
City of Barrie Multi-Family Fibre Bag Project



Submitted by:

City of Barrie

to:

Waste Diversion Organization of Ontario

with assistance from:

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EXECUTIVE SUMMARY

The City of Barrie designed and implemented a pilot study to test the impact of providing two different types of recycling bags to multi-family residents. The objectives were to determine to what extent these bags would encourage residents to recycle more and result in increased recycling capture and recovery rates and decreased contamination. An important element involved surveying residents of the subject buildings to understand their attitudes and opinions towards recycling and these specific initiatives, as a means of fully understanding the measured diversion results. This study did not undertake a comparison of the two, very distinct systems.

The pilot tested a reusable blue bag system at a representative 64 unit low-rise building. Two bags were distributed door to door to each unit (with one bag each to store and transport containers and papers) along with a letter describing the intent of the program, with suggestions for bag usage and a reminder about what recyclable materials are accepted in the City's program. These bags have a long lifespan (three to five years) and are designed for continuous use.

The pilot also tested a second kraft recyclable bag at a representative 144 unit high rise building. This bag featured an illustration and detailed messaging that explained that the bag was to be used to store and transport paper fibres to recycling carts, to be reused as long as possible and ultimately, to be recycled. It was distributed door to door with an attached letter that described the intent of the program with suggestions for its use, reminding residents that containers should be recycled as usual. This bag was provided to nearly 800 additional units in nine buildings for more limited testing.

The study team monitored set-out at the two subject buildings over a brief, four week period. The study also involved detailed sampling that was conducted over two- three week periods, before the bags were distributed and after they had been in the buildings for one month.

Waste sampling at the 'reusable blue bag' building showed that overall capture rates increased slightly from 65.2% to 65.6%; diversion increased from 37.5% to 38.8% and contamination in the recycling carts decreased from 5.7% to 3.8%. This building started with high diversion, and the modest increase during the life of the pilot is thus, understandable.

Waste sampling at the 'recyclable kraft bag' building showed a more pronounced increase in overall capture rates, from 47.4% to 59.9%. Overall waste diversion rates climbed from 25.5% to 27.9% and contamination in the recycling carts dropped from 8.5 to 6.1%. It was particularly notable that container diversion rates increased along with papers - an unanticipated bonus.

Communications efforts were deliberately kept to a minimum - the intent was to determine how much of a diversion increase could result, even given minimal communications. In addition to providing the bags and letters, communications activities consisted of surveying residents' opinions about recycling and the pilot systems. Surveys were conducted after the final waste audits had been completed. The surveys helped shed light on why the two systems caused the changes they did, unearthing additional issues that warrant consideration for future studies of this type.

The City of Barrie is considering the option of distributing recyclable kraft bags to its multi-family dwellings 2-4 times per year as a prompt to remind residents to recycle and as an opportunity to provide seasonal specific messages (i.e. during Christmas season).

1.0 INTRODUCTION

Improving and sustaining the recycling performance from apartment buildings has been a challenge for many Ontario municipalities. Barriers to recycling in apartment buildings contribute to the generally poor levels of recovery. Some of these obstacles include:

- Limited space within the unit to store two separate streams of recyclables;
- The need to separate materials at the recycling carts results in some residents collecting those materials that are most convenient to store such as flat and dry newspaper and boxes;
- Municipalities discourage residents from placing plastic bags in the recycling carts yet carrying recyclables to the carts is often a one-way trip that dictates the need to dispose of the bag;
- Lack of communication and education (C&E) initially and no training or resources for superintendents to educate new residents;
- C&E materials to residents are not consistently available or maintained to ensure acquired appropriate behaviour is reinforced;
- The convenience of using a garbage chute as compared to the inconvenience of taking recyclables down to collection bins or carts, typically outside at the rear of the building;
- Security concerns in some buildings, especially at night, and accessing outside bins or carts during inclement weather;
- Bins are not always labeled properly (sticker comes off and they are not replaced);
- Some locations have locked garbage enclosures because of the 2-bag limit. If residents don't have a key with them, they contaminate recycling carts with their garbage bags because of their easy access.

Through their recycling contractor, the City of Barrie provides weekly recycling collection service to all multi-family buildings using a roll-out cart based system. The City provides roll-out carts for paper products (newspaper, magazines, boxboard, cardboard and mixed residential paper) and container packaging (aluminium cans, rigid foil products, ferrous cans, glass bottles and jars, PET bottles, HDPE bottles, aseptic drinking boxes). The City of Barrie has implemented progressive programs to improve multi-family recycling including:

- Publishing a promotional and educational calendar, delivered through the Barrie Advance, a free newspaper distributed to all residents, including apartment dwellers. One month in the calendar is dedicated to apartment recycling promotion and education;
- Conducting waste composition study at two apartment buildings in 1999;
- Under its partnership agreement with CSR: Corporations Supporting Recycling, developing and testing the Master Recycler program for apartment residents, superintendents and building management.

In late 2000, the City submitted a proposal to the Waste Diversion Organization of Ontario (WDO) to pilot test two different apartment recycling enhancement programs.

Over a four-month period, the City of Barrie tested two separate 'bag-based' programs. The first pilot tested the use of two reusable blue recycling bags to aid residents to store and

separate containers and paper recyclables. The second test involved distributing a large brown kraft paper promotional bag for paper fibre collection. The team distributed bags to about 1,200 apartment units and conducted detailed waste diversion impact monitoring at two buildings.

This report details the development, implementation, monitoring and assessment of this study. The intent of running the pilots simultaneously was to determine if they would improve waste diversion and to benefit from efficiencies in monitoring and communications. Although the two systems focus on strengthening multi-family waste diversion, they are discussed separately in the report, and comparisons are not drawn between the pilots.

1.1 Study Participants and Sponsors

The pilot's sponsors and participants were:

Organization	Participants	Role
City of Barrie, Environmental Services Division	Tracy Quann-Strasser Mark Collins	Project Sponsor
Waste Diversion Organization	Joe Hruska	WDO Liaison
Enviros RIS	Gordon Day	Technical Consultants; External Project Manager
To the Point Communications	Margot Beverley	Communications Consultant
McConnell Weaver Communications Management	Barbara McConnell	Communications Advisor
R. Bull Environmental Services	Rick Bull	Waste Auditor

1.2 Report Structure

The remainder of this report presents the background information, findings and conclusions from the two buildings in the following sequence.

- 2.0 Study Components and Methodologies
- 3.0 Pilot Study at Cedar Grove Apartments
- 4.0 Pilot Study at Barrie Anne Gardens
- 5.0 Conclusions and Recommendations.

2.0 COMPONENTS OF STUDY

This study consisted of four components, namely, building identification, recycling monitoring, waste diversion auditing and communications. They are described below.

2.1 Building Identification

This study team identified two 'core' buildings as the focal point of the pilot. These buildings would receive the communications materials, with baseline and post-pilot waste auditing and with a follow-up survey of residents' opinions.

Several 'supplementary buildings' were also chosen to receive the paper fibre bag, without the waste audits or resident surveys. A visual monitoring procedure was established for these buildings.

Identifying the subject buildings was a more difficult task than had been anticipated. Determining what constitutes a 'representative' building in Barrie and finding appropriate locations that fit our size requirements and the profile was a challenge. Designating supplementary buildings that could be monitored and whose management were agreeable also required a high level of effort.

The study team chose a two-building walk-up complex for the reusable blue bag pilot, based on its size, population and the interest of its management and superintendent to participate the study. The second core building, the designated kraft bag pilot location, is owned by a company that has worked with the City on other recycling projects. Its selection was based on size (large enough to produce reliable results), it offered a representative population profile and we could count on the support of building management.

2.2 Bag Selection

The first bag tested is a reusable plastic blue bag provided by Superior Products Ltd. It is made of woven plastic with handles. The bag measures 42 cm (height), 49 cm (wide), with a 12 cm (base). One side carries the message, 'We Recycle !', beneath a mobius recycling loop. The bag costs \$3.97 per unit, including the screening.

The second is a kraft paper bag, measuring 33 cm (height), 38 cm (width), 15.25 cm (base). On a 'short run' of 1,000 units, the supplier was unable to print directly on the bags. Instead, the promotional message was printed on labels that were placed on the bags. This added cost increased the per bag cost to \$1.18, including development and labeling costs.

The cost of a larger run on kraft bags with the recycling message printed on the bag is much more cost effective. The quotation from the supplier for 5,000 bags was \$0.52 per bag and \$0.47 per bag for 10,000 bag order.

2.3 Recycling Monitoring

A local contractor who has conducted several waste audits for the City of Barrie was hired to complete monitoring and waste audit portions of the study. R. Bull Environmental Services (RBES) monitored set out at the two subject buildings over a four week period. The monitoring program determined the extent to which carts were being used, if there was capacity to absorb additional recyclables, whether contamination was a factor and if there were any obvious

impediments to improving recycling at these buildings.

2.4 Recycling Auditing

A baseline waste audit of the garbage and recycling streams was completed in January, before bags were distributed in the buildings. This audit provided baseline generation and recovery rates of recyclable materials as a baseline to measure the impact of the pilot.

Sampling occurred over the three-week period before bag delivery and over a three-week period after distribution using the exact same procedure. RBES collected the material, sorted and weighed recyclables. Materials placed in the recycling carts were collected, sorted and weighed for three consecutive weeks. Waste from the building was also collected, with recyclables extracted from the mixed stream over a one-week period.



2.5 Communications

The intent of this project was to increase recycling recovery rates by providing residents with an alternative recycling collection system and communications materials. Addressing the persistent question of "is there a comparable container to the blue box that will encourage apartment residents to recycle?" the pilots tested two distinct systems.

Residents of one building were asked to separate their containers and papers into two plastic reusable recycling bags, and to use them to carry materials to the recycling carts. Residents of the second building were asked to use a kraft paper bag to store and transport their paper recyclables only, using this bag as many times as possible and recycling it when it could no longer be used. The kraft bag included a label with illustrations and written instructions for its use. The instructions highlighted that containers should be recycled as usual.

2.4.1 Communication Objectives

The communications aspect of this pilot was built on the insight gained in previous studies and recent Toronto pilot studies. Of the many findings in these studies, two stood out:

- ◆ Apartment residents are generally willing to take recyclable materials downstairs to carts located near the building, regardless of whether they use a chute for garbage disposal;
- ◆ Facilitating storage and transportation of recyclables is an important key to encouraging further or deeper participation¹.

With that in mind, the communications objectives of this study were to:

- ◆ Assess the results of residents' exposure to minimal C&E materials with a 'prompt' designed to facilitate recycling; and

¹ Enviro RIS, *Report on Evaluation of Toronto Apartment Blue Bag Pilot*, December 2000

- ◆ Assess behaviour and attitudes to the pilot systems in order to shed light on the waste diversion results.

The central question was whether receiving a single kraft bag or the two reusable blue bags, with minimal additional C&E materials would motivate people to recycle more effectively.

2.4.2 Communication Methodology

The study tested whether we could apply a simple C&E strategy that included a 'prompt' (the bags) to increase recycling participation and diversion.

COMMUNICATIONS ACTIVITIES

Pre-Launch

- developed profile of 'representative' multi-family buildings, with City and multi-family representatives
- identified potential subject buildings; contacted management to confirm
- identified preferred core buildings; contacted superintendents to explain intent of the study, what was involved, their roles, timelines and to confirm their participation
- identified appropriate bag 'products' available from Canadian suppliers
- created messaging for paper bags; supplied artwork for printing on the kraft and reusable blue bags
- identified additional buildings for supplementary study of kraft bag; contacted building management/superintendents to explain intent of the study, their roles and arrange for distribution

Launch

- distributed plastic reusable bags at Cedar Grove Apartments door to door with letters
- distributed kraft bags at Barrie Anne Gardens, door to door, with letters
- distributed kraft bags at an 780 additional units in supplementary buildings

Post Audits

- survey of residents in core buildings
- random surveys of residents in supplemental buildings
- thank you letters distributed to all superintendents; small thank you gifts for superintendents of core buildings

2.4.3 Communications Materials

The bags were, in effect, the communications vehicles. Distributed with letters to explain the systems and the intent of the pilots, these systems were simple, cost-effective and replicable.

Plastic Reusable Recycling Bag - Cedar Grove Apartments:

The communications program at Cedar Grove consisted of distributing two plastic bags, each with the reminder "We Recycle!", along with a letter. The letter (included in Appendix A) recommended that the bags be used to separate, store and transport recyclables, with one bag each for fibres and containers. Over the signature of Tracy Quann-Strasser, Waste Reduction Officer, City of Barrie, the letter described the program, reminded residents of what materials are recyclable and mentioned that city representatives would survey residents' opinions at a later date.

Messaging on the plastic bags included three logos on one side for: The City of Barrie, CSR: Corporations Supporting Recycling and Waste Diversion Organization of Ontario. The flip side suggested: "We Recycle!". The logos were printed directly onto the reusable bags.

Kraft Paper Recycling Bag - Barrie Anne Gardens:

The communications program at Barrie Anne Gardens consisted of distributing a large kraft shopping bag to each unit. The bags featured a label with an illustration and messaging that explained their use (to collect and carry papers to recycling carts) and that they should be recycled when no longer usable.

A letter (included in Appendix B) was paper-clipped to the front of each bag (to prevent ripping) highlighting that the bags should be used for paper recycling only. Like the Cedar Grove letter, it described the pilot program, and asked residents to collect their recyclable papers in the bag and use it to carry fibres to the recycling carts. Over the signature of Tracy Quann-Strasser, the letter encouraged residents to recycle containers as usual and mentioned that representatives would survey residents' opinions at a later date.

With a 'short run' of only 1,000 units, the message was printed on labels for this pilot. For wider distribution, it would be printed one sided, directly on the bags in a single colour. The face of the bags provides ample room to highlight program sponsors (a potential means of cost-sharing for wider roll-out). The message file is available digitally in Corel Draw (v 9.0) and can be modified.

Kraft Paper Recycling Bag - Supplementary Buildings:

As at Barrie Anne Gardens, kraft paper bags were distributed to each unit of nine additional buildings, with a letter that was paper-clipped to the front. Like the other letters, this one described the pilot program, reminded residents that paper fibres should be placed in the bag and encouraged them to continue to recycle containers as usual, mentioning that a representatives might survey residents opinions later.

Bag Distribution

Distributing the bags involved one person entering the buildings and leaving a bag and letter on each unit's door handle. Wherever possible, bags were handed directly to residents with a brief explanation. A building with a simple configuration and 250 units could be covered in about one hour. More complex buildings required more time. Attaching letters to the bags and arranging distribution with the building superintendents were the most time-consuming aspects of distribution.

Residents who we met during distribution were interested in the program, pleased to receive

the bags and participate in the study.

Post-Pilot Surveys

In early March, a week after the final recycling audits were complete, the communications team conducted door-to-door research on attitudes towards the pilot systems. This involved two evenings at Barrie Anne Gardens and one at Cedar Grove Apartments, with additional surveys completed by telephone.

Two representatives worked through the building, asking residents to share their opinions, using a customized survey based on the most recent Toronto apartment survey work conducted by McConnell Weaver Communications Management. The communications team conducted seventy-eight surveys, in which only one respondent reported that they do not recycle.



There was no need to decommission the program since the plastic reusable bags can be used indefinitely and the kraft bags have a finite life span.

2.4.4 Communications Sequencing

Bags and letters were distributed to the core buildings on Friday, February 9, 2001. The supplementary buildings received their bags that day and throughout the next week.

When the final recycling audits were complete (after the bags had been in the buildings for one month), the communications team conducted the door-to-door surveys.

3.0 PILOT STUDY AT CEDAR GROVE APARTMENTS

3.1 Study Objectives: Reusable Blue Bags

Many Ontario municipalities have used reusable bags to assist apartment residents with recycling. Often considered the apartment equivalent to the blue box, these bags provide a constant reminder to apartment residents that the building does have a recycling program. The recycling bags assist the resident to store, transport and empty recyclables conveniently. However, it is common for municipalities to only provide the bags to residents once, and that is typically a program start-up. New residents typically do not receive the bags (either from the municipality or previous tenants) and thus, the municipality's investment is not fully utilized.

The objective of the reusable recycling bag pilot was to determine if providing two reusable blue bags would encourage residents to increase paper and container recovery. The specific objectives of the pilot were to:

- 1) Determine if the reusable blue bags would boost capture rates for all recyclables;
- 2) Measure the impact of the bags on paper and container capture rates and contamination rates before and after the introduction of the bags; and
- 3) Survey the residents to obtain and assess their opinions about the reusable bags.



3.2 Building Profile

Cedar Grove Apartments, operated by Lorne Properties Inc., consist of two low-rise buildings located at 131 and 141 Edgehill Drive, at the corner of Edgehill and Cedar Pointe. The buildings house twenty-eight and thirty-six, one and two bedroom units, for a total of sixty-four units. Their population includes a mix of young couples, a few seniors and families with children.

Both buildings have three separate entrances, with no internal connection between the sections. Six recycling carts are located near the entrance to the parking lot at each building, beside a garbage shed. The buildings do not have garbage chutes and residents transport their garbage to the shed.

The six carts are evenly split between fibres and containers and marked with stickers. The garbage shed houses two large plastic bins where residents place their waste. While neither is exceptionally convenient, residents are accustomed to walking across the parking lot to dispose of garbage. Carrying recyclables to the same place is accepted.

Recyclables are collected by the City, curbside on Friday. The City also collects garbage, weekly, on Wednesdays.



3.3 Monitoring Program

After the baseline data were gathered and the paper bags had been distributed, ongoing monitoring of the waste and recycling streams began. Each week, on Thursdays, from February 16th to March 2nd, RBES collected the roll-out carts for recyclables, transporting them to the City's Landfill. The material was sorted into specific categories and weighed. Two weeks after the bag distribution, the waste from the building was collected and recyclables were identified and recorded. The information gathered before and after the bags were distributed allowed the project team to determine a 'baseline' recycling recovery rate (expressed in kilograms per unit per year) and capture rates (% of materials recycled).

Findings from the baseline sampling include:

- ◆ An overall recyclables recovery rate of 101 kg/unit/yr, indicating that the program is above the provincial average for per unit recovery;
- ◆ An overall waste diversion rate of 37% which indicates that the program is extremely effective and far exceeds the average apartment recycling program;
- ◆ Capture rates that were also much higher than provincial averages. The recycling capture rates at Cedar Grove are comparable to well-performing single family residential neighbourhoods;
- ◆ Contamination measured 5.7%.



The summary results from the monitoring program for Cedar Grove Apartments are presented in Table 3.1. The table presents the annualized recyclables generation and recovery results from the baseline monitoring and post-distribution monitoring. The capture rates for each material are also presented for each sampling period.

Results of the post-campaign monitoring program show:

- Overall capture rates for all recyclables increased slightly from 65.2% to 65.6%;
- Capture rates for paper products decreased from 68.7% to 66.9%, whereas annualized recovery stayed virtually the same (72.98 kg/unit/yr versus 72.46 kg/unit/yr);
- Capture rates for containers increased from 57.5% to 62.5%, while recovery again remained the same (28.03 kg/unit/yr versus 28.82 kg/unit/yr);
- Contamination rates decreased from 5.7% to 3.8%;
- The overall measured diversion rate for the building increased from 37.5% to 38.8% (it should be noted that these diversion rates are some of the highest measured by the study participants).

Table 3.1 - Comparative Results for Cedar Grove Apartments (before and after distribution of reusable bags)

Material		Before Bag Drop	Total Waste	Baseline	3 Weeks After Bag Drop	Total Waste	After
Category	Sub-Category	Avg. Recovery (kg/unit/yr)	Generation (kg/unit/yr)	Capture Rates (%)	Avg. Recovery (kg/unit/yr)	Generation (kg/unit/yr)	Capture Rates (%)
Paper	Newspaper	35.08	44.95	78.0%	36.25	47.95	75.6%
	Magazines	7.66	14.64	54.6%	5.73	8.41	68.1%
	Boxboard	7.62	16.11	47.3%	7.43	18.16	40.9%
	Cardboard	14.63	16.01	91.4%	17.96	20.31	88.4%
	Household Paper	8.00	15.50	52.8%	5.09	13.54	37.6%
Total Paper		72.98	106.25	68.7%	72.46	108.37	66.9%
Containers	Aluminum Cans	2.15	2.93	73.6%	1.76	2.65	66.3%
	Aluminum Foil Trays	0.04	1.26	3.2%	0.04	1.26	3.2%
	Steel Cans	5.93	9.91	59.8%	5.19	9.17	56.6%
	Clear Glass	8.57	18.00	47.6%	9.87	16.45	60.0%
	Coloured Glass	7.19	8.49	84.7%	6.59	8.30	79.4%
	PET Bottles	2.76	5.73	48.2%	3.55	4.93	72.0%
	HDPE Bottles/Jugs	1.34	2.28	58.9%	1.77	3.24	54.8%
	Aseptic Boxes	0.04	0.20	20.0%	0.04	0.12	33.3%
Total Containers		28.03	48.79	57.5%	28.82	46.12	62.5%
Total Recyclables		101.01	155.05	65.2%	101.28	154.50	65.6%
Contamination		5.75			3.89		
Contamination Rate		5.7%			3.8%		
Garbage Disposed		181.59			166.16		
Building Waste Diversion Rate		37.0%			38.8%		

3.4 Results of Residents' Surveys - Cedar Grove Apartments

Twenty-eight people from the sixty-three occupied units completed the survey, for a response rate of forty-four percent. Most surveys were completed in person, door to door. The communications team followed up by completing telephone surveys at residents' convenience.

A detailed report of survey findings, along with a completed survey form showing final results for each question is presented in Appendix A. This section highlights survey findings that help explain the sampling results and performance of the reusable blue bags.

a) *Residents are committed to recycling and are doing it quite well.*

Respondents to the survey were predominantly female (62%), family types were dominated by couples (61%), between the ages of 25 and 44 (52%). Education levels are reasonably high with 43% who had completed some or all of high school; 29% with some or all of college; and another 29% who had completed some or all of university or graduate education. Thus, the population at this building (indicated by responses) might be characterized as predominantly young and middle aged, educated couples.

As is typical, most respondents agreed that recycling is good for the environment, important for our children's future and economical. The majority said they would pay to maintain recycling and that it is not a burden.

About 50% of respondents said they use and recycle most of the core materials (plastics, steel cans, newspaper and magazines, boxboard and cardboard boxes). There may be room to improve recycling of aluminum beverage cans, glass, fine paper and/or drink boxes, although it is not clear to what extent these figures reflect people not buying the materials, failing to recycle them or both.

b) *Many residents who received the plastic bags are using them for recycling.*

59% of people who received the bags used them to store recyclables and 63% used them to transport recyclables to the carts. In this small sample, most people who used the recycling bags were in the 35-44 age group, and who had high school or university education. There was no distinct family type that used the bags and about the same percentage of males and females used the bags.

90% said the bags are used solely for recycling. Responses to this survey do not demonstrate the assumption that these bags would be widely deployed for other purposes - a question that may bear further research with a larger sample.

The bags are being well-used: 45% said they had used the bags four times or more (i.e. approximately once per week). 31% had been used twice and only 13% were used only once (and potentially not again).

c) *Most respondents liked the reusable blue bags.*

Of people who used the bags, 71% said they were more convenient and 25% said they were less. Asked what they liked about the bags, residents highlighted convenience, the size, carrying handles and the ability to reuse the bags. Of those who had not used them, some had not tried them *yet* while others have a system in place that works.

Asked what residents disliked about the bags, most people said there were no problems. Dislikes included size (too small) and the need to reuse them (they would rather drop their recycling containers at the carts). Some respondents noted that they had established systems that worked and others simply saw no need for, or did not really understand the bags. Responses to this question do not

seem to explain fully why more than one quarter of responses indicated that residents chose not to use the bag - another point worthy of further research.

d) *The bags caused subtle changes in recycling habits that may or may not become ingrained.*

Only 26% said the bags had prompted them to recycle more or different materials. Most (76%) believed the bags made no difference. This may help explain the small incremental increase in recovery. Residents are recycling well so they probably need a more comprehensive or sustained C&E campaign to promote a substantial increase.

The reusable bags often displaced plastic bags that many residents had used to carry recyclables to the carts and which many people deposited in the carts, contributing to contamination. Offering an alternative bag helped break this contamination 'habit', but not necessarily change the behaviour. It did contribute to a contamination decrease of 2%.

We noted that one resident had not recycled at all, and another had done so only intermittently before receiving the bags - a clear indication that providing a system can help promote recycling.

In any case, most respondents (75%) recommended the blue recycling bags strongly or somewhat strongly for residents of other apartment buildings. Only 11% felt they would be of no value.

e) *Recycling communications capture residents' attention.*

Most people in this building said they have learned what to recycle from the cart stickers, while some have read information provided by the city. However, several people said that they learned when the program first started, from the media or that they do not remember. Based on this, a substantial portion of this building's population is recycling with outdated information and would benefit from C&E information updates. This theory is supported by the low capture rates for newer materials such as aluminum trays (3.2%) and drink boxes (33.3%), combined with fewer reports of usage/recycling. If residents are consuming these materials, they need to know that they can be recycled.

Based on this survey, residents pay attention to recycling information. Of those surveyed, 96% recalled (unassisted) receiving the bags and 71% recalled receiving the letter. Only 19% did not remember any message contained in the letter. This appears to indicate that recycling C&E efforts are read and retained.

3.5 Cedar Grove Pilot Conclusions

From the review of the results, field observations and discussions with the superintendent and residents, the conclusions about the plastic reusable recycling bag pilot are as follows:

- 1) The monitoring appears to show that providing reusable blue bags has had little impact on Cedar Grove Apartments' recycling program. However, these results have to be viewed in light of the fact that residents were already achieving a very high level of recycling performance prior to the reusable bag distribution. It always takes greater effort to increase performance of high performing buildings. With hindsight, it could be expected that introducing a single alternative system would have a minimal incremental impact.

- 2) Contamination decreased from 5.7% to 3.8% indicating that the bags, combined with the

communication materials helped to prevent non-recyclables from being placed in the recycling carts.

- 3) Overall building waste diversion did increase slightly. We know of at least two residents who would not be recycling or recycling as frequently if they had not received the bags.
- 4) Residents liked the bags and many did use them. However, a large portion did not. Due to the brief time span of this pilot and the limited supplementary communications materials, it is not clear if, over time, more people would have tried using the bags (or contrarily, given up). Would a few targeted C&E activities (newsletters, information card etc.) have encouraged more people to recycle better using the bags? Why did people choose not to use bags and would anything change that? This study has uncovered valuable questions that might be addressed with additional, focused research.
- 5) It would be valuable to study the impact of providing the reusable blue bags in low recovery buildings, matching results against a control building for additional indicators of performance.
- 6) The reusable blue bags appear to be a simple, viable and cost effective option for municipalities to provide to apartment residents. Additional in-depth analysis, conducted over a longer period of time, to determine why people do or do not use the bags, balancing cost, usage, alternatives (e.g. maintaining straight C&E contact) and results would provide more definitive answers.

4.0 PILOT STUDY AT BARRIE ANNE GARDENS

4.1 Study Objectives: Kraft Recycling Bag

The objective of the kraft recycling bag pilot was to determine if providing a single kraft paper bag (once) would encourage apartment residents to recycle more papers. The kraft bag was intended to remind residents about the types of paper that could be recycled. It was designed to be used by residents as many times as possible, to store papers in their units and to carry the fibres to the recycling carts.

Specific objectives were to:

- ◆ Determine if a one-time promotional paper bag would boost paper capture rates;
- ◆ Measure the impact of the bag on paper and container capture rates and contamination rates before and after the introduction of the bags;
- ◆ Monitor how long the kraft bags were used by residents (what is the useful life of the bags);
- ◆ Assess the performance of the kraft bag, measured by performance, price and promotional value.



The kraft bags readily lend themselves to corporate sponsorship, which would help offset bag costs paid by the municipality. The compressed timeframe of this pilot did not permit the study team to investigate this option at this time.

4.2 Building Profile - Barrie Anne Gardens

Barrie Anne Gardens is a high rise building located near downtown Barrie at the 269 Dunlop Street West, near the corner of Dunlop and Anne Streets. Managed by Melchior Management Company, Barrie Anne Gardens has 144 units including one and two bedroom rental apartments. Residents include a mix of young couples and senior citizens, with many singles and a few families.

The building has a front and back door, with twelve recycling carts at the back door and a 4 cu. yd. dumpster for corrugated cardboard. The recycling containers are clearly marked with stickers identifying what should be placed in each. Seven carts contain fibres and five hold containers.

Residents throw garbage down an internal garbage chute. There is an additional 6 cu. yd. dumpster outside for larger garbage items that do not fit in the chute.

Each unit at Barrie Anne Gardens was given one kraft paper “recycling” bag to collect, store and transport their recyclables to the recycling carts. Residents were encouraged to use the kraft bag for recyclable paper products, reusing the bag as many times as possible.

Residents were asked to recycle the bag at the end of its life. The bags featured a label explaining how they were to be used and this message was supported by a letter to the residents (see Appendix B) explaining the purpose of the bags and who to contact if they had questions about recycling in apartments.

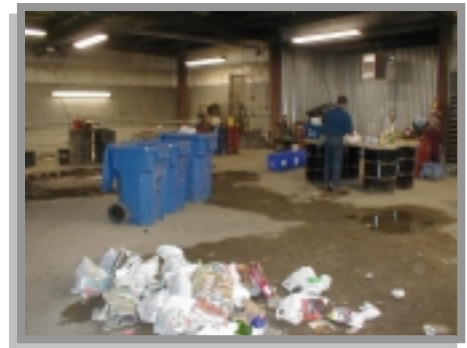


4.3 Monitoring Program - Barrie Anne Gardens

After the baseline data were gathered and the paper bags had been distributed, ongoing monitoring of the waste and recycling streams began. Each Thursday, from February 16th to March 2nd, RBES collected the roll-out carts for recyclables, transporting them to the City's Landfill. The material was sorted into specified categories and weighed. The number of kraft paper bags found in the carts was recorded in an effort to track their flow and usage patterns.

Findings from the baseline sampling include:

- ◆ An overall recyclables recovery rate of 64.25 kg/unit/yr, indicating that the program is fairly typical of apartment buildings in Ontario;
- ◆ An overall waste diversion rate of 25.5%, indicating that the program is relatively good;
- ◆ Capture rates were average for paper products and slightly above average for containers.



A summary of results from the monitoring program at Barrie Anne Gardens is presented in Table 4.1. Once again, the measured generation and recovery of recyclables for three weeks before and after the bags were delivery are presented, together with material capture rates.

Results of the post-campaign monitoring program include:

- ◆ Overall capture rates for all recyclables increased from 47.4% to 59.9%;
- ◆ Capture rates for paper products (the targeted material for the bag promotional information) increased from 49.8% to 61.1%;
- ◆ Capture rates for containers (not targeted on bag promotional information) increased from 42.1% to 56.8%;
- ◆ Contamination rates decreased from 8.5% to 4.3%;
- ◆ During the baseline monitoring, recyclable containers comprised 70% of contamination in the paper bins. For the 3 week period following bag distribution, containers represented only 30% of total contamination in the paper stream;
- ◆ The overall measured diversion rate for the building increased from 25.5% to 27.6%.

A total of 144 kraft bags were provided to the residents. In an effort to account for bags as they came out through the recycling carts, RBES monitored bags found each week during the sampling program. The following table briefly summarizes the bags counted in the recycling carts.

FINAL REPORT-Barrie Fibre Bag Pilot

Weeks After Bags Distributed	Bags that Were Used	Bags that Were Not Used	Total Bags Counted
Week 1	5	3	8
Week 2	13	4	17
Week 3	7	1	8
		Total	33

Only one kraft bag was found in the waste stream that was sampled on week 2.

Table 4.1 – Comparative Results for Barrie Anne Gardens (before and after distribution of paper bag)

Material Category	Sub-Category	Before Bag Drop Avg. Recovery (kg/unit/yr)	Total Waste Generation (kg/unit/yr)	Baseline Capture Rates (%)	3 Weeks After Bag Drop Avg. Recovery (kg/unit/yr)	Total Waste Generation (kg/unit/yr)	After Capture Rates (%)
Paper	Newspaper	35.67	49.79	71.6%	51.82	67.55	76.7%
	Magazines	3.03	11.01	27.5%	5.32	7.79	68.3%
	Boxboard	4.26	15.41	27.6%	6.13	16.97	36.1%
	Cardboard	1.79	8.94	20.1%	2.61	10.33	25.2%
	Household Fine Paper	2.07	8.46	23.4%	2.53	9.37	27.0%
Total Paper		46.82	94.02	49.8%	68.41	112.01	61.1%
Containers	Aluminum Cans	1.61	2.77	58.3%	1.71	3.28	52.1%
	Aluminum Foil Trays	0.03	0.79	3.8%	0.05	1.2	4.0%
	Steel Cans	3.20	7.71	41.5%	4.53	9.96	45.4%
	Clear Glass Bottles	5.18	13.58	38.2%	5.43	8.66	62.7%
	Coloured Glass Bottles	3.23	7.05	45.7%	6.64	7.93	83.8%
	PET Bottles	3.12	6.02	51.7%	3.53	6.12	57.8%
	HDPE Bottles/Jugs	1.04	3.39	30.7%	0.98	3.06	32.1%
	Aseptic Boxes	0.02	0.13	18.2%	0.02	0.11	21.1%
Total Containers		17.43	41.44	42.1%	22.90	40.32	56.8%
Total Recyclables		64.25	135.46	47.4%	91.30	152.33	59.9%
Contamination		5.48			3.89		
Contamination Rate		7.9%			4.1%		
Garbage Disposed		203.23			250.39		
Building Waste Diversion Rate		23.5%			26.5%		

Kraft bags were distributed to nine additional apartment buildings in Barrie, representing 790 units. The purpose of this supplemental program was to see how residents across a wider number of buildings may use the bag and to see if the bag created any unforeseen operational problems for the collection and processing contractors.

The bags were distributed the week of February 12th and the recycling carts were monitored visually by the recycling truck driver for a three-week period. It should be noted that driver only observed what he saw when opening the cart lids and could not see the material that was in the carts. Over the three week period, bags were not observed in any of the carts at three buildings. Bags were visible in bins at two buildings' carts for two consecutive weeks. Bags were visible in the carts at the remaining four buildings only one of the three weeks observed.

The City's Blue Box contractor, Capital Environmental Inc. did not report any handling or operational problems as a result of the bags at the processing facility. Capital did account for approximately 250 of the bags were recovered at the MRF. It is estimated that 80% of these in the last 2 weeks of March. Most of these bags were filled with fibre products indicating correct usage of the bag.

4.4 Results of Residents' Survey - Barrie Anne Gardens

Fifty people from the one hundred and forty-two occupied units completed the survey, for a response rate of 35%. Most surveys were completed in person, door to door. The communications team followed up by completing telephone surveys at the residents' convenience.

Only one respondent, a male, between the ages of twenty-five and thirty-four with a high school education, reported that he does not recycle. He considers recycling inconvenient, time-consuming and reported that he has no room to store the recyclables.

A detailed report of survey findings, along with a completed survey form showing final results for each question is presented in Appendix B. This section highlights survey findings that help explain the sampling results and performance of the kraft paper recycling bags.

a) *Residents believe strongly in recycling and value this opportunity.*

Respondents to the survey were predominantly female (62%), with 54% couples and 24% families, the majority being older than 45 years (60%). Education levels include 40% who had completed some or all of high school; 32% with some or all of college and 18% with some or all of university or graduate education.

As at Cedar Grove, most respondents agreed that recycling is good for the environment, important for our children's future and economical. Again here, most people said they would pay to maintain recycling and that it is not a burden.

Most respondents said that they use *and* recycle newspaper, cardboard, cans, glass and plastics. For most of these materials, the combined recall score (unassisted and prompted) was at or above 80% of respondents. Aluminum beverage cans (69%) are either not used or not recycled as much. Similarly, recent inclusions to the program like drink boxes lag behind other materials as a result of lower usage or lower recycling or a combination.

In some cases, there may be a discrepancy between what people know they can recycle, how strongly they feel about it, and actual capture rates. For example, 88% said they use and recycle boxboard, but its capture rate is only 36%. This may reflect an inconsistency between beliefs and behaviour or

it may simply highlight a distinction between people who know that certain materials are recyclable and those who consistently recycle the materials.

b) *Residents used the bags, and not just as suggested*

Most respondents recalled receiving the kraft bag (86%) and used them to store (64%) and transport (67%) their recyclables. From this sample there is no clear demographic distinction between people who did and did not use the bags. Survey responses show that about the same proportion of males as females said they used the bags and the greatest proportion of respondents who used the bags were 35 years and older. A slightly greater percentage of couples used the bags than did singles or families. In terms of education, a slightly larger portion of people who had used the bags had completed some high school; other respondents were distributed among various levels of education.

Messages on the bags and in the letters recommended using the bags for fibres only. While most respondents did use the bags for fibres, many also added cans, bottles and jugs. This wider use of the bags may help explain the unexpected increases in container capture rates.

c) *Some residents used the bags several times.*

As expected, many respondents used the kraft bags only once (38%). However, 24% of people who did use the bags, used them four times; 9% used them more than five times and 15% each had used the bags two or three times.

Forty seven percent of respondents still had their bags. While some had not used the bags at all and were simply storing them, other bags were still in service at the time of the survey. Most residents recycled the bags eventually although a few gave them away. Nobody reported placing them in the garbage. This indicates that residents read the bag instructions and/or they are well conditioned to recycle paper.

d) *Did the bags change recycling habits?*

Nearly universally, respondents believe that the bags did not alter their recycling habits. Only 51% of bag users reported that the kraft recycling bags improved convenience and 9% thought they were an impediment.

Decreased contamination may again be linked with reports that the kraft bags displaced plastic bags that residents had been using to carry recyclables to the carts. Providing a recyclable alternative to displace an incorrect habit probably had an effect. At this stage though, it seems likely that many people would resume their former practices when their kraft recycling bags are gone. In reality, it would probably take several more encounters with the kraft bags and messaging to effect a real change.

These findings suggest that the kraft bags had a subtle impact on residents' recycling behaviour. However, based on this single, brief episode, the longevity, depth or sustainability of the change is not assured.

e) *The bags were popular and many respondents would recommend them to other apartment residents.*

Asked what they liked about the bags, most responses highlighted increased convenience, some liked the size, others liked the carrying handles and the messaging. A significant portion of responses indicated that nothing positive really caught their attention.

Asked what they disliked, many said the bags were fine. The most frequently cited problems were size

(too small) or strength (not strong enough). Some respondents mentioned that they did not even try the bags because they looked too small.

Despite these concerns, most (66%) believed the kraft bags would be very or somewhat valuable for other apartment residents while 24% said they would be of little or no value and 10% did not feel strongly either way.

f) Residents responded to this C&E program.

Many of the respondents surveyed said they have learned to recycle from reading the cart stickers and from information provided by the City. The building's move-in package was also mentioned. Of note is the portion of residents that said they do not know what to recycle, they have learned from their children, other locations or do not remember.

With a substantial number of respondents reporting that their recycling knowledge is outdated or inaccurate, it can be anticipated that many residents might welcome a C&E update. This raises a question as to whether other C&E approaches might have had a similar impact by the simple virtue of forging a link with apartment dwellers, a broad issue that is outside the scope of *this* study.

In any case, most people (86%) recalled receiving the kraft bags and the letter (80%). Most respondents who remembered the letter also recalled parts of its message. Only 21% had no recall of the message. With increased waste diversion over the life of the pilot, these factors seem to indicate that residents did pay attention to this C&E vehicle and that it was valuable.

4.5 Barrie Anne Gardens Pilot Conclusions

From the review of the results, field observations and discussions with the superintendent and residents, the conclusions from the analysis of the pilot program are as follows:

- 1) The kraft paper bags, while specifically targeting paper products, had an overall positive impact on recycling performance for both the paper and container recycling streams.
- 2) Not only did recovery and capture rates increase but contamination rates decreased over the monitoring period.
- 3) Many of the bags have been used more than once and many were in use after a two-week period, with some still using the bags into week four.
- 4) Residents who received the bags appear to be pleased to have been the focus of a campaign organized by the City.
- 5) From this study, it is not clear if the bags prompted behavioural changes that result in long-term impacts. A further study of the impact of repeated introduction of the bags over time would be valuable.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This section details conclusions and recommendations that emerge from the studies.

5.1 Conclusions

Reusable Blue Bag Pilot - Cedar Grove Apartments

1. The building that received the reusable blue bags was representative in terms of size and character, however, it turned out that its waste diversion was exceptionally high from the outset. Increasing this would have required a more comprehensive strategy than this C&E program was designed to offer.
2. Residents responded to the C&E package by using the bags to store and/or transport materials and by retaining information in the accompanying letter.
3. The reusable blue bags increased recyclable rates modestly.
4. The bags appear to have helped reduce contamination rates by 2%.
5. Most residents who used the bags found they increased recycling convenience; an important factor in improving long-term sustainable diversion rates in multi-family buildings.
6. A considerable portion of survey respondents had not used the bags at all. It would be valuable to learn if this would change over time and if not, why not.
7. Of those who used the bags, most residents surveyed recommended that these bags be made available to residents of other apartment buildings to facilitate recycling. This suggests the bags may play a roll similar to the blue box in giving people a symbolic recycling tool; however, in this case, residents have already established systems they are comfortable with in their apartments.
8. Prior to wider roll-out further study to determine the number of bags that need to be provided, what other C&E activities would best support the system, distribution mechanisms, costing/cost-sharing strategies require detailed analysis.

Kraft Paper Recycling Bag

1. The building that received the kraft paper recycling bag was typical, not only of apartment buildings in Barrie, but of multi-family recycling performance in Ontario.
2. Residents appreciated receiving the kraft paper recycling bags; many were pleased to receive this form of communication and support from the City of Barrie.
3. Providing this one-time, short-life promotional paper bag resulted in a marked increase in waste diversion at this building over the short term of the study. The long-term sustainability of these higher rates could not be determined within the scope of this study.
4. With the kraft paper recycling bags, the paper fibre capture rates increased by 15 percentage points. As an additional (and unanticipated benefit), container capture rates rose by 15 percentage points and overall capture rate increased 12.5 percentage points.

5. With the kraft paper recycling bags in service, contamination decreased. An intriguing question is how much of this reduction would be sustained in the absence of the kraft recycling bags, and for how long?
6. Given the kraft recycling bags, residents recycled more effectively but were unaware of their actions. They believed that the bags did not alter their recycling habits.
7. Prior to broader roll-out of this type of system, distribution mechanisms, sponsorship strategies and more widespread testing would provide vital information.

Overall Project Conclusions

The two systems tested are more fundamentally different than the study team had appreciated. Not only are they physically different, but differences in lifespan, materials, promotional opportunities, potential distribution networks would result in entirely different strategies for their use.

As a one-time, short-term product, the kraft paper recycling bag offers its users a cost-effective interaction with residents, providing a tangible benefit, along with an educational message. This system provides something considered to be valuable because it is useful. At a low cost, it allows a municipality to educate its multi-family residents as often as it chooses. In summary, the value of the kraft paper bag is that it provides:

- a) A reusable prompt;
- b) Vehicle to carry the C&E messages;
- c) Longevity in the apartment because of its use as a storage and transportation tool;
- d) Low cost means it can be repeated periodically.

As a product that could be used for several years, the reusable blue bag is a more expensive and is immediately perceived to be of greater value. It has a longer lifespan, can potentially be used for other purposes and is more likely to leave the units in buildings with high rental turnover. Offering a one-time only communications impact, this bag would nevertheless serve as an reminder about recycling and set-up a system that enhances convenience. Distribution and management for widespread reusable blue bag use would require completely different strategies and financing scenarios to achieve different (but related) outcomes.

In either case, these pilots have shown that in Barrie, apartment residents welcome information about recycling and with a minimum of attention, will improve their recycling performance. They have raised deeper questions about what motivates multi-family residents to use differing containers for their recyclables and how could these systems could be developed to sustain a behavioural change and long-term increases in multi-family capture and recovery rates. These pilots showed that multi-family recycling can improve, quickly, at least over a brief time period.

Recommended Next Steps

The following next steps are offered to help move the multi-family recovery issue along in Ontario.

Reusable Blue Bag

The short-term recovery impact of the reusable blue bag was modestly positive, a result that raises several questions. Would the impact increase over time? Would recovery increase with additional C&E efforts? If people do not embrace these bags, why not? Would there be a different impact in a larger building with lower baseline performance rates? Do the reusable blue bags promote long-term sustainable change?

Combining the result of this study with a general belief that these bags should improve recycling (and the fact that they are in use in several communities), may warrant closer examination in a Phase II study to address:

- ◆ longer term impacts measured against results in a control building;
- ◆ the effects of providing additional C&E over a longer period of time;
- ◆ options for cost-effective bag distribution on a broader scale.

This study, conducted on a small scale has helped uncover important issues that could help determine the potential recycling capture and recovery impacts gained by offering reusable blue bags in apartment buildings. With results from this pilot indicating that these bags do have an impact, the next step would be to determine how significant it could be and could the benefits be realistically achieved?

Kraft Paper

The short-term recovery impact of the promotional kraft bag was positive. However, the long-term behavioural change and waste diversion impact are not known. The question remains as to whether the C&E information and the bag itself was sufficient to aid residents who were recycling to capture more materials than before or to motivate those residents who were not recycling before to begin separating and recycling recyclables. The positive short-term results from this pilot raise questions about the long-term impacts of the promotional kraft bag.

The positive results suggest that it might be valuable to implement a more extensive study, over a longer period in an Ontario community. A second phase evaluation of the kraft bags might:

- ◆ include a larger number of apartment buildings over a longer period of time (minimum 6 months);
- ◆ address sponsorship opportunities to reduce bag costs to the municipality;
- ◆ investigate bag distribution options.

This pilot study was the first time in Ontario that kraft paper bags were provided to apartment residents in an effort to increase awareness and convenience. The positive short-term results from the one building strongly suggest that this approach may be a strategy worthy of further investigation and study/analysis.

APPENDICES

APPENDIX A

Reusable Blue Bag *Cedar Grove Apartments*

RECYCLING SURVEY RESPONSES

Cedar Grove Apartments

System Tested: REUSABLE BLUE BAG

NOTE: UNLESS OTHERWISE INDICATED, ANSWERS REFLECT % OF RESPONSES GIVEN TO EACH QUESTION. IN SOME CASES, THIS EXCEEDS THE NUMBER OF RESPONDENTS.

1. Do you or members of your family recycle? Yes 100% No 0%

Do you disagree or agree with the following statements, using a scale of 1 to 5, where '1' means you DISAGREE strongly and '5' means you AGREE strongly

a) For non-recyclers	Disagree			Agree	
	1	2	3	4	5
Recycling is not available for this building	1	2	3	4	5
Recycling takes too much time	1	2	3	4	5
Recycling saves landfill space and diverts waste	1	2	3	4	5
Recycling is too inconvenient	1	2	3	4	5
I don't remember to recycle	1	2	3	4	5
I don't believe in recycling	1	2	3	4	5
Recycling is good for the environment	1	2	3	4	5
I don't know what to recycle	1	2	3	4	5
I don't know where to put recyclables	1	2	3	4	5
There isn't enough room in the carts or there aren't enough carts	1	2	3	4	5
Recycling is a more efficient use of resources	1	2	3	4	5
I don't have room to store materials in my apartment	1	2	3	4	5
I don't buy products or packaging that are recyclable	1	2	3	4	5

NON-Recyclers: Complete questions 23 to 28

a) For recyclers	Disagree			Agree	
	1	2	3	4	5
Recycling is good for the environment	0	0	7	11	81%
Recycling is a burden	55	21	14	7	3%
Recycling saves landfill space and diverts waste					
Recycling is important for our children's future	0	4	0	21	75%
Recycling is more economical compared to garbage	0	7	11	25	57%
Recycling makes my family feel good					
Recycling is a more efficient use of resources					
Recycling is something I would pay for to ensure it keeps going	14	7	18	26	25%
Recycling is easy and convenient to do					
Recycling is something I feel I'm being forced to do					
I think recycling is expensive					
I wouldn't be concerned there was no recycling					

Recyclers: Complete questions 2 to end

2. What types of materials do you have on hand that you usually recycle? (% of respondents on recall or prompted)

	RECALL	PROMPT		RECALL	PROMPT
glass bottles/jars	29%	19%	newspaper	48%	14%
plastic bottles/jars	43%	14%	magazines & phone books	5%	48%
aluminum soft drink cans	26%	17%	boxboard boxes (cereal etc.)	21%	33%
food cans	45%	17%	corrugated boxes	24%	36%
drink boxes	7%	2%	writing paper	10%	26%
aluminum foil and trays	0%	14%	gift wrap and cards	12%	19%
other (please specify): _____				0	

3. Where do you usually store recyclables in your apartment?

on the floor	30%	in bag hanging on back of a door	0%
under kitchen sink	27%	utility room	37%
other (please specify): _____			7%

4. How often do you take materials to the recycling carts? (% of respondents)

daily	12%	weekly	31%
every 2-3 days	35%	bi-weekly	12%
every 4-6 days	8%	once a month	4%

5. When do you take recyclables to the carts?

storage system is full	59%	going to laundry	0%
going to work	4%	regular schedule	11%
going out	26%		

6. Pre pilot:

a) What do you usually use to store and transport recyclables to carts?

plastic bag	24%	recycling box	17%
cardboard box	38%	recycling bag	3%
other (please specify): _____			3%

b) What did you do with the bag or box that you used to use to carry recyclables to the carts?

put it in recycling cart	24%	take back to apartment	38%
put it in garbage bin	34%	other	3%

7. Pre pilot: How did you originally learn what materials to recycle?

another place/previous experience	3%	looked in carts	0%
information from the city	17%	building information package	3%
cart stickers	27%	didn't know what materials	0%
from others in building	3%	other _____	47%

Pilot Project

8. Were you given anything recently to help you recycle? What would that be (do not prompt)?

plastic recycling bags	96%	nothing/don't recall	4%
		other (please specify):	0%

9. Did you use plastic bag to store recyclables? (% of respondents)

yes	59%	no	41%	sometimes/somethings:	0%
-----	-----	----	-----	-----------------------	----

10. What types of recyclables did you put in the bag?

papers	20%	jugs	10%
boxes	0%	other	0%
cans	10%	all	50%
bottles	10%		

11. Did you use the bags to transport recyclables to the carts? (% of respondents)

yes **63%** no **37%** sometimes/somethings: **0%**
0

12. What did you like most about the bags (do not prompt)?

size	18%	carrying handles	18%
convenience	24%	organization	6%
appearance	0%	weight	3%
ability to reuse	12%	Other:	9%
ability to wash	6%	Nothing	2%

13. What did you like least about the bags (do not prompt)?

too large	0%	need to keep/reuse	10%
too small	14%	appearance	0%
added clutter	0%	Other:	14%
strength	0%	ok/neutral	62%
weight when full	0%		

14. Are there any materials that you recycled before but have stopped recycling or are doing something else with because of the bags? (NOTE: QUESTION DELETED)

glass bottles/jars	01	newspaper	07
plastic bottles/jars	02	magazines & phone books	08
aluminum soft drink cans	03	boxboard boxes (cereal etc.)	09
food cans	04	corrugated boxes	10
drink boxes	05	writing paper	11
aluminum foil and trays	06	gift wrap and cards	12

other (please specify): _____ 13

b) If so, what did you do with these materials:

use separate bag/box to recycle	01	garbage	02
other:	_____ 03		

15. How many times have you used the bags? (% of respondents)

Once	13%	4x	13%
Twice	31%	5x	13%
3x	13%	>5 x	19%

16. Do you use the bags for any purpose other than recycling?

laundry	0%	storage	0%
groceries	10%	other:	0%
carry books/work	0%	no	90%

17. Have the bags made recycling more or less convenient for you? (% of respondents)

more **71%** less **25%** no change **4%**

18. Did anything come with the bags? (do not prompt)

letter **71%** nothing **25%** other **4%**

19. Do you recall getting a letter? (% of respondents)

yes **88%** no **12%**

20. Do you recall any message from the letter?

reminder re: what is recyclable **33%** survey **26%**
how to use this bag **7%** Other: **11%**
city recycling contact (& phone #) **4%** no recall **19%**

21. Have the bags made a difference to the amount you recycle? (% of respondents)

recycle same materials, more often **11%** no change **74%**
recycle additional materials **15%**

22. Do you think the city should provide these bags to other people living in apartment buildings to help them recycle? On a scale of 1 to 5, how valuable do you think this would be? (% of respondents)

Rate: 1 2 3 4 5 (1=low; 5=high)
% **11 0 14 25 40%**

Demographics

23. How many adults and how many children live in your household? (% of respondents)

1 adult **32%** >2 adults **0%**
2 adults **61%** 1+adult/1+ child **7%**

24. Which category includes your age? (% of respondents)

18-24 **14%** 45-54 **14%**
25-34 **28%** 55-64 **10%**
35-44 **24%** Senior **10%**

25. What is the highest level of education that you have achieved? (% of respondents)

some high school **14%** some university **4%**
completed high school **29%** completed university **18%**
some college **4%** graduate education **7%**
completed college **25%**

26. How long have you lived in this building?

_____ years

27. Gender: male **38%** female **62%**
% of respondents

28. Unit #: _____

Detailed Survey Findings

Cedar Grove Apartments, Reusable Recycling Bag Pilot

■ **Demographics**

Respondents to the survey were predominantly female (62%), family types were dominated by couples (61%), between the ages of 25 and 44 (52%). Education levels are reasonably high with 43% who had completed some or all of high school; 29% with some or all of college; and another 29% who had completed some or all of university or graduate education. Thus, the population at this building (indicated by responses) might be characterized as predominantly young and middle aged, educated couples.

■ **How people feel about recycling**

92% of survey respondents agree that recycling is good for the environment. The majority or respondents (96%) agree it is important for our children's future and recycling is not a burden (66%). Again, a majority agreed that recycling is more economical than garbage (82%), with 61% indicating that they would be willing to pay to protect the system.

■ **Recycling Literacy**

About 50% of respondents said they use and recycle most of the core materials (plastics, steel cans, newspaper and magazines, boxboard and cardboard boxes). There may be room to improve recycling of aluminum beverage cans, glass, fine paper and/or drink boxes, although it is not clear to what extent these figures reflect people not buying the materials, failing to recycle them or both.

Most people in this building said they have learned what to recycle from the cart stickers, while some have read information provided by the city. However, several people said that they learned when the program first started, from the media or that they do not remember. Based on this, a substantial portion of this building's population is recycling but probably operating with outdated information and would benefit from C&E information updates. This theory is supported by the low capture rates for newer materials such as aluminum trays (3.2%) and drink boxes (33.3%), combined with fewer reports of usage/recycling. If residents *are* consuming these materials, they need to know to that they can be recycled.

■ **The majority of people surveyed like the plastic reusable recycling bags.**

Of the survey respondents, 59% used bags to store the recyclables and 63% used them to carry recyclables to carts. Of those who have not used the bags, some reported that they planned to, but had not used it yet and others reported that they have a workable system already, therefore they did not need the bags.

Most survey respondents who used the bags reported that the *bags did improve convenience*, while 25% reported they found them less convenient and 4% reported no change.

Respondents were asked to rank *the value of the reusable bags* for residents of other apartment buildings on a scale of one to five (where five is high value). Of responses to this question, 50% said the bags would be of highest value; 25% ranked them at '4' and 15% gave a more ambivalent ranking of '3'. Only 11% felt that the bags would be of low value, with a rank of '1'.

■ ***The bags have been well used.***

Of respondents who have used them, most have used them at least twice (31%); 19% reported using them five times and 13% reported using them either once, three times, four times or more than five times.

Of those who *disliked* anything about the bags, 14% reported that they were too small; 10% did not like having to reuse them and others reported that they fell over or contents spilled out. However, the vast majority, 62% reported that there were no problems.

The majority of respondents think the bags have not influenced how much they recycle.

Responses indicated that 74% believe they recycle the same as before the bags. Only 11% report recycling more often and 15% report that they now recycle more materials. One respondent indicated that she had started to recycle when she received the bags.

■ ***Most residents used the bags as suggested.***

Of respondents who used the bags, 50% used them for all recyclables while some highlighted cans; papers, bottles. Nobody reported recycling fewer materials because of the bags. The vast majority of respondents (90%) reported that they dedicated the bags to recycling. Only 10% reported using the bags for any other purposes (including carrying groceries).

■ ***In many cases, the bags replace the use of plastic garbage bags for storing and transporting recyclables.***

Before receiving the reusable plastic bags, 67% of respondents used plastic bags to store and transport their recyclables. Another 17% used recycling boxes, 10% used cardboard boxes, 3% used recycling bags and another 3% used other systems such as laundry totes and milk crates. Some reported combining systems (e.g. plastic bags for containers and cardboard boxes for fibres).

Many respondents (38%) reported that before they received the reusable bags, they usually returned their bag or box to the apartment, while 34% placed something like a plastic bag in the garbage after its use. Another 24% reported that they placed their carrying container in the recycling bin after its use. Given that only 10% were using cardboard boxes, this would account for some of the plastic bag contamination in the recycling carts.

APPENDIX A

To the Residents of Cedar Grove:

Re: Reusable Bags for a Recycling Study

The City of Barrie is conducting a pilot project to test recycling methods for people living in apartment buildings. Cedar Grove is one of several apartment buildings in Barrie that is participating.

Each unit in your building will receive two reusable plastic recycling bags. They are yours to keep, free of charge. The bags are designed for storing recyclables and carrying them to the recycling carts. We recommend that you use one for containers and the other for paper fibres.

Within the next few weeks we will be in your building to conduct a survey of your opinions of the bags, recycling and recycling in general.

Papers

- Cardboard boxes;
- Newspapers, magazines and telephone directories;
- Boxboard (cereal and tissue boxes);
- Writing papers, computer papers and gift cards; and
- Books (hard and soft covers - with the hard covers removed).

Containers

- Steel food and drink cans;
- Aluminum cans, pie plates and foil;
- Glass bottles and jars;
- Drink boxes;
- #1 plastic bottles (PET); and
- #2 plastic bottles and jugs (HDPE).

Within the next few weeks, we will be in your building to conduct a survey of your opinions of this bag and recycling in general.

This project is being sponsored by the City of Barrie, in conjunction with the Ontario Waste Diversion Organization (WDO) and CSR: Corporations Supporting Recycling. It is being conducted with the support of Lorne Investments and your superintendent.

For more information, please call Tracy Quann-Strasser at the City of Barrie's Waste Reduction Office, 739-4219. We would be pleased to hear from you.

Thank you in advance for helping us learn more about recycling.

Yours truly,

Tracy Quann-Strasser
Waste Reduction Officer, City of Barrie

APPENDIX B

Kraft Recycling Bag
*Barrie Anne Gardens &
Supplementary Buildings*

RECYCLING SURVEY

Barrie Anne Gardens

System Tested: Kraft Recycling Bag

NOTE: UNLESS OTHERWISE INDICATED, ANSWERS REFLECT % OF RESPONSES GIVEN TO EACH QUESTION. IN SOME CASES, THIS EXCEEDS THE NUMBER OF RESPONDENTS.

1. Do you or members of your family recycle? Yes 98% No 2%

Do you disagree or agree with the following statements, using a scale of 1 to 5, where '1' means you DISAGREE strongly and '5' means you AGREE strongly

a) For recyclers	Disagree Agree				
	1	2	3	4	5
Recycling is not available for this building	1	2	3	4	5
Recycling takes too much time	1	2	3	4	5
Recycling saves landfill space and diverts waste	1	2	3	4	5
Recycling is too inconvenient	1	2	3	4	5
I don't remember to recycle	1	2	3	4	5
I don't believe in recycling	1	2	3	4	5
Recycling is good for the environment	1	2	3	4	5
I don't know what to recycle	1	2	3	4	5
I don't know where to put recyclables	1	2	3	4	5
There isn't enough room in the carts or there aren't enough carts	1	2	3	4	5
Recycling is a more efficient use of resources	1	2	3	4	5
I don't have room to store materials in my apartment	1	2	3	4	5
I don't buy products or packaging that are recyclable	1	2	3	4	5

NON-Recyclers: Complete questions 24-28

b) For recyclers	Disagree Agree				
	1	2	3	4	5
Recycling is good for the environment	0	0	0	4	96%
Recycling is a burden	39	27	10	18	6%
Recycling saves landfill space and diverts waste	0	0	0	8	92%
Recycling is important for our children's future	0	0	0	8	92%
Recycling is more economical compared to garbage	2	4	8	23	63%
Recycling makes my family feel good					
Recycling is a more efficient use of resources					
Recycling is something I would pay for to ensure it keeps going	2	8	27	27	35%
Recycling is easy and convenient to do					
Recycling is something I feel I'm being forced to do					
I think recycling is expensive					
I wouldn't be concerned if there was no recycling					

Recyclers: Complete questions 2 to end

2. What types of materials do you have on hand that you usually recycle? (% of respondents on recall or prompted)

	RECALL	PROMPT		RECALL	PROMPT
glass bottles/jars	49%	27%	newspaper	84%	14%
plastic bottles/jars	76%	10%	magazines & phone books	27%	53%
aluminum soft drink cans	55%	14%	boxboard boxes (cereal etc.)	49%	39%
food cans	65%	14%	corrugated boxes	43%	41%
drink boxes	10%	14%	writing paper	31%	16%
aluminum foil and trays	4%	27%	gift wrap and cards	12%	2%
other (please specify): _____				0	

3. Where do you usually store recyclables in your apartment?

on the floor	35%	in bag hanging on back of a door	4%
under kitchen sink	20%	utility room	41%
other (please specify): _____			0%

4. How often do you take materials to the recycling carts? (% respondents)

daily	10%	weekly	39%
every 2-3 days	39%	bi-weekly	6%
every 4-6 days	4%	once a month	2%

5. When do you take recyclables to the carts?

storage system is full	58%	going to laundry	0%
going to work	8%	regular schedule	10%
going out	23%		

6. Pre pilot:

a) What do you usually use to store and transport recyclables to carts?

plastic bag	55%	recycling box	5%
cardboard box	16%	recycling bag	2%
other (please specify): _____			21%

b) What did you do with the bag or box that you used to use to carry recyclables to the carts?

put it in recycling cart	41%	put it in garbage bin	12%
take back to apartment	43%		
other (please specify): _____			4%

7. Pre pilot: How did you originally learn what materials to recycle?

another place/previous experience	3%	looked in carts	0%
information from the city	28%	building information package	9%
cart stickers	31%	didn't know what materials	9%
from others in building	0%	other _____	20%

Pilot Project

8. Were you provided with anything recently to help you recycle? What would that be (do not prompt).

plastic recycling bags		nothing/don't recall	6%
6	6%8	other (please specify):	8%

9. Did you use paper bag to store recyclables? (% of respondents)

yes	64%	no	36%	sometimes/somethings:	0%
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10. What types of recyclables did you put in the paper bag?

papers	58%	bottles	4%
boxes	14%	jugs	4%
cans	16%	other _____	4%

11. Did you use the bag(s) to transport recyclables to the carts? (% of respondents)

yes **67%**

no **32%**

sometimes/somethings: **1%**

12. What did you like most about the bag (do not prompt)?

size	16%	ability to recycle	6%
convenience	24%	carrying handles	10%
ability to reuse	2%	organization	2%
messaging	8%	other:	20%
carrying handles	6%	nothing	12%

13. What did you like least about the bag (do not prompt)?

too large	0%	weight when full	0%
too small	24%	need to keep/reuse	0%
added clutter	2%	short life span	0%
messaging	0%	Other:	11%
strength	13%	ok/neutral	50%

14. Are there any recyclables that you usually recycle but did not, because of the bag? (NOTE: QUESTION DELETED)

glass bottles/jars	01	newspaper	07
plastic bottles/jars	02	magazines & phone books	08
aluminum soft drink cans	03	boxboard boxes (cereal etc.)	09
food cans	04	corrugated boxes	10
drink boxes	05	writing paper	11
aluminum foil and trays	06	gift wrap and cards	12
other (please specify): _____			13

b) If so, what did you do with them:

use separate bag/box to recycle	01	garbage	02
other: _____			03

16. How many times did you use the bag? (% of respondents)

Once	38%	4x	24%
Twice	15%	5x	0%
3x	15%	>5 x	9%

17. What did you do after using it as long as you could? (do not prompt)

recycle	47%	store/still have it	47%
garbage	0%	other _____	5%

18. Has the bag made recycling more or less convenient for you? (% of respondents)

more	51%	less	9%
no change	40%		

19. Did anything come with the bag? (do not prompt)

letter	71%	nothing	17%	other	12%
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20. Do you recall getting a letter? (% of respondents)

yes **80%** no **20%**

21. Do you recall any message from the letter?

reminder re: what is recyclable	37%	survey	17%
how to use this bag	21%	other:	4%
city recycling contact (& phone #)	0%	no recall	21%

22. Have the bags made a difference to the amount you recycle? (% of respondents)

recycle same materials, more often	3%	no change	97%
recycle additional materials	0%		

23. Do you think the city should provide the bag to others living in apartment buildings to help people recycle? On a scale of 1 to 5, how valuable do you think they would be? (% of respondents)

Rate: 1 2 3 4 5 (1=low; 5=high)
 17% 7% 10% 15% 51%

Demographics

24. How many adults and how many children live in your household? (% of respondents)

1 adult	12%	>2 adults	10%
2 adults	54%	1+adult/1+ child	24%

25. Which category includes your age?

18-24	9%	45-54	23%
25-34	21%	55-64	16%
35-44	7%	Senior	23%

26. What is the highest level of education that you have achieved?

some high school	34%	some university	4%
completed high school	16%	completed university	6%
some college	16%	graduate education	8%
completed college	16%		

28. Gender: male 38% female 62% (% of respondents)

27. How long have you lived in this building?

_____ years

Unit #: _____

Detailed Survey Findings

Barrie Anne Gardens, Kraft Recycling Bag Project

■ Respondents were split among several age categories, with couples in the majority of family types.

The survey confirmed that the majority of residents are 'couples' (54% of respondents) and that

APPENDIX B

residents are predominantly between the ages 45 and 54; senior citizens (23% each) and between 25 and 34 (21%). Of respondents, 16% were between 55 and 64 years; 9% were between 18 and 24 and 7% are between 35 and 44. Families made up 24% of respondents, followed by single adult residents (12%) and households with more than 2 adults (10%). Most respondents had completed some or all of high school (50%), while 32% had completed some or all of college and 10% had completed some or all of a university degree, with an additional 8% that had post-graduate university education.

■ Respondents are committed to recycling.

Everyone of the respondents agreed, either very or quite strongly that recycling is good for the environment *and* important for our children's future. There were no dissenting views. While most responses (66%) indicated people do not feel recycling is a burden, a significant portion (24% of responses) agreed with this statement. An additional 10% of responses were ambivalent or uncommitted. In response to the hypothetical statement, "Recycling is something I would pay for to make sure it keeps going", 62% of responses indicated agreement (very or quite strong), while 27% indicated ambivalence and only 10% indicated disagreement.

■ Recycling Literacy.

Upon recall, many respondents are familiar with the types materials that they can recycle. With aided recall, this 'recycling literacy' is even stronger. Many respondents reported that they recycle newspaper (84%), plastic bottles (76%), food cans (65%) and aluminum cans (55%); glass bottles and boxboard (49% each), cardboard boxes (43%) and fine paper (31%). With a prompt, these figures rose higher. Of interest is that for many, it is simply assumed that they now recycle magazines (and for that reason, many failed to specify them until prompted) and that many others continue to view boxboard and cardboard as essentially the same material. Drink boxes, which were added to Barrie's program one year ago were mentioned by 10% of respondents unassisted, with an additional 14% who agreed that they do recycle them, when prompted by the survey team. It is important to note that these figures do not indicated whether people are not recycling various materials because they do not use them, or do not recycle them.

■ Stickers on the recycling carts provide essential recycling education.

Asked how they originally learned what to recycle, the cart stickers accounted for 31% of responses. Other important sources of information were the city (28%), and the building move in package. A surprising 9% of responses suggested that residents didn't know what materials to recycle and 3% mentioned learning what to recycle in another place -- a danger in that the programs may accept the same materials. Several respondents reported that they did not remember where they learned to recycle or that they just know - indicating that the behaviour has become ingrained.

■ Most respondents remembered receiving the bags to help them recycle.

While 86% of respondents recalled receiving the bags to help them recycle, 8% had no recall or reported that they did not receive anything. An additional 6% mentioned receiving other items such as pamphlets, a move-in package or the city's recycling calendar.

■ The majority of survey respondents like the kraft paper recycling bags.

Reponses show that 64% of people who received the bags and answered the question used the paper bags to store the recyclables and 67% used them to carry recyclables to carts. Of those who have not

APPENDIX B

used the bags, some reported that they planned to, but had not used it yet and others reported that they like the system they have implemented and did not want to change.

Most survey respondents who used the bags (71%) reported that the *bags did improve convenience*, while 12% reported they found them less convenient and 17% reported no change either way.

Respondents who used the bags were asked to rank the value of the kraft bags for assisting residents in other apartments to recycle. Using a scale of one to five (where five is high value), 51% gave a strong 'yes' (5); 15% ranked them at '4' and 10% gave a more ambivalent ranking of '3'. Only 17% felt that the bags would be of low value, with a rank of '1' and 7% ranked the bags as a '2'.

■ ***Many residents liked the convenience offered by the bags.***

Of residents who received and used the bags, 28% reported that they liked the convenience and 19% liked their size. Other reported 'likes' were the bags' weight when full (12%), the messaging (9%) and that they were recyclable (7%). A few respondents each reported that they liked having the ability to reuse the bags and that they offered an organized system. Additional highlights mentioned were their strength and durability. Of note is that 14% either did not like them or were neutral.

■ ***Some people have used the bags several times.***

Of respondents who have received and used the bags, 7% had used them more than 5 times. One respondent reported using them 10 times and several reported that their bags were still in service. 18% have used the bags four times; 11% each have used them two and three times and 29% used them only once.

Of those who *disliked* anything about the bags, 14% reported that they were too small; 10% did not like having to reuse them and others reported that they fell over or contents spilled out. However, the vast majority, 62% reported that there were no problems.

■ ***The majority of respondents think the bags have not influenced how much they recycle.***

Responses indicated that 97% believe they recycle the same as before the bags. Only 3% report that they think they recycle the same materials, more often.

■ ***Most residents used the bags as suggested.***

Of respondents who used the bags, 58% of responses indicated that bags were used for papers and 14% noted (unassisted) that they were used for boxes. Although not intended for this, containers were also placed in the paper bags (16%) and bottles and jugs also accounted for 4% each of responses.

■ ***In many cases, the bags replace the use of plastic garbage bags for storing and transporting recyclables.***

Before receiving the reusable plastic bags, 55% of respondents used plastic bags to store and transport their recyclables. Another 16% used cardboard boxes, 2% used recycling bags and another 3% used other systems such as laundry totes and milk crates. Some respondents at this building combine systems (e.g. plastic bags for containers and cardboard boxes for fibres) and use other containers such as milk crate, shopping boxes and other 'garbage containers'.

Most respondents to this survey reported that they return their container to their apartment (43%),

APPENDIX B

followed closely by the respondents who put their container in the recycling cart. Only 12% of responses indicated placing containers in garbage, with an additional 4% of other systems.

APPENDIX B - Letter to Residents

To the Residents of Barrie Anne Gardens:

Re: Paper Bags for Recycling

The City of Barrie is conducting a pilot project to test recycling methods for people living in apartment buildings. Barrie Anne Gardens is one of several apartment buildings in Barrie that is participating.

Each unit in your building will receive a paper recycling bag. It's yours to keep, free of charge. This bag is designed for storing paper recyclables and carrying them to the recycling carts. We hope that you will keep reusing it as many times as you and recycle it when it can no longer be used.

As a reminder, in Barrie, we collect several types of papers including:

- Cardboard boxes;
- Newspapers, magazines and telephone directories;
- Boxboard (cereal and tissue boxes);
- Writing papers, computer papers and gift cards; and
- Books (hard and soft covers - with the hard covers removed).

We hope you will continue to collect and recycle your containers as usual. These include:

- Steel food and drink cans;
- Aluminum cans, pie plates and foil;
- Glass bottles and jars;
- Drink boxes;
- #1 plastic bottles (PET); and
- #2 plastic bottles and jugs (HDPE).

Within the next few weeks we will be in your building to conduct a survey of your opinions of this bag and recycling in general.

This project is being sponsored by the City, in conjunction with the Ontario Waste Diversion Organization (WDO) and CSR: Corporations Supporting Recycling. It has been conducted with the support of Melchior Management Corporation and your superintendent(s).

For more information, please call Tracy Quann-Strasser at the City of Barrie's Waste Reduction Office, 739-4219. We would be pleased to hear from you. Thank you in advance for helping us learn more about recycling.

Yours truly,

Tracy Quann-Strasser
Waste Diversion Officer, City of Barrie
Attachment

APPENDIX B - Letter to Residents

Dear Resident:

Re: Paper Bags for Recycling

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