Final Report | 15

Bluewater Recycling Association

Large Curbside Container Project 559.3

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1.0 Table of Contents

2.0 Introduction

In accordance with the requirements of the Continuous Improvement Fund Project Agreement #559.3, this report provides certain information pertaining to the distribution of large collection containers to facilitate the Association's conversion to a collection system involving the use of automated collection vehicles and wheelie bins instead of the traditional blue box with a manual collection system.

This report is divided into three sections:

1) Wheelie Bin Distribution
2) Operational Results
3) Lessons Learned

This is the project final report.

The Application was submitted on March 22, 2010 for consideration. Approval for the purchase of 95 gallon wheelie bins only was granted in 2011 to cover 50% of the cost of the bins up to the sum of $1,077,044 inclusive of any applicable tax.

The project was expected to take five years to deliver approximately 50,000 wheelie bins.

The wheelie bins were procured using the specifications outlined in Appendix A.

3.0 Wheelie Bin Distribution

3.1 Project Schedule

In the application for funding, the following schedule was suggested, subject to change.

Cart Deployment - Summary of Years 1 to 5						
	2009	**2010**	**2011**	**2012**	**2013**	**Total**
65 Gallon	438	1,307	3,078	3,056	615	8,495
95 Gallon	2,483	7,405	17,444	17,320	3,488	48,139
Recycling Carts Distributed	**2,921**	**8,712**	**20,522**	**20,376**	**4,103**	**56,634**
95 Gallon Carts	2,483	7,405	17,444	17,320	3,488	48,139
Estimated $ per Cart	47.03	47.03	47.03	47.03	47.03	
Funding %	-	50%	50%	50%	50%	44,313
Total Estimated Funding	**0**	**174,129**	**410,196**	**407,280**	**82,020**	**1,073,624**

Cart Distribution is based on 15% of the carts delivered being the smaller 65 gallon.
This budget is based on projected conversion projects which are subject to change.
Projects will be launched throughout the year and disbursements will be requested as programs are launched.

In light of the late approval, changes in economic conditions, along with the many political challenges over the years, the project was implemented over a longer period of time.

3.2 Actual Launch Schedule

The Association is a municipal cooperative whereby its member municipalities still have some control of their programming including in this case the decision to upgrade to the larger bins if and when they choose to do so. As such, each conversion is up to the local council.

Once a council has decided to upgrade their service to the wheelie bins, the residents are usually presented with two options. By default, everyone is to receive the 95 gallon wheelie bin for recycling purposes but they have the option to downsize to a 65 gallon bin. Approximately 25% of the households choose to downsize. Those bins were not covered for funding in this project.

Both bins are offered at no charge to the resident, except for services fees where applicable. Service fees were the same regardless of size.

The next table outlines the actual launch schedule as it was undertaken. Currently, 79% of Association households have converted and 48,355 bins have been delivered thus far.

Service Area	Launched	Households	BRA Coverage	Bins
St. Marys	Oct-08	3088	5%	2,720
Huron East	Jun-10	2055	8%	1,677
Goderich	Jun-10	3578	13%	3,316
Central Huron	Nov-10	4229	19%	3,575
Oneida	Jul-11	475	20%	475
Brooke Alvinston	Oct-11	1067	22%	1,081
North Perth	Apr-12	5279	30%	4,635
South Huron	May-12	4683	37%	4,323
Morris Turnberry	Aug-12	1309	39%	1,314
West Perth	Aug-12	3561	44%	3,420
Lucan Biddulph	Aug-12	1807	47%	1,734
Strathroy-Caradoc	Jan-13	8408	59%	7,882
Lambton Shores	Jul-14	7366	70%	6,741
Middlesex Centre	Jun-15	6138	79%	5,462

3.3 Typical Program Timeline

In this report, we will discuss some of the activities undertaken to launch a program. The following Automated Program Implementation Timeline identifies the 10 steps needed prior to the first collection. Since those steps can take up to 24 months to complete and they are beyond the scope of this project, our report will focus on Step 6 and 7 only.

Automated Collection Program Implementation Timeline

1. Pre-planning (2 – 6 months)
Analyze Costs, Potential Savings and Benefits
Attain Political Buy-in
Once attained, plan on about 1 year until start-up of new collection operations

2. Planning, Budgeting and Authorization (1-6 months)
Tasks, Responsibilities and Implementation Schedule
Financing & Procurements
Attain Political Authorization to Proceed

3. Procurements for Bins, Trucks, Hauler, Disposal/Processing, Information Systems, PR and Management Consultants (as applicable; 3+ months)
Prepare RFP (1 month)
Prepare invitation for bids or request for proposals package, including forms, schedules, contract, notices, and all other necessary documents.
Prepare draft technical specifications
Issue RFP/IFB (1 month)
Evaluate RFP/IFB and contract (1 month)
In particular, hauler procurement may take longer
If proposers contest procurement, will take longer

4. Establish Operations (concurrent with delivery delays; 3-6 months)
- Implement Information Systems for Work Orders (carts and complaints), Customer Service, Routing, Billing
- Hiring and Training of Drivers, Supervisors, Customer Service Rep's, Bylaw Enforcement Officers
  - Develop Job Description
  - Obtain Position and Salary Approval
  - Interview and Hire
  - Conduct Orientation Training
- Contract Customer Service Temporary Staff
- Set-up Facilities for Offices, Depot, Wheelie Bin Storage

5. Manufacturing/Delivery Delays (2-6 months)
- Wheelie Bins (3-6 months)
- Trucks (4-12 months)
- Haulers (may need same manufacturing delay periods, plus time to set-up operations)
- Software (0-3 months)
- Custom developed software (2-6 months)

6. Implementation
- Public Relations Campaign
  - Initial Outreach (2-3 months prior to first collection)
  - New Service Notices Directly to Customers (1-2 weeks prior to cart delivery)
  - Media
    - Direct mailings
    - Notices on bills
    - Website
    - Special phone line
    - Newspaper ads, TV, etc.

7. Assembly and Distribution of Wheelie Bins (1-4 weeks prior to first collection)

8. Implement Information Systems (1-6 month prior to launch)
- Work orders
  - Carts
  - Misses
- Routing
- Customer service
- Billing
- Contract Management (for hauler performance indicators)

9. Routing (1-4 months to complete; drafts to be completed 1-2 months prior to implementation)
- Analyze Day of Week Change (if applicable)
- Establish Districts (particularly for contracting to hauler)
- Draft Routes
- Finalize Routes (with driver feedback)

10. Bylaw Enforcement (start after political buy-in)
- Conduct Legal Research
- Draft Bylaw(s)
- Present to Municipal CAO or Similar
- Present Bylaw package to Council for Consideration and Approval
- Establish Responsibilities and Procedures for Bylaw Enforcement
- Hiring and Training

11. First Collection

3.4 Initial Notice

Residents were notified of the program changes through the use of a legal paper sizes notice mailed to every resident through either bulk mail or via tax bill inserts. Note that approximately 20% of the population is on a no junk mail list with Canada Post which means they cannot deliver the notice to them via bulk mail. Another group of property owners do not live locally (seasonal properties, landlords) so they do not receive local bulk mail.

Using the tax bill was more accurate, however, a number of users do not receive a tax bill. Many homeowners have the bank that holds the mortgage pay for the taxes and as such never see the tax bill. Tenants also do not typically receive the tax bill yet they are users of the service. They require some communication between the landlord and the tenant. Some properties receive one tax bill for several properties such as condo associations. Yet others are now enrolled in the electronic delivery of their tax bills. In short, any notices should be distributed using a variety of approaches to reach the target audience.

As sample is enclosed in Appendix B.

3.5 Resident Selection Process

Once a launch is approved by council, the latest tax roll was downloaded and the properties were segregated by type using the MPAC code. Based on the property type, the number of containers needed in each size for the launch was estimated and production time was booked with the supplier.

Resident were delivered the initial notice and usually given two weeks to respond with their choice of containers. No response defaulted to the standard 95 gallon container. Approximately 75% of households chose the default. 25% of households chose to downgrade to the 65 gallon container. These were mostly elderly residents and/or those living in residences with limited space such as condo and townhouses.

Residents could call or email their alternate choices through dedicated communication points with staff trained to answer their questions.

Multiresidential properties and those attached to a commercial property such as main street apartments downtown, were personally visited to review the best options for them. In some cases, the current blue box with a central convenience depot in the form of a 6 cubic yard front end container or one or more wheelie bins for all users.

3.6 First Ad Before Delivery

A week before the bins are delivered to each property owner, an ad was placed in the local newspapers to remind everyone that the bins were coming.

A sample of the ad is enclosed in Appendix C

3.7 Second Ad During Delivery

While the bins were being delivered to the property owners, an ad was placed in the local newspapers to inform them how easy they were to use. A sample of the ad is enclosed in Appendix D.

3.8 Final Ad After Delivery

Once all the bins had been delivered, a final newspaper ad was placed to make sure no one was forgotten. A sample of the ad is enclosed in Appendix E.

3.9 Delivery Process

The delivery of the right wheelie bins to the right property appears to be a simple task but in fact can get very complicated specially when competed by inexperience people.

3.9.1 Delivery List

The delivery list is the list provided to the group responsible for the assembly and distribution of the wheelie bins. In all of our launches, we employed the skills of a specialized contractor named Delta Logistics for the delivery of the bins. They have a long standing relationship with our manufacturer, Rehrig Pacific, and they fully understand the requirements of the job.

The quality of the list will determine the success or failure of the delivery process. The list is typically generated from the tax roll which can be useful to those who can understand its original purpose and the way it manages information. The tax roll is designed to collect taxes based on property value. Its main foundation is parcels of land. The determination of the type of property it represents is determined by the 4 digit MPAC code (one of 304) attached to the parcel. It identifies if the land is vacant or occupied a single family dwelling, duplex, commercial property, or a number of other types of property.

Understanding the MPAC code means avoiding deliveries to vacant land, or delivering more than one bin where it is needed. Sometimes 200 homes will show as only one property when in fact it is an entire subdivision. Every address provided represents a work order to the contractor. In short, in the rural area, every bin delivered or attempted to be delivered costs $4.00 on the initial delivery. Every mistake needs to be fixed with a special request and they cost $25.00 each. The accuracy of the original list is paramount.

3.9.2 Staging Site

In order to deliver thousands of bins to the residents, the delivery crew needs a site to receive the bins from the manufacturer and transfer them into the delivery vehicles. Usually this means a large lot that can preferably be secured at night. For every size bin delivered, a trailer needs to be onsite with enough room for new full trailers to be dropped off while empty ones are picked up.

The site needs to be central to the distribution area in order to be as efficient as possible. Having restrooms on the staging site is also beneficial.

3.9.3 Routing

The delivery is the most efficient when only one pass per street is done. In order to achieve this, routes need to be planned ahead of time to be able to know how many of each size bins is needed on the delivery vehicle. It also allows for the pre-sorting of addresses in the scanner to speed up the recording process. In some cases like ours where collection is only done on one side of the road in the rural area, it is critical that the bins be dropped of on the correct side of the road.

3.9.4 Equipment and Staff

While many variations have been tried during our many launches, we have found that the best way to deliver the bins is with specialized trailers build low to the ground capable of holding half a tractor trailer. These trailers are pulled by a pickup truck. Regular cubes vans are too high for quick deliveries resulting in more breakage during delivery.

The crew usually consists of two people in rural areas or three in the urban areas. One drives, one assembles and delivers while the last one identifies what is needed where and records the bins delivered to each address while assisting in the delivery when needed.

The assembly of the container will vary from manufacturer to manufacturer and the options chosen. In our case, each container came with the lid already attached with all the labeling needed included in the mold. To be assembled, the bins needed an axle with two snap-on wheels. Our bins also have an optional lifting bar on the front for the more traditional North American lifts. It is not in use with our fully automated trucks but they would be required if we had to use any other truck in an emergency. Our lifting bars are metal with spring loaded clips for easy tool less installation. In mold plastic bars do not hold up to the use and other metal bars with rivet like clips are more time consuming to install.

3.9.5 Placement

The placement of the bins upon delivery has a substantial impact on the effectiveness of the collection operation subsequently. Ideally:

1) The bins are delivered on the correct side of the road.
2) The bins are pointing in the right direction (wheels away from the road).
3) The bins are two to three feet apart so they can be grabbed by the mechanical arm.
4) They have no obstruction in front, behind, on the side, or above (trees or wires).
5) They do not block the mail delivery.
6) They do not block the sidewalk, if any.
7) They are not on the roadway.
8) They do not block access to the driveway.
9) They are not too close to the road where high speed traffic could tip them.
10) They are not too far from the road that the arm cannot reach them.
11) They are set out on level ground so they don't tip over.
12) It is clear which property they belong to.

3.9.6 Recording

In our project, we made the commitment to use RFID technology to manage our system. More on that is discussed later. It is critical to get accurate information on who has which bin in order to have accurate service verification, asset tracking, and monitoring the use and/or abuse. While RFID is best for day to day operational use, it is difficult to work with during the delivery phase. An RFID scanner can scan a tag up to 30 feet away. As a result, it is easy to read an different bin within reach if that method is used.

Manually entering numbers is subject to too many errors. Scanning a bar code on the bin was found to be the best method of recording the asset delivery accurately.

3.10 Special Requests

Special requests are those requests that come after the initial selection process. Anyone that wants a different size or decides they want or do not want a bin after the original selection period. It also includes everyone that changes their mind once they receive the initial bin.

They require someone to drive to a specific address, likely deliver a container, possibly recover another bin that will need to be washed and taken apart before being placed back in inventory. This process costs approximately $25 per container to do. As such, municipalities would be wise to have policies in place with respect to changes by the property owners.

Our experience has been that approximately 20% of the containers are changed, added or deleted in the first three months of the program. One factor affecting the special requests is whether or not the program is mandatory. In cases where the program is mandatory, no opt out, the special requests are halved to about 10%. In those programs where it is optional, the special requests in the first three months exceed 20% as the property owners that resist change eventually call to request a bin except by then it costs you $25 to get the bin to them instead of $4.

After the initial launch, you can expect a maintenance rate of about 3% to manage new homes, change of owners, tenants moving in and out, and repairs and maintenance. The most common items on the repairs and maintenance list are wheels and lids. There is also a certain amount of bin movements from wilful theft to innocent misunderstandings.

4.0 Operational Results

4.1 Waste Diversion

Every program converted has resulted in an increase in the amount of recyclables recovered. This is attributed to the capacity of the bins. As packaging becomes lighter and bulkier, it is nearly impossible to recycle everything within the confines of one or two traditional blue boxes.

Since our participants are given a 95 gallon bin by default which is the equivalent of 6 blue boxes, they have plenty of room to recycle everything they have. Individuals and elderlies that generate less materials are give the option to use a smaller 65 gallon bin which is the equivalent to 4 blue boxes. In a couple of areas, we did experiment with a 35 gallon container which was found to be too small. Bulky cardboard and or plastic containers prevent the efficient removal of materials from the bins and they tended to overflow.

All new launches experience a surge in participation because of all the attention renewed on the program. The key to success is too maintain that gain over the long term. The table below outlines the diversion increase as an average since the launch as compared to the year before launch. Some areas have no available data for different reasons. Huron East only converted part of the municipality and recyclables are monitored community wide. Oneida had no previous service. They have been doubling in their diversion every year. Lambton Shores and Middlesex Centre are too new to have reliable data.

Service Area	Launched	Households	Diversion
St. Marys	Oct-08	3088	130%
Huron East	Jun-10	2055	N/A
Goderich	Jun-10	3578	155%
Central Huron	Nov-10	4229	133%
Oneida	Jul-11	475	N/A
Brooke Alvinston	Oct-11	1067	118%
North Perth	Apr-12	5279	131%
South Huron	May-12	4683	166%
Morris Turnberry	Aug-12	1309	178%
West Perth	Aug-12	3561	153%
Lucan Biddulph	Aug-12	1807	163%
Strathroy-Caradoc	Jan-13	8408	142%
Lambton Shores	Jul-14	7366	N/A
Middlesex Centre	Jun-15	6138	N/A

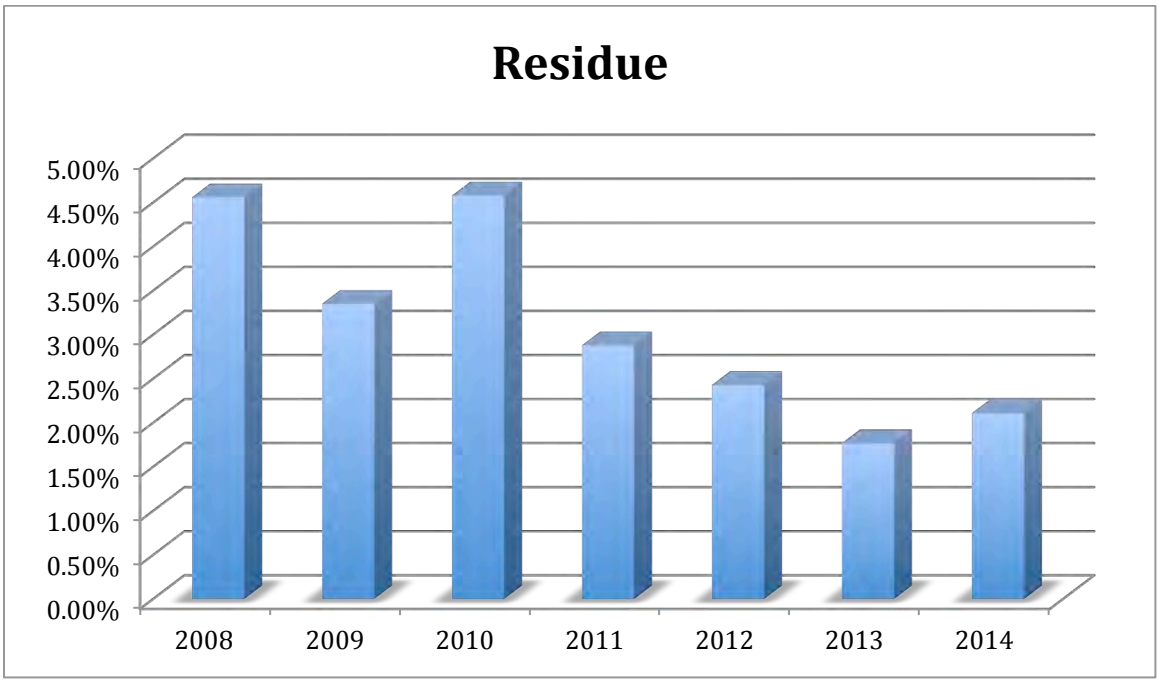
In comparison, municipalities that did not convert yet have seen an average decrease in their recyclables of 13% as compared to the group increase of 47%.

4.2 Residue Rate

One of the concerns with increasing the recycling bins is that they will also become the waste bin. There is no doubt this possibility exists specially if there is no quality control program in effect or any sort of monitoring.

The Association knowingly committed to this project with the understanding of this possibility. To prevent this from happening, the Association utilized the RFID technology to associate the bins with its clients and maintained its database of wheelie bin allocation. With the use of cameras, onboard computers and driver interaction, we have been able to monitor the materials collected and intervene, when necessary.

We also have a reinforced material delivery protocol where all loads received are inspected. In the end, any increase contamination in the loads would be reflected in an equal increase in our residue. We are happy to report that this fear never materialized. The chart below outlines our residue rate since the conversion began.



4.2.1 Litter Improvement

Another significant improvement of the wheelie bin system over the traditional blue box system is the reduction in litter. With a container with the capacity needed to handle all the recyclables equipped with a lid, litter has been virtually eliminated. Gone are the plastic bags blowing down the street on a windy day. The street is clean before and after collection.

4.3 Problem Areas

Like any new process implemented, a variety of side effects manifests themselves which are sometimes positives and other times problematic where system adjustments are needed. Here is a sample of some areas we have had to deal with.

4.3.1 Large OCC

When people move in or they buy large appliances, they cannot always fit everything into their wheelie bin. To accommodate this we have installed a number of convenience depots in the form of 6 yard containers in some public locations such as community centres. They have worked well to take the overflow with minimal abuse. The more public the location the lesser is the abuse.

4.3.2 Long Driveways

The wheelie bins are designed to be pushed or pulled. If you are moving the bin on a solid surface like a paved driveway, you can push your bin to the road. If your driveway is gravel based, it will be easier to pull the wheelie bin. But when your driveway is a quarter mile people are looking for options. What we have found is that many will leave the bins at or near the end of the driveway and use them as their personal depot. On collection day, they simply move the bins to the road, usually 20 feet away. Others prefer to keep an eye on their bins so they have developed a number devices to tow their bins to the road on collection day with their vehicle, tractor, or lawnmower.

4.3.3 Material Preparation

This is an area that we have noticed some changes over time. We cannot quantify the change but we are noticing that materials are not being presented the same as they used too. One of the areas of concerns is plastic bags. We have been collecting them since 1990 and they have always been bagged. More and more, we are seeing single bags or bags still on the newspapers and they are creating a problem with our disk screens. Where we used to have to clean them once per day, now we have to do it four times a day because our staff on the presort cannot physically hand pick everyone of them.

Other materials that are coming in differently is boxboard and junk mail. They used to be stuffed in one large cereal or detergent box but now they show up loose and individual. Smaller bits of paper including an increase in shredded paper actually find their way into the glass where they must be recovered. We have had to increase the suction on our vaccum system to manage the increase of paper but this only works when the material is relatively dry.

4.3.4 Material Composition

The mix of materials has drastically changed. A portion of the change is related to the packaging industry heavily promoting lighter packaging in an effort to combat greenhouse gases. Not only are they moving away from heavy recyclables like glass but they are reducing the weight of common recyclables through technology advancements. Creating packaging with thinner walls makes them more susceptible to crushing. In an industry where one of the pillars of material separation is based on shape, specifically whether an item is two dimensional or three dimensional, creating packaging that is expected to be 3D but presents itself as a two dimensional item on the sorting line adds a level of complexity to the separation of quality materials.

Furthermore, we all are familiar with the impending death of the newspaper industry, the struggling glass packaging industry and the ever growing plastic industry. The wheelie bins facilitate the collection of light and bulky packaging such as claim shells. They also facilitate the recycling of small packaging/materials, such as small pieces of paper packaging and shredded paper. Together, they accelerate the upcoming changes. We have seen our newspapers drop from 45% of the material mix, down to 5%. Our aluminum cans have dropped by 25% in tonnes as the packaging industry moves to the PET bottle. While aluminum only accounted for 1.6% of our materials in the past, it accounted for 25% of our commodity sales.

The wheelie bin has adapted well to the new bulky material but it does little for the revenue loss.

4.3.5 Wind Tolerance

Making the decision to change the way we collect recyclables was not one that was taken lightly. It took years of research and a battery of tests before we were convinced that it was an improvement for everyone that was worth the investment in the long term.

As part of the evaluation to switch our recycling system to an automated style using wheelie bins we reviewed the container's ability to withstand strong winds because we are familiar with this concern in the rural area specially near the shores of Lake Huron. If you don't believe me, you should ask the wind turbine generator companies that have decided to build over 1,000 of them on our shores.

We have wind tunnel testing that demonstrates the ability for the bins to withstand 56 to 90 km/hr wind gusts depending on the size of the container and the face exposed. A look at the hourly records at Sarnia Airport in 2011 indicated that throughout the entire year on the hourly recordings the wind never reached 60 km/hr. We all know that we did have gusts of wind in excess of 60 km/hr in 2011 as brief as they may have been.

We cannot control the weather and we don't know any blue boxes that can withstand any winds close to 60 km/hr so we are sure the old system would not have performed better. There are a couple of suggestions we can offer in order to help with the problem such as using hockey sticks for support and/or hard rubber wheels to help anchor the bins but as long as you understand that if mother nature decides to blow hard enough, it will tip your container.

Bin Wind Resistance (km/hr)			
km/hr	**Small**	**Medium**	**Large**
Front	58.4	68.9	56.3
Side	60.5	63.9	75.6
Back	69.4	65.3	90.1

4.3.6 In Mold Labels

As part of the bin design, the Association chose to use the in mold labels available by the manufacturer. It allows for the inclusion of a full colour label into the lid that cannot be removed by the user. The intent was that since the recycling program was relatively mature with a low likely hood of material changes in the program, it would be wise to ensure the end user had the latest instructions available in an attractive format for the life of the bin. We do not regret our decision and continue to use the in mold label but not all manufacturers are equal. In our first launch in 2008 we used bins from Otto and the labels did not standup in the sun.

In comparison, the labels from Rehrig have performed very well.

4.4 Supporting Promotion and Education Materials

The Association has been operating the facility at approximately 12 tonnes per hour meeting all of the current market demands. Appendix A outlines the details of the system efficiency and effectiveness compared with the equipment efficiency and effectiveness for each commodity managed by the Association.

4.4.1 Informational Flyer

Using a wheelie bin is different than using a blue box. Every program launch saw a new informational flyer distributed to the residents to learn the new tips of the program. The flyers included information on the set out, the acceptable materials, their calendar and service area map, if applicable. A sample is included in Appendix E.

4.4.2 Website

Part of the Association's website has been dedicated to automated collection with help pages and unique municipal pages outlining the program with links to all the outreach materials.

4.4.3 Imprint

In addition to the in mold label, the Association also took advantage of the hot stamp tool on the lid, and three sides of the body. On the lid, we hot stamped in white the words "Recyclables Only" along with the positioning directional arrows.

On the body, we imprinted the logos of our partners on one side (WDO, CIF, and SO) and our logo on the opposite side. On the front of the body, we imprinted the serial number and a matching bar code to facilitate delivery.

4.5 Maintenance Requirements

The Wheelie Bins are warrantied for a period of 10 years. This warranty covers the bin against general manufacturing defects. Manufacturers expect a 2-3% warranty claim rate. Our experience has been much lower. A number of bins get damaged but they are usually the result of abuse or damage. For example, driving a tractor over the bin is a not a warranty claim. Actual maintenance has been very limited. It usually involves repairing a wheel or replacing a lid.

4.5.1 No Vandalism Warranty

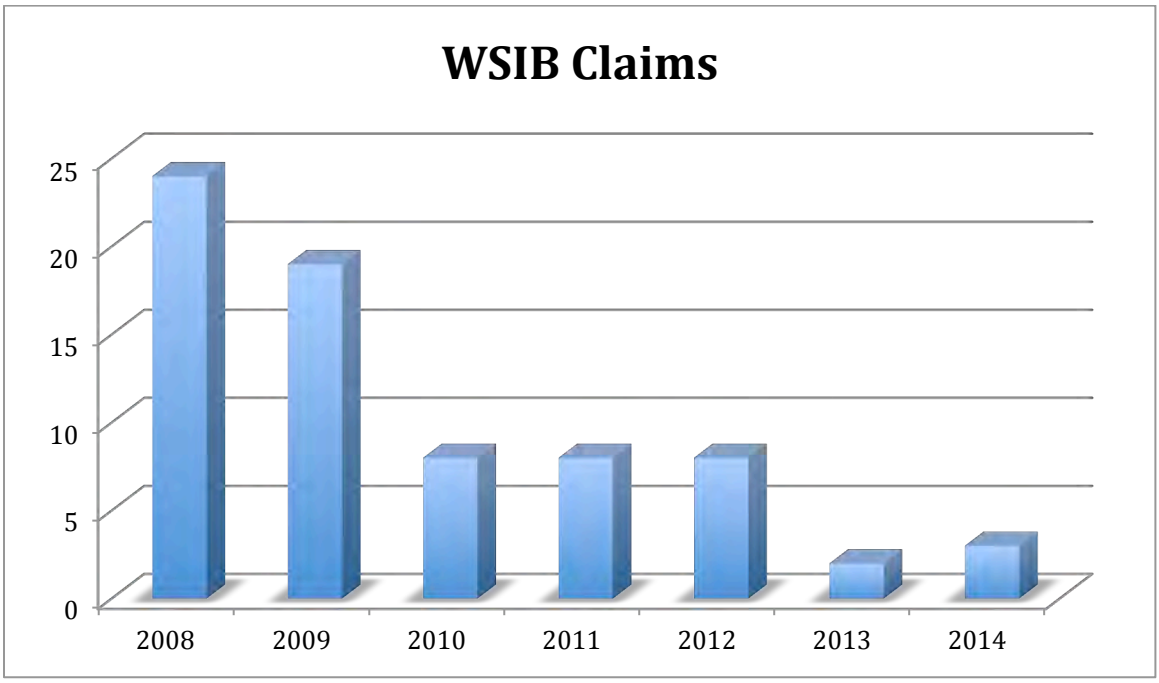
The bins can be subject to vandalism but that happens rarely. It is more likely that a resident will place hot ashes in the bin by mistake than to see teenagers gather around for a bond fire.

4.5.2 Split Personality

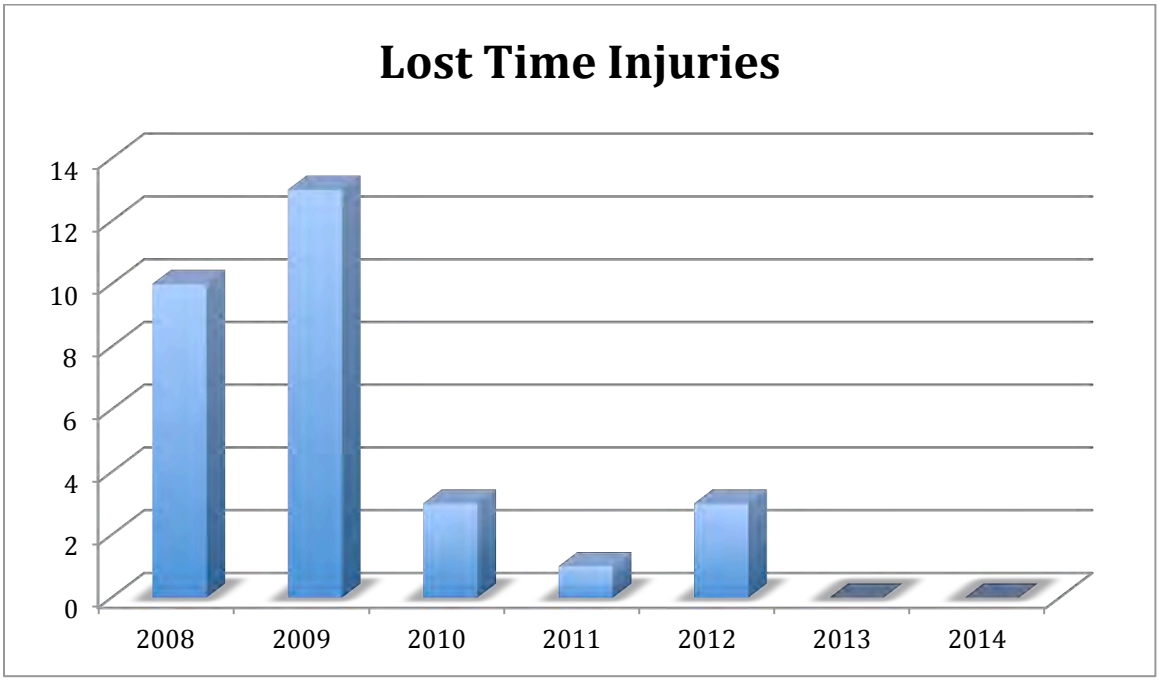
The Association did experience a number of failures on the 35 gallon bins. In our case, those are actually used for waste. The problem appears to have been limited to certain batches which leads us to believe that the problem was related to the initial resin used to make those lids.

4.6 Health and Safety

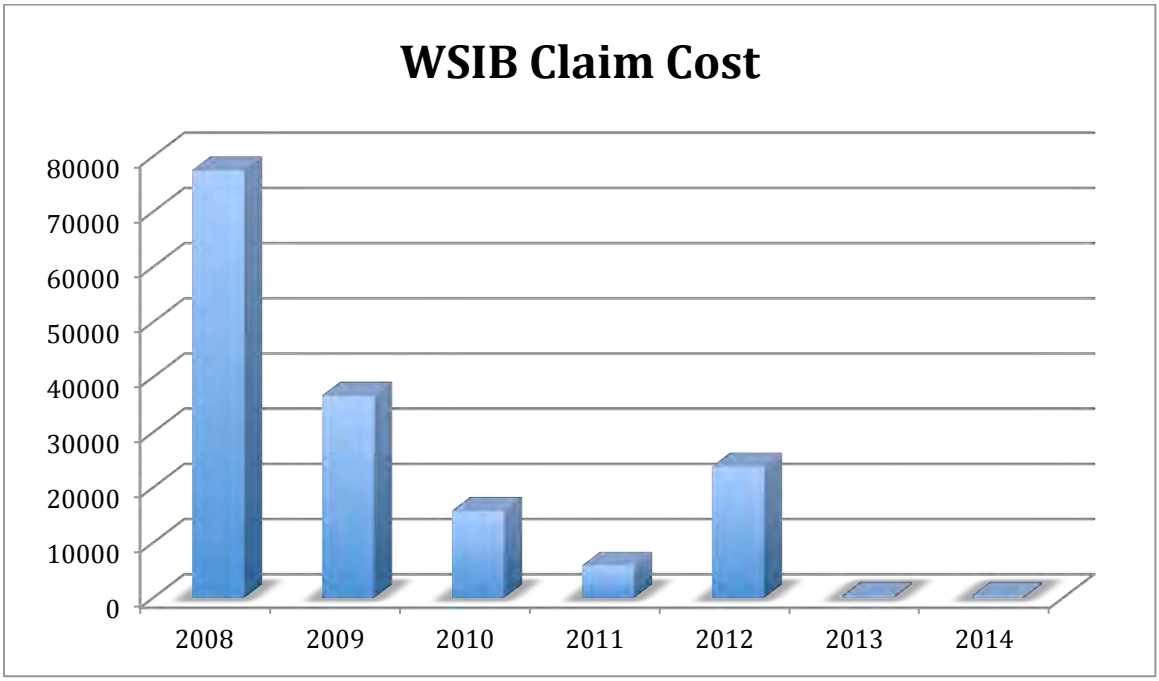
One of the goals of the project was to provide a safer work environment for employees and reduce WSIB claims. Our total number of claims has been reduced by 92% since the implementation of our automated programs.



Lost time injuries have been eliminated. The Association has not had any in the last two years.



As the WSIB is moving towards a user pay system the Association has reduced its claim costs by 99.5%.



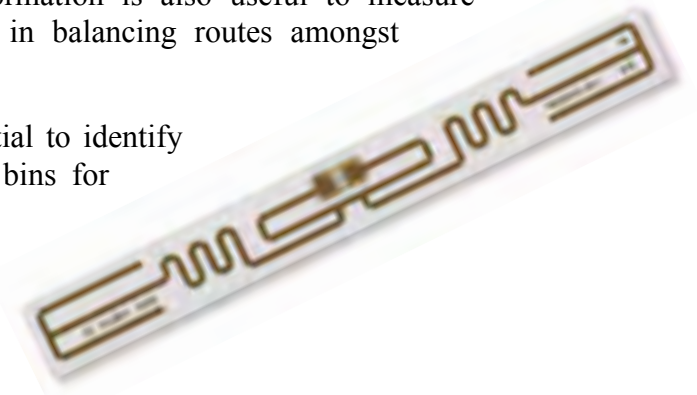
4.7 RFID Technology

The Association has used RFID tags in all the bins delivered. They cost approximately a dollar each to include at the time of manufacturing. The tags are nothing more than an electronic bar code that can be read easier in our real operating environment. The tags are passive, meaning that they do not "call us", we must wake them up when they are within our proximity for them to respond with their 24 digit hexadecimal code.

They have been very useful to verify service. With our equipment we can identify the last time a bin was serviced by which truck and where. This helps us keep track of our bins, as well as knowing who is using them where. Some residents think they own the bin so they move it with them when they relocate. If they relocate within our service area, we are capable of reallocating or recovering the bin.

They are a critical component of our quality control system to identify and manage contamination. The information is also useful to measure employee productivity and assist in balancing routes amongst different drivers.

It also provides us with the potential to identify residents that are not using their bins for targeted education in the future.



4.8 GPS Technology

The Association has incorporated the use of GPS technology in its vehicles for a variety of purposes. While it is a great directional tool, we have found that the data provided is not accurate enough to find missing bins. In a dense area it is easy to get GPS coordinates that could represent up to 6 different properties. As a result, when a missing or stolen bin is tipped in a new location, it enables our investigator to pin point an area but not always a single property.

Depending on the system used, data may not always be live based on the programming or the connectivity of the local cell network. One vendor promised live data but in fact some vehicles were live while others were as much as two hours behind.

4.9 Future Launch

The Association's goal was to convert between 85 to 90% of its households to the wheelie bin system. To date, 79% of our households are converted. We expect to meet our goal in the next 12 months.

5.0 Lessons Learned

1) The use of wheelie bins increased diversion by 47% while traditional blue boxes lost 13%.
2) Residue does not have to increase with the introduction of wheelie bins.
3) Litter is reduced with the use of wheelie bins.
4) 75% of the households are satisfied with 95 gallon wheelie bin.
5) 25% of the households need a 65 gallon container to meet their needs.
6) 35 gallon containers are not suitable for recycling.
7) Worker injuries are virtually eliminated with wheelie bins.
8) Convenience depots are an efficient way of managing excess materials.
9) Options exist for households with long driveways.
10) The material preparation will change and affect processing.
11) Wind can be a nuisance in the rural area on unlevel surfaces.
12) Not all in mold are created equal.
13) Bin warranty is 10 years but not all perils are covered.
14) RFID technology is a must for service verification and quality control.
15) GPS is a useful tool for direction and general help.
16) Getting the distribution list right the first time is paramount.
17) The delivery process is more complex than it appears.
18) Placing the container properly upon delivery has a big impact on the subsequent collection operation.
19) Contractors are better equipped to manage the delivery process.
20) It costs a lot less to deliver the bin during the initial delivery than it does as a special request after the initial delivery.
21) Special requests can be kept to a minimum if the program is mandatory instead of voluntary.
22) Multiresidential properties and those with joint commercial and residential use need to be visited personally to find the right solutions.

6.0 Appendix A

BLUEWATER RECYCLING ASSOCIATION
CART SPECIFICATIONS

The intent of these specifications is not to provide an exhaustive list of all requirements for the supply of the required Carts for the Association's automated collection program but rather a set of basic requirements for the intended use and success of the program.

A. CART DESIGN REQUIREMENTS

1. General

a. The Carts shall be manufactured by injection molding and meet the Cart design and performance requirements specified below. The Carts shall be designed to be emptied by both semi-automated and fully-automated Collection systems and designed to be lifted by a lift unit so that its contents are deposited in the hopper of a standard rear, front, or side-loading Collection vehicle.

b. The body of the container shall be composed of recyclable polyethylene resin. The Cart manufacturer shall maintain, on file, certification by the resin vendor that the resin supplied and used for construction of the Carts meets published physical properties for each lot of resin purchased.

Each fully assembled Cart must contain a minimum of 10% and subject to material availability, up to 50+% of post-consumer recycled content (PCR). Non-recyclable material such as cross linked polyethylene will not be acceptable.

Any manufacturer making the recycled content claim must be able to document its claim by disclosing the source and origin of the resin used and also provide a tour to the Association of the Cart manufacturing facility.

The container and its component parts, shall meet all testing standards as set forth by ANSI Waste Container Safety Requirements (Z245.30-2008), Product Safety Signs and Label Requirements (Z535.4-2007), and Waste Container Compatibility Dimensions (Z245.60-2008). Manufacturers must submit certified copies of all ANSI test results with its proposal.

The Association reserves the right to request, at no charge to the Association, a sample of the carts from Manufacturer. This sample will be kept by the Association and may be used in tests conducted by the Association or its designated testing agent to measure weight, wall thickness, PCR, etc. The Association reserves the right to select an alternative Cart vendor if the provided sample fails any field test which may include, but are not be limited to, drop tests, grabber simulation tests, weight tolerance, PCR, and wall thickness.

2. Materials Identification and Decals

Carts or their lids must be in readily identifiable colors to facilitate Customer's ready recognition of Waste, Recyclable Materials, and Organic Materials, as outlined in section 6 of this document. The Manufacturer shall also:

1) Apply an in-mold full colour instructional label on the lid of each Cart. The approximate dimensions of the label will be 8" x 12" for each Cart except the 32 gallon which shall be as physically possible. Artwork to be provided by the Association.
2) Hot-stamp the Association's logo on each side of the body in white foil no less than 5.5" in height. Artwork to be provided by the Association.
3) Hot-stamp the material name in while foil on the Cart lid (Waste, Recyclables, Organics).
4) Emboss or hot-stamp proper set out directional arrows on the Cart Lid.
5) Provide any other markings as required by the applicable ANSI Standards.

3. Cart Handles

The Cart handles and handle mounts shall be an integrally molded part of the Cart body only. The Cart handles shall provide comfortable gripping area for pulling or pushing the Cart or lifting the lid. Pinch points are unacceptable.

4. Cart Lid

Each Cart shall be provided with a lid that continuously overlaps and comes in contact with the Cart body or otherwise causes an interface with the Cart body that simultaneously:

- Prevents the intrusion of rainwater, rodents, birds, and flies;
- Prevents the emission of odors;
- Enables the free and complete flow of material from the Cart during the Collection cycle without interference with the material already deposited in the truck body or the truck body itself and its lifting mechanism;
- Permits users of the Cart to conveniently and easily open and shut the lid throughout the serviceable life of the Cart;
- The lid handle shall be an integrally molded part of the lid;
- The lid (and body) must be of such design and weight that would prevent an empty Cart from tilting backward when flipping the lid open; and,
- The lid shall be hinged to the Cart body in such a manner so as to enable the lid to be fully opened, free of tension, to a position whereby it may rest against the backside of the Cart body.

The inside and exterior of the lid must contain a permanent caution label as per ANSI Product Safety Signs and Label Standards (Z535.4-2007). The image shall be warranted for ten years; shall not fade, discolor or disfigure; and shall not peel or wear off under normal use.

5. Wheels and Axles

Wheels shall be manufactured from a rubberized polyethelene and be a minimum of diameter of:

Cart Size (Gallons)	Minimum	Preferred
94-96	12"	12"
64-68	10"	12"
32-35	8"	10"

For ease of assembly, wheels will be designed for "snap-on" or equivalent attachment. Wheels shall attach securely to the Cart by means of a self-locking hub with internal wheel-retention details that snap into a corresponding groove on the axle.

The axle must be solid steel construction, plated to protect against corrosion and must be mounted in the cart body through axle fittings integrally molded as part of the cart body.

6. Cart Colors

The Waste, Recyclable Materials, and Organic Materials Carts shall be differentiated by color. The colors shall be colorfast and resistant to fading as a result of weathering or ultraviolet degradation. The Cart must be stabilized against ultraviolet degradation with not less than 0.5% of UV 531 or equivalent additive in order to ensure a ten (10) year life cycle of outdoor exposure. Color of lids and Cart bodies must be as outlined below for each Cart type (i.e., Waste, Recyclable Materials, and Organic Materials).

	Body	Lid
Recycling Cart	Light Grey	Blue PMS 287 C
Waste Cart	Light Grey	Black
Organics Cart	Light Grey	Green PMS 3425C

For all colors including those prescribed in this paragraph, the Manufacturer shall obtain written approval from the Association for the Cart colors, by providing samples thereof.

7. Identification Markings

Each Cart shall include serial numbering system for the purpose of Cart tracking and identification. The identification markings will include the following three identifiers:

1) The bar code hot stamped shall be affixed on the front of the Cart body in an area where it is readily accessible for electronic scanning.
2) The serial number hot stamped shall be affixed on the front of the Cart body. A one inch high 8 digit hot-stamped white foil serial number on the front of every cart.
    a. First position being the size (9, 6, or 3),
    b. second and third position to be the year (10),
    c. last five positions being the serial number (03000-25999).
3) The passive Ultra High Frequency (UHF) Radio Frequency Identification (RFID) tag incorporated into the handle of the Cart body. The tag should be designed to withstand ten (10) years of regular use in this application with the following minimum specifications:
    a. UHF EPC Class 1 Gen 2, 96 bit Chip
    b. ISO 18000-6C
    c. Chips will be encoded per customer provided range
    d. Operating temperature from -40°C to +65°C
    e. Readable in its intended environment

The Manufacturer shall deliver an electronic record of the identification markings along with the final destination address in a format suitable for the Association to use with its route management software.

8. Lift System

Each container shall be equipped with attachment points which make it compatible with standard American semi-automated bar-locking lifters and fully automated arm lifters. The upper lift point must be integrally molded into the body of the container. The lower lift bar must be designed to withstand ten (10) years of lifting, rotate a full 360° on its own axis, and be manufactured from galvanized steel or composite materials. The lower bar must be installed prior to delivery and cannot be attached by means of rivets, screws, bolts, etc.

B. CART PERFORMANCE REQUIREMENTS

1. General

All Carts shall be designed and manufactured to meet the minimum performance requirements described below.

2. Cart Load Capacity

Depending on the capacity, the Carts shall have a minimum load capacity as noted below without Cart distortion, damage, or reduction in maneuverability or any other functions as required herein.

Cart Size (Gallons)	Minimum Load Capacity (Pounds)
94-96	329-335
64-68	224-238
32-35	112-123

3. Cart Durability

Carts shall remain durable, and at a minimum, shall meet the following durability requirements to satisfy their intended use and performance, for the term of this Agreement:

- Maintain original shape and appearance;
- Be resistant to kicks and blows;
- Require no routine maintenance and essentially be maintenance free;
- Not warp, crack, rust, discolor, or otherwise deteriorate over time in a manner that shall interfere with intended use;
- Resist degradation from ultraviolet radiation;
- Be incapable of penetration by biting or clawing of household pets (i.e., dogs and cats);
- The bottoms of Cart bodies must remain impervious to any damage that would interfere with the Cart's intended use after repeated contact with gravel, concrete, asphalt, or any other rough and abrasive surface;
- All wheel and axle assemblies are to provide continuous maneuverability and mobility as originally designed and intended; and,
- Resist degradation by other airborne gases or particulate matter currently present in the ambient air of the Association.

4. Chemical Resistant

Carts shall resist damage from common household or Residential products and chemicals. Carts, also, shall resist damage from human and animal urine and feces.

5. Stability and Maneuverability

The Carts shall be stable and self-balancing in the upright position, when either empty or loaded to its maximum design capacity with an evenly distributed load, and with the lid in either a closed or an open position.

The Carts shall be capable of maintaining their upright position in sustained or gusting winds of up to fifty (50) km per hour as applied from any direction.

The Carts shall be capable of being easily moved and maneuvered, with an evenly distributed load equal in weight to its maximum design capacity on a level, sloped, or stepped surface.

6. Lid Performance

Cart lid assemblies shall meet the following minimum requirements:

- Prevent damage to the Cart body, the lid itself or any component parts through repeated opening and closing of the lid by users or in the dumping process as intended;
- Remain closed in winds up to fifty (50) km per hour from any direction. All lid hinges must remain fully functional and continually hold the lid in the original designed and intended positions when either opened or closed or any position between the two extremes; and,
- Lid shall be designed and constructed such that it prevents physical injury to the user while opening and closing the Cart.

7. Reparability

Damage to hinges, wheels, axles, hardware, and other component parts shall be readily repairable or replaceable. All repairs must restore the Cart to its full functionality to meet the design and performance requirements as set for herein.

8. Warranty

The Cart body, wheels, axle, and all necessary hardware must be covered by a ten (10) year warranty. Any component parts that are found to be defective in materials or workmanship shall be replaced at no charge. Documentation of such warranty shall be made available to Association upon request.

9. Additional Information

Manufacturer shall supply complete technical data on the specific Cart being used. The data should include manufacturing specifications and ANSI certification and test data. Manufacturer must also provide a detailed user's list of other customers who used the same make and model of cart. The Association may use this information as a reference list regarding the quality of products and service records of the manufacturer.

C. CART RELATED SERVICES REQUIREMENTS

1. Delivery

Manufacturer shall deliver each Cart to the address provided by the Association based on the requests made by the customer. Upon completion of the delivery an electronic list of all carts delivered along with their identification markings will be provided to the Association for integration into its route management system.

2. Leasing

Manufacturer shall leasing options for the Carts over a five (5) year and/or ten (10) year term.

3. Cart Maintenance

Manufacturer shall offer a Cart maintenance service for the life of the Carts for consideration by the Association.

Frequently Asked Questions

BRA Bluewater Recycling Association

middlesex centre in the centre of it all

WHAT IS AUTOMATED COLLECTION?
Automated collection is a system where a specially-designed truck picks up the wheelie bin, empties it, and then returns it to its original position.

WHY SWITCH TO A WHEELIE BIN?
Rolling wheelie bins relieve residents of moving heavy cans and bags, keep animals out, and are supplied by the Association. While providing a cleaner community with less litter, the wheelie bin system also improves efficiency and protects workers from injury and the potential of handling dangerous materials.

DO I NEED TO BUY THE BINS?
No, every residence will be provided with bins. The wheelie bins will remain the property of the Bluewater Recycling Association and will be replaced at the end of their life cycle. However, in lieu of the bag tags that residents currently have to purchase there is an annual fee for waste collection services based on the size of waste bin you request. (shown on inside of pamphlet).

CAN I USE MY EXISTING GARBAGE BIN OR CAN?
No, because only new wheelie bins are compatible with the automated collection trucks. However, while your new containers will be delivered in May, you need to continue to use your current containers until the new program officially starts with the specialized vehicles and wheelie bins (expected start date is June 1, 2015).

WHO IS RESPONSIBLE FOR THE BINS?
Residents are responsible for keeping their bins clean and secure, and returning their bins to their property after collection. If damage or vandalism of the bins results from negligence, residents may be responsible for the replacement cost.

WHAT IF I LOSE OR DAMAGE MY BINS?
Lost, stolen or damaged bins should be immediately reported to the Association for replacement. Please call **1-800-265-9799 ext 243** to report your issue.

WHAT HAPPENS TO THE WHEELIE BINS WHEN I MOVE?
Wheelie bins should remain at your current property, and should not be moved. Each bin has a code which is associated with the residential address to which it was delivered. If you move, the bins should be emptied, cleaned and left at the original residence. Ensure they are in a secure location, such as a garage or shed.

Call us at 1.800.265.9799 ext. 243 for more information

INTRODUCING

New Automated Collection Service

COMING JUNE 1, 2015

CLEANER
SAFER
EASIER

Waste & Recycling Container Option

YOUR WASTE, YOUR CHOICE

We will offer three different sizes for waste, each with a different fee. You will have two options for the recycling containers and they have no fees attached. You can view them on display at the municipal office in Coldstream, Ilderton Arena, Komoka Wellness Centre, Delaware Community Centre, and the Bryanston Community Centre. Select the size that will fulfill your regular needs with some room for occasional variations. By default, you will receive a small waste and large recycling.

SMALL BIN

Capacity: 35 Gallons (120 litres)
Bag Equivalent: Up to 2 Bags
Dimensions: 39" x 20" x 23"
Maximum Weight: 120 lbs
Waste Fee: $100 per Year

RECYCLING BINS HAVE NO FEE

MEDIUM BIN

Capacity: 65 Gallons (240 litres)
Bag Equivalent: Up to 4 Bags
Dimensions: 41" x 27" x 28"
Maximum Weight: 220 lbs
Waste Fee: $185 per Year

LARGE BIN

Capacity: 95 Gallons (360 litres)
Bag Equivalent: Up to 6 Bags
Dimensions: 45" x 29" x 34"
Maximum Weight: 320 lbs
Waste Fee: $270 per Year

ACTION REQUIRED

Each residential property will be delivered a small waste bin and a large recycling bin unless we hear from you. **For alternate request, you must contact the Bluewater Recycling Association at 1.800.265.9799 ext.243 or info@bra.org by February 27th. The program is mandatory, special requests are:**

1) You wish to receive a different size and/or additional bins.
2) You have a commercial or multiresidential site.

Call us at 1.800.265.9799 ext 243 or email at info@bra.org

What will Change?

What do I have to do?

NEW AUTOMATED COLLECTION SERVICE

The council for the Municipality of Middlesex Centre, has approved a proposal from the Bluewater Recycling Association that will upgrade the current waste and recycling program to a new automated collection service starting June 1 of 2015.

Rolling wheelie bins relieve residents of moving heavy cans and bags, keep animals out, and are supplied by the Association. While providing a cleaner community with less litter, the wheelie bin system also improves efficiency and protects workers from injury and the potential of handling dangerous materials. You will no longer need to buy garbage bags or replacement blue boxes.

Each home will be provided with a small wheelie bin for waste and a large one for recyclables. It will enable this enhanced, cleaner, and more efficient service to begin. All residential customers will be required to use the new bin system to participate in the municipal collection program. Individuals generating few recyclables may request the medium bin for recycling.

You can also request one of the two larger bins for waste, if needed. The medium bin holds up to four bags of waste. It is suitable for those generating up to three normal waste bags per collection with the occasional extra bag providing some flexibility. Our large bin is our largest container issued for large waste generators. It is the perfect size for businesses and small apartment buildings who produce up to 6 bags of garbage per collection, or for those who wish to put out their materials less frequently.

The waste and recycling collection frequency will remain the same as present. Service will be upgraded to both sides of the street in urban areas, where possible.

Users will pay an annual fee for collection services billed through the tax bill based on the size of container used for waste. The annual fee will range from $100 to $270 per year. No more bag tags needed on collection day. There will be no fee for recycling.

Your Wheelie Bins are Coming!

Attention: Residents of Middlesex Centre

The **NEW "Wheelie" waste and recycling bins** will be delivered by the Association during the month of May

They will be delivered at the edge of your property where they should be placed when ready for collection starting **June 1st**.

Also watch for your **Easy as 1-2-3** instructional flyer coming in the mail.
Do not use the new bins until **June 1st**. For more info contact us at 1.800.265.9799 or info@bra.org

Automated Collection is as easy as...

1 COLLECT

Collect waste and recyclable materials like normal.

2 EMPTY

Empty your blue box or waste basket into your new "wheelie" bins.

3 SET OUT

Set out your "wheelie" bins at the curb!

The new automated collection system **starts Monday June 1st**.
For more information, refer to the instructional flyer you received in the mail,
visit our website at www.bra.org to download the flyer or contact us at 1.800.265.9799 or email info@bra.org

Your Environmental Alternative

BRA
Bluewater Recycling Association

Your "Wheelie" Bins are Here!

Attention: Residents of Middlesex Centre

Welcome to a new era in waste management!
By now, you should have received your new "wheelie" bins, along with the "Easy as 1-2-3" instructional flyer that was delivered in the mail.

If this is not the case, please contact us immediately at 1-800-265-9799 or info@bra.org.

About Automated Collection
The new automated collection program is designed to increase waste diversion by capturing more recyclables while reducing litter, loss to scavengers, overall costs, and injuries. In the future, it may also serve to provide other waste diversion opportunities such as organics collection.

We have developed a very special section on our website dedicated to the automated collection program in an effort to answer your questions about this innovative new program. You will find it an easy to navigate source of information. Visit www.bra.org/helpautomated.html

Your Environmental Alternative

BRA
Bluewater Recycling Association

6.5 Appendix F

Recyclable Materials

middlesex centre

New Wheelie Bins

Accepted Paper

- Loose newspaper, flyers, catalogues, magazines, no plastic wrapping
- Telephone books, paper back books, books with no hard cover
- Cardboard, boxboard, cartons, paper egg cartons, paper towel rolls
- Paper junk mail, letters, envelopes, brochures, paper bags
- Shredded paper in tied clear plastic bags

Accepted Glass

- All clear and coloured glass food and beverage containers
- Lids, caps, and corks should be removed
- Labels can stay on
- Organic materials must be emptied

Accepted Metal

- Aluminum and steel beverage and food cans
- Clean aluminum foil, plates, and containers
- Empty aerosol containers
- Empty metal paint cans
- All metal lids and caps

Accepted Plastic

- All clear rigid plastic packaging labeled ♳ through ♷ such as containers, bottles, tubs, clam shells, lids over 3 inches
- Grocery and retail bags stuffed in one tied bag
- **See important exceptions below**

Not Accepted Materials

- No foam containers of any kind
- No containers or materials previously used for hazardous materials
- No pails or buckets exceeding a twenty (20) litre capacity.
- No biological containers such as plant trays or pots.
- No other household items such as toys, tools, lawn furniture, etc.
- No construction materials such as pipe, hose, tubing, siding, etc.
- No scrap metal of any kind.

Starting June 1st the Automated Collection Truck will begin collecting the new "Wheelie" Bins in Middlesex Centre. Using the new bins is as easy as 1-2-3!

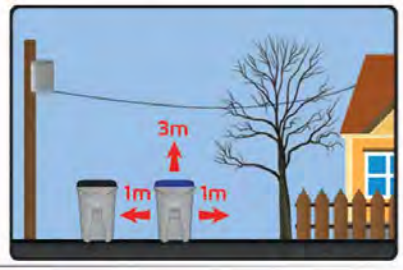
1 Collect.

Collect all your materials inside your home!
TIP: Gather your recyclable materials using your blue box. See the lid of your new bin for acceptable materials. Use small kitchen catcher type bags around the house to capture waste where ever it is generated.

2 Empty.

Empty the blue box contents into the Blue recycling bin.
Place your kitchen catcher bags directly in the Black waste bin.
TIP: Place all the recyclable items loose in the bin. Do not bag or tie anything to help us separate better with the exception of plastic bags and shredded paper which should be bagged before being placed in the bin. Trash may be bagged in bags if you wish.

3 Set Out.



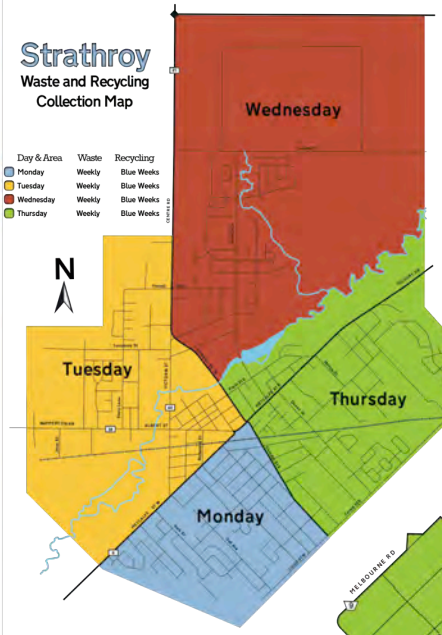
Set out your "wheelie" bins at the road when full (or almost)
TIP: The "wheelie" bins should be placed at least **3 feet away from any other objects** with the wheels and handle pointing towards the house and the lid opening towards the road. The truck arm can reach up to 12 feet. Rural collection is done on one side of the road only, the same side as always or which ever side the driver leaves the bins.

If in doubt, leave it out and check it out at www.bra.org/recycleguide.html

If you have ANY questions about the program or your "wheelie" bins, please visit our site at **www.bra.org** where you will find useful information on all aspects of the automated collection program. Alternatively, contact us at **1.800.265.9799** or **info@bra.org**

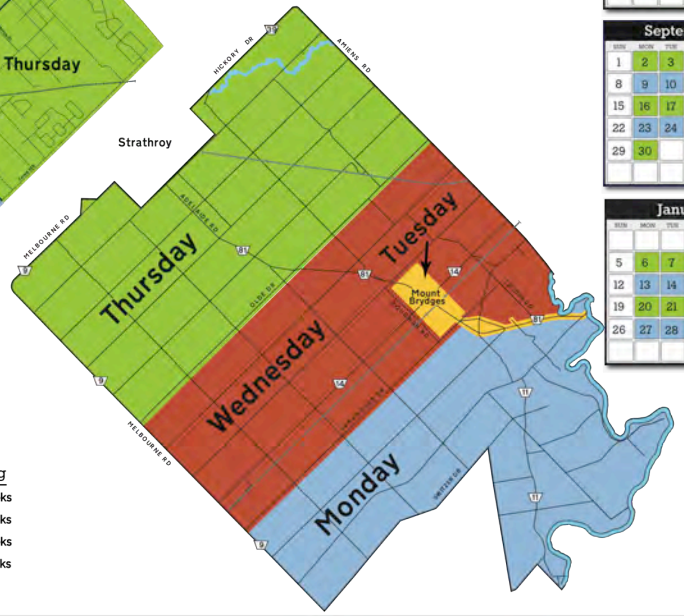
Strathroy-Caradoc Waste and Recycling Schedule

Strathroy
Waste and Recycling Collection Map



Day & Area	Waste	Recycling
Monday	Weekly	Blue Weeks
Tuesday	Weekly	Blue Weeks
Wednesday	Weekly	Blue Weeks
Thursday	Weekly	Blue Weeks

Caradoc
Waste and Recycling Collection Map



Day & Area	Waste	Recycling
Monday	Weekly	Green Weeks
Tuesday	Weekly	Green Weeks
Wednesday	Weekly	Green Weeks
Thursday	Weekly	Green Weeks

How to Use Your Recycling & Waste Bin

- Please do not start using your bins until the week of **January 7th**.
- Refer to the map for your collection day and to the calendar for your recycling week. Waste is weekly, recycling is biweekly.
- Place your bins out for collection in the same location as they were delivered or wherever moved by the driver.
- **Park it** – Place your bins on the shoulder or driveway, not on road.
- **Point it** – The arrow on the bin lid must point to the road.
- **Space it** – Leave at least 1 meter of clearance between each bin and any obstacles such as parked cars, poles & mailboxes.
- Collection is on one side in rural areas, both sides in urban areas.
- All material must fit within the bin and the lid must be closed.
- No extra materials will be collected. Breakdown boxes.
- **Have your bins out by 7:00 am**.
- Mix all recyclables and leave materials loose in the bin. **Do NOT** place recyclables in bags, except shredded paper and plastic bags.
- There is regular collection on all holidays except Christmas and New Years Day where collection is rescheduled usually to the Saturday in between. See our website at www.bra.org for the latest information.

Got a Smartphone or Tablet?

You can download the Association's my-waste App to get instant access to all the waste collection schedules that happen in your neighbourhood and in our community. Visit:

www.my-waste.mobi/bluewater