Final Report

CIF 525.4

Multi-residential Recycling: Implementing Best Practices City of Woodstock

city of Woodstock

Final Project Report, March 2015

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Acknowledgement:

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Executive summary

This is the final report of a project implemented by the City of Woodstock between with the majority of the data collection and analysis being completed during the period of May 2010 and November 2010. The project goal was to increase recycling rates by implementing best practices in the municipal multi-residential recycling program. Waste Diversion Ontario - Continuous Improvement Fund (WDO – CIF) provided financial and technical.

In 2010, Woodstock provided blue box recycling to 13,000 households, including 4,265 households in multi-residential buildings. In 2015, the total number of single family households serviced by the City has increased to 15,000, while 3 new MR buildings with approximately 75 units have been added to the MR program. The number of multi-residential buildings provided with municipal recycling service increased from 30 to 49 during this project implementation in 2010. This represents a corresponding increase in terms of residential units from 2,067 to 2,571. All 101 multi-residential properties are provided with municipal recycling service, those previous are numbers of those 101 properties that have decided to implement a centralized recycling setup.

The best practices that were implemented during this project included: creating a database of multi-residential properties, evaluating the recycling performance of individual buildings and estimating the overall program recycling rate, increasing the number of recycling containers at buildings and distributing new promotion and education materials to residential and building staff in 2015. The average recycling rate at buildings was estimated at 70 kg per unit. 95 gal recycling containers were added to the program, increasing the recycling capacity from 21 litres per unit to 54 litres per unit. It is estimated that implementing best practices had the effect of increasing recycling by 24 per cent or from 70kg per unit to 86.8kg per unit.

The City of Woodstock developed a Waste Diversion Strategy that incorporated the findings of this project, but let it be known that this program was initiated separate and before any larger strategy was put in place. The entire goal was to implement best practice strategies at multi-residential facilities within the City of Woodstock.

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Introduction

The City of Woodstock chose to participate in the CIF Multi-Residential Recycling Program in order to divert recyclables from the landfill. There are a number of multi-residential properties within the municipality that before the program, each individual resident was responsible for bringing their materials curbside for pickup. This was a major inconvenience for a majority of residents due to a lack of storage space within their units, and now with containers in place recycling rates have increased.

The goal of this project was to implement best practice methods for recycling within a multi-residential context. We researched what previous municipalities had done and were therefore able to develop our own strategy that would best serve the residents of this community now and into the future. The City of Woodstock is currently in the early stages of developing a larger overall Waste Diversion Plan of which this program is being included, in the continued effort to divert waste and find alternate environmentally responsible methods of disposal.

Background: multi-residential recycling program overview

The City of Woodstock currently collects recyclables under a two-stream blue box system on a bi-weekly basis from approximately 13,000 single family households. The Province of Ontario defined, under the Environmental Protection Act Ontario Regulation 103/94, Multi-Unit Residential Buildings that "the owner of a building that contains six or more dwelling units shall implement a source separation program for the waste generated at the building." The City of Woodstock at the time of this audit had 4,566 units within 103 buildings that needed an improved setup for collecting its recycled materials.

Table 1: Municipal Blue Box program (October, 2010)

	Curbside	Multi-res	Total
All households	13,000	4,566	17,566
% of total households	74%	26%	100%
Households with municipal Blue Box program	13,000	2,067	15,067
% with Blue Box program	100%	45%	86%

Recycling is collected bi-weekly and sorted by two streams, containers and fibres. We require residents to have their blue boxes at the curb ready for pickup by 7:30 am on their designated recycling day in order for materials to be collected. Individual households, at various times in the past have been provided with blue boxes through a number of government grants. Currently these blue boxes are available for purchase by city residents at cost. It is recommended that each household have a minimum of two containers, one for each stream. At this time there are three trucks used for collection, and multi-res properties are collected during designated curbside routes. All properties are provided with municipal recycling collection should they choose to participate. Of the 103 multi-res buildings, only 30 had some form of recycling collection setup for their residents prior to implementation of this program. In 2008 Woodstock made a switch from a labour intensive multi-stream recycling program to a much more practical two-stream system.

Municipal garbage collection follows much of the same guidelines, with a bagtag system put into place in 2003. Homeowners are able to put out as many bags as they would like so long as each bag has a proper tag and adheres to outlined weight restrictions.

There are a number of factors that affect participation in the municipal recycling program. For example, more often it is the larger buildings that have ample space available are the participants, this usually means that they are newer as well. Newer buildings were built with participation in recycling in mind, most older buildings can only accommodate a garbage collection system. It was found that more apartment buildings participate than condominium developments usually because apartments have a manager or superintendent on-site to monitor and execute a recycling program.

Table 2: Multi-Residential buildings and Blue Box services

	Buildings	Units	Units per building
Total	103	4,566	44
With Recycling	30	2,067	69
No Recycling	73	2,499	34
% Recycling	29%	45%	
	Before Project	**After Project**	**% Change**
Buildings with Recycling	30	49	63%
Units with Recycling	2,067	2,571	24%
Units / building	69	52	

The project scope

The project scope included four main phases:

Phase 1: Develop and maintain a database of buildings

Phase 2: Benchmark recycling performance

Phase 3: Increase recycling container capacity

Phase 4: Provide promotion & education materials

Each of the phases is discussed in the following sections.

Phase 1: Develop and maintain a database of buildings

Through the funding and assistance from CIF, an access database of the multi residential properties was created. This data proves useful in maintaining records for building owners, property managers, site superintendents and the number of recycling carts per unit.

Sources & collection methodology

Data was recorded manually onto specific site visit forms. A works summer student conducted a site visit at each location, first visiting with and collecting contact information from the on-site

representative and then recording their thoughts and ideas for an ideal recycling setup within their building. The next step was observing and recording data on the existing recycling program, if one was in place. Challenges of the site visits were mainly restricted to whether or not an individual was on-site to grant access and available for discussion.

Database and completeness of data

The input of data involved a few steps, the first was taking the manually recorded data from the site visits and inputting the data into an Excel spreadsheet. The data was then stored and updated until such a time as when the database was developed. Once the database was developed by a third party using the Microsoft Access program, it was installed onto 4 computers and connected to the server. The data was then transferred from Excel into Access where it is now more readily available and can be easily updated at any time on one of the computers. Any and all data that was obtained during this program is now stored on the database.

Table 3: Database summary

Buildings	Total in municipality[1]	Recycling provided by municipality	Site visits completed[2]	Data updated[2]
Number of buildings	103	100	95	103
% of all buildings	100%	97%	92%	100%

Notes

[1] Total number of buildings of six or more residential units.

[2] Site visits and data updates were completed at all buildings where access was permitted.

Data maintenance

After the initial investment to create an up-to-data database has been it is important to protect this investment by maintaining the database and ensuring a process of keeping it up-to-date. The current database is in Microsoft Access and is a program that staff is not familiar with, making it difficult to maintain the database. Staff contacted the CIF project manager to obtain some additional support from the creator of the database and the creator has yet to contact staff. Staff are currently with internal Information Technology staff to have this information exported into an excel database so staff can work this data and maintain the data.

Summary and recommendation:

Phase 1 included obtaining and recording data on each multi-res building within the City of Woodstock. Baseline information is now stored successfully on a database that includes all 103 multi-res properties. Staff will be working to convert this database to excel for ease of use and future upkeep of the data.

Phase 2: Benchmarking recycling performance

It is difficult to obtain accurate performance rating from the multi residential sector without performing a dedicated route to track the material weights. The multi residential buildings are collected as part of the regular collection routes. The City of Woodstock has a truck scale to track these weights and will be scheduling this benchmarking when resources become available. The intent is to conduct a dedicated multi residential route every 6 months to track the multi residential performance. This will also be used for updating the Superintendents handbook and conducting more site visits with building superintendents and property managers at underperforming properties to try to improve recycling capture rates.

In general, since the implementation of the multi residential recycling program and the initial site visits, the number of building participating in the City's program has increased and the number of 95 gal carts in the system continues to increase, giving an indication that recycling capture rates are improving. Staff has recently placed an order for an additional 96 recycling carts due through the CIF joint purchasing program to the increase demand for more recycling capacity at the multi residential buildings.

Although this project is wrapping up through this report, the City plans to work to continue to improve on recycling in the multi residential buildings by continuous performance monitoring.

Procedure for estimating recycling rates

The procedure for estimating the recycling rates involves using the data from program participants. The data needed is the total number of units in a building, the number and size of recycling containers available to the residents and the average fullness of each container. With the use of both the database and Microsoft Excel we were able to estimate recycling rates of our programs participants. The City's coop student completed visual estimates of recycling rates during site visits prior to implementation of the MR Best Practices and following implementation. Figure 1 & 2 are comparisons of the pre vs post rates.

Figure 1: Comparative building recycling rates

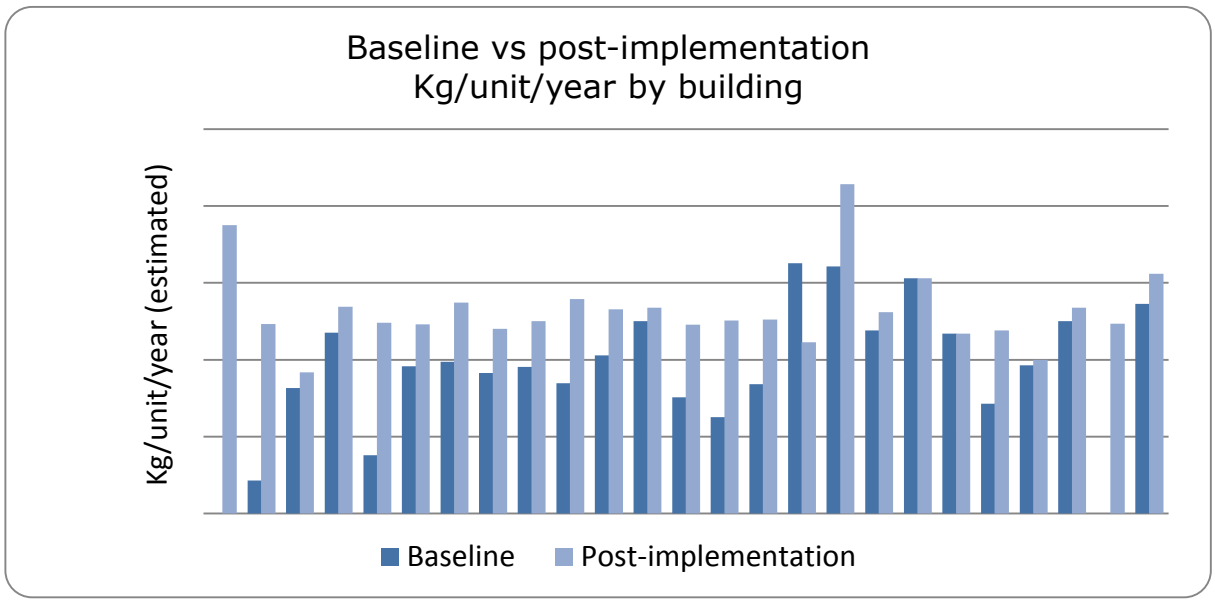
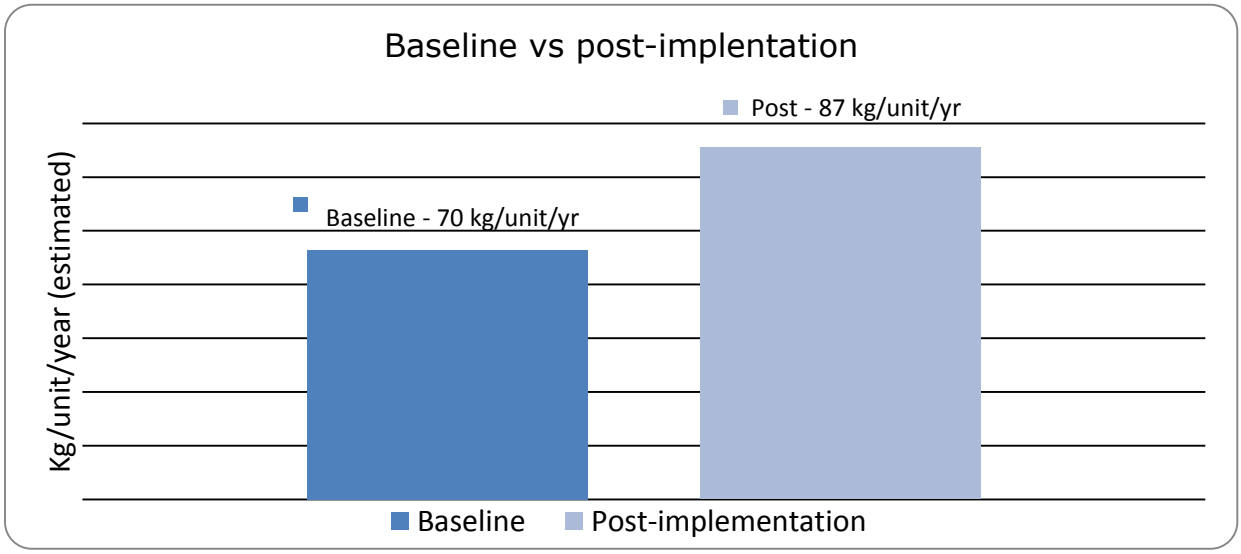


Figure 2: Comparative recycling rates for period prior to MR Best Practice implementation (baseline) vs Post Implementation



Barriers to Recycling

Site visits were completed at 92% of the multi-res properties in Woodstock; 5 properties that were not included were from no interest or no contacts being available. Performance was evaluated by 9 different criteria on a scale of 1-3, 1 being bad and requiring attention and 3 being excellent. During site visits it was quite obvious if performance was bad or excellent, with the majority of buildings being responsive and willing to cooperate.

Another barrier was the presence of an individual on-site who would be willing to monitor their own program. This became an issue with condo developments where a proposal was made but ultimately turned down on the basis that there was no one to look after the setup and to ensure the carts got curbside for pickup. Efforts were made to enter some of these properties with a truck but due to the lack of safe turn around space we are unable to assist them at this time.

Table 4: Barriers to recycling noted at site visits completed at x buildings

Barrier to increased recycling	Requires corrective action	% of total	Set high standard 'model building'	% of total
OCC managed well	5	16%	3	10%
Contamination	3	10%	0	0%
Access to recycling	0	0%	1	3%
Loose materials noted	2	6%	1	3%
Containers overflowing	5	16%	0	0%

Barrier to increased recycling	Requires corrective action	% of total	Set high standard 'model building'	% of total
Cleanliness of area	0	0%	2	6%
Area well lighted	0	0%	1	3%
Well labelled & signed	11	36%	1	3%
Total	26	86%	9	30%

Featured buildings

An exemplary participant is a condo development whose ideal setup has been shared with others and may be used in the future. Condos were a particular barrier because there is no person on-site to look after such a program, but 928 Lorene Street shows excellent performance for their setup that easily accessible and easy to use. The condo board had a separate building constructed to house garbage and recycling that acts as a depot and drop-off for the residents until the scheduled pickup time.

Figure 3 & 4: '928 Lorene' provides a waste station on their property with more than adequate space for garbage and recycling containers

Phase 3: Increase recycling container capacity

Having enough storage space for recyclables is one of the most critical factors in a successful recycling program and it is important to address this first before other program improvements are put in place. During Phase 2 site visits the baseline container quantities were recorded and information was collected

about where containers could be relocated within the building to provide more convenience to residents. Site visits also provided the opportunity to determine if additional containers are required and where additional containers would be stored and ultimately used.

Type of recycling containers

Recycling storage space is referred to as 'capacity' and is the shared recycling containers used by building residents to deposit their recyclables.

The City provides 95 gallon recycling carts at 50% cost (other 50% paid through this program) to multi residential buildings and complexes. The number of containers is based on the number of residential units. The City recommends one cart per seven residential units to determine the cart capacity to begin with. Some multi residential facilities have requested additional carts based on the success of their program.

How much recycling capacity is being provided?

Based on the provincial target of recycling 70% of all recyclables it is recommended that each residential unit be provided with a minimum of 50 litres of storage capacity. This is equivalent in size to a standard 14 gallon blue box. In terms of multi-residential containers, the following guidelines are recommended by CIF and are considered best practices:

- 360 litre carts – one cart for every 7 residential units
- Bulk bins - one cubic meter for every 15 residential units (eg, a 4-yard bin for 60 units)

Continuous Improvement Funding is provided on the basis that municipalities implement these best practice ratios. The guidelines represent average requirements and it is assumed that at the building level there will be ranges depending on the demographics.

From the implementation of this program, the average capacity per unit (L / unit) for MR households in the city is now 54 L / unit, up from 21 L / unit. Table 5 further breaks down the change in collection container capacity as a result of this program.

Table 5: Total number of recycling containers

	Baseline	Post – implementation
Units with Recycling	5,050	5,120
95 Gallon carts	300	500
3 yard bins	0	12
4 yard bins	0	16
6 yard bins	0	8
Total program capacity (L)	108,000	275,220
Capacity per unit (L / unit)	21	54

What is the connection between recycling container capacity and recycling?

Figure 2 below displays a very clear trend in the City of Woodstock multi-residential program. The trend connects a building's average capacity per unit with the recycling rate observed through the site visit visual assessments. What we observe is that as residents are provided with additional capacity on site to accept their recyclables, the recycling rate increases. The trendline identifies an interesting relationship, in that for every litre per household/unit (L/unit) of collection container capacity on site residents recycle ~1.86 kg more recyclable material per year (or roughly 2 percent more). The data observed in the scatterplot is very tight to the trend line through the best practice range of the plot and becomes more loose as capacity exceeds 65 L/unit. From this, we can gather that there may be a point when extra capacity becomes unnecessary and the focus of our future programming should focus on maintaining the upper range of the best practice range to achieve the best diversion for capital outlay of carts

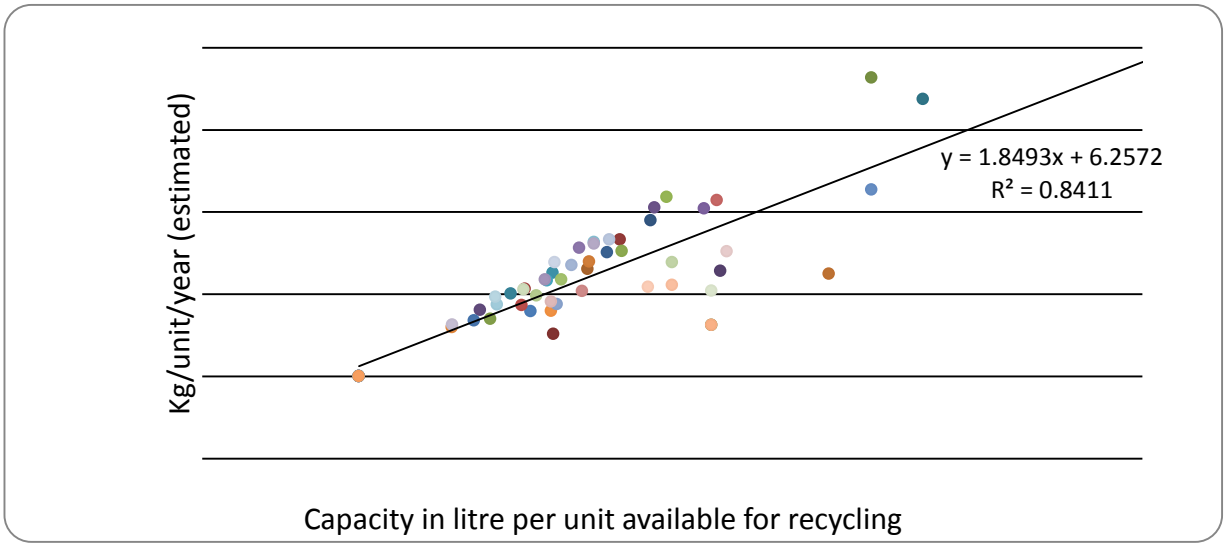


Figure 5: Relationship between number of recycling containers and recycling

Based on a sample of buildings taken for analysis, we can see that prior to implementation of this program, 18 of 25 bulidings had below Best Practice collection container capacity available for MR households. Following implementation, only one of the sample set buildings did not have capacity up to the recommended levels; due to limited storage capacity for containers on site in this case. The data in Table 6 presents the change in capacity for the sample set and includes comparison of recycling rates for buildings with low, best practice range, and higher than best practice amounts of capacity on site. A similar trend is observed to that in Figure 2, in that residents who live in buildings with more capacity tend to recycle at greater rates, on average, than their peers with less capacity.

Table 6: Recycling capacity and recycling rate, baseline and post-implementation

Capacity range	Baseline		Post-implementation	
	Number of Buildings	Kg/unit	Number of Buildings	Kg/unit
Best practice range: 45 to 55 litres/unit	2	106	9	119
Low: less than 45 litres/unit	18	78	1	100
High: more than 55 litres/unit	5	140	15	142

Phase 4: Provide promotion & education materials

Print materials

A project goal was to distribute new print materials to promote recycling and educate building residents and staff about what can and cannot be recycled. Municipalities have access to print templates (resident flyers, posters and signs for buildings, container labels and a guidebook for superintendents, property managers and building owners) through the CIF website. The template materials were customized with City of Woodstock specific information.

The *CIF Best Practice Guidelines* recommends strategies for distribution of print materials which include that municipalities take responsibility for: distributing print materials directly to residents, distributing and displaying posters at multi-residential properties, and applying labels to recycling containers. During the 2010 operations year, the coop student distributed flyers, posters, and labels to participating MR buildings in the City. The superintendent's handbook will be distributed this upcoming year as a component of CIF project 412.

Table 7: Summary of Promotion & Education materials used

P&E Component	Number distributed	Method of distribution
Resident flyers	10,500 - 1 per residential unit	By municipal staff to each unit
Posters	1,500 - 5 to 10 per building, depending on bldg size	Posted by municipal staff on each floor (chute room), laundry room, lobby, mail room, etc.
Containers labels	3,000 – 2 per cart (top and front)	By municipal staff
Recycling guidebook	400 - For each superintendent, property manager and property owners	By mail or provided during site visits

Project budget and schedule

The following table, Table 8, is a summary of budgeted costs for this programming versus the actual costs incurred to complete the implementation process. The City was able to achieve significant cost savings in the purchase of 96 gallon carts for MR buildings through participation in the CIFs cooperative tender for collection container capacity purchase program.

Table 8: Project budget, planned and actual

Description	Unit	Quantity (est.)	Unit Cost (est.)	CIF Approved (upset limit)	Quantity (actual)	Unit Cost	Cost
Staff support	Building	105	$35	$3,675	105	$35	$3,675
Increase capacity	Carts	350	$50	$17,500	215	$50	$10,760
Superintendent's handbook	Design	1	$500	$500	1	$500	$500
Final report	Report	1	$4,000	$2,000	1	$4,000	$2,000
Total				**$23,175**			**$16,935**

Concluding comments

City staff were pleased with the initial roll-out of the municipal MR recycling program. Staff are committed to maintaining this service and are always keen to support new and existing buildings that sign on to the City's services. Staff are maintaining collection container capacity on site, through replacement programs for damaged carts and the provision of recycling carts and larger bins to new buildings. Staff are also planning to run MR dedicated routes, beginning in Q2 2015, to actively monitor diversion through this program and to better understand the impacts of P&E and outreach to this sector.