

**Halton Solid Waste Management Strategy
MA-10-251-00-MA**

**Final Report
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Executive Summary

The Development and Recommendations of the Strategy

In the spring of 2010 Halton Region initiated the development of a new Solid Waste Management Strategy. The principal objective of the Strategy is to identify approaches that will feasibly increase the level of waste diversion in the Region, which for residential service currently stands at about 57.4%. Through this exercise the Region explored approaches that would increase diversion to 65% and possibly 70%, thereby extending the Regional landfill's operating life. GENIVAR Consultants LP was selected to assist Halton staff with the development of the plan.

Halton Region's 2006–2010 Solid Waste Management Strategy was instrumental in helping the Region reach its waste diversion target from landfill through several key initiatives, including a Region-wide implementation of the GreenCart program and the development of an award-winning promotion and education program. The development of this follow-up report came at an interesting time and faces a number of challenges.

First, Halton operates mature waste diversion programs which it supports with strong public awareness efforts. Given current efforts there was some question as to whether other strategies will make a significant impact on an already well performing waste diversion program. The examination of waste diversion options, or groups of options, was intended to determine the extent to which this is possible.

Second, the continuing influence on the system of extended producer responsibility (EPR) programs, and the current uncertainty around the Waste Diversion Act (WDA) review poses a number of questions. EPR could be quite beneficial to the Region in terms of both diversion and financial support. With respect to the Region's Blue Box program, the time when producers of the packaging and paper that go into Blue Boxes will be made responsible for the full cost is in doubt. This decision is tied to the provincial government's review of the WDA and it is unclear when this might be forthcoming. Within the municipal community there are two schools of thought in play: some are suspending investment in recycling systems and waiting for industry stewards to be made responsible for recycling, other municipalities are continuing to invest in systems with the assumption that there will be a role for well operated municipal systems. The latter group are continuing to plan on the basis of a role in a full EPR system and pursuing their role in the full EPR scheme.

This final report was being completed while the province was in the lead up to the October 2011 provincial election. It appeared that none of the political parties were saying much, if anything at all, about the future of extended EPR and the WDA review in general.

Industry stewardship representatives have no more information than municipalities about what the WDA review might bring, but have suggested in various forums that there will be a role for well managed, efficient municipal players. The operating relationship may change but it appears that there is a willingness to continue working with municipalities to deliver programs.

Stewardship systems for other materials such as household hazardous waste (HHW), electronics and tires should benefit municipalities by encouraging the development of parallel systems that take certain materials out of the waste stream in advance of the municipality having to deal with the items, or by providing a fee payable to municipalities for managing the material. For HHW, electronics and tires, systems are already in place.

Strategy development was initially guided by the preliminary visioning exercises of the Joint Municipal/Regional Waste Management Committee (JMRWMC), an Advisory Committee mandated by the Environmental Assessment Approval for the Halton Waste Management Site (HWMS) and which reports to Regional Council through the Planning and Public Works Standing Committee. In January and February of 2010 the JMRWMC met to establish a vision and possible key initiatives for the Strategy, developing a number of potential initiatives with respect to: curbside service levels; multi-residential waste diversion, and; infrastructure.

The overall vision arising from the exercise is clear: the JMRWMC wants Halton to remain a leader with respect to waste reduction and diversion. The group acknowledged that there are related cost implications but there is a desire to attract greater participation in Blue Box and GreenCart programs.

The planning process employed for this report includes the definition of the current state, the establishment of a desired future state, a “roadmap” on how to move from one to the other, and an understanding of how to measure and monitor progress. The work led to the development of a number of options, which were the product of a research phase and refinement with Halton staff. These options were first defined in terms of general diversion potential and high-level cost, and in some cases consolidated or grouped where synergies existed.

Research began with the compilation of a “long list” from a broad menu of sources. The research was supported by discussions with Regional staff, who are specialists in their disciplines, and who provided additional sources, ideas and input to the research process.

The initial long list, which contained over 120 items, was reduced to 67 entries for a number of reasons including: the Region had either implemented the approach or something that made the approach irrelevant; options were combined because they were very similar and could be considered as a single approach, and; the approach could not be directly controlled by the Region. An example of this might be high rise buildings: the Region can educate and assist property managers, and might possibly even adopt certain policy directives to encourage diversion, but would ultimately have little or no operational control inside each individual building. Therefore, actions that are building specific were removed.

The “short list” contained potential approaches for which additional research was required. The main purpose of the added research was to further define cost and diversion potential associated with each. The options on the short list fall into the following categories:

- Promotion and Education
- Collection Service
- Drop Off Service
- Policy Approaches
- Multi-Residential Recycling and Diversion Programs

In preparation for a broad public consultation, and working with the Region of Halton Finance department, costs for the separate components of the strategy were further defined and refined prior to presentation to Regional Council. In order to provide a perspective for anyone who wished to comment, costs were presented as an annual cost impact for every \$100,000 current value assessment (CVA). Following presentation to Council the proposed strategy was brought forward for consultation.

In May and June of 2011 the resulting strategy was brought forward by Halton staff for a broader public engagement process that included four open houses, a phone survey and an online study. The open houses were conducted by Region of Halton staff and Ipsos-Reid executed both the phone and online survey components. 60 people signed in for the open house events, 800 randomly selected residents (200 in each of Burlington, Oakville, Milton and Halton) were interviewed by telephone, and 330 people completed the online survey.

Feedback from the consultation program was incorporated in two ways when the report was completed. Firstly, the strategies were reviewed in the context of the comments and concerns expressed by Halton residents. Most notably, while there was support for the aggressive 70% diversion target, this support dropped once the cost of pursuing this goal was introduced. This resulted in a review of the strategies from a cost perspective, and it was apparent that there is a diminishing return for the cost as the 70% goal is approached. The options were reconsidered and re-ordered with a 5-year implementation plan recommended to achieve 65%, and the remaining programs to achieve 70% as Future Considerations. The first increment, which is expected to move waste diversion in the Region beyond 65%, consists of six strategies which, collectively, represent an annual cost of \$2.47 per \$100,000 CVA. These are recommended for implementation in the years 2012 through 2016.

The remaining initiatives for Future Consideration are to be reviewed more formally in 2016, and are suggested for implementation in 2017 through 2021. They are currently estimated to take the Region to 70% diversion at a combined cost of \$4.79 per \$100,000 CVA. The staging of these at a later time is a concession to cost, as well as a prudent measure that will allow the Region to gauge the impact of the first increment. This includes the possibility that the successful implementation of the first group of strategies may have favourable impacts on the cost of, or need for, the second group.

Secondly, feedback from the public consultation is used to inform the implementation strategies. There are concerns, for instance, that an aggressive strategy such as bag limits will result in illegal dumping. Implementation of such a strategy should include measures to deal with this issue before, during and after the implementation, such that these concerns are anticipated and mitigated.

Ultimately the strategies were configured as follows:

For implementation in 2012 through 2016:

- Bag limits and partial pay-as-you-throw
- Enhanced Promotion, Education and Outreach
- Expand Blue Box materials, enhance household Blue Box capacity
- Multi-residential waste diversion
- Textile recover communications plan
- Expanded household hazardous waste (HHW) events

For review and possible implementation in 2017 through 2021:

- Curbside construction and demolition waste collection
- Community Recycling Centre
- Public space waste diversion and recycling
- Mobile curbside HHW collection
- Waste exchange programs

Meeting the Requirements for a Waste Recycling Strategy

This Project has been delivered with the assistance of Waste Diversion Ontario's Continuous Improvement Fund, a fund financed by Ontario municipalities and stewards of blue box waste in Ontario. Notwithstanding this support, the views expressed are the views of the author(s), and Waste Diversion Ontario and Stewardship Ontario accept no responsibility for these views.

As noted above a portion of this report is funded by the Continuous Improvement Fund, specifically that portion that refers specifically to Halton's Blue Box recycling program. This report has been constructed to meet CIF requirements for the funding of a Blue Box related Waste Recycling Strategy (WRS).

More specifically, the CIF *WRS Guidebook* outlines a planning process, a process that is closely aligned with the one used for the development of this report. All elements of a typical WRS can be located in this report, including the following, as pertains specifically to the Region's Blue Box Program:

- Process overviews, stated objectives and definition of study parameters and areas
- Public consultation
- Community goals, program goals
- Definition of current state, trends, and accommodation for future growth
- Development of options and recommendation of initiatives
- Implementation and program review

In order to help the reader of this report track various Blue Box elements, a “Halton Blue Box” marker is used in the margins and text of the report where discussion, options and initiatives pertain to the Blue Box program:



The Halton Waste Management Strategy includes a number of recommended policies and programs that have a direct impact on the Blue Box program, namely:

For implementation in 2012 through 2016:

- Bag limits and partial pay-as-you-throw
- Enhanced Promotion, Education and Outreach
- Expand Blue Box materials, enhance household Blue Box capacity
- Multi-residential waste diversion

For review and possible implementation in 2017 through 2021:

- Community Recycling Centre
- Public space waste diversion and recycling

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1. Introduction

Since the Halton Waste Management Site commenced operations in 1992, followed by Halton Region assuming responsibility for waste collection in 1996, staff have worked to develop an integrated waste management system throughout the Region and promote waste diversion as a top priority in order to minimize the Region's dependency on its landfill. In 2007, by-law 145-07 gave Halton Region the power to establish, maintain, operate and determine service levels for the four lower-tier municipalities in Halton Region.

Halton Region has a long history of setting ambitious goals and developing plans and strategies directing how to achieve the goals. In 2006, the Region published its 2006-2010 Solid Waste Management Strategy, developed by Halton Region staff in co-operation with the Joint Municipal/Regional Waste Management Committee (JMRWMC). The Strategy's vision states "In order to protect and conserve the capacity of Halton's landfill site and meet a target of diverting 60% of its waste away from landfill, Halton Region's waste management system will strive to cost-effectively maximize waste reduction and diversion programs." The document outlines key strategies for the Region to undertake in attaining its vision. All of the strategies have been or are in the process of being undertaken, resulting in the Region achieving close to the 60% waste diversion goal in 2009.

In the spring of 2010 Halton Region initiated the development of a new Waste Management Strategy. The principal objective of the Strategy is to identify approaches that will feasibly increase the level of waste diversion in the Region, which for the residential sector currently stands at about 60%. The challenge is to develop approaches that will move the Region to 65% and possibly 70% over the next several years, and to maintain and enhance policies that will continue to drive diversion activities and conserve the Region's landfill resource and extend the landfill's operating life. GENIVAR Consultants LP was selected to assist Halton staff with the development of the plan.

For a number of reasons, the development of the plan comes at an interesting time and faces a number of challenges. Most notably, Halton operates mature waste diversion programs which it supports with strong public awareness efforts. Moving into the process of strategy development opens the question of diminishing return on effort: what can be feasibly done to make a significant impact on an already well performing waste diversion program? What, if any, big gains can be made for reasonable cost?

A second element is the continuing influence on the system of extended producer responsibility (EPR) programs, and the current uncertainty around the Waste Diversion Act (WDA) review. EPR will continue to benefit the Region in terms of both diversion and financial support. The manner in which EPR programs will continue to develop in this province in the future remains a moving target; however, the stage has been set for increasing intervention by the provincial and possibly the national level to expand EPR and stewardship initiatives.

2. Halton Region's Solid Waste Management System

Over the past two decades, Halton has demonstrated its commitment to developing an integrated, harmonized waste management system that features waste diversion as a top priority with the ultimate objective of providing long term secure landfill capacity for the Region.

The 2006-2010 Halton Solid Waste Management Strategy has guided Halton Region through several significant program changes, resulting in an increase in residential diversion from 42.6% in 2005 to 57.4% in 2010. This visionary plan oversaw the implementation of programs such as GreenCart organics, co-collection of recycling and organics, multi-residential promotion and education and the use of alternative landfill covers, which have all contributed to extending the Halton Solid Waste Management Site's landfill life expectancy to beyond 2032.

Halton Region

Municipalities

Burlington, Halton Hills, Milton and
Oakville

Population

475,414

Single-Family Households

143,266

Multi- Residential Households

28,212

The twelve key components of the 2006-2010 Solid Waste Management Strategy were as follows:

1. Implement GreenCart Region-wide
2. Explore partnerships with neighbouring municipalities
3. Enhance promotion and education of waste diversion programs
4. Enhance multi-residential diversion
5. Conduct waste studies when required
6. Advocate to the provincial government on the promotion of waste reduction initiatives and product stewardship initiatives
7. Harmonize waste management service levels across the region
8. Maximize capacity at the Halton Solid Waste Management Site
9. Enhance electronics recycling
10. Expand Blue Box materials when viable
11. Investigate energy from waste
12. Enhance industrial/commercial/institutional recycling

During the course of Halton's 2006 – 2010 Solid Waste Management Strategy, the Region made very impressive improvements in waste diversion performance with the introduction of new initiatives and the strengthening of existing programs. The Region was able to meet targets in all of the key areas which has boosted their waste diversion performance, and allowed them to remain a leader in waste management planning and practice.

Figure 2-1 provides an overview of generation, disposal and diversion from 2002 – 2009. Major program changes, rolled out in April 2008 had a clear and immediate impact on diversion performance. These changes included the roll-out of weekly GreenCart organics collection to all single-family residents, the introduction of weekly Blue Box collection and a move to bi-weekly garbage collection.

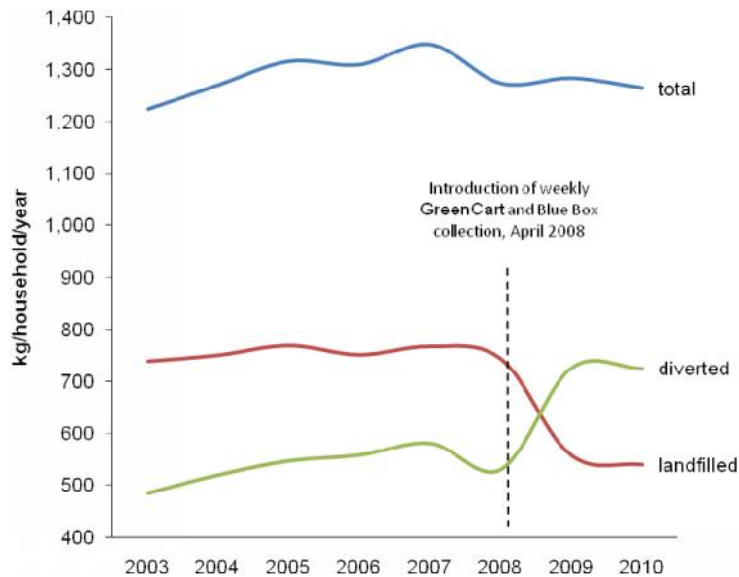


Figure 2-1 Region-Wide Halton Waste Management Rates

Sources: 2002 – 2009 Regional Year-End Waste Management Reports
2002 – 2009 WDO Program Information

2.1 Halton Region's Current Integrated Waste Management System

2.1.1 Residential Garbage Collection Services

Garbage is collected every other week with a six bag/can limit from all single family houses. Some rural areas in Halton Hills do not receive garbage collection from the Region. Some townhouse complexes receive weekly garbage collection because they lack individual garages which impact residents' ability to store garbage for a two week period.

Participation studies conducted in 2010 indicate that 82% of households place three bags of garbage, or less, at the curb every other week for collection.

Miller Waste Systems holds the current residential garbage collection contract, which will expire in 2014. Garbage is collected manually by Miller crews, therefore Halton Region has imposed weight and size limits on garbage bags/cans.

Single family and townhouse complex garbage is disposed of at the Halton Waste Management Site.

In addition, Halton offers a Diaper Bag Tag program. Participating residents can use the tags on clear bags of diapers to surpass the six garbage bag/can limit every other week, or can use the tags to drop clear bags of diapers free of charge at the Halton Waste Management Site or a transfer station. Residents must contact the Region to determine eligibility for the program.

Apartments receive once a week, front-end garbage collection from Halton Region through a contract with Advantage Waste Systems. This collection contract ends in 2014. Some apartment buildings augment this service with additional private garbage collection. Advantage Waste does not dispose of the apartment garbage at the HWMS landfill.

2.1.2 Bulk Waste Collection Service

Halton Region collects up to three bulk waste items once every four weeks as part of its residential garbage collection service. Bulk waste includes items over 22 kg (50 lbs), or that will not fit in a garbage bag/can. Acceptable bulk items include furniture, flooring, windows, toilets, mirrors and wood.

Bulk waste collection is suspended during the month of May to accommodate high volumes of yard waste during that month. Some rural areas in Halton Hills do not receive bulk waste collection from the Region. Miller Waste Systems collects bulk waste with its garbage collection. The collection contracts expire in 2014. Single family and townhouse complex bulk waste is disposed of at the Halton Waste Management Site.

In 2008, Halton Region began a bulk waste collection program for apartment buildings. Buildings are eligible for bulk waste collection up to twice per year. Items are collected in 20 or 40 yd³ bins, and individual buildings are responsible for packing bins prior to collection. This service is provided by Advantage Waste Systems and the garbage is not disposed at the HWMS landfill.

2.1.3 IC&I Garbage Collection Service

Halton Region provides waste collection service to a portion of the ICI Sector:

- Publicly funded schools: under the Advantage Waste Systems front end collection contract, School Boards pay per lift and per metric tonne disposed.
- Business Improvement Areas (BIA): under the Miller Waste Systems residential contract, eight BIAs receive curbside collection twice per week, six bag/can limit per collection.
- Regional and Local Municipal Facilities: under the Advantage Waste Systems front end collection contract, includes town and city halls, community centres, arenas, libraries and police stations.
- Commercial: approximately 1,000 businesses located along arterial roads and industrial parks receive twice per week curbside garbage collection with a six bag/can limit per collection under the Emterra contract.

Most of the ICI sector that receive service from the Region are government facilities that are funded with tax revenue or had received waste collection from the local municipality prior to the Region assuming responsibility.

2.1.4 Waste Disposal Service

Halton Region owns and operates the Halton Waste Management Site (HWMS) which provides a number of different services including the only operating landfill in the region as well as a Container Station, a leaf and yard waste windrow composting site, a woodchip site, a concrete rubble site, a Salvation Army Reuse Depot and a Household Hazardous Waste (HHW) depot. Opened in 1992, the HWMS is a showcase of a well engineered and operated integrated waste management facility, used to augment the Region's progressive 3Rs programs.

The cornerstone of the HWMS is the regional landfill, accepting about 80,000 tonnes of waste annually and covering 53 hectares (131 acres), which represents about one third of the space owned as part of the Halton Waste Management Site (126 hectares / 311 acres).

Halton has been successful in extending landfill life considerably by increasing waste diversion. The Region aims to continue increasing waste diversion and reduce residual waste, which will further extend the lifespan of the landfill.

In 2007, the Region undertook an EFW technology review as part of a EFW business case evaluation process. After much investigation into the matter, the Regional Council adopted the position not to be the proponent of a proposed EFW facility and that the EFW option not be considered for a period of five years.

2.2 Waste Diversion

2.2.1 Residential Recycling Service



Blue Box materials are collected from all residents in Halton. Single family homes and most townhouse complexes receive once a week curbside collection and are provided 60 to 84 litre (16 to 22 gallon) Blue Boxes from the Region. The Blue Box collects single stream materials (containers and papers can be co-mingled in the same Blue Box). The remaining townhouse complexes and apartment buildings use 95 litre (360 gallon) Blue Bins

Miller Waste Systems co-collects residential Blue Box and Bin materials (in the same truck as GreenCart materials). The collection contract expires April 2014. Blue Box materials are taken to a privately owned/operated transfer station: Norjohn in Burlington or Leferink in Georgetown.

Blue Box materials are transported to the materials recovery facility (MRF) owned/operated by Emterra in Burlington. Emterra is responsible for marketing Blue Box materials and Halton retains 25% of the revenue from the sale of the recyclables. The processing contract expires April 2014.

The following materials are accepted in the Blue Box Program:

- Plastic bottles (#1 and 2)
- Glass bottles and jars
- Metal food and beverage containers
- Boxed beverage containers
- Aluminum foil
- Plastic tubs and lids (#5)
- Books
- Boxboard
- Cardboard
- Fine paper

As of 2009, Halton Region's Blue Box Program served 172,000 households and recycled 42,000 tonnes of material.

With a recycling rate of 88% and a net cost per tonne of \$190, the Region is the best performer in the Large Urban municipal grouping.

Blue Box recycling rates jumped between 2007 and 2008 as a result of several program changes, including weekly collection of recycling, bi-weekly garbage collection and introduction of the GreenCart program. From 2008 to 2009, there was a small decrease in the Blue Box diversion rate, likely associated with a lagging economy, increasing LCBO recovery and decreasing newsprint tonnages.

2.2.2 Residential GreenCart Service

Halton's GreenCart program has been a major contributor to increased waste diversion as part of the 2006-2010 Solid Waste Management Strategy. In 2008, the GreenCart program was delivered to single-family households, and a portion of the Region's townhomes. At present, all single-family households and over 80% of townhomes receive weekly GreenCart collection. In total, 81% of all households in the Region receive GreenCart services.

Miller Waste Systems co-collects residential GreenCart materials in the same truck as Blue Box materials. The collection contract expires April 2014. GreenCart materials are taken to a privately owned/operated transfer station: Norjohn in Burlington or Leferink in Georgetown.

GreenCart materials are transported to the central composting facility, owned by the City of Hamilton and operated by AIM Environmental. AIM Environmental is responsible for the marketing of finished compost. The processing contract expires April 2012.

The GreenCart program manages a wide range of household organics including fruits and vegetables, cereals, bread, fish, meat, soiled tissue products, eggs, dairy, nuts, fats and oils. The program does not accept pet waste, diapers and sanitary products nor plastic bags. Residents can line their GreenCarts with paper bags, compostable bags certified by the Biodegradable Products Institute, newspapers, or boxboard.

2.2.3 Residential Yard Waste Service

In urban areas of Halton, yard waste is collected every other week, on the same day as garbage, April through December. Currently, Oakville residents are provided bulk brush collection as an additional service – residents must schedule a collection appointment. Christmas trees are also collected from urban households in January each year.

Acceptable set-out includes paper bags, reusable rigid containers and bundled brush. Halton Region does not accept yard waste in plastic bags, and does not accept grass clippings; the Region encourages residents to grasscycle.

Yard waste and Christmas trees are collected by Miller Waste Systems as part of its collection contract. This collection contract expires in 2014.

Yard waste and Christmas trees are taken to the composting facility at the Halton Waste Management Site, which is operated by Gro-Bark. The processing contract expires 2012. In 2009 Gro-Bark processed almost 30,000 tonnes of leaf and yard waste. The majority of this was collected curbside, with about 1,000 tonnes received at the Container Station.

Backyard composting is also encouraged by the Region, with over 40,000 backyard composting units distributed since the program began. In 2009, an additional 313 composters were distributed to Halton residents. The estimated annual waste diversion through back yard composting is about 4,000 tonnes. The Region subsidizes the cost of a backyard composter by selling for \$15 each at the Halton Waste Management Site.

2.2.4 Metal and Appliance Collection

The Region offers scrap metal and appliance collection on a scheduled basis only, in all urban and rural areas, excluding certain areas of rural Halton Hills. Residents can call to schedule a collection appointment. A list of acceptable items is provided in the Region's Waste Management Guide and Collection Calendar. Miller Waste provides the collection service as part of its collection contract.

In 2009, the Region collected 907 tonnes of scrap metals and appliances, of which scrap metal represented 60% and appliances represented 40% of the total weight. All materials are recycled.

2.2.5 IC&I Waste Diversion

The Region offers recycling collection to the IC&I sector including schools and businesses receiving garbage collection services from the Region.

All publicly-funded schools participate in Halton's Blue Box program. There are currently 105 publicly-funded elementary and secondary schools participating in the GreenCart program. Halton Region is the first municipality in Ontario to have implemented such a comprehensive GreenCart program in schools. It has more schools participating in the program than any other municipality in the province.

In 2008, Halton Region assumed the costs of Blue Box and GreenCart collection and processing from publicly-funded schools. No costs for these waste diversion services are passed on to the school boards. Economies of scale are realized by combining the school boards' collection with the Region's collection. Miller Waste Systems co-collects Blue Box and GreenCart materials from publicly-funded schools.

Approximately 1,000 businesses in the eight BIAs receive once a week Blue Box collection from Miller Waste Systems. The Halton Regional Centre, the four Town Halls, Burlington Central Public Library, Oakville Central Public Library receive weekly Blue Bin and GreenCart collection (provided by Emterra and Miller Waste Systems). Halton's Emergency Medical Services stations receive residential Blue Box and GreenCart collection. Regional and Local Municipal facilities such as community centres, arenas, libraries and police stations receive weekly Blue Bin collection from Emterra.

Commercial businesses, primarily located along arterial roads and in industrial parks, receive weekly Blue Bin collection from Emterra, this collection contract expires in 2014.

In October 2009, Region staff undertook a review, as part of a request by Council, to evaluate existing diversion services provided to the IC&I sector and the need to expand the services.¹

Staff estimated that IC&I establishments in Halton Region generate 50,000 tonnes of recyclable materials annually, of which 75% is paper and paper products. No further assessment was conducted to determine the extent to which the available recyclables are currently being diverted through alternative means.

As part of the investigation, the Region concluded that its Regional MRF, owned and operated by Emterra, does not have the capacity to process additional recyclable material coming from IC&I establishments and in order for the Region to expand its waste diversion services to the IC&I sector, there would be a significant impact on taxes. Furthermore, research on service levels provided by other comparable municipalities revealed that no municipalities currently service their entire IC&I sector.

At the end of the review, staff recommended no changes to the current level of service delivered to the IC&I sector and the Region needed to wait until potential forthcoming changes to Provincial Regulations regarding the management and collection of IC&I waste and recyclables requires a response from the Region.

2.2.6 Other Waste Diversion Policies and Program

Halton Waste Management Site

The Halton Waste Management Site (HWMS) is Halton's one stop solution for waste diversion at the Container Station, the Salvation Army Reuse Depot, and the Paint & Stain Reuse Depot, yard waste composting, safe drop-off of household hazardous waste, and garbage disposal. It is centrally located on Regional Road 25 in the south of Milton. Residents can also pick up a new Blue Box, GreenCart or purchase a subsidized backyard composter.

Container Station

The Container Station at the Halton Waste Management Site accepts a variety of divertible materials including:



- Blue Box mixed containers
- Blue Box papers and cardboard
- GreenCart material
- Natural Wine Bottle Corks
- Drywall
- Wood
- Appliances
- Scrap Metal
- CFC – Scrap Metal
- Bikes
- Eye Glasses
- Printer Cartridges
- Cell Phones
- Electronics
- Tires
- Leaf and yard waste

Halton increased fees at the Halton Waste Management Site in 2009 to \$143/tonne for garbage, drywall, scrap metal, wood and yard waste, and attributes a 50% decrease in yard waste tonnage seen at the Container Station to the fee increase. All other items are free of charge.

¹ Report of the Planning and Public Works Committee. October 23, 2009. Analysis of Non-Residential Waste Management Service Enhancement. PW-19-09

Over time, Halton's citizens have gradually increased the amount of materials diverted through the HWMS with the Region experiencing a 6.2% increase in materials diverted at the Container Station between 2008 and 2009. However, as the Region grows, it becomes increasingly less convenient for residents to drive to the HWMS.

Salvation Army Reuse Depot

The Salvation Army provides and operates a trailer for residents to divert reusable goods such as toys, kitchenware, furniture and clothing free of charge. These items are transported to the Salvation Army Thrift Stores for resale with the revenue going towards their community programs.

Household Hazardous Waste (HHW) Depot

The HHW Depot collects household waste that can damage the environment if disposed of improperly due to it being toxic, ignitable, corrosive or reactive. The materials are safely stored in special containers and transported for processing or disposal at a facility licensed to handle these materials. Acceptable materials include aerosol cans, antifreeze, bleach, fertilizer, fuels, medications, paints and stains.

Waste Diversion Services at Special Community Events

The Region provides waste diversion tools and collection services to community events on an as-requested basis. Blue and green bins for recyclables and organics, planning, staff hours, collection and other support are provided to event organizers.



In 2010, Halton Region provided waste diversion services to 30 community events attended by approximately 550,000 people. Over 300 blue and 300 green bins were provided to these events, with approximately 49,000 kilograms of recycling and organics, and 12,000 kilograms of garbage collected.

Some of the events serviced in 2010 include the Robbie Burns 8 km Road Race, Downtown Milton Street Festival, Relay for Life, Sound of Music Festival, Canada Day, and Ribfest.

With demand for these services continuing to climb, Halton staff created a guideline for providing services to community events. The guideline, prepared in April 2010, outlines the level of service and support provided by Halton Region.

Take It Back! Halton

Halton Region implemented Take It Back! Halton in 2007, which is a directory of local businesses, non-profit organizations and municipal facilities that take back materials to be reused, recycled or disposed. Take It Back! Halton launched with grocery stores taking back plastic shopping bags for recycling.

In 2009, the Region introduced 40 new partners to the program. Due to the nature of the program, the Region cannot measure the amount of materials diverted from disposal, with the exception of some materials that are diverted through designated municipal facilities, such as batteries that have designated drop-off depots at municipal locations. The batteries are collected by Region staff and disposed at the HHW Depot at the HWMS.

Partners are responsible for operating their reuse and recycling programs. The Region provides a listing on its website, www.halton.ca/takeitback, and a print directory.

Non-Profit Reuse Diversion Credit

In 2004, the Region implemented the Non-Profit Diversion Credit for Reuse Subsidy (Diversion Credit) which provides a subsidy equivalent to the cost per tonne to collect curbside garbage to non-profit organizations that divert reusable material from landfill disposal. Organizations must be registered charities and apply for approval with Halton Region to receive the subsidy. The subsidy has an annual cap of \$50,000 per organization. There are six registered charities participating in the program.

In 2009, the Diversion Credit policy was reviewed and amended to include clauses such as partnership recognition with Halton Region, the addition of books and corrugated cardboard as acceptable material and to allow funding adjustment for inflation to the annual cap.

Grass Ban/Grasscycling

For residents in Halton Hills, Milton and Oakville grass clippings are banned from the curbside yard waste collection but can be brought to the Halton Waste Management Site for a fee. Residents in Burlington are subject to a partial grass ban: grass clippings are not collected in yard waste from June to October. Halton promotes grasscycling to all residents on its website as well as through collection calendars and other promotion and education materials. In 2009, the Region estimated 4,421 tonnes, or 2%, waste diversion through its grasscycling program.

2.2.7 Promotion and Education

Promotion and Education (P&E) programs are the cornerstone of Halton's waste management and diversion system. Staff have developed comprehensive P&E strategies targeting all members of the community which feature traditional communication tools such as collection calendars, newsletters, flyers and brochures, videos, directories and a dedicated website.

Halton Region has been recognized as a leader in waste management communications. For its *More Silver Ontario Waste Minimization Award (Promotion)* - Recycling Council of Ontario

- Pinnacle Award (Communications Management) - Canadian Public Relations Society Hamilton Chapter
- Gold Quill Award of Merit (Communications Management) - International Association of Business Communicators (IABC)
- Ovation Award of Excellence (Social Responsibility) - IABC Toronto Chapter
- PR News Corporate Social Responsibility Award of Merit (Green PR Campaign) - PR News
- Award of Merit (Advocacy and Social Marketing) - Canadian Public Relations Society
- Silver Marketing Excellence Award - Solid Waste Management Association of North America

Halton offers a comprehensive outreach program to schools, community groups, apartment buildings and businesses. In the 2009-2010 school years, Halton provided 231 educational workshops in 87 schools to 35,963 students. Since 2006, Halton has delivered 954 workshops to 107,282 individuals. Tours of the Halton Waste Management Site, student conducted waste audits and participation in community events such as the Halton Eco Festival complement the workshops.

Halton's waste management outreach program has been awarded:

- Conservation Awards of Excellence (Community) – Conservation Halton
- Gold Ontario Waste Minimization Award (Promotion) – Recycling Council of Ontario

2.2.8 Customer Service

Halton staff administer the waste collection and processing contracts by documenting the performance of the work to ensure compliance with the contract terms and conditions to ensure that residents and customers are receiving the intended level of service. Residents can inquire about program information or waste service via telephone, email or web-based service requests. New residents receive new waste diversion containers and existing residents can receive replacement waste diversion containers such as Blue Boxes and GreenCarts free of charge.

Although not actively enforced, Halton Region has a Waste Management by-law that describes how waste is to be set out at the curb for collection.

2.2.9 Provincial Extended Producer Responsibility Programs

There are four EPR programs currently operating in Ontario, targeting Blue Box waste, waste electronics, municipal hazardous and special waste (MHSW) and scrap tires. The legislation enabling the development of these programs is the Waste Diversion Act, 2002, which created Waste Diversion Ontario

(WDO) and gave WDO the mandate to develop, implement and operate waste diversion programs to reduce, reuse or recycle waste.

Two of the plans, those for Blue Box and MHSW, are the responsibility of Stewardship Ontario, the Industry Funding Organization (IFO) created to help industry stewards meet their obligations under the plans. IFOs are mandated to assess fees to obligated stewards such that their financial commitments are met under the plan.

Blue Box Program Plan



The Blue Box Program Plan took effect on February 1, 2004, and a revised program plan was submitted to the environment minister for review early in 2010. This plan is executed in conjunction with municipal recycling programs, and Stewardship Ontario works with WDO to meet the financial obligation of product stewards responsible for Blue Box waste, being 50% of net system costs. Funding to municipalities is provided through the WDO. Halton Region submits a report to WDO annually detailing the costs to operate the Blue Box program and the tonnages managed through the program to receive funding. In 2011, Halton will receive \$3.39 million from the stewards which represents 42.4% of the net costs to operate the program.

Municipal Hazardous and Special Waste Program Plan

The Municipal Hazardous and Special Waste (MHSW) Program Plan was developed by Stewardship Ontario and launched July 1, 2008. The program was then amended to increase the materials captured and incorporate full EPR, which requires that stewards of designated materials be financially responsible for all elements of their management. The initial phase of the MHSW Program limited the financial obligation of stewards to post-collection costs only. The final consolidated MHSW Program Plan was approved in July 2009 and started on July 1, 2010.

MHSW collection is accomplished through a variety of methods, all brought together under the banner of the Orange Drop program. MHSW can be dropped off at municipal depots, mobile depots, retail locations, pharmacies and special collection events. Under the amended Program Plan, stewards bear the collection, processing, recycling and disposal costs for collected materials.

When the consolidated MHSW program started on July 1, 2010, consumer confusion and public controversy over “Eco Fees” charged by stewards (some retailers elected to pass on the MHSW fees to consumers as a discrete fee shown on their receipts) ultimately led to the Ministry of the Environment revoking the consolidated program on October 12, 2010, and requesting a revised MHSW Plan. Stewardship Ontario has continued to operate the Orange Drop program in its entirety at the request of the government during this transition period. However with the cancellation of the Plan that came into effect on July 1, 2010, funding to municipalities for the Phase 2 materials listed below is no longer covered by the stewards and the Provincial government is covering this portion of the MHSW funding to municipalities.

Materials covered by the final consolidated MHSW Program Plan referred to above as the amended plan include:

Phase 1 Materials

- paints and coatings, and containers in which they are contained;
- solvent, and containers in which they are contained;
- oil filters, after they have been used for their intended purpose;
- containers that have a capacity of 30 litres or less and that were manufactured and used for the purpose of containing lubricating oil;
- single use dry cell batteries;
- antifreeze, and containers in which they are contained;
- pressurized containers such as propane tanks and cylinders; and
- fertilizers, fungicides, herbicides, insecticides, or pesticides and containers in which they are contained.

Phase 2 Materials

- aerosol containers;
- batteries (other than single use dry cell);
- portable fire extinguishers;
- fluorescent light bulbs and tubes;
- pharmaceuticals;
- sharps, including syringes;
- switches that contain mercury;
- thermostats, thermometers, barometers, or other measuring devices containing mercury;
- corrosives (includes irritants);
- flammables (includes solvents);
- leachate toxics;
- reactives; and
- toxics.

Funding to municipalities for their participation in MHSW programs is accommodated through operating agreements.

Halton Region collects municipal hazardous and special waste through its HHW Depot located at the Halton Waste Management Site, as well as through special event days held throughout the Region. In 2010, one special waste drop-off event was held in each municipality, for a total of four events. The Region advertises MHSW diversion options through its literature and website, including directing residents to stewardship websites for the MHSW, WEEE and Ontario Tire Stewardship programs.

Halton Region maintains a contract with Hotz Environmental Ltd (recently purchased by Enviro Systems Inc., headquartered in Nova Scotia) to operate the permanent HHW Depot and operate the drop-off event days conducted four times a year. In 2009, the Region collected 895 tonnes of MHSW at the HHW depot, and 120 tonnes at the mobile event days which represents an average of 5.92 kg of MHSW per household collected through the Region's MHSW program. The estimated capture rate among Halton's residents is the highest among the five GTA regional municipalities (including York Region, Durham Region, Toronto and Peel Region).

WEEE Program Plan

The IFO established to manage the Waste Electrical and Electronic Equipment (WEEE) Program Plan is Ontario Electronic Stewardship (OES). The plan requires brand owners, first importers, franchisors, and assemblers to pay fees for electrical and electronic equipment (EEE) supplied to Ontario. Collected fees will be used by OES to operate the WEEE program.

Under the program, 44 different products are designated for diversion from landfill. Similar to the MHSW plan the program was introduced in phases: Phase 1 was launched on April 1, 2009, and the revised Phase 1 and 2 plan on April 1, 2010. Materials covered by the plan include:

- Desktop computers
- Portable computers
- Computer peripherals
- Monitors
- Televisions
- Printing devices
- Computer peripherals including modems
- Printing devices including copiers, scanners, typewriters
- Telephones (physical and accessories)
- Cellular phones
- PDAs and pagers
- Audio and video players
- Cameras
- Equalizers/(pre)amplifiers

- Radios
- Receivers
- Speakers
- Tuners
- Turntables
- Video players/projectors
- Video recorders
- Personal hand held computers

Halton Region collects WEEE at the HWMS and at the four annual mobile events along with MHSW.

Used Tires Program

Ontario Tire Stewardship (OTS) is the IFO responsible for implementing the Used Tires Program, which targets tires supplied into the Ontario market for diversion from burning and landfilling. Launched on September 1, 2009, the program allows consumers to have old tires recycled by dropping them off at registered collectors across Ontario.

Tire stewards remit fees for every tire they supply into the Ontario market, which are used to fund all aspects of the Program. OTS provides financial incentives for registered organizations that collect, transport, and process Used Tires or manufacture recycled products in accordance with the Program Plan. Halton Region collects tires at the HWMS.

2.3 Waste Audit Data and Waste Generation Estimates

2.3.1 2010 Tonnage Report

Halton Region's total waste generation, diversion and landfill rates are presented in Table 2-1, with greater detail provided in Appendix B. An average of 1,210 kg of waste per household per year was managed by Halton Region in 2010. From this total, 695 kg are diverted through the Region's wide range of successful waste diversion programs, and the remaining 515 kg are landfilled at the HWMS.

Table 2-1 2010 Tonnage Report Breakdown per Household (SF & MF Combined)

	Total Waste Managed by Halton Region for All Households	
	Total Waste per Household (kg)	Total Tonnage (tonnes)
Total Recycled / Reused	343	60,415
Total Organics Composted	352	62,051
Total Diverted	695	122,467
Total Landfilled	515	90,824
Total Waste (Diverted and Landfilled)	1,210	213,291

Source: Halton 2010 Tonnage Report

2.3.2 Single Family Households

Single Family Garbage Stream Composition

In 2009 Halton Region conducted a single family residential waste audit on garbage placed at the curb for collection, excluding bulk material.

Halton Region's single family garbage collection includes all material collected curbside from detached households, semi-detached households, some townhouses (depends upon configuration) and apartments consisting of six units or less.

Figure 2-2 presents a breakdown of the Region's single family garbage, and does not include any materials collected through waste diversion programs such as the Blue Box or GreenCart programs.

Single Family Diversion Opportunities

Halton Region's mature waste diversion programs capture a large portion of the single family waste stream through the Blue Box, GreenCart, Leaf & Yard and HHW programs. A 2009 waste audit of the Region's single family garbage confirmed that the single family garbage generation rate is down to 288 kg/household/year, but also highlighted that divertible materials remain in the single family garbage stream.

Figure 2-2 shows that 40% of the contents of an average single-family garbage bag could be diverted through the Blue Box, GreenCart, Leaf & Yard and Household Hazardous Waste diversion programs. The residual 60% contains divertible materials such as textiles, plastics, construction materials, electronics and other miscellaneous household items. Expansion of existing programs and development of new waste diversion initiatives could increase diversion by capturing these materials.

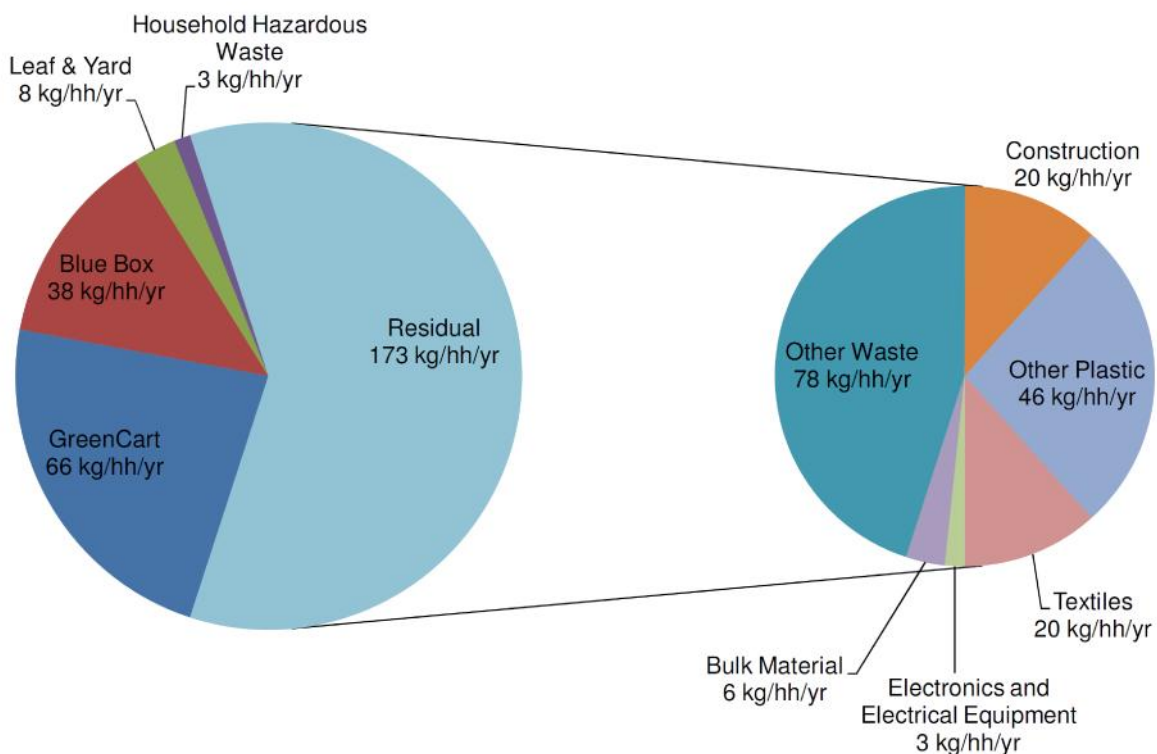


Figure 2-2 Single-Family Dwelling Garbage Composition

Source: 2009 Halton Region Waste Audit

2.3.3 Apartment Households

Apartment Garbage Stream Composition

The overall apartment waste stream composition is based on Stewardship Ontario's 2007 apartment waste audit conducted in Halton. As the GreenCart program has not yet been extended to apartment residents, the individual audits of the garbage and Blue Box streams can be assumed to approximate the present waste composition and generation.

Halton Region's apartment garbage stream includes all garbage placed in a shared garbage container for collection from a building that consists of more than six units. Figure 2-3 shows that a substantial portion of apartment garbage is in fact divertible waste. The most striking diversion opportunity in the apartment garbage stream is the GreenCart organic materials, which make up 44% of the collected apartment garbage. To date the GreenCart program has not been extended to Halton Region's apartment population, but there are plans for a future apartment GreenCart roll-out.

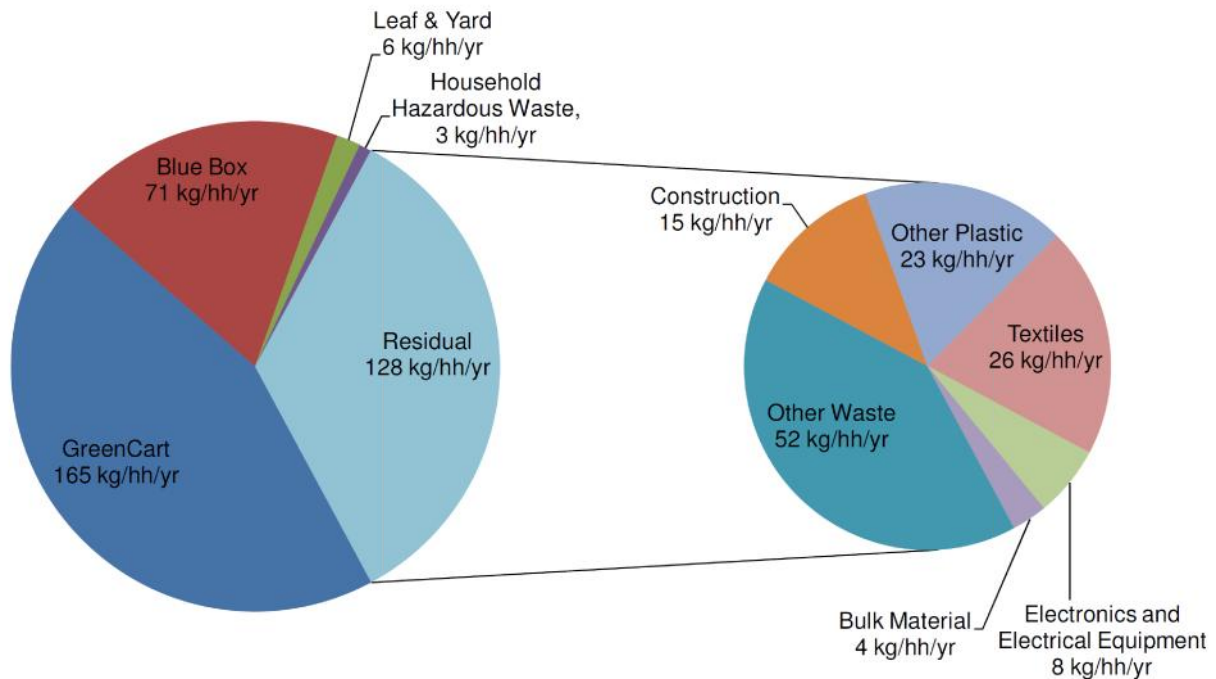


Figure 2-3 Apartment Garbage Composition

Source: Stewardship Ontario 2007 Waste Audit Series

Apartment Waste Generation Rates

Apartment garbage and Blue Box generation totals 474 kg/hhld/year, as in Table 2-2. Assuming 2007 generation rates, and applying the number of apartment households in Halton in 2009, waste generation is estimated at 13,372 tonnes, or about 6% of the Region's total managed waste.

Table 2-2 Apartment Waste Generation

Waste Management Program	Generation (kg/hhld/yr)	Estimated 2009 Tonnage
Blue Box	101	2,849
Garbage	373	10,523
Total	474	13,372

Source: Stewardship Ontario 2007 Waste Audit Series

Apartment Diversion Opportunities

As is the case for apartment waste diversion across the province, opportunities exist to significantly improve diversion performance in core diversion programs. The Blue Box capture rate, as calculated from the 2007 waste audits, is 56%, which leaves room for increased capture of recyclables. As shown in Table 2-3, 19% of the apartment garbage stream is composed of Blue Box recyclables.

Furthermore, once the Region introduces its GreenCart program to apartment buildings, an additional 44% of the multi-family garbage stream will be potentially divertible.

Table 2-3 Materials in the Apartment Garbage Stream

Material	2007 kg/hhd/yr	2007 Composition
Blue Box	71	19%
GreenCart	165	44%
Leaf & Yard	6	2%
MHSW	3	1%
Residual Garbage	128	34%
<i>Textiles</i>	26	7%
<i>Other Plastic</i>	23	6%
<i>Construction</i>	15	4%
<i>Electrical & Electronic Equipment</i>	8	2%
<i>Misc. Household Items</i>	4	1%
<i>Other Waste</i>	52	14%
Total Residential Garbage	373	100%

Source: Stewardship Ontario 2007 Waste Audit Series

2.3.4 Program Participation Rates

Halton conducted a participation study of its garbage, GreenCart and Blue Box programs with observations made in 2009 and 2010. Results of the study are summarized in Table 2-3. GreenCart participation has slightly dropped while Blue Box program participation rates are essentially constant over this period. These results are based on weekly data.

Table 2-3 Halton Waste Management Program Participation Study (2008-2010)

Year	GreenCart Participation Rate	Blue Box Participation Rate	Garbage Set-Out ¹ Bi-Weekly		
			3 bags or less	2 bags or less	1 bag or less
2008	84%	96%	79%	63%	37%
2010	77%	97%	82%	67%	40%

¹ Garbage set out based on bi-weekly schedule (two collection cycles)

Observations on garbage set-out indicate that residents were setting out increasing numbers of bags of garbage during the course of the study. The Region currently has a 6-bag bi-weekly garbage limit and the study indicates that 5 – 10% of households are at or above the limit. The vast majority of households are setting out 3 bags of garbage or less every other week, suggesting that a bag limit of 3 or less would be necessary to significantly reduce garbage set-out.

2.4 Planning for Growth

2.4.1 Provincial Growth Planning

The Provincial government has undertaken several initiatives to promote long term sustainable planning and growth in Ontario. The Places to Grow Act 2005 gives the province the power to designate geographical growth areas and to develop growth plans in collaboration with local officials and stakeholders to meet specific needs across the province.

In June 2006, the province demonstrated its vision for sustainable growth in the Greater Toronto Area by releasing the document “Places to Grow Growth Plan for the Greater Golden Horseshoe. The Growth Plan for the Greater Golden Horseshoe, released on June 16, 2006, is a 25-year plan that aims to:

- Revitalize downtowns to become vibrant and convenient centres.
- Create complete communities with options for living, working, learning, shopping and playing.
- Provide housing options to meet the needs of people at any age.
- Curb sprawl and protect farmland and green spaces.
- Reduce traffic gridlock by improving access to a greater range of transportation options.²

To achieve, these goals, the Growth Plan establishes minimum intensification targets for built up areas and minimum density targets for both urban growth centres and designated Greenfield centres. The plan requires that by 2015 and each year after, a minimum of 40 per cent of all residential development occurring annually within each upper- and single-tier municipality will be within the built-up area. Furthermore, urban growth centres will be planned to achieve, by 2031 or earlier, a minimum gross density target of 200 residents and jobs combined per hectare for Downtown Burlington, Downtown Milton, and Midtown Oakville. This will have a strong impact on urban planning, placing greater pressure on the Region to build up and build compact.

2.4.2 Projected Regional Growth

Halton Region is prosperous and growing, and future waste management needs will depend largely on the population and development trends within the Region and its municipalities. An examination of the best planning estimates to 2021 reveals some of these trends:

- **Oakville and Milton are driving the population increase.** The Region’s population is increasing steadily to 2021 and beyond, with population moving from 492,100 in 2010 to 628,900 in 2021, at an average increase of 12,000 people per year. Together they will create 87% of the Region’s population growth from 2010 – 2021, with Oakville adding 3,000 – 5,000 people per year, and Milton adding 5,000 – 7,000 people per year through 2021.
- **The number of people per dwelling unit is trending down** in the Region as a whole, and in all municipalities except for Milton. 2.766 people per household in 2010, dropping to 2.697 people per household in 2021.
- **High density housing units increasing.** About 5,000 dwelling units per year are added from 2010 – 2021. In 2010, these new units are 60% low, 23% medium and 17% high density. By 2021, the new units are 53% low, 24% medium and 23% high density. The proportion of new high density dwelling units is increasing by 0.6% per year, while the proportion of new dwelling units which are low density is decreasing by the same amount.

The latter two trends will tend to make waste diversion more difficult. If per capita waste generation rates remain constant while average household size decreases, then waste will be spread among an increasing number households and collection points, resulting in increased collection costs.

High density or multi-residential housing units present a challenge to the Region in terms of maintaining high diversion rates. Typically, waste diversion rates for multi-residential households fall significantly below those for single family homes.

² Ontario Government. June 2006. Places to Grow Growth Plan for the Greater Golden Horseshoe at https://www.placestogrow.ca/index.php?option=com_content&task=view&id=9&Itemid=14

3. Research and Long List Development

3.1 Joint Visioning Exercise

To date, Strategy development has been guided by the vision of the Joint Municipal/Regional Waste Management Committee (JMRWMC), an Advisory Committee authorized by Regional Council and which reports to Regional Council through the Planning and Public Works Standing Committee. The JMRWMC advises and assists the Region with respect to the minimization of waste going to the landfill site through such activities as reduction, reuse and recycling (3Rs) of solid waste. The Committee is comprised of 14 members, consisting of 1 member of Regional Council, an elected Councillor from each of the 4 Local Municipalities (be they a local or Regional Councillor), 1 member of the Halton Waste Management Site Advisory Committee as selected by that Committee, and 8 citizens-at-large, at least 2 of whom represent rural areas.

In January and February of 2010 the JMRWMC met to establish a vision and possible key initiatives for the Strategy. The Committee developed a number of potential initiatives with respect to curbside service levels; multi-family waste diversion, and; infrastructure. More specifically, the Committee suggests that

- promotion, policy and enforcement approaches be used to increase curbside performance
- the site plan review process and building design requirements for multi-family residences are potentially important approaches to meeting future diversion targets, and that this sector might be a candidate for policy approaches and financial tools
- There may be a place for Community Recycling Centres or local depots. The position acknowledges the relative cost of potential options, but it is important to note that in addition to cost and waste diversion potential, this direction allows for decision making to consider the aspect of service delivery.
- The use of the HWMS as a waste management “hub” for waste processing, recycling and composting capacity should be considered.

The vision is clear: the JMRWMC wants Halton to remain a leader with respect to waste reduction and diversion. The group acknowledges that there are related cost implications but there is a desire to attract greater participation in Blue Box and GreenCart programs.

This preliminary visioning exercise by the JMRWMC has provided useful direction to the project, and the high-level concepts of leadership in waste diversion and improvements to service delivery have guided the process.

3.2 Research

In order to develop the most complete list possible of waste diversion program and policy options from which the Region might draw a final waste management strategy, the Project Team engaged in a program of research and options development. The purpose of the preliminary research was to identify and document an exhaustive list of policies and program approaches, and where possible, determine at a high level the potential impact in terms of diversion and cost.

The research for this study sought to uncover innovative and visionary municipal policies and programs from North America that are known to promote and deliver high performing waste prevention and diversion programs. The building of the “long list” was accomplished by engaging in a number of research approaches.

The research employed a wide variety of resources including reports, web pages and internet research, journal articles, personal contacts and industry sources. North America, and more specifically Canada and the United States, is the principal context for the Strategy. Some information is derived from personal experience in the field, and report sources vary widely and include E&E Fund reports on program upgrades, sustainable financing, multi-residential recycling, and the Best Practices Assessment report.

Other reports include waste plans and program assessments recently completed by the team and published technical papers. The research was supported by discussions with Regional staff, to identify additional sources, ideas and input to the research process.

The research and development of the long list of waste diversion opportunities was directed by identifying key components of an integrated waste management system and ensuring the research uncovered waste diversion opportunities associated with each component, as follows:

- **Multi-residential recycling and waste diversion:** The GENIVAR team has had the benefit of researching, in great detail, multi-residential recycling and waste diversion programs. A recent source document on the matter was our recently completed study on maximizing Residential Waste Diversion in Connection with the Mayor's Tower Renewal Pilot Feasibility Study (City of Toronto). Sources for the work are vast and include case studies from all over North America, interviews with numerous municipal jurisdictions (New York, Chicago, San Francisco, San Jose, Seattle) and current literature compiled under the Stewardship Ontario E&E Fund. Site visits and stakeholder interviews were also part of the study, and the development of strategies and approaches revisited and, where appropriate, considered for Halton Region. This work was augmented by additional information and in some cases follow-ups with municipalities throughout North America.
- **Reduction and Reuse:** a menu of strategies including packaging bans, sustainable procurement, retail-based programs and waste exchange concepts are also derived from across the continent. Not all are well established but materials and information on related approaches are available from Halifax to Vancouver and New York City to San Francisco.
- **Collection Services:** there is an abundance of collection approaches that have been either employed or considered throughout the country targeting specialized waste streams for diversion. Streams include household hazardous and special wastes, electronics, scrap metal, textiles, pet Box or organics collection programs, have sought to reach to new sources for their material. Expanding collections in public spaces or for special events is another frontier for the increase in recyclable material, for instance.
- **Policy Approaches:** British Columbia, Ontario, California and Washington State are examples of the many places in which municipalities have established policies that support waste diversion. Policy support is one of the most direct ways a municipality can promote certain outcomes, and include measures such as clear bags for garbage, pay-as-you-throw and sustainable financing strategies, container and bag limits, material bans at the curb or at the landfill, variable tipping fees, and by-law support.
- **Support and Incentive Options:** typically these are "reward" style approaches designed to positively reinforce desired recycling and waste diversion behaviours. Hamilton's "Gold Box" is such an approach where the resident receives a gold-coloured recycling container with a thanks for their participation and recycling habits. Some American jurisdictions go as far as to reward participants with coupons or rebates. There are administration challenges to recognize individuals with these options.
- **Public Engagement and Education:** Halton Region already supports an innovative and robust public education program, but there is still some room to go further with outreach and education processes. Examples of interactive campaigns, outreach efforts, and targeted promotion can be found from around the continent and while some are still in development the body of work suggests that viable options are available.
- **Back-end:** This approach is not considered viable but does come up in the research. The notion of processing material after it is collected as garbage, as opposed to separating at source, has been considered by some jurisdictions.

This approach helped ensure that all aspects of waste diversion, including waste reduction and reuse, were captured.

Effort was taken to identify innovative waste diversion policies and programs implemented by North American and European communities. An initial long list of waste diversion opportunities employed by municipalities contained over 100 items. A preliminary scan of the comprehensive long list revealed a number of opportunities not suitable for further consideration for a number of reasons:

- A number of options were dropped from further consideration, either because the Region had either implemented the approach (e.g. grass bans);
- Many were combined, usually because they were very similar and could be considered as a single approach which had a number of variations (e.g. various Pay-as-you-throw programs);
- Some were removed because they were strategies that could not be directly controlled by the Region or not part of the Region's mandate.

The initial long list of waste diversion opportunities was reduced to 65 entries that could be potentially adopted by the Region to promote waste diversion in its single family and multi-residential sectors (BIAs and events and public spaces were captured under the single family sector).

3.3 Long List of Waste Diversion Policies and Programs

The project team drew on their extensive experience in waste management planning and developed the Long List of Waste Diversion Practices (Long List). This Long List focused on:

- Waste management and diversion service options – opportunities to enhance existing collection and processing services (primarily to the residential sector).
- Waste diversion innovative practices – defined as supporting policies and programs implemented by the municipality to promote waste reduction and diversion in the single family and multi-family residential and any customer (residential, IC&I or C&D) that accesses the Region's landfill.

Table C-1 in Appendix C to this report, presents a consolidated version of the Long List. The measures were divided by sector and activity, as follows:

1. Single-family residential sector resulted in 47 long listed measures identified
2. Multi-residential sector resulted in 18 long listed measures identified
3. Other which includes public space, events and BIAs and incorporated into the single-family long list of options.

Each sector list is further subdivided into:

- Regional Goals, Targets and Advocacy Options;
- Reduction/Reuse Options;
- Collection Options;
- Policy Approaches;
- Support and Incentive Options;
- Public Engagement and Education Options;
- Back End Options; and
- Multi-Residential Options.

Refer to Appendix C for the complete Long List of waste diversion options.

4. Evaluation of Options and Recommendations



The approximately 65 options identified for the Long List were screened to remove from further consideration any opportunities that were not practical or in keeping with the goals, objectives, or vision for the study. This was done by first developing a set of evaluation/screening criteria and then applying these criteria to screen the Long List and identify a Short List of Waste Diversion options potentially applicable to the Region. Details on these criteria and screening process are presented below.

4.1 Evaluation Criteria

The project team worked with Halton staff to develop a list of evaluation criteria that best represented the screening needs of the Region. An initial list of nine potential evaluation criteria was presented to staff for discussion as shown below:

1. Compatibility with existing and future infrastructure (e.g. compatibility with existing collecting and disposal infrastructure – the mechanical or “hard” infrastructure requirements);
2. Community acceptance (how well the community would embrace the measure);
3. Compatibility with existing programs and by-laws (e.g. requirement for new or amended by-laws, programs, and staffing – the support or “soft” infrastructure requirements);
4. Proven technology or system (e.g. the degree that the technology or measure is commercially proven to work and achieves its intended purpose);
5. Provides public health benefits (e.g. reduces pollution to protect public health);
6. Provides environmental benefits (e.g. reduces pollution to protect the environment);
7. Consistent with Regional strategic plans and goals
8. Provides customer service benefits (e.g. provides greater direct service level as requested by public); and
9. Diversion potential (e.g. the relative quantity of material diverted from disposal by the option).

After much discussion, staff determined the need to reduce the number of evaluation criteria to their key components by combining and eliminating some of the criteria. In the end, the final list of evaluation criteria was reduced to five key needs:

1. Community Acceptance (how well the community would support the initiative);
2. Proven technology or system (the proven success of the technology or system);
3. Social and Environmental benefits (including waste diversion benefits);
4. Customer service benefits (the degree to which the option provides greater service to Halton’s residents and customers);
5. Ease of implementation and adaptability to the current waste management system (what level of effort would be required to adapt the option to Halton’s waste management system)

4.1.1 Preliminary Screening

Staff met with the project team to conduct a 1.5 day workshop in order to screen the long list and produce a short list of potential waste diversion options. A one day workshop was dedicated to the screening of the waste diversion options targeting the single family sector (including public space and events) and a half day workshop was dedicated to the screening of waste diversion options targeting the multi-residential sector.

Each option was screened by applying a ranking method by assigning a score that corresponded to a rank of high, medium-high, medium, low-medium, low. The score assigned to each rank were, high = 5, medium-high = 4, medium = 3, low-medium = 2, low = 1. Each of the five evaluation criteria of each waste diversion option were ranked/scored and then summed to produce a final score. The long list

matrix consisted of five (5) evaluation criteria, therefore, the highest possible score that an option could achieve was 25 (5 evaluation criteria x a high score of 5) and lowest possible score was 5 (5 evaluation criteria x a low score of 1).

In order to determine whether the waste diversion option progressed to the short list, a threshold score needed to be developed. Staff determined that the threshold score would be 17. Although, the mid-point of this set was 15 (mid way between the scores of 5 and 25), staff chose to err on the conservative side with the opportunity to add in a lower scored option that met a Regional mandate or goal.

The process resulted in the long list of waste diversion options reduced to short list of 32 waste diversion options. The Short List resulting from this screening process is presented in the following Section 4.2.

4.2 Short List of Options

On the basis of the preliminary screening a number of options were forwarded for further evaluation. This “short list” of options contained 32 potential approaches for which additional research was required. The main purpose of the added research was to further define cost and diversion potential associated with each.

The options on the short list fall into the following categories:

- Promotion and Education
- Collection Service
- Drop Off Service
- Policy Approaches
- Multi-Residential Recycling and Diversion Programs

4.2.1 Promotion and Education

The Region is considered to be a leader in this area and, as a result, is in an excellent position to build on this well-earned reputation. The options forwarded for consideration under this category include:

Enhanced Promotion and Education – either by increasing the volume of materials and media used to promote the program or by targeting the message at problematic materials, poor performing sectors or operational deficiencies (such as contamination of recyclables by non-recyclables in the Blue Box).

Outreach – the principal difference between outreach and promotion and education is that the former would involve personal contact and stakeholder engagement, such as workshops, the management of an education centre, the hosting of events or display opportunities at community centres and other public venues, and many other proactive approaches that foster support for programs.

Promotion of “Waste Less” Principles and Policies – This strategy could be achieved concurrently with the previous two approaches, and assumes that the Region would become a vocal or official supporter of policies that promote waste reduction. This strategy could also take the form of a “PreCycling” campaign or “shop smart” programs, and other information and support that encourages personal decision making that considers the implications of waste generation at a critical point in the process: the purchase of goods.

4.2.2 Collection Service

Curbside collection for household hazardous and special wastes and electronics – This strategy would see the current collection system expanded to include HHW and electronic wastes.

Expand Household Hazardous Waste events – The main purpose of this strategy would be to increase the number and convenience of opportunities for residents to divert HHW. The Region has already initiated this type of change and increased the number of annual events.



Expand the list of eligible Blue Box materials collected – This strategy could be exercised when feasible, but new technologies and processing approaches continue to be developed to differentiate and sort thermoform plastics and in general many programs have added plastics not collected in the Halton program.

Review household recycling capacity and distribute additional Blue Boxes – The concept is simply to assure that Regional residents have enough recycling capacity, more specifically adequate space in their Blue Boxes to store recyclables between collection days. This would prevent the need to place recyclables into the next option, namely the garbage receptacle, because the household Blue Boxes were overflowing with material.

Curbside small quantity construction and demolition (C&D) waste collection – This collection approach would target C&D waste generated at a household do-it-yourself (DIY) scale, in a manner similar to metal and appliance collection. This waste is generally comprised of wood waste, drywall and carpeting.

Textile recovery – The collection of textiles for reuse or recycling.

4.2.3 Drop-Off Service

Community Recycling Centres – This is a strategy that is becoming increasingly popular in the GTA (Peel, York, Hamilton), and would see the development of existing Regional properties to serve as multi-purpose drop-off centres. The purpose is to enhance opportunities for residents to divert materials by providing local options and to relieve current pressures at the HWMS.

Waste exchanges (reuse centres, goods exchange events, on-line business directories, computer exchange programs) – This approach would see the Region establish and facilitate exchange programs that enable residents to donate and exchange reusable goods. It is common for reuse facilities to be established at waste drop-off and depot locations.



Public space diversion and recycling – An approach that assumes cooperation from Regional and areas, especially where evidence of recyclable containers (cans and bottles) is high. This would include outdoor parks, trails and public facilities.

Extended hours at the landfill – The extended hours would provide additional opportunities for people to use the Container Station and HHW Depot.

4.2.4 Policy Approaches

Harmonize services, policies and by-laws – A work-in-progress for the Region, efforts to harmonize all waste services and supporting by-laws and policies would continue. The desired outcome is equal service for all in all aspects including grass bans and bulk brush collection services.

Reduced tipping fees for diverted materials at the landfill – HWMS users would receive reduced tipping fees for materials that can be diverted through the Container Station or the yard waste area at the HWMS.

Special events diversion and recycling – The Regional policy directed at event coordinators and contractors to encourage and support waste diversion at special events would be enhanced.

Expand curbside and landfill disposal bans – An approach that could be coordinated with waste diversion opportunities available at the Container Station or CRCs, certain materials would be designated as prohibited from disposal, which includes giving garbage collection crews the authority to refuse prohibited material at the curb. Examples include electronic waste, Blue Box recyclables, and wood waste.

Mandatory recycling or source separation by-laws – The establishment of by-laws stipulating source separation, again in support of existing waste diversion opportunities. This strategy would require meaningful enforcement support.

Adoption of an annual per household disposal rate target – Goal setting would allow the region to promote a target and measure progress. Based on the 2009 Halton Tonnage Report, for instance, the kg/capita disposed by Halton Region residents was 194. Based on a review of similar municipalities (Urban Regional and Large Urban municipal groupings in the WDO Datacall) it would be possible to set an achievable but challenging target against which to measure waste diversion progress.

Pay-as-you-throw (PAYT) and sustainable financing strategies – There are a number of financing strategies that could be used to promote waste diversion. In some instances these would be connected to container limits, for instance partial bag-tag systems that would come into effect after a certain “free” container threshold was reached. Strategies could include full or partial bag tag systems, variable and hybrid variable rates, variable cart rates, and weight-based collection, with some strategies potentially supported by new technologies like RFID.

Promotion of sustainable policies – The Region would work with government agencies at the federal and provincial levels to advocate and promote sustainable policies and programs, such as extended producer responsibility, that target durable goods including C&D waste, textiles, carpets and furniture.

Packaging bans, fees or levies – In this approach the Region would impose bans or levies on designated packaging, generally outside of existing stewardship programs such as store packaging, used by designated commercial establishments.

4.2.5 Multi-Residential Recycling and Diversion Programs

Build Multi-Residential Building Database – The Region would establish a multi-residential building database to aid with the management and monitoring of multi-residential solid waste programs.

Enhancing the Region's multi-residential website – This method would call for the Region to dedicate a section of the Waste Management website to multi-residential waste management and diversion matters. This could include green rental information, a waste diversion handbook for superintendents, waste diversion tips, case studies, implementation “toolkits” and other information that would support and facilitate action by property managers to implement diversion programs.

Promotion and support for multi-residential recycling program strategies (existing buildings) – The Region would develop a targeted promotion and education strategy for residents living in existing on how to maximize recycling opportunities in their buildings. These would differ from the website based tools and include such things as landlord and tenant pledges, training and tools for superintendents, building-based outreach, and program reviews to advise operators whether their programs are convenient and user friendly.

Designated goods diversion (e.g. HHW, Electronics, Textiles) – Specific collection programs and events are established in multi-residential buildings to divert designated goods for recycling and reuse.

GreenCart implementation – Implement the GreenCart program at multi-residential buildings so service is consistent with single-family households.

Waste diversion info provided to new and existing tenants – In this scenario the Region would establish a requirement for building owners to provide waste diversion educational packages to new and existing tenants on an annual basis.

Waste diversion plans for new and existing buildings – This is a proposed requirement for building owners, in this case a requirement to complete a recycling plan for submission to the Region for approval.

Animators/ambassadors/champions – The development and implementation of a trained volunteer group who would act as building ambassadors, experts and key contacts to promote recycling in buildings.

Feedback to buildings – This would involve the use of “barometers” and other graphic representations to tell residents how their building is doing in the area of recycling and waste diversion.



Garbage chute closure support – The Region would promote garbage chute closure as part of the Region's multi-residential guidelines and ensure that the initiative wasn't impeded by municipal by-laws.

4.3 Estimated Impacts of Waste Diversion Options

4.3.1 Evaluating Diversion and Cost Impacts

In November 2006, Seattle hired a team of consultants to perform a Zero Waste Study for the City.³ The study addressed three major facets of the solid waste management program: Zero Waste principles and product stewardship; collection of waste and recyclables; and existing/proposed solid waste facilities. Similar in nature to this study, the consultant team reviewed a wide range of potential opportunities and infrastructure to help the City achieve a goal of zero waste. As part of the evaluation process, the consultant team developed a method for displaying potential diversion and costing implications for the selected options. The following discusses the diversion and costing evaluation method developed for the Seattle Zero Waste Study which has been adopted and modified for this study.

In the Seattle Zero Waste Study, the project team established diversion ranges for each strategy during preliminary evaluations. During detailed analysis, the diversion range was refined to reflect the realities of diversion potentials. Since Halton has implemented the most effective waste diversion activities, there are very few single strategy, high diversion opportunities remaining. The diversion ranges reflect this reality.

Table 4-1 shows the initial ranges used. Waste diversion rates are calculated relative to the entire Regional waste stream, and not limited to residential curbside material.

Table 4-1 Diversion Ranges for Evaluating Waste Diversion Options

Diversion Value	Description	Code
Very Low	> 0.0% to 0.5%	VL
Low	> 0.5% to 1.0%	L
Medium	> 1% to 2.0%	M
High	> 2% to 5.0%	H
Very High	> 5.0%	VH
NA	0.0%	NA

Source: City of Seattle Seattle Solid Waste Recycling, Waste Reduction, And Facilities Opportunities: Volume 1 April 2007 with Diversion description ranges and description based on work by Skumatz Economic Research Associates, Inc.

Unfortunately, the study did not provide a viable alternative evaluation method for the costing component of the project. Since Seattle was not as advanced at implementing waste diversion programs, such as GreenCart collection, many of the proposed initiatives reflected high per household costs, starting at up to \$10 per household as the very low cost range to over \$100 per household at the very high cost range. For this reason, a modified approach has been developed as shown in Table 4-2. Costs ranges are calculated in \$/household, based on the total number of dwelling units in the Region.

Table 4-2 Cost Ranges for Evaluating Waste Diversion Options

Cost Value Diversion	Description Cost (\$/hhld)	Code
Low	\$ 0 – 2	L
Medium	> \$ 2 – 10	M
High	> \$ 10 +	H

³ City of Seattle. April 2007. Seattle Solid Waste Recycling, Waste Reduction, And Facilities Opportunities: Volume 1

4.3.2 Estimated Impacts of Single-Family Waste Diversion Options

The waste diversion impacts and estimated costs for the shortlist of waste diversion options for single-family households are summarized in Table 4-3. Research was undertaken as described in Section 3.2, including literature reviews, interviews and consulting with municipalities.

It is important to re-iterate that Halton Region is already running a high-performing waste diversion program, and has already adopted many available options to maximize waste diversion. As such, the diversion and cost impacts of the additional options available to the Region tend to be less easily quantified than the move to single stream recyclables collection, introduction of organics collection, or changes in collection frequency. As indicated by the 32 options that remain on the short list, a wide array of promotion and education, collection, drop-off and policy options are available to the Region to continue to increase performance. However, many of these options are not well established and proven programs, not widely implemented and implementation varies between jurisdictions.

Many of the options also display a high degree of interrelatedness. For example, many of the collection or drop-off service strategies would necessitate the introduction of supporting policy initiatives as well as a substantial promotion and education effort in order to succeed.

Where sufficient data was available, preliminary estimates of cost and diversion potential for each strategy have been included. These are often presented as ranges representing outcomes observed in other jurisdictions where the strategies have been tested or implemented.

Table 4-3 Estimated Impacts of Single-Family Waste Diversion Options

Waste Diversion Option	Cost Impact Based on per household costs	Diversion Impact Based on all managed waste streams
<i>Promotion and Education</i>		
Enhanced Promotion and Education	<p>L</p> <p>Halton’s current Blue Box P&E budget is above provincial and municipal group averages, and the Region employs P&E dollars effectively. Enhancing P&E would require additional staff and increased operating funds. This option is highly interrelated with the “Outreach” option, and assumes additional staff and funds.</p>	<p>L – M</p> <p>Enhanced P&E has some potential to increase diversion in existing programs, exclusive of new initiatives. Enhancing Halton’s already robust P&E program would result in some increased diversion.</p>
Outreach	<p>L</p> <p>A robust outreach program could require additional staff and program funding. Cost is somewhat higher than for P&E as outreach is typically event-based. This option is highly interrelated with the “Enhanced P&E” option and assumes an additional half-time staff and funds.</p>	<p>M</p> <p>Outreach programs have the potential to impact performance and material recovery in existing programs. Diversion impacts for outreach would be somewhat higher than for P&E as they engage stakeholders more fully.</p>
Promotion of “Waste Less” Principles and Policies	<p>L</p> <p>Cost impacts would include staff and additional funding requirements, and are included with “Enhanced P&E” option.</p>	<p>M</p> <p>Source reduction could have have dramatic effects on waste generation rates, depending on supporting policies approaches and promotion, education and outreach.</p>
<i>Collection Service</i>		
Curbside collection for household hazardous and special wastes and electronics	<p>L</p> <p>A Toxics Taxi style MHSW pick-up program would require dedicated staff and MOE approved vehicles. Cost recovery for MHSW-related activities would be negotiated with Stewardship Ontario.</p>	<p>VL – L</p> <p>MHSW is a small but potentially toxic element of the waste stream, and estimates of available MHSW vary. One dedicated mobile collection vehicle could increase Regional diversion by 0.1%</p>
Expand Special Waste Events	<p>L</p> <p>MHSW collection events are often combined with other programs such as WEEE collection, compost give-aways, etc. Costs are about \$14,000 per event. Cost recovery for MHSW-related activities is negotiated with Stewardship Ontario.</p>	<p>VL</p> <p>Collection events are not as effective at capturing MHSW as permanent depots or CRCs. There is not a strong correlation between increased events and increased MHSW recovery. A robust network of HHW events could impact Regional diversion with a 0% – 0.3% increase.</p>



Table 4-3 Estimated Impacts of Single-Family Waste Diversion Options



Waste Diversion Option	Cost Impact Based on per household costs	Diversion Impact Based on all managed waste streams
 Expand the list of eligible Blue Box materials collected	L Cost impacts are related to tonnages of each material available. Addition of empty aerosol or paint cans would have a relatively low cost impact, while addition of #3, 5, and 7 plastics would have a higher impact.	M Highest diversion impact for high-tonnage materials. Diversion impact would be realized from the new material tonnages and increased program awareness.
Review household recycling capacity and distribute additional Blue Boxes	L A Blue Box capacity audit would be a necessary step in addressing this option. A finding of limited capacity would warrant a pilot to assess actual potential diversion impact.	VL – M Diversion impact is dependent on the degree to which capacity issues exist. Increased capacity could increase the capture of Blue Box materials significantly.
Curbside small quantity construction and demolition (C&D) waste collection	L Costs would involve collection vehicle(s), collection crew, transportation and material processing.	L Despite tonnages collected at the HWMS, significant C&D tonnages remain in the garbage stream. The convenience of a scheduled curbside pick-up could boost residential C&D capture.
Curbside textile recovery	L Changes to recyclables collection contract and additional MRF sorting staff if included in Blue Box. Several non-profit organizations currently offer this service. A VL alternative would be to promote them rather than Region providing service.	L Assuming that textile recovery program captures 20 - 40% of textile remaining in SF/MF waste streams.
<i>Drop-Off Service</i>		
 Community Recycling Centres	H Costs would depend on intended use, available space/assets, and design complexity. Based on other Ontario municipalities, capital costs per CRC range from \$2 to \$7 million with annual operating costs from \$1 - \$3 million.	H Approximate trend is 1% recovery per CRC. Assumes careful placement of facilities to maximize access, wide range of materials accepted and minimal charge to resident.
Waste exchanges (goods exchange events, on-line business directories, computer exchange programs)	VL – M Cost would be dependent on extent of program. Dedicated re-use centres from \$1 – 2 million in capital costs, while web-based exchange programs could be allocated from existing P&E budget.	VL Conservative estimate of waste reduction based on available data.



Table 4-3 Estimated Impacts of Single-Family Waste Diversion Options

Waste Diversion Option	Cost Impact Based on per household costs	Diversion Impact Based on all managed waste streams
Public space diversion and recycling	VL – M Available data from GTA municipalities suggests a broad range of costs as a function of the scope of public spaces targeted, staff requirements and container types.	VL – L Diversion impact would be dependent on targeted locations (indoor/outdoor, sports facilities, trails, parks) and subject to high contamination rates.
Extended hours at the landfill	No data available for impacts of extended landfill hours. Cost impacts are related to additional staff time required. Survey and possible pilot study would be required to assess extent of additional hours required and associated staff costs.	VL No data available to estimate potential diversion impacts. It is anticipated that extended hours would increase traffic at the Halton Solid Waste Management Site and Container Station.
<i>Policy Approaches</i>		
Harmonize Services, policies and by-laws	Harmonization of services would result in increased efficiencies in service delivery, contracting and particularly promotion and education materials.	The consistent messaging allowed by service harmonization would tend to increase awareness, reduce confusion and improve diversion program performance.
Reduced tipping fees for diverted materials at the landfill	Lost tipping fees from divertible materials, and additional staff time would be required for inspection of loads to confirm divertible material.	Potential for survey to assess diversion impact of reducing fees for divertible items by revealing to what extent cost is a factor for residents' use of the Container Station.
Special events diversion and recycling	Expansion of current program to provide coordination and waste management services to an increased number of events, and enhancement of services would require additional staff time, containers and delivery/pick-up vehicles.	Diversion potential includes what is available from increased diversion performance at special events, expanding the number of events serviced, and increased GreenCart and Blue Box program awareness from educational opportunity.
Expand curbside and landfill disposal bans	Major cost component would be in promoting program and educating public on new banned materials. Some additional staff / collection crew time would be required to inspect waste contaminated with banned materials.	Other jurisdictions have observed, to varying degrees, decreased contamination of waste stream with divertible materials, and increased recovery in diversion programs.
Mandatory recycling or source separation by-laws	Cost of enforcement is a function of extent and enforcement approach. Additional full-time staff and vehicle would be required for inspection and enforcement.	With sufficient promotion, education and enforcement, recycling bylaws could drive increased recovery for existing waste diversion programs.

Table 4-3 Estimated Impacts of Single-Family Waste Diversion Options

Waste Diversion Option	Cost Impact Based on per household costs	Diversion Impact Based on all managed waste streams
Adoption of an annual per household disposal rate target	Costs would include an allocation of the P&E budget for promoting program and annual results, as well as an initial consultant's report to assist in setting an appropriate target.	This option would have no direct impact on diversion, but instead would provide an easily understandable yardstick by which to measure diversion performance and landfill capacity.
Pay-as-you-throw (PAYT) and sustainable financing strategies	L – H Additional staff (typically 1 – 2 staff in larger Ontario municipalities) would be required to administer tag distribution for PAYT programs.	H – VH PAYT has potential to both decrease waste generation and increase participation and performance of existing waste diversion programs. Some jurisdictions have observed dramatic performance increases using PAYT type programs.
Promotion of sustainable policies	Staff time to attend meetings, participate in working groups and advocate for sustainable waste management policies with other levels of government.	Diversion impact would likely be seen in the long term, dependent on policies and materials targeted.
Packaging bans, fees or levies	Staff time to advocate for bans and levies, and administer and enforce program.	Potential for substantial diversion of targeted / problem materials such as plastic film.

4.3.3 Estimated Impacts of Multi-Residential Waste Diversion Options

Halton's multi-residential households divert an estimated 19% of their waste from landfill through the Region's Blue Box Program. Compared to other municipalities, this is considered a relatively high level of multi-residential diversion.

While the shortlist of potential waste diversion options for multi-residential households in Halton is presented in Section 4.2.5, this section is structured in a manner that assumes that the employment of a number of strategies in combination will be required to improve diversion levels in multi-residential units. In this respect, the potential for increased diversion per unit could be significant recognizing the reduced impact over the entire waste stream since multi-residential residents currently generate only 6% of the Region's waste stream.

There are a number of ways to establish the potential diversion rate increase for multi-residential residences in Halton. Research suggests, for instance, that 30% is a reasonable and ultimately achievable target diversion rate for Blue Box materials from multi-residential households. This target has been proclaimed in a number of studies such as Toronto's Tower Renewal Project and Toronto Community Housing. For Halton multi-residential households, which as noted previously is already diverting 19% through the Blue Box program, this 11% increase would roughly amount to less than 1% of the total waste stream, but can be expected to increase over time with housing intensification resulting in proportional increase of multi-family residences.



To estimate potential diversion rates for the multi-residential waste stream, a scenario approach was used as part of the Mayor's Tower Renewal Feasibility Study conducted for the City of Toronto. Scenarios depicting low to high recovery rates for multi-residential residences were generated based on waste audit data for the City of Toronto. A similar approach is taken here, and incorporates organics and other divertible materials in the waste stream.

Waste Diversion Scenarios

Halton's multi-residential waste audit data for 2007 would suggest that Blue Box recovery, namely the capture of Blue Box material relative to how much is available, is almost 60%. Three multi-residential waste diversion scenarios are presented in Table 4-4. Scenario 1 below assumes a 60% starting point for recyclables capture, coupled with a relatively low GreenCart capture rate of 25% and a 60% capture rate for programs subject to stewardship plans, namely electronics and MHSW. Scenario 2 assumes an increase in organics capture from 25% to 40% with all other capture rates remaining the same and Scenario 3 assumes improvement in both Blue Box and stewardship plan capture rates with both increasing to 70% capture rate and GreenCart remaining at 40% capture rate.

In general, based on three scenarios, achieving these preset targets has the potential to increase diversion as a portion of the entire waste stream in the high diversion range (exceeds 2%) but as the proportion multi-residential units continues to increase within the housing stock this figure will continue to increase. It is assumed that any number of the proposed strategies would be considered in order to achieve these levels.

The related cost is considered high as well, with collection and cart costs being the major components for the GreenCart program.

Table 4-4 Multi-Residential Waste Diversion Scenarios

Scenario	Material Category	Multi-Residential kg	Target Recovery %	Target Recovery kg	Regional Waste Diversion Impact %
1	Blue Box	172	60%	103	0.7%
	GreenCart	165	25%	41	
	Electronics/MHSW	11	60%	7	
2	Blue Box	172	60%	103	1.0%
	GreenCart	165	40%	66	
	Electronics/MHSW	11	60%	7	
3	Blue Box	172	70%	120	1.3%
	GreenCart	165	40%	66	
	Electronics/MHSW	11	70%	8	

4.4 Strategies for Reaching Diversion Goals

The Short List of waste diversion strategies has been separated into a list of options to which waste diversion potential and costs can be attributed, and a list of supporting policies and activities. It is important to note that the implementation of these waste diversion options is likely to occur over several years, with some options requiring substantial lead time for public notification, planning and preparation.

The options in **Error! Reference source not found.** have an associated diversion potential and cost. The reality is that each option has a range of diversion potential and cost depending on the complexity and success of implementation. The information presented in this table adheres to one of the guiding principles of this study, namely the selection of strategies that can feasibly be implemented to increase diversion. For example, PAYT and Sustainable Financing options can be implemented in a number of ways from a very basic bag tag approach to a high-cost, high capital cart system, and the impact on diversion may not differ all that much between the two. In this case the strategy reflects the costs of the low cost (more feasible) option.

Diversion options are listed in order of diversion impact from greatest to least. The table shows the diversion and cost impacts of individual strategies, as well as the cumulative diversion impacts of the strategies counting up from the 2010 baseline diversion rate.

For the purposes of this report, the baseline level of waste diversion has been taken as 57.4%, which was Halton Region’s overall waste diversion rate as reported in the 2010 Tonnage Report. Cost impacts are reported on the basis of 2010 property current value assessment (CVA) as cost per \$100,000 CVA.

Waste diversion potential and costs were assigned for the following eleven strategies:

1. PAYT and Sustainable Financing

A partial user-pay strategy consisting of a container or bag limit and bag tags for additional garbage. Bags in excess of the limit would be picked up only if tagged. PAYT systems result in some source reduction and the diversion of additional material through the Blue Box and GreenCart programs. The program would be managed by two Region FTEs and tags would be made available for purchase through the Region and possibly other locations. Costs would



include staff, implementation and the cost of managing additional Blue Box and GreenCart material.

2. Enhanced Promotion, Education and Outreach

Build on current promotion, education and outreach successes with increased effort and communications targeted at specific issues. Further community engagement through workshops, event hosting and display opportunities. Two FTE and a budget for materials and events are required and will be phased in over the next five years.

Halton offers a comprehensive outreach program to schools, community groups, apartment buildings and businesses. In the 2009-2010 school years, Halton provided 231 educational workshops in 87 schools to 35,963 students. Since 2006, Halton has delivered 912 workshops to 99,856 individuals. Tours of the Halton Waste Management Site, student conducted waste audits and participation in community events such as the Halton Eco Festival, Earth Day events, Children's Water Festival, Fall Fairs, etc. complement the workshops. Waste Management receives more requests than we are able to fill; therefore, another FTE is required to meet the steadily increasing demand to deliver this popular service.

Further promotion and education initiatives that are proposed as part of the Strategy include utilizing social media tools such as Twitter and Facebook, developing a Wasteless campaign, developing more multi-media tools such as videos for the Halton website, a Diversity Communications Strategy to develop tools to reach diverse communities. A Diversity Communications Strategy will support Halton's strategic goal of strengthening equitable access to programs and services.

3. Expand Blue Box Materials and Review / Enhance Blue Box Capacity



Expand the list of eligible Blue Box materials to include empty aerosol cans, empty paint cans, and other bottles and containers (#3, 5, and 7 plastics). In conjunction with material expansion, a capacity audit would be conducted to determine if additional household Blue Box capacity were warranted. Costs would include additional collection / transfer / processing costs, a budget for a Blue Box capacity audit and the purchase and delivery of additional Blue Boxes and GreenCarts to residents to accommodate the increased amount of material. This option should be coordinated with PAYT program implementation such that the degree to which PAYT policies drive additional materials to Blue Box and Green Cart programs would be accommodated by available Blue Box and Green Cart capacity at the household.

4. Curbside Construction and Demolition (C&D) Waste Collection

Collection of small quantities of C&D materials (carpet, drywall, wood waste) from residents on a call-in basis to capture material in addition to what is currently dropped off at the Halton Waste Management Site Container Station. An estimated 2,500 tonnes of C&D materials are disposed of in the residential garbage stream every year in Halton. The C&D collection and processing services would be contracted out.

5. Multi-Residential Waste Diversion Enhancement in Existing Buildings

A variety of approaches could be used as part of this strategy, as outlined in Appendix C. An essential element of this strategy would be the implementation of the GreenCart throughout the Region's multi-residential buildings. Other options could include the development of a multi-residential building database, community animators and tenant / landlord recycling pledges. Costs would include GreenCart capital and operation, as well as budget specifically for one FTE and materials to implement a variety of multi-residential diversion options. Assuming recovery of 60% Blue Box, 40% GreenCart and 60% MHSW and WEEE, Regional diversion could increase by 1%.

6. Community Recycling Centre

At an existing Regional property, Halton would develop a multi-purpose drop off centre to relieve current pressures at the HWMS and to increase local options to drop off material for recycling or proper disposal. This option assumes that a single Community Recycling Centre would be constructed at a cost of \$5 million with an annual operating budget of \$1 million.

7. Public Space Diversion and Recycling

The Region would work with local municipalities to install recycling containers in high traffic areas, especially where evidence of container use is pronounced. Public space includes outdoor parks, trails and public facilities. The annual budget allocation would allow for the implementation of a few key locations initially to pilot the program with more locations being phased-in each year.

8. Enhanced Textile Communications Plan

A number of charities in Halton divert material from landfill by accepting donations of clothing and textiles, as listed on the Halton Region Waste Management website and collection calendars. Enhancing promotion of these existing textile diversion options would enable the Region to divert additional textiles from the over 3,500 tonnes per year remaining in the garbage stream. The cost of additional promotion and education for textile diversion is incorporated into Enhanced Promotion, Education and Outreach budget.

9. Mobile Collection for HHW

Mobile HHW collection offers an option in addition to the HHW Depot at the Halton Waste Management Site and retail drop-off sites within the Region, creating opportunities for residents to safely dispose of HHW and increase convenience. This diverts toxic materials from landfill and reduces opportunities for toxic materials, either at the landfill or during garbage collection, to escape into the natural environment. Small quantities of HHW materials would be collected on a call-in basis and brought to the HHW depot for processing. Residents would be required to book a pick-up date by telephone for a minimum quantity of HHW, and materials would be collected by a dedicated crew in an MOE approved vehicle. The mobile collection program would require two FTEs and a dedicated MOE approved collection vehicle.

10. Expanded Special Waste Drop-Off Day Events

Household hazardous waste (HHW) and waste electronics (WEEE) would be collected at Special Waste Drop-Off Day events across the Region. In addition to diverting potentially toxic materials from landfill, these events would offer an opportunity for waste management staff to interact with the public, promote waste diversion programs and educate residents. Two additional annual Special Waste Drop-Off Days could increase convenience and divert additional HHW and WEEE.

11. Waste Exchange Programs

An online waste exchange site would allow residents to list items for giveaway, trade or sale. The Region could establish an online waste exchange program enabling residents to donate and exchange a variety of reusable goods. Costs would be minimal and include website development, administration and maintenance.

The remaining strategies on the Short List were characterized as supporting policies and activities. Some are already being implemented by the Region, such as special event diversion / recycling and service harmonization. Others are policy directions for which it is difficult to estimate diversion impacts, or for which costs would come largely from within existing budget allocations.

- Promote “Waste Less” principles and policies
- Expand curbside and landfill / disposal bans
- Mandatory recycling or source-separation by-laws
- Promotion of sustainable policies
- Harmonization of services, policies and by-laws
- Reduced tipping fees for diverted materials at the landfill
- Special event diversion and recycling

- Packaging bans, fees or levies
- Extended hours at the HWMS

Table 4-5 Waste Diversion Strategy Options for Halton Region

Strategy	Diversion (%)		Annual Cost Impact (per \$100,000 CVA)
	Impact	Cumulative	
	2010 Baseline Diversion Rate: 57.4%		
PAYT and Sustainable Financing	3.0%	60.4%	\$1.03
Enhanced Promotion, Education and Outreach	3.0%	63.4%	\$0.58
Expand Blue Box Materials and Review / Enhance Blue Box Capacity	1.6%	65.0%	\$0.44
Curbside C&D Waste Collection	1.2%	66.2%	\$0.34
Community Recycling Centre	1.1%	67.3%	\$1.72
Multi-Residential Waste Diversion Enhancement in Existing Buildings	1.0%	68.3%	\$0.67
Enhanced Textile Communications Plan	0.5%	68.8%	\$0.00
Public Space Diversion and Recycling	0.4%	69.2%	\$2.23
Mobile Collection for HHW	0.4%	69.6%	\$0.20
Expanded HHW Events	0.3%	69.9%	\$0.04
Waste Exchange Programs	<0.1%	70.0%	\$0.01
TOTAL	12.6%	70.0%	\$7.26

5. Public Consultation

5.1 Report Preparation and Financial Review

In preparation for a broad public consultation, and working with the Halton Region Financial Planning and Budgets Division, costs for the separate components of the strategy were reviewed prior to presentation to Regional Council. In order to provide a perspective for anyone who wished to comment, costs were presented as an annual cost impact for every \$100,000 current value assessment (CVA). Following presentation to Council the proposed strategy was brought forward for consultation.

5.2 Consultation Approaches

In May and June of 2011 the resulting strategy was brought forward by Halton staff for a broader public engagement process that included four open houses, a phone survey and an online study. The open houses were conducted by Region of Halton staff and Ipsos-Reid executed both the phone and online survey components. 60 people signed in for the open house events, 800 randomly selected residents (200 in each of Burlington, Oakville, Milton and Halton) were interviewed by telephone, and 330 people completed the online survey.

5.2.1 Ipsos-Reid

Ipsos-Reid is one of the world's leading survey-based marketing research firms. Their business activities include brand development and building, market assessment and interpretation of market trends. On behalf of clients, Ipsos-Reid tests advertising and studies audience responses to various media. They are most well-known for measuring public opinion on a variety of topics. For Halton's Waste Management Strategy, Ipsos-Reid conducted a study with the following objectives:

- Overall satisfaction with Regional services
- Satisfaction with waste management services
- Awareness of and attitudes towards the Region's efforts at waste diversion
- Assessment of potential and enhanced waste management features
- Impact of increases in tax levies on support for waste diversion, and
- An assessment of how residents would like to be informed about the Region's activities related to waste management and diversion.

Data for the survey was collected via two methods – a telephone survey and an online survey.

5.2.1.1 Telephone Survey

For the telephone survey, Ipsos-Reid interviewed a total of 800 randomly selected residents of Halton Region, divided evenly between Burlington, Oakville, Milton and Halton Hills (200 each). Residents were 18 years of age and older. Statistical weighting procedures were used to ensure that the final sample accurately reflects the overall population of the Region according to municipality, gender and age. The interviews, which took approximately seven minutes to administer over the phone, were conducted between May 30th and June 7th, 2011. The margin of error for the overall sample of 800 residents is +/- 3.5 percentage points, nineteen times out of twenty and +/- 6.9 percentage points, nineteen times out of twenty for the individual samples of 200 residents.

5.2.1.2 Online Survey

The online survey, accessed through a link posted on the Region's website, was available from May 30th to June 30th, 2011. The survey was publicized in local newspapers and Wasteless News and made available at a series of waste management sessions hosted by the Region, making it available to anyone. There was no mechanism in place to prevent respondents from completing the survey multiple times or to monitor completions. In all, 330 respondents completed the online survey. Unlike the telephone survey,

the respondents to the online survey are not randomly selected, but are self-selected. As such, the results of this group reflect the specific views of this group rather than all the residents of Halton.

5.2.2 Open House events

In order to directly gather public opinion, the Region held four Open House events, one each in Burlington, Halton Hills, Milton, and Oakville. The events were held on Saturdays between 10am and 1pm at community centres in late May and June, 2011. On two days, the weather was warm and sunny while the others were overcast. At each event, there were at least one or more members of Regional Council and several staff members. There was no media presence at any event location.

Staff had a registration table, which they tried to locate in the lobby where possible. One or two computers were available to allow residents to complete the online survey. As well, paper copies of the survey were available for those without internet access. Resident participation ranged from six to twenty-six who signed in. Over 100 flyers were handed out in Oakville to passersby from other programming at the community centre. At the other three locations, there were no or very few other people around.

5.2.3 Comments

In addition to telephone and online surveying done by Ipsos-Reid and the Open House events, Region staff also received a number of comments either by telephone or via email. Many were generated in response to receiving a copy of "WasteLess News" in the mail. Some people emailed rather than complete the online survey. Several residents indicated that they could not attend the Open House in their area but that they had a comment that they wanted to make sure was included. Other people had written a letter to a local paper and also sent a copy to Region staff.

5.3 Key Findings and Input

5.3.1 Ipsos-Reid

In analysing the results of the telephone survey and the online survey, Halton residents expressed very high levels of satisfaction with municipal services, including specifically the waste management services offered to them by the Region. There was broad agreement that the current waste collection calendar is useful. While the majority of residents continue to prefer a paper-based calendar, younger residents were interested in something in an electronic format.

While awareness of the Region's 60% diversion goal is not high, it was considerable higher among those who self-selected and completed the online survey. Even lower was awareness of the Draft Solid Waste Management Strategy, although online respondents were again more aware than those reached by telephone. When considering a diversion target of 70%, telephone respondents were substantially in support (online respondents were in favour, but less acutely so). However, the level of support for this target decreased substantially when residents were informed of the magnitude of the tax levy required to support this initiative (\$7.26 for every \$100,000 of assessed value). Rather, residents were more supportive of a 65% diversion target coupled with a more modest tax levy (\$2.06 for every \$100,000 of assessed value).

Aside from their lack of knowledge of the Region's specific target, residents appear to have a good understanding of the rationale behind increasing waste diversion targets. When asked to cite why this is an important activity, most mentioned reasons associated with reducing waste, saving landfill space or increasing the life of the landfill, and promoting recycling. Of the few residents opposed to increasing waste diversion targets, cost was mentioned most often.

Residents were asked to provide their support or opposition to the seventeen features or attributes considered for inclusion in the Draft Solid Waste Management Strategy. There was the substantial support for all but one option. The strongest support was for the following features or attributes:

- Enhancing promotion, education and outreach on waste diversion
- Enhancing waste diversion in multi-unit dwellings
- Promoting the reuse of textiles and clothing
- Mobile collection of hazardous waste for those unable to access a drop-off facility
- Expanding the number of Special Waste Drop-off Days
- An online exchange program for residents to donate or exchange reusable goods
- Expanding materials acceptable for the Blue Box
- Recycling in public parks and recreation centres
- Developing additional permanent drop-off centres in Halton
- Developing a campaign to promote WasteLess and zero waste concepts
- Providing larger Blue Boxes
- Curbside collection and recycling of renovation waste and debris

There was strong support for four other options:

- Reducing tipping fees at Halton Waste Management Sites for recyclable and waste materials diverted from landfill
- Extending the current hours of operation for the Container Station at the Halton Waste Management Site
- Mandatory recycling and waste separation by-laws
- Banning certain materials from the garbage and landfill

Residents showed the strongest level of opposition to one option: the creation of a pay-as-you-throw system (PAYT). On this measure, residents were evenly split (49% support and 49% oppose). The majority (57%) of those in the online sample were opposed to PAYT.

5.3.2 Open House events

Residents were able to access four Open House sessions in various parts of Halton Region. Participation was for the most part limited to those who purposely attended the event. Response was generally positive towards the proposed Strategy, with most negative comments were related to PAYT and bag limits.

In Oakville where there were a large number of passersby, feedback on the Strategy was overall very positive and many people said they would complete the online survey at home. Specific comments included concerns about PAYT, especially among men, and the “nickel and diming” of taxpayers who are already paying for garbage disposal. Residents also expressed a desire for both an expansion to the material acceptable in their Blue Boxes and increased recycling in apartment buildings. PAYT and the collection of curbside construction and demolition were of special concern, while all respondents supported expanding the materials collected in the Blue Box and reviewing capacity, enhanced recycling in apartments, more waste drop-off days and enhanced communications regarding textiles.

At the Milton location, all attendees had purposely set out to do so. Most concerns were related to meeting reduced garbage bag limits. Since Milton is a growing community, many residents have new families where disposal of diaper waste is an issue. At the same time, there was support for more promotion of cloth diapers. There were also comments related to the tax implications of the Strategy and what residents would get in return for their additional tax dollars. Respondents were in support of all options with the exception of PAYT.

In Georgetown, residents who were there had come specifically for the Open House. Residents mentioned illegal dumping in rural areas and there were misconceptions that the proposed Community Recycling Centre would be like the old unstaffed igloo system. There were only two responses to the individual initiatives, all of which were supported except for PAYT.

As in Milton and Georgetown, the Burlington Open House did not have any passersby. Overall response was quite positive, with the negative comments related to PAYT, illegal dumping and the implications for families with babies. Some residents suggested that additional plastics, particularly Styrofoam, need to be added to the Blue Box program. People also asked that the Region undertake a more active role in convincing retailers to stop carrying non-recyclable and non-compostable packaging.

5.3.3 Comments

Comments were received by Region staff via email, telephone and through letters to local media outlets. Most comments were positive and commended Region staff and contractors for the way the current program is managed. The recommended initiatives in the draft Strategy specifically referenced were enhancing promotion and education, implementing recycling and GreenCart programs in apartment buildings and expanding what materials are accepted in the Blue Box to include plastics and even textiles. Some residents provided suggestions on how to improve the current program, such as a deposit system for plant pots or picking up material on one side of the road for collection efficiency.

Residents did not support the PAYT program, many calling it a “tax grab” for garbage that is already included in their property taxes. Additionally, people noted that charging more for garbage would increase illegal dumping or contamination of Blue Box materials (put garbage in the recycling rather than pay for another bag).

6. Strategy Implementation

Given the principal objective of identifying approaches that will feasibly increase the level of waste diversion above the Region's current 57.4%, the strategies listed in Table 4.5, Waste Diversion Strategy Options for Halton Region were reviewed with this in mind. A key concept in the objective is the notion of feasibility, and indeed the consultation associated with the draft report indicated that strong support for the 70% diversion target dropped once the collective cost of the strategy was shared. Given recent economic uncertainties, the public, Regional staff and Regional Council were cautious about incurring new costs to be assumed by Regional ratepayers.

Also taken into consideration were comments received throughout the process. The result was a re-ordering of the strategies to provide the Region with an incremental approach: the first goal will be to reach the "next level" of waste diversion at 65% within the next five years. The region will then pursue 70% diversion in the following five years. The strategies selected for implementation in the first five years are considered to be the most feasible, as they are both low-cost but effective strategies. Those strategies that follow in the second five year period as Future Considerations currently require a higher cost to achieve additional diversion, and are best considered when the impact of the first implementation is known.

6.1 Phased Implementation Approach

If implemented, the first five year increment is expected to take Halton Region to the 65% waste diversion level. The total cost for these strategies is estimated to be \$2.47 per every \$100,000 property current value assessment (CVA).

The Future Considerations consists of five additional strategies that are expected to bring the Region up to 70%. The total cost for these strategies is estimated to be \$4.79 per every \$100,000 property current value assessment (CVA).

6.2 Getting to 65% and beyond in 5 Years

The following strategies are recommended for implementation in the next five years. Strategy details are found in Section 4.4 of this report. Rationale for selection, and implementation considerations, are discussed below and Section 6.3:

1. Bag Limits and Partial User Pay

This strategy assumes that the current garbage container or bag limit of 6 every other week is reduced, and that bag tags are required for additional garbage above the limit placed at the curb. When the cost for the strategy was calculated, the price for a bag tag was assumed to be \$1. The implementation of a partial system of this type, as opposed to a full user pay system, is consistent with some of the comments received during the consultation. This approach rewards households who are already doing a good job of participating in the diversion programs as they are unlikely to require bag tags, while at the same time providing incentives for others to divert more.

Halton staff have performed curbside garbage bag set-out counts and it is apparent that the average household in the Region is in a position to easily cope with a three bag limit. Bag tag revenues can be adjusted over time so that people who continue to exceed the bag limit receive stronger encouragement to use diversion programs.

To be successful, implementation should be supported by a comprehensive public education campaign, which was factored into the implementation costs. Initially it would be expected that there will be some complaints and concerns expressed about the new system, and in fact public dialogue early in the process would be a sign that the communications program is reaching people. The focus is to help people and households manage the change: tell them how to stay under the bag limit by using programs that are already available to them, and share recycling and

waste reduction strategies. Many municipalities have successfully implemented bag tags and bag limits, or combinations of both, and their approaches are available as examples of how to promote the change. In surveys done for other projects by GENIVAR where on-line respondents were asked what length of lead time is required by their household when garbage collection and recycling program changes are being implemented, most people responded that a month was sufficient. For this policy change, however, we think it best that a minimum three-month lead-in be considered, and that the change be reinforced a number of times during this period using a mixed-media approach.

Costs for this strategy include staff to administer, co-ordinate and monitor the program, communication material, and a shift of material from the garbage to the Blue Box and GreenCart since the cost of collection and processing of Blue Box and GreenCart material is higher than landfill disposal. Implementation for the strategy, assuming budget approval, is recommended for the spring of 2013.

2. Enhanced Promotion, Education and Outreach



The cost for this strategy included the addition of another full-time staff member. Further promotion and education initiatives that are proposed as part of the Strategy include utilizing social media tools such as Twitter and Facebook, developing a Wasteless campaign, developing more multi-media tools such as videos for the Halton website, a Diversity Communications Strategy to develop tools to reach diverse communities.

A Communications Strategy will support Halton's strategic goal, and in particular may be useful in closing the gap identified in the consultation program. Specifically, the telephone survey suggests that the awareness of waste diversion goals is not high. In addition to strengthening equitable access to programs and services, and stressing the role of these services as a means of meeting the bag limit, it is considered important that people are made aware of the strategy, its goals and the transparent and public process used to develop the strategy.

3. Expand Blue Box Materials and Review / Enhance Blue Box Capacity

A strategy to expand the list of eligible Blue Box materials to include empty aerosol cans, empty paint cans, and other bottles and containers (# 3, 5, 7 plastics) is to be considered at a strategic time in the first five years, namely at the time when the existing recycling processing contract comes to an end.

The current agreement is structured such that addition of the materials would increase the processing cost per tonne for all materials processed, and not just the new materials. This makes immediate addition cost-prohibitive. Research, including an examination of the WDO municipal categories, indicate that some comparable municipalities collect and process the added materials yet their collection and processing costs per tonne are similar to or less than those in Halton. This suggests that when the next contract opportunity arrives, the Region can include the added materials to the scope with the expectation to include these materials in the recycling program at reasonable and competitive prices.

In conjunction with both material expansion and the implementation of bag limits and/or user pay, it is critical to success to ensure that the Blue Box program has the capacity to accept additional volumes. A capacity audit can help to determine if additional household Blue Box capacity is needed, and the process is relatively straight forward. Depending on the result of the audit it may be necessary to purchase and deliver additional Blue Boxes and GreenCarts to residents to accommodate the increased amount of material.

This type of curbside audit can be supported by ongoing staff and contractor observations: simply put, if it appears that the majority of Blue Boxes are full to spilling over, this may be a sign that more are required to accommodate participation. By providing the Blue Boxes, Halton removes a barrier presented when people are required to purchase their own, and also takes direct control for the success of their diversion policies and the performance of their program. The requirement for individuals to provide their own solutions, while avoiding the cost associated with the purchase

and storage of Blue Boxes, can result in the use of home-made solutions that may not be compatible with collection (loose material, boxes in sizes that slow down collectors or present ergonomic issues) or processing (bags). Other residents may not bother trying to capture overflow materials and place these in the garbage, undermining diversion efforts.

4. Multi-Residential Waste Diversion Enhancement in Existing Buildings

This strategy assumes that Halton Region will dedicate time and effort, specifically by budgeting for one staff position and materials, to promote and implement multi-residential diversion options. A variety of approaches could be used as part of this strategy, as outlined in Appendix C. An essential element of this strategy would be the implementation of the GreenCart throughout the Region's multi-residential buildings. Other options could include the development of a multi-residential building database, community animators and tenant / landlord recycling pledges.

Multi-residential recycling tends to be more complex than curbside recycling, especially in existing buildings where waste diversion was not considered at the design stage. It is very common for municipalities with a significant number of multi-residential units to dedicate the efforts of an individual in order to implement and maintain the program. The most significant difference between curbside and multi-residential recycling is that, unlike curbside, a multi-residential resident is dependent on his or her property manager to facilitate the service. The nature of the physical structure, the difference in convenience (garbage chutes versus central recycling and GreenCart), truck access issues, requirements for signage, and the varying degree to which building staff are able to support recycling and GreenCart activities, all present challenges to the user and for this reason waste diversion rates are usually lower in multi-residential settings than in curbside programs.

5. Enhanced Textile Communications Plan

The cost of additional promotion and education for textile diversion is incorporated into Enhanced Promotion, Education and Outreach budget. This strategy supports a number of charities in Halton that divert material from landfill by accepting donations of clothing and textiles, as listed on the Halton Region Waste Management website and collection calendars. It is felt that these existing textile diversion options could divert an additional 3,500 tonnes per year.

This strategy can be implemented in concurrence with Strategy 2: Enhanced Promotion, Education and Outreach.

6. Expanded Special Waste Drop-Off Day Events

Two additional annual Special Waste Drop-Off Days are contemplated as part of this strategy, with an annual cost of over \$33,000. While diversion potential measured in tonnes is low, the diversion of special wastes is designed to protect groundwater resources and minimize leachate treatment requirements at the landfill. When compared to the parallel strategy of providing mobile collection, diversion expectations are similar but the cost impact is considerably lower for this event-based strategy.

Table 6-1 Waste Diversion Strategy Implementation for Halton Region

Strategy	Diversion (%)				Annual Cost Impact (per \$100,000 CVA)
	Impact		Cumulative		
	(%)	(tonnes)	(%)	(tonnes)	
2010 Baseline Diversion Rate: 57.4% or 122,408 tonnes					
For Implementation from 2012 through 2016					
PAYT and Sustainable Financing	3.0%	6,398	60.4%	128,806	\$1.03
Enhanced Promotion, Education and Outreach	1.5%	3,199	61.9%	132,005	\$0.29
Expand Blue Box Materials and Review / Enhance Blue Box Capacity	1.6%	3,412	63.5%	135,417	\$0.44
Multi-Residential Waste Diversion Enhancement in Existing Buildings	1.0%	2,133	64.5%	137,549	\$0.67
Enhanced Textile Communications Plan	0.5%	1,066	65.0%	138,616	\$0.00
Expanded HHW Events	0.3%	640	65.3%	139,256	\$0.04
<i>Subtotal for 2012 to 2016</i>	7.9%	16,847	65.3%	139,256	\$2.47
OVERALL TOTAL	7.9%		65.3%		\$2.47

Appendix A

Waste Audit Data

Waste Audit Data Sources

In the past, Stewardship Ontario has completed a series of residential municipal solid waste audits in single family and multi-family households as part of its monitoring and fee setting requirements. Since 2005, Stewardship Ontario has been conducting comprehensive waste audits in different communities throughout Ontario, providing a representative sample of geographic, size and urban/rural community characteristics in Ontario. The waste audit program has targeted both the single family residential sector as well as the multi-family residential sector.

In 2007, Stewardship Ontario completed waste audits in Halton Region as part of its Waste Audit Program. As well, Halton Region completed four seasonal waste audits for the single-family households in 2009 to measure the impacts of the new collection programs that were implemented in 2008. The four season audits were completed for both single-family and multi-residential households in the Region, sorting materials into 89 categories. Each seasonal single-family audit was conducted over a 2-week period on a representative sample of 100 households, with 10 homes in each of 10 sample areas. Each seasonal multi-residential audit was conducted over a 2-week period on a representative sample of 10 multi-residential complexes. Stewardship Ontario does not measure yard waste set out as part of its waste audit methodology.

The methodology prescribed by Stewardship Ontario for the 2007 audits excluded the measurement of large and bulky waste items, such as electronics, furniture, mattresses, and carpets that would be set out at the curb and collected as part of the Region bulky waste collection service. Since Halton is achieving high residential diversion rates, one of the challenges of this study is the identification of new diversion opportunities in an already high-performing system. Bulk waste and durable goods have been identified as offering significant diversion opportunities.

Halton Region Single-Family 2009 Waste Audit Analysis

Material Category	% of Garbage Stream (%)	Audit (kg / household / year)	Region (Metric Tonne / year)
FIBRES			
Paper	6%	18.0	2518.2
Boxboard	2%	6.4	902.3
Cardboard	1%	1.8	254.9
Kraft Paper	0.5%	1.5	210.9
Total Fibres	10%	27.8	3,886.21
CONTAINERS			
Plastic (1,2,5)	1%	3.9	541.3
Metal	1%	3.1	430.7
Glass	1%	1.8	253.9
Aseptic	0%	0.4	61.8
Gable Top	0%	0.3	42.3
Total Containers	3%	9.7	1,329.93
ORGANICS			
Food	19%	55.2	7727.3
Tissue	4%	11.9	1672.5
Paper packaging	0.5%	1.5	213.9
Molded Pulp	0.2%	0.5	71.5
Total Organics	23%	65.4	9,685.13
LEAF & YARD			
Total Leaf & Yard	3%	7.9	1,100.10
HHW			
Total HHW	1%	3.2	454.7
TRUE GARBAGE			
Other Waste	5%	14.1	1980.4
Diapers and Sanitary	8%	21.8	3051.6
Pet waste	9%	25.9	3630.8
Construction	7%	19.8	2772.2
Durable Plastic Products	5%	14.2	1987.7
Textiles	7%	19.4	2712.2
Plastic Bags	3%	9.5	1334.9
Other Metals	3%	7.2	1010.0
Other Plastic Bags	2%	5.4	760.0
Carpeting	1%	3.6	508.4
Non-package plastic bags	2%	4.4	617.0
Rigid Plastic	2%	5.0	699.4
Other Glass	1%	3.2	454.6
Polystyrene Packaging	1%	3.5	489.2
Other Electronics	1%	2.7	372.3
Laminated Paper	1%	2.4	338.0
Large Bulky Items	1%	2.4	335.2
Ceramics	1%	2.4	336.5
PET Other Packaging	0.3%	0.9	132.3
Steel Aerosol Cans	0.3%	0.8	111.4
Composite Cans	0.2%	0.5	63.1
Computer/ IT	0.1%	0.2	27.7
Tires/Rubber	0.2%	0.7	98.5
Other Bottles and Jars	0.1%	0.4	57.1
Telecom Equipment	0.09%	0.3	36.7
Bag in Box liners	0.01%	0.0	5.8
TV & Audio	0.14%	0.4	56.7
Total True Garbage	60%	171.28	23,979.47
TOTAL WEIGHT OF GARBAGE	100%	285.27	40,435.53

Source: 2009 Waste Audits completed by Halton Region, 2009

Halton Region Multi-Family 2007 Waste Sort Results

Material Category	Materials Accepted	Garbage Mean (kg/household/year)	Recycling Mean (kg/household/year)	All Waste Mean (kg/household/year)
1. PAPER				
Newspaper – Dailys and Weeklys	X	5.48	23.89	29.37
Newspaper - Other	X	9.05	15.94	24.99
Telephone Books / Directories	X	1.46	1.16	2.62
Magazines & Catalogues	X	5.76	6.27	12.03
Mixed Fine Paper	X	7.57	3.88	11.45
Books	X	1.71	1.22	2.93
Other Paper		0.43	0.08	0.51
Total Paper		31.46	52.43	83.89
2. PAPER PACKAGING				
Corrugated Wine Bag in Box	X	0.06	0.08	0.13
Other Corrugated	X	7.53	13.54	21.08
Corrugated Total		7.59	13.62	21.21
Kraft Paper	X	2.27	0.38	2.64
Boxboard / Cores	X	10.06	6.70	16.76
Molded Pulp	X	0.87	0.26	1.13
Paper Cups and Paper Ice-Cream Containers		1.45	0.27	1.72
Laminated Paper Packaging		1.21	0.12	1.32
Composite Cans		0.60	0.10	0.71
Gable Top Cartons	X	1.22	1.05	2.26
Aseptic Alcohol Over 630 ml	X	0.01	0.05	0.06
Aseptic Alcohol 630 ml and Under	X	0.00	0.00	0.00
Aseptic Other Containers	X	0.29	0.09	0.38
Aseptic Containers Total		0.30	0.15	0.45
Tissue/Toweling		8.85	0.10	8.94
Total Paper Packaging		34.40	22.74	57.14
3. PLASTICS				
PET Beer Bottles Over 630 ml	X	0.01	0.00	0.01
PET Beer Bottles 630 ml and Under	X	0.01	0.00	0.01
PET Other Alcohol Bottles Over 630 ml	X	0.05	0.02	0.07
PET Other Alcohol Bottles Over 100 ml and Less Than or Equal to 630 ml	X	0.06	0.01	0.07
PET Other Alcohol Bottles 100 ml and Under	X	0.01	0.00	0.01
PET Other Beverage Bottles	X	3.05	3.06	6.12
PET Beverage Bottles Total		3.19	3.10	6.29
PET Other Bottles & Jars	X	0.97	0.48	1.45
PET Other Packaging		0.54	0.35	0.89
HDPE Beverage Bottles	X	0.21	0.27	0.48
HDPE Other Bottles & Jugs	X	1.64	1.23	2.88
PVC Bottles & Jars		0.07	0.08	0.15
Other Plastic Alcohol Containers 100 ml and Under		0.00	0.01	0.01
Other Bottles, Jars & Jugs		0.93	0.23	1.16
Other Plastic Containers Total		0.93	0.25	1.18
Polystyrene Packaging		1.99	0.47	2.46
Wide Mouth Tubs & Lids	X	0.89	0.53	1.43
Large HDPE & PP Pails & Lids	X	0.13	0.12	0.25
Polyethylene Plastic Bags & Film - Packaging		7.19	0.61	7.80
Polyethylene Plastic Bags & Film - Non-Packaging		2.84	0.17	3.01
Laminated Pouches & Bag in Box Liners for Alcohol		0.10	0.02	0.11
Laminated/Other Plastic Film and Bags		3.05	0.18	3.24
Laminated/Other Plastic Film and Bags Total		3.15	0.20	3.35
Other Rigid Plastic Packaging		2.75	0.48	3.23
Durable Plastic Products		4.94	0.80	5.74
Total Plastics		31.45	9.14	40.59
4. METALS				
Aluminum Alcoholic Beverage Cans Over 1 L	X	0.00	0.03	0.04
Aluminum Alcoholic Beverage Cans 1 L and Under	X	0.23	0.03	0.26
Aluminum Food & Other Beverage Cans	X	1.64	1.12	2.76
Aluminum Food & Beverage Cans Total		1.87	1.19	3.06
Aluminum Foil & Foil Trays	X	0.79	0.07	0.86
Other Aluminum Containers		0.11	0.04	0.15
Steel Alcoholic Beverage Cans Over 1 L	X	0.00	0.00	0.00
Steel Alcoholic Beverage Cans 1 L and Under	X	0.06	0.02	0.08
Steel Food & Other Beverage Cans	X	3.21	2.92	6.13
Steel Food & Beverage Cans Total		3.28	2.94	6.21
Steel Aerosol Cans		0.57	0.28	0.85
Steel Paint Cans		0.03	0.00	0.03

Other Metal		3.20	0.21	3.41
Total Metals		9.86	4.72	14.58
5. GLASS				
Clear Glass Beer Over 630 ml	X	0.03	0.00	0.03
Clear Glass Beer 630 ml and Under	X	0.10	0.01	0.11
Clear Glass Other Alcohol Over 630 ml	X	0.61	0.55	1.16
Clear Glass Other Alcohol Over 100 ml and Less Than or Equal to 630 ml	X	0.20	0.27	0.47
Clear Glass Other Alcohol 100 ml and Under	X	0.02	0.02	0.03
Clear Glass Alcohol Beverage Total		0.95	0.85	1.81
Coloured Glass Beer Over 630 ml	X	0.05	0.00	0.05
Coloured Glass Beer 630 ml and Under	X	0.17	0.40	0.57
Coloured Glass Other Alcohol Over 630 ml	X	0.50	1.00	1.50
Coloured Glass Other Alcohol Over 100 ml and Less Than or Equal to 630 ml	X	0.06	0.08	0.14
Coloured Glass Other Alcohol 100 ml and Under	X	0.00	0.07	0.07
Coloured Glass Alcohol Beverage Total		0.79	1.54	2.33
Clear Glass Other Beverage and Food	X	3.67	5.15	8.82
Coloured Glass Other Beverage and Food	X	0.38	0.87	1.25
Other Glass		2.43	1.20	3.63
Total Glass		8.22	9.61	17.84
6. HOUSEHOLD SPECIAL WASTE				
Batteries		0.20	0.01	0.21
Paint & Stain		1.09	0.02	1.11
Motor Oil		0.27	0.00	0.27
Other HSW liquids		0.67	0.02	0.69
Other HSW		0.96	0.02	0.98
Total HSW		3.19	0.07	3.26
7. ORGANICS				
Food Waste		153.94	1.07	155.01
Yard Waste		6.25	0.01	6.26
Pet waste		21.46	0.04	21.50
Total Organics		181.65	1.12	182.77
8. OTHER MATERIALS				
Diapers and Sanitary Products		17.93	0.08	18.01
Textiles		24.94	0.17	25.11
Carpeting		3.00	0.00	3.00
Construction & Renovation		15.88	0.25	16.14
Computer / IT Equipment		2.09	0.02	2.11
Telecom Equipment		0.18	0.00	0.18
TV & Audio Equipment		1.62	0.03	1.65
Small Kitchen Appliances		0.49	0.12	0.60
Other Electronics		2.76	0.11	2.87
Tires and Other Rubber		0.30	0.00	0.30
Ceramics		2.52	0.36	2.87
Furniture		0.25	0.00	0.25
Mattresses		0.00	0.00	0.00
Other Large Bulky Items		0.58	0.00	0.58
Other Waste		0.68	0.00	0.68
Total Other Materials		73.22	1.12	74.34
Grand Total		373.46	100.96	474.42

1. Audit results are based on garbage and recycling samples from 10 multi-residential complexes

2. Means for "garbage" and "recycling" streams were calculated using all samples collected. Similarly, standard deviations and confidence intervals for "garbage" and "recycling" streams are based on all samples collected. Means for the combined "all waste" are the sum of garbage and recycling stream means (they are not the statistical mean). Standard deviation and confidence intervals for "all waste" are based on all samples collected from areas with complete data sets.

Appendix B

Halton 2010 Tonnage Report

**Regional Municipality of Halton
Waste Diversion Report (tonnes)
2010 & 2005**

GENERATOR TYPE	TOTAL 2010	TOTAL 2005
Diversion Programs		
Recycling/Reuse:		
Residential Blue Box/Tote Recycling	42,996	40,396
Multi-Unit Blue Bin	4,498	-
Container Station: Mixed Containers	39	105
Container Station: Paper	267	339
Container Station: OCC	395	476
Container Station: Polystyrene	-	-
Container Station: Foam	-	72
Container Station: Cork	0.38	-
Container Station: Drywall	795	801
Container Station: Wood	4,224	3,178
Container Station: Scrap Metal	1,121	1,352
Container Station: CFC-Scrap Metal	73	89
Container Station: Bikes	1.32	4
Container Station: Eye Glasses	0.04	0
Container Station: Printer Cartridges	0.00	0
Container Station: Cell Phones	-	0
Electronics (Container Station & Events)	581	84
Tires (Container Station & Events)	79	108
Metal/White Goods (Curbside)	448	830
Household Hazardous Waste Depot	860	821
Salvation Army	256	151
Reuse Centres	3,783	2,808
Sub-Total Recycling/Reuse	60,415	51,614
Diversion Programs		
Organic:		
Container Station: Yard Waste and Brush	792	709
Yard Waste (Curbside)	18,340	14,069
Christmas Trees	330	354
T-Vac (leaves)	7,546	6,589
GreenCart Organics	26,773	-
Container Station: Kitchen Organics	13	95
Grasscycling	4002	4,552
Backyard Composting	4219	6,954
Sub-Total Organic	62,051	33,322
Total Diverted Material	122,467	84,936
Waste Landfilled		
Residential Garbage	62,734	96,644
Multi-Unit Front End Garbage	9,916	4,281
Front End Garbage Collected - Schools	2,841	-
Container Station: Garbage	8,486	10,336
Residential Tipping Face Waste	528	880
Recycling & Organics Transfer Residual Waste	461	-
Organics Processing Residual Waste	1,324	-
Recycling Processing Residual Waste	4,534	2,076
Total Waste Landfilled	90,824	114,217
Total Material Collected	213,291	199,153
Diversion Rate	57.4%	42.6%

Appendix C

Long List of Waste Diversion Options

Table C-1 Long List of Waste Diversion Options

Strategy Category	Strategy No	Option Name and Description
Regional Goals, Targets and Advocacy	1	Adopt annual per household disposal rate target (kg) A goal to reduce annual waste disposal to an annual kg/capita rate. For example Nova Scotia has set a goal of 300 kg/capita disposed.
	2	Promotion of Sustainable policies Region works with other government agencies (Federal, Provincial agencies) to promote sustainable policies and programs (e.g. target durable goods for EPR including C&D waste, textiles, furniture, carpets).
	3	Promote Zero Waste Principles and Policies The concept of zero waste involves reducing waste over time through a variety of policy instruments including EPR, green procurement, PAYT, etc.
	4	Adopt 4 Rs principle Refuse, Reduce, Reuse, Recycle - emphasize refuse.
Reduction/Reuse	5	Green Procurement/Sustainable Procurement Education Residents are educated about making decisions to promote sustainability and reduce waste. Examples: PreCycling Campaign (Halifax) and Shop Smart (San Francisco).
	6	Loan/Rebates for Xeriscaping "Dry" landscaping, or landscaping for efficient water use has a waste benefit since the types of plants used tend to be slower-growing, low maintenance (less trimming)
	7	Rebates (for mulching mowers) Promotes grasscycling by offering methods to easily manage grass left on the lawn.
	8	Packaging bans, fees (plastic bags) or levies Bans or levies on designated packaging, used by designated commercial establishments.
	9	Stores collect and recycle plastic bags Grocery stores required to set up in-store plastic bag recycling programs for customers.
	10	Goods Exchange Events: 'Mother of All yard sales' A day is identified by the municipality in which residents can place reusable items at the curb for use by other residents. Similar to a yard sale but no money is involved in the transaction. Also called 'Swap Days', 'Mother of All Yard Sales', etc.
	11	Waste Exchange Programs (e.g. reuse centres, on-line business directories, computer exchange programs) Region establishes waste exchange program ranging from reuse centres to on-line waste exchange programs enabling residents to donate and exchange reusable goods. Common for reuse centre to be established at landfill or CRC.
Collection Services	12	Capacity review/enhancement (Blue Boxes, nets, carts) Region undertakes review of household capacity to recycle, specifically whether more Blue Boxes or equivalents should be distributed.
	13	Community Recycling Centres (CRCs) Development at existing Regional properties of multi-purpose drop off centres. Purpose is to relieve current pressures at the HWMS and to increase local options to drop off material for recycling or proper disposal.
	14	Contract incentives/penalties (for recycling, organics, garbage contracts) Develop contract language and approaches that will reward desired performance or incentivize increased waste reduction, recycling and organics performance.
	15	Curbside C&D Waste Collection Residents would receive collection services for small quantities of C&D materials in a manner similar to bulk waste collection services.
	16	Curbside/mobile collection for MHSW / Electronics Adapt the current collection system to accommodate MHSW and electronics.
	17	Curbside scrap metal collection and recycling Curbside collection of scrap metal provided on regular basis to residents.

Table C-1 Long List of Waste Diversion Options

Strategy Category	Strategy No	Option Name and Description
	18	Curbside textile recovery Curbside collection of textiles provided on a regular basis to residents.
	19	Curbside wood waste collection and recycling Curbside collection of wood waste provided on a regular basis to residents.
	20	Curbside Pet Waste Composting Curbside collection of pet waste provided on a regular basis to residents.
	21	Durable goods collection and re-use centres Curbside collection of durable goods for reuse purposes provided on regular basis to residents.
	22	Expand the list of eligible Blue Box materials to include some or all of aerosol or paint cans, other bottles (plastics), LDPE/HDPE film, PS crystal.
	23	Expanded Household Hazardous Waste Events Residents are provided with more opportunities to divert their household hazardous waste (HHW) not captured by product stewardship programs, by increasing the number of HHW events provided in the community.
	24	Expanded Household Hazardous Waste Depot (Permanent Facility) Residents would drop off household hazardous wastes (HHW) not captured by product stewardship programs at a permanent depot at a convenient location. Some communities establish reuse areas to help reduce operating costs.
	25	Public space diversion and recycling Work with parks and recreation to install and collect recycling containers in high traffic areas, especially where evidence of container use is pronounced. Includes outdoor parks, trails, and public facilities.
	26	Special events diversion and recycling Region establishes policy or incentives for events coordinators and contractors to make recycling available at special events.
Policy Approaches	27	Clear Bag Residents are required to place all garbage in a clear bag that can be scrutinized by the collection crew and left behind if containing recyclable materials.
	28	Clear bags for excess garbage Residents are required to place any garbage beyond one bag, enforced as above.
	29	Reduced Container Limits for Garbage By-laws stipulate that residents may only set out a prescribed number/size of waste containers. No significant waste reduction until less than three bag limit imposed.
	30	Curbside Materials Bans Designated material is banned from being collected with garbage at the curbside. The collection crew has the authority to refuse to collect the garbage if containing banned materials. Commonly banned materials include electronic waste, recyclable materials, wood waste.
	31	Pay-as-you-throw and Sustainable Financing Strategies Financing strategies used to promote waste diversion including Full or Partial Bag Tag systems, variable and hybrid variable rates, pay by collection frequency, variable carts rates, weight-based garbage collection, possibly supported by RFID technology.
	32	Grass Ban/Grasscycling Grass is restricted from collection in the leaf and yard waste program or general garbage.
	33	Landfill/Disposal Bans Designated materials are prohibited from being disposed at the landfill or disposal facility.

Table C-1 Long List of Waste Diversion Options

Strategy Category	Strategy No	Option Name and Description
	34	Penalties to Residents Residents are financially penalized for poor performance or failure to participate in the recycling program.
	35	Variable/Differential Tipping Fees Differential tipping fees are applied to loads of waste containing designated recyclables and/or organic materials. Contaminated loads cost more to dispose.
	36	Harmonize services, policies, by-laws Region would continue to work towards harmonization of all waste related services, policies and by-laws to ensure that all residents receive equal service (e.g. grass ban, bulky brush collection).
	37	Mandatory Recycling or Source Separation By-laws By-laws stipulate that residents must source separate recyclable materials from the waste stream or prohibit them from discarding in the garbage. Residents would face materials left at curb or fines for non-compliance. Some include composting (e.g. San Francisco).
Support and Incentive Options	38	Customer Reward Programs Selected residents are rewarded by the municipality for participating in the recycling program using different approaches such as financial rewards, media recognition, award ceremony: Gold Box awarded for good "on the spot" curbside performance or for passing a quiz, both methods used to educate; cash for trash.
	39	Payback Savings/Rebates Residents who pledge to participate in the recycling program receive a rebate on their garbage bill or Revenues from recyclables and/or surpluses incurred from the operations of the waste management program are rebated back to the residents.
	40	RecycleBank A business that offers rewards to residential customers who participate in a community's curbside recycling program. Residents are rewarded with coupons that can be redeemed at participating stores. This is a variation on curbside recycling collection.
Public Engagement and Education	41	Increase or targeted (ie plastics) education and promotion efforts Education campaign targets problematic materials causing contamination in the Blue Box or not being captured.
	42	Master composter/recycler programs Citizens are trained to help educate neighbours about composting and/or recycling techniques.
	43	Neighbourhood challenges and/or competitions Friendly neighbourhood challenges are encouraged to determine best recycling community.
	44	Feedback Residents are given regular feedback on a specific activity, such as recycling or contamination of recycling bins.
	45	Outreach Communities use citizens and/or students to promote waste management initiatives by implementing block leader programs, master training programs, or canvassing. Outreach uses tools that directly engage the resident in an action to foster and maintain behaviour change. Related concepts include stakeholder involvement, student green teams.
	46	EPR Pamphlet Residents receive information from the Region explaining the various EPR programs available to them.
Back End	47	Mixed Waste Processing/ MBT (mechanical/biological treatment)/Stabilized Landfill Garbage is sorted at a specialized facility to further remove recyclables and the remaining residual is composted or digested anaerobically and then landfilled. Well established in Europe.

Table C-1 Long List of Waste Diversion Options

Strategy Category	Strategy No	Option Name and Description
Multi-Residential Recycling and Diversion Programs	MR 1	Animators/ambassadors/champions Development and implementation of a trained volunteer group who act as building ambassadors, experts and key contacts to promote recycling in buildings.
	MR 2	Build Multi-Residential Building Database Continue creating a database for use to manage and monitor MF solid waste programs.
	MR 3	Feedback to buildings The use of "barometers" and other graphic representations to tell residents how their building is doing in the area of recycling and waste diversion.
	MR 4	Garbage chute closure support Region would provide support to buildings opting to close garbage chutes to make recycling as convenient as waste disposal.
	MR 5	Enhancing Region's MR website Region would dedicate a section of the Waste Management website to MR waste management and diversion matters. Could include green rental information, waste diversion handbook for superintendents, waste diversion tips, case studies, etc.
	MR 6	Promotion and support for Multi-Residential Recycling Program strategies Develop a targeted promotion and education strategy for residents living in existing multi-residential dwellings, provide support and tools to superintendents and property managers on how to maximize recycling opportunities in their buildings.
	MR 7	Penalties Targeting Buildings Financial penalties for poor performance or failure to meet recycling targets.
	MR 8	Recyclebank rewards program Residents receive financial or other rewards for participating in the recycling program.
	MR 9	Recycling pledge (landlords) In order to receive garbage and recycling services the building owner must sign a pledge to provide recycling program to its tenants.
	MR 10	Recycling pledge (tenants) Tenant lease has paragraph committing tenant to participate in waste diversion programs in the building. Tenant must sign commitment.
	MR 11	Recycling required to be as convenient as garbage collection Region establishes requirements that recycling must be as easy as garbage collection.
	MR 12	Termination of service for failure to recycle Buildings that do not meet recycling program objectives are refused municipal garbage collection service. Participating in recycling is a condition of receiving service.
	MR 13	Two-tiered garbage rates with preference to recycling buildings Buildings with recycling programs receive lower garbage rates than buildings without recycling program (could be based on performance as well).
	MR 14	Designated goods diversion (HHW, Electronics, Textiles) Specific collection programs are established in multi-residential buildings to divert designated goods for recycling/reuse.
	MR 15	Waste diversion info provided to new and existing tenants Building owners are required to provide waste diversion educational packages to new tenants and existing tenants on an annual basis.
	MR 16	Multi-Residential Working Group Region establishes a Multi-Residential Working Group that meets on a regular basis to discuss waste diversion challenges and strategies.
	MR 17	Waste diversion plans Building owners must complete recycling plans and submit for Region approval.
	MR 18	GreenCart Implementation Mandate GreenCart implementation in MR buildings so service consistent with SF hhlds.

