction have the potential to impact all aspects of London's residential waste management system (generally under the implementation responsibility of Municipal Council) and strongly influence how Industrial, Commercial & Institutional (IC&I) waste is managed by businesses and private waste management companies.

The proposed WRA and WRS for Ontario have a strong vision to divert more waste resources from landfill to the benefit of the Ontario economy and environment. The WRS is an outcomes based strategy that will promote Individual Producer Responsibility (IPR) and internalize the costs of recycling in the price of products. The WRS highlights why a transformation is needed and provides some specific facts and figures.

Recognizing challenges and opportunities from other municipalities is key to designing a sustainable waste management system for London. The MOE continues to be an important technical resource and is the regulatory authority on most waste management matters in the Province. City staff will continue to consult with them on appropriate matters.

Industry

Industry can play an important role in waste diversion by designing products and packaging with waste minimization in mind. If identified as a priority, industry's innovative nature can have a significant positive impact on waste reduction. For example, plastic beverage bottles have seen a light-weighting trend and the quantity of plastic required has been steadily reduced.

Federal Government

At the Federal level, Environment Canada is moving forward with two key approaches to promote waste reduction and diversion (sometimes referred to as waste minimization):

1. Extended Producer Responsibility (EPR): means that the responsibility of a consumer product at the end of its lifecycle (i.e., when it is being disposed) is shifted to the producer of the product, away from municipalities, and
2. Packaging Stewardship: recognizes the need for product packaging to be designed to have a minimum impact on the environment.

In October 2009, Canadian Council of Ministers of the Environment (CCME) approved the *Canada-Wide Action Plan for Extended Producer Responsibility* and a *Canada-wide Strategy for Sustainable Packaging*,

As noted on their website, the broad mandate of the CCME is to protect Canada's environment, 'by focusing on issues that are national in scope and that require collective attention by a number of governments' (provincial, federal, territorial).

The CCME Waste Management Task Group reviews and develops positions on government policy and advancements in the area of waste management in Canada. In addition to EPR and Packaging, other areas of work for the Task Group include: Compost, Electrical Waste, Hazardous Waste and Biosolids.

EPR at the Federal level is very logical as it builds on economies of scale plus the fact that products and packages flow regularly from one Province to the next. Harmonization of regulation will benefit consumers, taxpayers and businesses. City staff will continue to follow the progress with the CCME and Environment Canada.

3.5 NEW AND EMERGING TECHNOLOGIES

Staff continue to review developments with aerobic composting, anaerobic digestion, mechanical biological treatment (MBT) processes, advanced thermal treatment (ATT) and other technologies (including new, next generation and emerging technologies) that could assist in optimizing materials recovery and creating renewable energy while moving from the City's current diversion rate of approximately 44% towards the Provincial goal of 60%.

Some of these new, next generation and emerging technologies are currently being investigated or used in other Ontario municipalities and are shown below.



**Gasification Pilot Project (Plasco)
Ottawa**



**Anaerobic Digestion Facilities
Toronto**



**Refused Derived Fuel (Dongara)
York Region**



**Gasification Pilot Project (Elementa)
Sault St. Marie**



**Durham York Energy Centre (Covanta)
Durham Region (Artist's Rendering)**

A report on alternative technologies and the role they might play in the future in London's waste management system is underway with a planned completion in early 2014.

Capital and operating cost estimates for new, emerging and next generation technologies are not widely available in North America and even less information is specifically available in Canada. Table 3 contains data derived from a number of sources. As noted, further details are being compiled for these types of technologies. Also shown in Table 3 is the cost for managing Green Bin materials (aerobic composting) and expansion of the W12A landfill (landfilling) for comparison purposes.

Table 3 – Approximate Costs and Cost Ranges for Alternative Resource Recovery Technologies

Technology	Approximate Cost			Comments
	Capital (\$ per annual tonne capacity) ^a	Operating (\$/tonne)	Combined Operating & Capital (\$/tonne)	
New Emerging and Next Generation Technologies				
Anaerobic Digestion ^b	\$600 to \$800	\$50 to \$80	-	Capital and/or operating costs may vary +/- 50% depending on specific vendor and technology
Energy-from-Waste ^b	\$700 to \$900	\$60 to \$90	-	
Gasification ^b	\$800 to \$1,000	\$60 to \$90	-	
Refused Derived Fuel ^c	-	-	\$90 to \$100	
Conventional Technologies				
Aerobic Composting ^d	-	-	\$90 to \$100	
Landfilling ^e	-	-	\$35 to \$40	

Notes

- For London, assume a facility that processes between 75,000 and 150,000 tonnes; therefore capital cost could range between \$60 million to \$120 million; of which London could produce feedstock for 25% to 50% of the capacity.
- Cost information adapted from *Waste Resource Strategy Update* (Stantec, 2013) and other similar engineering consultant studies
- Cost estimate based on Dongara facility in Region of York
- Cost estimate based on various municipal contracts in Ontario.
- Preliminary estimated overall cost for expansion of the City of London W12A landfill.

4) WHAT'S NEXT...ROADMAP 2.0 – What are the Choices?

4.1 INTRODUCTION

The nature of continuous improvement is to improve using logical, incremental and measurable steps. Generally there are three areas of accountability where improvement and balance is sought: environmental, economic and social. Blended together, these three areas often referred to as the “triple bottom” line and are the foundation of sustainable waste management.

These concepts were used to review all aspects of the City's current waste management system and provide a road map for potential changes over the next several years. Potential changes are outlined in the next sections of the report. Most of the changes identified in this report are small incremental improvements to the system. Large scale changes to the current waste management system will be examined following completion of a detailed review of new, emerging and next generation technologies that is currently underway and is discussed in Section 3.4. In addition, it is key to have the policy direction for the Province of Ontario that may or may be set under the proposed Waste Reduction Act and Waste Reduction Strategy. The potential changes have been grouped into one of five categories as follows:

a) Initiatives Previously Approved

These are initiatives that were previously part of the first Road Map and are in the process of being implemented.

b) Early Adoption (2014)

These are initiatives that can move forward immediately because they are relatively low cost and are expected to have public support.

c) Initiatives to Consider in the Short Term (2014 – 2015)

These are initiatives that are considered the most logical to implement in the short term based on the following guiding principles:

- Continuous improvement to maximize waste diversion
- Reduce or maintain current costs of City programs
- Support local job creation efforts
- Minimize negative impact to Londoners and the environment
- Align with the proposed Waste Reduction Act and Waste Reduction Strategy

These are the same guiding principles as those established in 2007 with only minor modifications, taking into account changes at the provincial level and Council directive to contain costs.

d) Initiatives to Consider in the Mid-Term (2016 – 2019)

Initiatives that are more costly, and/or less public support and/or have more difficult approvals.

e) Initiatives Not to be Considered at this Time

Initiatives that are not consider reasonable at this time because of high cost relative to the potential benefit. This may change in the future as technology or other factors change.

4.2 BLUE BOX RECYCLING PROGRAM**a) Adding New Materials****City Staff Choices**Short Term: 2014 to 2015

- Investigate adding mixed polycoat (includes hot/cold beverage cups & ice cream containers) and blister packaging (i.e. consumer plastic packaging such as rigid plastic around toys, hardware, etc.)

Mid-Term: 2016 to 2019

- Investigate metal cookware and single use batteries

Not at this time

- Film plastic (e.g. plastic bags), expanded foam polystyrene (EPS) and textiles

Rationale

The existing Blue Box program already includes all “low hanging fruit”. These are materials that can be managed at a reasonable cost or materials that constitute a large portion of the waste stream.

A review of other municipalities in Ontario found nine “more difficult” to recycle materials that are being recycled by at least one municipality.

Financial, environmental and social considerations as well as technical issues of adding these materials to the City’s recycling program are presented in Appendix C and summarized below.

Materials That May be Added in the Short Term

Further investigation in the short term is recommended for mixed polycoat (e.g., coffee cups) and *blister packaging (rigid plastic around toys, hardware, etc.)*.

Existing Blue Box Program

- ✓ Accepts 14 materials
- ✓ Shipped over 26,000 tonnes to markets (mostly in Ontario and Canada)
- ✓ Generated \$3.8 million in revenue in 2012

Each of these materials is currently being recycled by one or more municipalities in Ontario but research is required to confirm strength of end markets and processing costs for addition to the City's program in 2014.



**Mixed
Polycoat**



**Blister
Packaging**

Materials That May be Added in the Mid-Term

Further investigation in the mid-term is recommended for batteries and metal cookware.

Each of these materials is currently being recycled by one or more municipalities in Ontario but research is required to:

- Further examine alternative collection methods for single use batteries (e.g. collection with Blue Box or separate collection with electronics)
- Confirm processing costs and changes to the City's Material Recovery Facility to accommodate metal cookware in the future



**Single Use
Batteries**



**Metal
Cookware**

Materials not to be Added at this Time



Film Plastic



Expanded Foam



Textiles

Film plastic (e.g. plastic bags), expanded foam polystyrene (EPS) and textiles are not recommended for inclusion in the recycling program at this time because:

- potential to contaminate other recyclables and/or damage processing equipment
- processing costs are significantly greater than revenue
- residents can already take film plastic (e.g. grocery bags) to many retail outlets for recycling and textiles to drop-off locations throughout the City for reuse
- EPS does not have stable North American markets and its capture rate is very low (< 20%) at Material Recovery Facilities

Consideration will be given to collecting film and EPS at the EnviroDepots as part of a pilot project. Textiles are already collected at the EnviroDepots.

b) Increase Capacity

City Staff Choices

Early Adoption: 2014

- *As part of recycling education and awareness, provide residents of newly constructed homes with two Blue Boxes at no cost*
- *Establish a multi-residential recycling cart purchase program that sells roll-out carts at cost*

Mid-Term: 2014 to 2015

- *Sell Blue Boxes at cost from the City's EnviroDepots*
- *Provide front-end collection of cardboard at larger multi-residential buildings*

Mid-Term: 2016 to 2019

- *Provide free replacement Blue Boxes for broken ones*

Rationale

Providing Blue Boxes to Residents

Providing two Blue Boxes for newly constructed homes and selling boxes at cost will result in more boxes in the system which will increase the capacity to recycle and provide convenience for residents. Further benefits include:

- Improved ability of residents to sort recyclables into two streams
- More room to recycle more
- Improved litter control by reducing overflowing boxes and the use of other containers (e.g. cardboard boxes, laundry baskets, etc.) and broken Blue Boxes
- Increase access to recycling for those less able to purchase Blue Boxes
- Waste Diversion Ontario recognizes providing free or below cost recycling containers as a best practice and municipalities are financially rewarded in their grant payments
- Minimal cost to implement; there is no added cost for selling Blue Boxes at cost and it would cost approximately \$5,000 per year to provide a second Blue Box to new homes

Existing Program

- ✓ One Blue Box is provided to each newly constructed home
- ✓ Residents are asked to use at least two Blue Boxes to separate their recyclables into two streams.



Further investigation should be given to providing replacement Blue Boxes for boxes that are broken. It is estimated that such a program could cost approximately \$60,000 per year after WDO funding but given the benefits noted previously, this expenditure may be warranted.

Providing Blue Carts

The Blue Cart is the standard container for recycling collection in multi-residential buildings. The benefits of making carts more accessible are similar to those of providing more Blue Boxes. More carts in the system will increase the capacity to recycle and provide convenience for residents. Some specific benefits include:

- Improved ability of residents to sort recyclables into two streams
- More capacity to recycle
- Improved building maintenance and litter control by reducing overflowing carts
- A lower priced recycling cart is an incentive for building owners/property managers to increase their recycling efforts and reduce their garbage

In 2010 the City received a grant from the Continuous Improvement Fund (Waste Diversion Ontario) to increase the number of recycling carts in our program. The goal of the grant program was to increase the number of carts to the best practices recommendation of 50 litres capacity per multi-residential unit (i.e. 1 cart per 7 units) which is about the equivalent of a small blue box.

London used the grant to subsidize the cost of carts for building owners and property managers. We continue to make subsidized carts available, and work towards the best practices recommended number of carts.

The following provides an overview of number of carts:

- Since 2009, prior to the grant program, we have increased the ratio of carts from 25 litres to 38 litres per unit (our goal is 50 litres per unit).
- There are 5,350 recycling carts in the program (compared to 3,400 in 2009), a 57% increase during this period.

The original "subsidized" cart program is drawing to an end and given its success should be replaced with a permanent "at cost" cart program.

Multi-Residential Recycling

- ✓ There are 51,600 multi-residential units in London
- ✓ They represent 31% of all London households



Front End Cardboard Collection at Multi-Residential Buildings

The use of front end collected bulk bins, instead of recycling carts, is a more effective way to store and collect cardboard from many multi-residential buildings. A pilot project in London found buildings with front-end cardboard collection captured twice as much cardboard compared to buildings using only carts. Multi-residential buildings and complexes generate large quantities of cardboard that is a challenge to manage and collect using 360 litre (95 gallon) recycling carts. Bulk bins are typically 3,050 to 4,600 litres (4 to 6 cubic yards) or equivalent to 9 to 13 recycling carts.



Cardboard Pilot Collection

- ✓ 40 buildings
- ✓ Cardboard capture doubled compared to buildings using carts for cardboard
- ✓ Positive feedback from building managers and collectors

In addition to providing more volume capacity, they are better suited to manage the size of cardboard. Large cardboard pieces do not fit inside recycling carts and instead are placed loose resulting in site maintenance problems and collection inefficiencies. Often oversized and overflow cardboard is found in the garbage bulk bins when carts are used resulting in a loss of recyclables.

In 2010 the City received a grant from the Continuous Improvement Fund (Waste Diversion Ontario) to increase our recycling capacity in the multi-residential buildings up to 50 litres of recycling storage space per household unit. This included a grant to purchase 100 front-end bins (shown above) as well as recycling carts (discussed on previous page).

This service should be provided where it is economically viable (e.g. several buildings close together).

c) Other Blue Box Initiatives

City Staff Choices

Short Term: 2014 to 2015

- Options for increasing public space recycling be explored
- A comprehensive pilot cardboard collection project be undertaken in the downtown area for small businesses to determine cost and effectiveness of a permanent program (to add to the details that have been previously compiled)
- The City facilitate purchase of contracted recycling collection to Business Improvement Areas (BIAs) and business/industry parks

Rationale

Increase Public Space Recycling

When London residents have the opportunity to recycle away from home it reinforces the correct information about what and how to recycle and that recycling is a priority for the City of London. In addition to increasing the opportunities to recycle, public space recycling is important for the positive effect it has on at-home recycling. When public space recycling is not available it can send a message with negative consequences for our City-wide Blue Box program. Additionally, public space recycling contributes to our overall waste diversion efforts.

EnviroBin Locations

- ✓ Argyle B/A
- ✓ Downtown
- ✓ Richmond Row
- ✓ Wortley Village
- ✓ Old East Village



The public space recycling program has been in place for approximately ten years. There are about 40 collection containers in four areas as noted in the box above. Public space recycling should be expanded because of its benefits. Options for expansion include:

- Increase the number of recycling containers in the existing five locations where we currently collect
- Increase the number of Business Improvement Areas where public space recycling is available.
- Investigate options for increasing recycling in other public space areas

Downtown Cardboard Collection

Provincial legislation requires that the City provide Blue Box recycling to residential properties, but is not required to provide recycling to commercial properties. As a result the City has traditionally not provided recycling collection in commercial areas. However, in the most recent collection contract a change was introduced to extend curbside recycling collection to businesses located on residential collection routes. This has been well received by businesses, increasing our recycling quantities and reducing what we send to landfill. Collection of cardboard in the core areas offers a number of similar advantages, including:

Downtown Cardboard Collection

- ✓ Over 100 business place cardboard to the curb
- ✓ Will collect upwards of 200 tonnes annually

- Cardboard that is set out for collection is already being collected by the City garbage crews. The recommended change would have the cardboard recycled rather than being picked up with garbage and landfilled.
- Downtown cardboard is another source of recyclables that can be processed in London's Material Recovery Facility. As noted in previous reports, our processing costs decrease as we increase the facility throughput.
- Increased service delivery to business and residents in the downtown area.
- Can be collected at a minimal cost (can be co-collected with garbage with one truck)

A comprehensive pilot project to collect downtown cardboard is proposed to determine costs and effectiveness of a permanent program and add to the experience from initial collection trials.

Facilitate Recycling Services in BIAs and Business/Industry Parks

Some Business Improvement Areas and Business/Industry Parks are not serviced with recycling collection. Individual businesses may have arrangements, but many of the businesses are not recycling. An option would be for neighbouring businesses to work together to find a common recycling service provider (e.g. would likely produce economies of scale to help reduce program costs to participants). This would be of benefit to both the businesses and the service providers. There is a potential role for the City to facilitate the purchase of recycling collection service, especially in those areas where the City is providing garbage



collection to the businesses. More recycling would reduce the recyclables we are collecting with the garbage, and there is potential to increase the quantity of recyclables that are sent to the City's Material Recovery Facility.

d) Blue Box Education and Awareness Programs

City Staff Choices

Short Term: 2014 to 2015

- Targeted promotion to increase the capture of boxboard, mixed household paper, plastics and aluminum foil/trays and proper sorting of recyclables
- Increase education and awareness funding (as budgets permit) and/or in-kind services to the recommended "Blue Box" best practice of \$1 per household to implement new incentive programs (e.g., reward programs such as the Gold Box) and/or other encouragement/engagement programs

Rationale

Target Key Materials

Existing programs are the easiest place to find more materials to divert from landfill. Programs such as Blue Box recycling are already deep-rooted in our community. Residents understand the program and the program infrastructure is in place.

Waste audits conducted in 2012 show there are 11,000 tonnes of recyclable materials still being disposed of in the garbage. The incremental cost to capture more of these recyclables through the existing collection program is small compared to the cost to provide new programs.

The best way to increase the capture rate of missed recyclables is with enhanced communication and education and different methods of reaching the target audiences. This should focus on the key materials that have a combination of a low capture rate and significant quantity still in the garbage.

Recommended materials to focus on are boxboard (e.g. cereal boxes, mixed household paper, plastics and aluminum foil and trays) as shown in Table 4.

Table 4 – Key Recyclable Materials to Target

Material	Existing Capture Rate	Quantity in Garbage (tonnes)
Boxboard	60%	1,900
Household Paper	40%	1,700
Plastic Containers	60%	1,600
Aluminum Foil/Trays	10%	200

Education and Awareness Funding

WDO best practices report recommends that a municipality spend approximately \$1 per household on promotion and education for recycling in addition to the free newspaper ads provided by industry. London's current budget is approximately \$80,000. At \$1 per household the budget would be approximately \$170,000. Given current budget constraints it is not practical to increase to this level in the short term, and alternative strategies will need to be identified. Staff will look at opportunities to increase exposure and awareness of our programs taking advantage of low and no cost media options. The additional funding can go towards promotion programs such as incentive programs.

Existing Education/Awareness Program

- ✓ Annual \$70,000 budget for recycling
- ✓ Annual \$30,000 budget for other waste diversion programs
- ✓ Newspaper ads provided without charge, as an in-kind industry stewardship obligation to pay for Blue Box program costs

Waste Diversion Awareness

More and more each year staff is challenged to develop innovative and cost effective methods of communicating our program information and key messages to the London community. The traditional media outlets, such as newspaper, radio and television ads, which previously represented our main means of communicating, are now only one part of the much wider range of methods being used to inform and educate the public about our programs. The new media offer great opportunities to connect with more people. To help us meet these challenges and benefit from the wide range of medium for getting our messages out to Londoners, an annual Promotion & Education (P&E) Plan is created to provide direction, key messages and budget allocations for the year.



Regional Partnerships

In 2012 London signed partnership agreements with six local municipalities for processing of Blue Box recyclables at the Manning Drive Regional Material Recovery Facility (MRF). At that time the partner municipalities (Aylmer, Bayham, Central Elgin, Dutton-Dunwich, Malahide, Thames Centre), changed their programs to collect the same as in London's program. This harmonization of Blue Box programs across the seven municipalities has offered considerable shared benefits. For residents the immediate benefit is common information about their recycling program across all partner municipalities. As residents



travel across the communities (for work, school, entertainment, etc.) they will access this common information about their recycling program from the various local media (TV, radio, news and community papers) and in social interactions (e.g., from friends and family living in adjacent communities). For municipalities there is savings of P&E budgets and staff time as all are able to share in design templates and work cooperatively on media buy and production costs.

Funding Opportunities

London looks for opportunities to leverage additional funding through partnerships, collaboration and municipal grants program. Aside from the obvious advantage of more funds to promote waste diversion programs, these opportunities have the added advantage of bringing more expertise and guidance to the table. Since Road Map 1.0 (2007) was released, London has received external funding for several P&E initiatives, including:

- Multi-residential recycling promotion
- Curbside, two stream recycling promotion
- Increasing capture of Blue Box plastics
- Funding to update waste composition data
- Public space recycling awareness
- Electronic waste recycling awareness



2014 Priorities

The *Sort it right!* Campaign was launched in late 2012 and has been the key focus for the Blue Box program through 2013 and will continue in 2014. The goal of the campaign is to minimize the amount of recycling errors (non-recyclables and recyclables placed in the wrong Blue Box) received at the MRF to less than 3% by the end of 2014. Providing positive feedback to the majority of London residents that take the time to recycle correctly is also a priority. Thank you cards are currently being used. Other options include curbside recognition of perfect recyclers through stickers on Blue Boxes, or awarding a special box, such as a gold box. The gold box program in Hamilton provides a gold recycling box to residents who have been found to be sorting their recyclables properly.

Initiatives that are used to encourage or engage those residents that are underperforming are discussed in Section 4.4. A balance approach between reward programs and encouragement/engagement programs is preferred.

Building regional MRF partnerships was a key focus for 2013 and will continue through 2014 as we explore ways to promote common messages and share resources. Community partnerships have been fostered in new areas including working with youth groups, a local theatre company and community organizations.

4.3 ORGANICS MANAGEMENT

a) Green Bin

City Staff Choices

Initiatives Previously Approved

- Delay Green Bin decision until new, emerging and next generation resource recovery review complete in 2014 (in progress).

Rationale

One of the key components of the *Interim Business Plan for the Green Bin Program and Zero Waste Initiatives* was the potential implementation of a City wide Green Bin program.



Pilot Project

In order to refine costing, diversion estimates and determine logistical issues, a one year Green Bin and Modified Garbage Collection Schedule Pilot Project began in mid-October 2011 with approximately 760 homes in the Glen Cairn area. Details of the pilot project can be found in Appendix D.

Residential Garbage Composition

Waste audits suggest there is approximately 45% or 26,000 tonnes of compostable material in the curbside garbage that is collected (See Table 5).

Table 5 - Residential Curbside Garbage Composition

Material	Quantity		Comments
	(tonnes)	%	
Food Waste	22,000	38	
Yard Waste	1,000	2	
Compostable Paper	3,000	5	e.g. Tissue, towels, etc.
Subtotal Compostables	26,000	45	Total curbside organics available
Other Curbside Materials	32,000	55	Excludes bulky items
Total Curbside Garbage	58,000	100	
Total Residential Waste	154,000		Includes curbside & multi-residential garbage and recyclables, yard materials and on-site management (e.g. backyard composting)

Estimated Program Diversion and Costs of City Wide Program

The increased waste diversion and costs of implementing a City wide Green Bin program are presented below. The diversion rate and costs were developed based on providing weekly Green Bin, Garbage and Blue Box collection. Lower costs and higher diversion rates can be achieved by behaviour change initiatives such as bi-weekly garbage collection, reduced garbage container limits, user pay system, etc.

Diversion Impact

- as shown in Table 5, recent waste audits (2012) indicate there are approximately 26,000 tonnes of compostable waste in the curbside residential waste stream and this represents 45% of the curbside waste stream (excluding bulky items)
- a curbside Green Bin program would divert approximately 12,000 to 14,500 tonnes (45% to 55 % of the compostable waste) and increase overall waste diversion by 8% to 9%; the curbside diversion rate will increase from about 50% to about 60 to 65%
- it is noted the estimated amount of material diverted and the potential increase in the diversion rate is lower than in the report Road Map to Maximize Waste Diversion in London. This is because the per household food waste generation is down 10% since 2007 (overall household generation is down 15%) and the estimated capture rate of organics from townhomes has been lowered

Costs

- One time capital costs of approximately \$9 million which consists of carts for 117,000 homes (\$6 million), modifications to existing garbage trucks (\$1.5 million) and the purchase of six new trucks (\$1.5 million)
- On-going operating costs of approximately \$2.9 million annually for Green Bin which consists of \$1.3 million in Green Bin processing costs and \$1.6 to provide weekly Green Bin collection.
- Additional on-going operating costs of approximately \$1.2 million annually for weekly same day Blue Box and garbage collection

Table 6 – Ongoing Green Bin Costs

Operating Costs	Cost per Household Served
Green Bin - Collection	\$14
Green Bin – Processing	\$11
Weekly Garbage/Recycling	\$10
Total Cost	\$35

Benefits and Problems

There are many benefits to a Green Bin program in addition to the increase in waste diversion as well as some potential problems. These are detailed in Appendix D. Benefits of the program include reduction of greenhouse gases, increased employment; creation of a valuable product and increasing the likelihood of expanding the City's landfill. Potential problems include low participation rate by residents and processing issues. Appendix D also provides a summary of Green Bin programs in Ontario

Conclusion

The Green Bin program has many benefits and is a proven way to divert waste but comes with significant capital and operating costs and only a 50% to 65% participation rate. As noted in Section 3, staff continue to review developments with respect to aerobic composting, anaerobic digestion, mechanical biological treatment (MBT) processes, advanced thermal treatment (ATT) and other technologies (including new, next generation and emerging technologies) that could assist in optimizing materials recovery and moving from the City's current diversion rate of approximately 44% towards the Provincial goal of 60%. It is recommended that any decision on the Green Bin program be delayed until this review is completed.

b) Home Composting

City Staff Choices

Mid-Term: 2016 to 2019

- *Additional investigation be undertaken into increasing home composting.*

Rationale

Home Composting

Home (or "backyard") composting has played an important role in waste reduction in London since the mid-1990s. Between 1995 and 1999 the City of London participated in a provincial grant program to provide subsidized home composters to residents. Through this program, the City sold approximately 53,000 subsidized composters. Since 2007 the City has sold composters at cost from the two EnviroDepots. The units are sold for \$30 and approximately 250 units per year are sold. Home composting is promoted on the City's website and through information flyers.

Two pilot projects were undertaken to learn more about the potential to increase waste diversion by increasing home composting. The pilot projects tested strategies to increase the uptake of home composting units by residents and the details are provided in Appendix E. One pilot project in Northridge involved door-to-door sales of composters at a subsidized rate (\$10 per composter). The other pilot project in Old South included the pre-order and pick up at local community school and a higher price for the composters (\$20 per composter).



Initial estimates suggest that an additional 500 to 2,000 tonnes per year of food scraps could be diverted (up to 1.5% increase in overall diversion) with an aggressive home composting program modeled on the Northridge pilot project. It is estimated that it would take 3 years to canvass the City and cost approximately \$400,000 to \$500,000.

Similarly, initial estimates suggest that less than 500 additional tonnes would be diverted (less than 0.5% increase in overall diversion) with a home composting program modeled on a local community pick up location. It is estimated this program would cost approximately \$80,000 to \$100,000.

It is recommended that additional investigation into the preferred approach(es) to increase home composting be undertaken.

c) Community Composting

City Staff Choices

Short Term: 2014 to 2015

- Additional investigation be undertaken into potential opportunities for community composting.

Rationale

Community Composting is now possible because of changes to provincial legislation that makes approval of community compost areas less onerous.



Of particular interest, City staff heard from some Green Bin Pilot Project participants that they wished to continue to separate Green Bin materials at the end of the Green Bin pilot program and were prepared to drive their organics to another location to be composted. For those that wish to continue to separate Green Bin materials, a special area was established at the Clarke Road EnviroDepot.

This interest is consistent with experience in some communities that are exploring the potential of "community or neighbourhood composting".



d) Curbside Collection of Christmas Trees

City Staff Choices

Mid-Term: 2016 to 2019

- Additional investigation be undertaken into providing curbside collection of Christmas trees.

Rationale

Residents currently have the option of taking Christmas trees to a depot or having them collected with garbage. It is estimated that approximately 100 tonnes of trees are diverted to the depots and about 400 tonnes are disposed of at the landfill. Consideration could be given to providing curbside collection of Christmas Trees at an estimated cost of \$30,000 to 40,000 per year.



e) Food Waste Reduction

Short Term: 2014 to 2015

- Additional investigation be undertaken into the potential of promoting source reduction of food waste.

Rationale

Approximately 80% of the organic material available to compost in the garbage is food waste thrown away by Londoners (see Table 5). A breakdown of this food waste based on the 2012/13 waste audits are presented in Table 7.

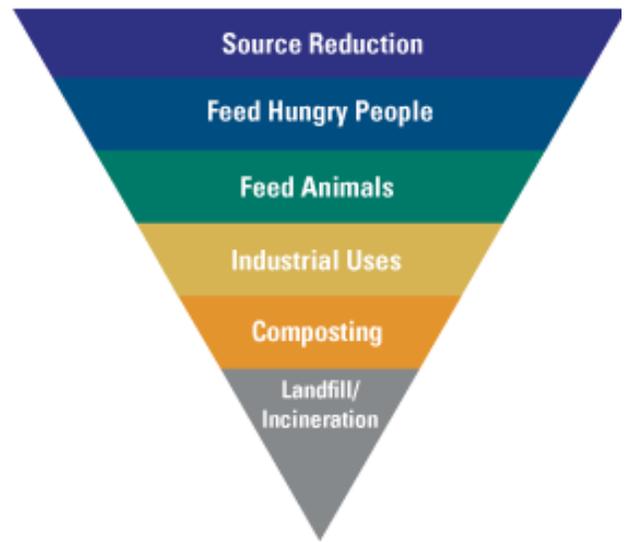
While some of this food waste cannot be avoided (e.g. vegetable trimmings, bones, etc.), most of it can be and is the result of over buying, cooking too much and then throwing away the extras, not using things before they go bad, impulse buys and poor portion control.

Table 7 - Breakdown of Food Waste

Food Category	%	kg/wk
Fresh Vegetables, Salads, Fresh Fruit, Beans	53%	1.82
Meat and Fish	10%	0.34
Dairy and Eggs	5%	0.17
Cereals, Grains, Pasta, Bakery	13%	0.46
All other Food Waste	19%	0.63
Total	100%	3.41

Many people think of food waste as a benign substance and simply rots away in the landfill anyway. Food waste is not benign and is responsible for much of the greenhouse gases and odours produced by landfills. There is a growing movement to reduce food waste at the source by promoting responsible food buying and management practices.

The United States Environmental Protection Agency has developed a food waste recovery hierarchy to illustrate how productive use can be made of excess food. The hierarchy emphasizes practices that provide the greatest ecological, economic, and social benefits, with disposal as the last option. Source reduction is at the top of the hierarchy with composting near the bottom.



4.4 ENVIRODEPOT (MULTI-MATERIAL) PROGRAMS

a) Adding New Materials

The existing EnviroDepots are popular destinations which provide a convenient “one stop drop” location for residents to dispose of a variety of materials.

A review of other municipalities in Ontario found eight materials that could potentially also be managed at the depots. Financial, environmental and social considerations as well as technical issues of adding these materials to the Depots is presented in Appendix F and summarized below.

City Staff Choices

Early Adoption: 2014

- That vegetable oil and used oil be added to the Oxford and Clarke Road EnviroDepots in 2014

Mid-Term: 2016 to 2019

- *Additional investigation into adding paint, expanded foam polystyrene, carpets and mattresses be undertaken in the future.*

Not at this time

- Film plastic (e.g. plastic bags) is not recommended for inclusion in the EnviroDepot program at this time.

Existing EnviroDepot Program

- ✓ 3 locations
- ✓ 200,000 customers in 2012
- ✓ Accepts:
 - Blue Box materials
 - leaf & yard materials
 - electronics
 - used clothing & small household items
 - scrap metal
 - appliances
 - renovation materials
 - tires
 - batteries
 - fluorescent tubes & bulbs
 - propane tanks
 - empty oil & antifreeze containers

Rationale

Adding vegetable oil and used oil to the EnviroDepots in 2014 will allow time to get the necessary approvals and make the required modifications to the EnviroDepots. These materials are recommended to be added in the short term:

- No issues with collection of used vegetable oil & used motor oil at W12A EnviroDepot
- They have stable Ontario and North American markets and will generate revenue
- There are no processing or collection issues with adding these materials at the Oxford and Clarke Road EnviroDepots



Vegetable Oil

Used Motor Oil

Materials to be considered in the Mid-Term



Paint



EPS



Mattresses



Carpets

Residents in London can currently take used paint to three retail outlets and the City's HSW depot. This is down from five retail outlets and the City's HSW depot a year earlier. The City's HSW depot is the only location that provides service to small businesses (e.g. paint contractors). Given this, there may be a need for more locations in the future. Under the current MHSW funding program the cost to collect paint at the EnviroDepots would be the responsibility of the City while the cost to remove/process would be covered by the stewards (industry). How funding would work if the proposed WRA is passed is unknown.

Several Ontario municipalities have depot programs for EPS. Preliminary research suggests that a program consisting of EPS collection at the EnviroDepots and processing at the City's Material Recovery Facility would cost between \$25,000 and 40,000 per year. Approximately 50% of these costs would be funded under the existing program. How EPS would be managed and how the funding of EPS would change if the WRA is passed is unknown.

Mattresses and carpets are currently being recycled by a couple of municipalities in Ontario. In these municipalities residents are responsible for taking the mattresses and

carpets to a depot and must pay a fee. In London, mattresses and carpets are currently collected at the curb with garbage at no cost to the residents. Currently there is no industry funding for mattresses and carpets but this may change if the proposed WRA is passed. In summary, staff choice on the addition of paint, EPS, mattresses and carpets is to delay this until 2016 to 2019 so that the potential impact of the WRA on these materials and their funding is better understood.

Materials Not to be Added at this time

Film plastic (e.g. plastic bags) is not recommended for inclusion in the EnviroDepot program at this time because:

- Residents can already conveniently recycle film plastic (e.g. grocery bags) at many retail outlets
- Collection and processing costs are significantly greater than revenue
- There may be opportunities to work with local retailers to expand the types of film plastic they take (e.g. include bread bags, overwrap, etc.)



b) Increase Capacity

City Staff Choices

Initiatives Previously Approved

- *Staff will continue to work on the development of a fourth EnviroDepot in the north.*

Rationale

The north area of the City is currently serviced by the depots on Clarke Road and Oxford Street and growth in the north of the City is causing these depots to become overcrowded during busy periods. The distance in the north end is a disincentive for residents to make use of the Depot services. A depot is required closer to these residents to provide an adequate level of service and encourage the proper handling of solid waste.

Council has previously approved capital funds for a new depot in the north end, but its development has been delayed because of difficulties in securing a suitable location to construct the facility.



4.5 ENCOURAGING AND ENGAGING LONDONERS

City Staff Choices

Mid-Term: 2016 to 2019

Additional investigation be undertaken in into:

- *Reducing the bag limit in conjunction with a user pay system for "extra" curbside garbage*
- *Banning of Christmas trees from curbside garbage collection.*

Not at This Time

- *Full user Pay*
- *Mandatory Recycling Bylaw (with and without clear bags for garbage)*

Rationale

Although there are high levels of resident participation in City diversion programs, participation is voluntary, and does not require residents to first minimize the quantity of waste being generated in the home. There are a number of "behaviour change initiatives" that could be undertaken to encourage both waste reduction (i.e. not produced in the first place) and waste diversion of recyclables and compostables. As waste diversion programs mature and all practical programs have been implemented, behaviour change initiatives become the key tools remaining to increase diversion.

Some of these programs are not costly to implement and may generate revenue (e.g. user pay for garbage) or reduce costs (e.g. every other week garbage collection). Other programs would require support by businesses and residents, and could range from tougher enforcement of waste by-laws (e.g. garbage container and weight limits) to City policies and by-laws that would impact how business is conducted and consumer behaviour (e.g. banning plastic bags in London). Some residents may see these programs as inconvenient or "going too far".

Below are some common behaviour change initiatives that may have a role in London in the future. Most of these initiatives will require a change to current Council policies and practices and be implemented through a by-law.



Bag Limits

Reducing the container limit will encourage participation in the various waste diversion programs as well as reducing garbage generation.

The City of London currently has a 4 Container Limit for garbage collection for single family households. The City's container limit takes into consideration the longer cycle times between collections which varies from 8 to 12 days throughout the year. This is equivalent 2.3 to 3.5 containers per week or an average of 3.2 containers per week over the entire year. Many Ontario municipalities have a one or two container limit per week.

Consideration to reducing the bag limit in conjunction with a user pay system for "extra" curbside garbage is recommended because:

- The quantity of curbside garbage per household has been reduced by 17% since the introduction of the 4 Container Limit in 2007
- Many municipalities have a 1 or 2 container limit
- Allowing residents to pay for "extra" garbage will provide convenience to residents who currently drive extra garbage to the EnviroDepots

Under the current six day cycle, consideration should be given to reducing the container limit to three containers per week with residents having the option of purchasing tags for additional containers.

Staff is currently examining various potential collection schedules, including a return to weekly garbage collection. If the City implements weekly garbage collection, consideration should be given to reducing the container limit to 2 bags per week with residents having the option of purchasing tags for additional containers.

Collection Frequency

Reducing garbage collection frequency to every other week can result in an even greater desire to participate in waste diversion programs and reduce garbage generation. Municipalities with every other week garbage collection typically have weekly Green Bin collection which allows residents to get rid of materials that are likely to smell if stored for two weeks. Without a Green Bin program, it is possible to reduce collection to every other week in the winter when cooler weather can help control odours but not the summer. This type of collection schedule is called "seasonal collection" (weekly collection in the summer and bi-weekly collection in the winter).

Consideration should be given to a seasonal collection schedule as part of the City's review of potential collection schedules.

Mandatory Recycling By-Law

The vast majority of Londoners participate in various diversion programs although there are those that refuse to participate in these voluntary programs. The City could explore developing a mandatory by-law for the diversion of materials for which there are programs. Enforcement of the by-law would require additional staff. Some municipalities have residents use clear bags so that recyclables could be easily spotted in the garbage. This is more common in the Maritimes but the City of Markham recently became the first large municipality in Ontario to require the use of clear bags.

Consideration to a mandatory recycling by-law and/or the use of clear bags should not be considered until other behavior change initiatives have been implemented.

Municipal Council Policies and By-laws (e.g. bans, restrictions)

The City currently has banned a number of materials from garbage collection including renovation materials, grass clippings, blue box recyclables, scrap metal, electronics, tires and yard materials. These materials were banned because reasonably convenient recycling options exist.



Residents currently have the option of taking Christmas trees to a depot or having them collected with garbage. Consideration could be given to banning them from garbage collection and requiring residents to take them to a depot or providing curbside collection of Christmas Trees.

Mattresses and carpets could be banned from curbside collection in the future if recycling opportunities are provided for these materials at the EnviroDepots.

Full User Pay

Some smaller municipalities have gone to full user pay systems where residents pay for every container of garbage placed to the curb. Full user pay systems encourage participation in the various waste diversion programs as well as reducing one's garbage generation.

A full user pay system is typically not practical in larger municipalities unless the municipality has a cart based garbage collection system. This is the case in Toronto where residents pay an annual fee ranging from \$224 to \$430 per year per household depending on the size of cart they select. A full user pay system is not recommended for London at this time.



4.6 OTHER POTENTIAL INITIATIVES

City Staff Choices

Mid-Term: 2016 to 2019

- *Additional investigation be undertaken in into providing semi-annual curbside collection of batteries, electronics and scrap metal.*

Rationale

Curbside Collection of Batteries, Electronics & Scrap Metal

A small (1,000 home) pilot completed by the City suggests that it may be possible to provide annual or semi-annual curbside collection of batteries, electronics and scrap metal at no or little cost because the revenue generated may cover collection costs.

There is also the possibility that non-sanctioned scavengers may take the more valuable materials before the City sanctioned contractor can collect them, leaving only materials that will cost money to be handled. A pilot covering a larger number of homes should be considered before deciding if such a program is practical.

Electronics/Battery Collection Pilot Project

- ✓ 1,000 homes
- ✓ Collected 4 tonnes of electronics
- ✓ Collected 30 kilograms of batteries

Other Initiatives

A list of waste diversion initiatives that may warrant some consideration in the future is presented below. Each of these initiatives is currently in place in at least one municipality in Ontario:

- Recycling containers at community mail boxes for paper
- Program to reduce over-circulation of flyers and newspaper (non-solicited mail)
- More take back programs with local retailers
- Furniture re-use/exchange program
- Involvement with school programs
- Community waste diversion workshops
- Incentive program with local businesses for living green
- Newsletters to residents/neighbourhood groups
- Supporting active resident groups and ambassador/volunteer programs
- Waste free lunch challenges
- Waste reward programs for top performing residents
- Encouraging smarter consumer practices

5) HOW FAST/FAR DO WE DRIVE?

Information on a number of potential programs and initiatives were presented in the previous sections. These potential programs and initiatives are summarized in Table 7 below. Table 7 also includes a tentative timetable for implementation.

We now need to hear from Londoners what are their priorities and how quickly do they want to move. A four month public engagement period with Londoners is proposed and would include:

- Information to residents through traditional media including a summary of the report in the London Free Press
- Social media outreach
- Outreach at community events (e.g., London Home Builder's Association Home Show)
- Feedback opportunities through a variety of means including the City's website

Feedback from residents will help shape the direction of new programs and initiatives to be implemented. It should also be noted:

- Prior to the implementation of any these programs/initiatives, detailed information on the program/initiative will be brought to Council for final approval.
- It will take time to develop the new programs after decisions have been made as to which programs and initiatives should be implemented. Time is required to obtain provincial approvals, have new equipment supplied, make approved program changes, ensure people are aware of upcoming changes, ensure appropriate budgets are approved, etc.
- Some programs, such as providing two Blue Boxes to newly constructed homes could start almost immediately while others will take one to two years or longer to fully implement.
- The timetable for some programs, like mattress recycling, will be dependent on the outcome of the Waste Reduction Act and follow-up regulations.
- Expenditures on waste diversion programs must also be considered in the context of other environmental expenditures and other budgetary needs across the Corporation of the City of London.

Table 8 - Implementation Schedule

Year	Program/Initiative
2013	<ul style="list-style-type: none"> • North end EnviroDepot (in progress) • Delay Green Bin decision until new, emerging and next generation resource recovery review complete in 2014 (in progress)
Early 2014 Adoption	<ul style="list-style-type: none"> • As part of recycling education and awareness, provide residents of newly constructed homes with two Blue Boxes at no cost • Establish a multi-residential recycling cart purchase program that sells roll-out carts at cost • Add vegetable oil and used motor oil to EnviroDepots
Further Investigation 2014 to 2015	<ul style="list-style-type: none"> • Add mixed polycoat (includes hot/cold beverage cups & ice cream containers) & blister packaging (includes rigid plastic packaging around toys, hardware, etc.) to the Blue Box program • Sell Blue Boxes at the EnviroDepots at cost • Front end bin cardboard collection at multi-residential buildings • Start downtown cardboard collection • Increase public space recycling • Facilitate purchase of recycling services for BIAs/commercial areas • Targeted education & awareness programs for selected Blue Box materials • Increase education and awareness funding (as budgets permit) and/or in-kind services to implement new incentive programs (e.g., reward programs such as the Gold Box) and/or other encouragement/engagement programs • Explore source reduction of food waste • Examine the role of community composting
Further investigation 2016 to 2019	<ul style="list-style-type: none"> • Add single use batteries and metal cookware to the Blue Box program • Provide replacement Blue Boxes to residents • Add paint, expanded foam polystyrene, carpets and mattresses to EnviroDepots • Increasing home composting • Begin curbside collection of Christmas trees • Ban curbside garbage collection of Christmas trees • Explore a reduced bag limit with user pay system for extra garbage • Begin semi-annual curbside collection of electronics, scrap metal and batteries
Delayed – Future Consideration	<ul style="list-style-type: none"> • Add film plastic, expanded foam polystyrene and textiles to the Blue Box • Add film plastic to the EnviroDepots • Examine full User Pay for garbage • Mandatory Recycling Bylaw (with and without clear bags for garbage)

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