Town of Markham Clear Garbage Bag Project E & E Project # 285 Final Report

December 2008

Prepared by:



451 Ferndale Avenue, London ON Mary Little Tel: 905-372-4994, email: mary@2cg.ca

Table of Contents

1.0	Introduction	1
2.0	Background	1
3.0	Project Description and Goals	4
4.0	Focus Groups	6
4.1	Focus Group Feedback	6
5.0	Project Implementation	8
6.0	Project Monitoring	8
6.1	Weekly Set-Out Monitoring	8
6.2	Door-to-Door Satisfaction Survey	9
6.3	Waste Auditing	9
6.4	Promotion and Education	10
6.5	Observations during Clear Bag Pilot	10
7.0	Pilot Results	11
7.1	Set-Out Data Results	11
7.2	Satisfaction Survey Results	12
8.0	Conclusions and Recommendations	13

- Appendix 1- Johnsview Pilot Area Map
- **Appendix 2- Focus Group Report**
- **Appendix 3- Customer Satisfaction Survey Results**
- Appendix 4 AET audit report
- Appendix 5 Clear Bag Pilot Sample P&E Literature

This project has been delivered with the assistance of Stewardship Ontario's Effectiveness and Efficiency Fund, a fund financed by Ontario municipalities and stewards of blue box waste in Ontario. Notwithstanding this support, the views expressed are the views of the authors, and the Association of Municipalities of Ontario and Stewardship Ontario accept no responsibility for these views.

Copyright © 2008

All rights reserved. No part of this publication may be reproduced, recorded or transmitted in any form or by any means, electronic, mechanical, photographic, sound, magnetic or other, without advance written permission from the owner.



1.0 Introduction

The Town of Markham (Town), through Stewardship Ontario, retained 2cg Inc. (2cg) to document the implementation of the Effectiveness and Efficiency Fund Project #285: "Markham Clear Garbage Bag Pilot". This report provides an overview of this Project, including, project description, project implementation and monitoring. Information was gathered by 2cg from Town staff.

It should be noted that Quinte Waste Solutions completed a clear bag research study (E&E #177) to examine the use of clear garbage bags as a means to divert material from the waste stream. Clear bag programs in the following jurisdictions were surveyed: Nova Scotia, Ontario, Prince Edward Island, Maine, New Hampshire, New York, Wisconsin, and Nebraska. There were fourteen Ontario programs identified in this research project study. According to all but one of the 22 survey respondents who participated in this study (177), clear bag requirements lead to increased recycling tonnage. The majority of survey respondent's further report the clear bag program had a positive impact on overall waste management costs. In Canada, Nova Scotia is considered a leader in applying the concept. The Province has been very proactive in collecting data to track the results of their programs. These results reveal that the 13 Nova Scotia municipalities, which have had the program in place for two years (April 2005 to April 2007), experienced a 41% decrease in residential waste, a 35% increase in residential recycling, and a 38% increase in residential organics collection.

Quinte Waste Solutions is also in the process of monitoring a mandatory clear bag program in the Municipality of Centre Hastings and Madoc Township (E&E Project #312). This project was implemented in January, 2008 with enforcement beginning in June 2008. The final report for the clear bag research study (177) is listed on the Stewardship Ontario Website. It is anticipated that results from Project # 312 will be available by mid 2009.

2.0 Background

The Town of Markham has a population of approximately 296,000 (78,700 households) representing the largest municipality within the Region of York and the 7th largest municipality in Ontario. The Town of Markham is comprised of the municipalities of Unionville, Thornhill, Cornell, Milliken Mills, Buttonville, Berczy, Box Grove, Armadale, Cachet, German Mills, Mount Joy, and Markham Village.

The Town provides its residents (single and multi-residential) with a number of waste management services using both public (recycling drop off depot sites) and contracted services (collection). Single stream recycling processing service is provided by the Region of York. Curbside recycling collection commenced in 1988. Since its inception, the Town has continued to promote blue box recycling with the most recent initiative, Mission Green Plan, launched in 2006.

Waste management services provided by the Town under the Mission Green Plan include;

- Weekly expanded curbside blue box program that accepts comingled materials including empty paint/aerosol cans, aluminum foil/food trays, all plastic bottles, metal containers, glass jars and paper fibres;
- Bi-weekly residential garbage collection, including bulky items;
- Weekly curbside green bin collection for kitchen organics;
- Seasonal leaf and yard waste collection;
- White goods collection (on a cost recovery basis);
- Public space recycling program;
- Reuse partners with Goodwill, Salvation Army and Ontario Federation of Cerebral Palsy;
- Four centralized recycling depot sites for bulky recyclables and reusable items (polystyrene, scrap metal, toner cartridges, tires, plastic bags, electronic waste).

To date, the Town has reached an overall diversion rate of 68% from waste disposal.

Figure 2.1 depicts curbside placement of divertible materials for the Town of Markham.



Figure 2.1 – Markham Curbside Diversion System

Table 2.1 depicts the Town's diversion and waste tonnages since the implementation of the Mission Green Plan (2005 – 2007).

Table 2.1 Recycling Tonnages from 2005 – 2007

Year	Markham HHLD's Served	Markham Blue Box Tonnes Collected Curb	Markham Organic Tonnes Collected (Food Waste)	Markham Garbage Tonnes Collected	York MRF Blue Box Residual Rate
2005	73, 056	18,594	12,080	38,064	9.03%
2006	74,629	24,536	23,080	27,504	7.98%
2007	76,236	23,950	15,294	36,600	9.70%

The implementation of the LCBO Deposit Return Program and the removal of LCBO glass from the Blue Box system resulted in a tonnage reduction in 2007. The green cart program was launched in mid-2005 and experienced a full year of collection in 2006.

Despite the successful Mission Green program, a recent audit conducted by AET Consultants, indicated that 66% of the garbage stream consisted of materials that could be composted in the green bin program, or recycled via the blue box program. Additionally, 27% of the material could have been diverted through the drop off depots or reuse programs (Goodwill, etc).

Table 2.2 depicts the breakdown of the residual audit results.

Material	Percentage of Waste Stream (%)
Organics	31
Textiles	27
Recyclable Paper	
Fibres	19
New Blue Box Items	
(paint cans, aerosols)	2
Recyclable Glass	2
Recyclable Metal	1
Recyclable Plastics	1
Non-Recyclable	
Residue	17
Total	100

Table 2.2 Residual Audit Composition – Town of Markham 2007

The Town's experience has been that residents dispose of recyclables that do not fit in their blue boxes. The Town is aware that the use of clear bags for recyclables or roll-out carts has the potential to increase collection capacity. The option of bagging recyclables was ruled out because the York Region processing facility is not equipped to manage bagged material. The use of carts was also ruled out after a cart pilot project - `Markham's on a Roll' – was conducted in 2006 and determined that cart collection was less efficient and more costly than their current blue box program.

Having ruled out these options, the Town has offered residents blue boxes with larger capacity (16 and 21 gallon boxes) as well as additional blue boxes, and piloted with the use of lids for blue boxes (E&E project 286) to address the issue of capacity at the curb. The Town preferred to maintain the current blue box collection system based on the established public acceptance and integration with the current collection contract.

Regardless of the additional recycling capacity options provided, divertible materials have continued to be disposed in the green/black garbage bags. Town staff believed

that residents were defaulting to the garbage bags because of the ability to `hide' divertible materials in the bags.

To discourage residents from hiding recyclables in the curbside garbage bags then, the Town investigated the option of using see through (clear) garbage bags. The Town estimates that mandatory clear garbage bags have the potential to drive as much as 50% of the available recyclables out of the garbage stream and into the blue box. Specific to the Town of Markham, this represents a potential increase in capture of blue box recyclables by as much as 3,300 tonnes annually.

3.0 Project Description and Goals

The goal of this project was to test the use of clear garbage bags as a mechanism to increase diversion by optimizing blue box capture rates. More specifically, the project aimed to measure the impact of the clear garbage bags on the following metrics:

- Recycling capture rates;
- Recycling composition;
- Resident set out rates;
- Resident acceptability; and
- Collection productivity.

In the fall of 2007, the Town commenced a clear garbage bag pilot study in two neighbourhoods; Swan Lake Village and Johnsview Village. These two communities were selected due to their relative isolation in relation to the rest of the Town, making it easier to control outside variables. Swan Lake Village is made up of 300 single family residential community of older demographic and middle to upper income. Johnsview Village is made up of 400 townhouse units representing middle income families in the younger to middle age demographic. Refer to Appendix 1 for a Site Map of Johnsview Village pilot area location.

The Town retained AET Consultants (AET) in July 2007 to gather baseline and pilot audit data for the Johnsview Village area. A pre-pilot audit was conducted on July 17, 2007 and a pilot audit was conducted on December 18, 2007.

Public meetings were held with each community prior to the pilot launch to address concerns and gather resident feedback for consideration. Focus group research was also conducted prior to program launch to probe the public acceptability of various enforcement methods and to determine overall public reception to the clear bag pilot. Figure 3.1 depicts the use of clear garbage bags in a pilot area



Figure 3.1 – Use of Clear Bags for Residential Garbage

The Town anticipated a need to provide residents with a means to capture additional recyclables. Clear blue bags were issued to all residents in the pilot area. Arrangements were made with a private processing facility (Turtle Island) to receive the bagged material. The Town also conducted a blue box lid pilot in the same area as the clear bag pilot. The objective of lid project was to test the effectiveness of the lid as a litter prevention device and at providing additional blue box capacity (for details of the blue box lid project refer to E&E Project # 286).

Figure 3.2 depicts the use of a clear garbage bags accompanied by a clear blue bag for overflow recyclables and a flexible blue box lid for the Blue Box.



Figure 3.2 – Clear Garbage Bags and Supporting Recycling Overflow Containers

The pilot project was conducted over a three month period. Town staff and students delivered 24 clear garbage bags per household (2 bags per week x 12 weeks), approximately 2-3 weeks prior to program launch. Additionally, one clear blue bag and one flexible blue box lid was also issued to each pilot household to collect extra materials. Promotional literature was distributed at the same time as the bags were delivered and staff were available during the delivery period to answer any questions. The clear garbage bags were not mandatory. Collection drivers contacted the Town where residents did not use clear bags and students distributed additional literature on the pilot program to the households not participating.

4.0 Focus Groups

Prior to project implementation, the Town requested formal feedback from residents in the form of focus group sessions conducted by INFORMA Marketing Research. The focus group sessions were conducted at the Town municipal building and proceedings were recorded on DVD and audio tapes. Town staff observed the sessions via closed circuit television, in an adjoining meeting room. Respondents were recruited by a professional recruiting firm, Sharper Insight, to ensure quality participants. In return for their participation, respondents received a \$75 honorarium. The recruiting specifications for the focus group included the following:

- One group each, male and female;
- 10 people per group;
- Residents from across Town;
- Representing major decision makers;
- Plays role in recycling at home;
- Access to curbside collection;
- Representative of ethnicity of Town

The focus groups were asked a series of questions related to the Town's waste management programs, including the idea of using clear bags for collecting residential garbage as a mechanism to increase blue box diversion.

4.1 Focus Group Feedback

The complete Focus Group report is available in Appendix 2¹.

The idea of requiring transparent bags for garbage immediately evoked many questions and reactions from the focus groups. In summary, the comments raised at the focus group session were as follows:

¹ Please note that the Focus Groups were conducted not only on the topic of Clear Bags, but also sought feedback on the blue box lid pilot and on the Town's waterworks services. Those sections of the report directly related to the Clear Bag pilot are clearly identified.

- "Did the majority of good recyclers have to `suffer' because of a minority of `lazy people' hiding recyclables in the green garbage bags?"
- "Loss of Privacy" Residents immediately resisted the idea as an invasion of privacy.
- "Would there be exceptions such as using small grocery bags filled with personal hygiene/ bathroom items?"
- "What would they use to line their inside garbage containers?"
- "We would have to do ` room by room' recycling in order to ensure that no recyclable items were placed in the garbage."
- "Will the Town provide free clear bags?"
- "How will the Town enforce this project?"
- "Will there be reminder notices for residents to assist with the program change?"

After the initial exchange of feedback from the residents, the focus group was presented with the waste audit information (refer to Table 2.2) depicting 66% of the Town's residential waste consisted of compostable or recyclable material.

The reaction to this statement evoked the following responses from the focus groups;

- "This is surprising, particularly the amount of paper that is not recycled."
- "We refuse to recycle personal documents due to identity theft concerns and this may account for the quantities of recyclable paper entering the waste stream."

To support these comments, the consultants leading the focus group sessions referenced previous research that showed that over half of residents (53%) within the greater Toronto area (GTA) do not recycle personal records because of the concern of identity theft (2005 Benchmark Study, Enhancing Recycling, Stewardship Ontario's E&E Fund).

During the wrap-up of the focus group sessions, respondents were asked a second time if they felt that using a clear garbage bag was a good idea for diversion. The final response indicated that over half (12 out of 19 participants) concluded that requiring residents to use transparent bags for garbage was either a "good idea" or "neither good nor bad" with approximately one third rejecting the idea.

The proponents for the clear bags felt that it was justified in order to ensure that everyone was treated equally and all households recycled. The opponents of the clear bag initiative perceived the idea as `Draconian' and an invasion of privacy. The neutral reaction (neither "good" nor "bad") agreed with the necessity of this measure, however they hoped that the Town would be flexible and not penalize the occasional `blunder' and use `gentle enforcement.'

At the conclusion of the focus group sessions, it was apparent to the Town that the concept of using a clear garbage bag for residential waste evoked strong opinions. In the end, it was determined by the Town that information gathered from a pilot study would be a useful tool to determine if quantitative data can support the implementation of a clear garbage bag policy as a method of waste diversion for the Town of Markham.

5.0 Project Implementation

The pilot was conducted during the fall and early winter months. Project implementation schedule was as follows:

- July 17, 2007 conduct a one-day baseline audit
- September 10,2007 develop educational material
- September 15, 2007 distribute promotional material, bags & box lids
- Oct. 1, 2007
- -commence bag pilot project
 -conduct weekly set out audit
- Oct-Dec,2007 -conduct weekly set ou
 January 1, 2008 -complete pilot project
- June, 2008 -complete follow-up satisfaction survey

6.0 Project Monitoring

6.1 Weekly Set-Out Monitoring

Co-op students recorded weekly set out data from the pilot areas to monitor data on the three curbside collection units: blue boxes, green carts and garbage bags.

Table 5.1 depicts the format used for of the set-out data collection during the pilot.

House			G	arbage				Blue Box				Green Bin	
#	Litter (pieces)	Clear Bags	Opaque Bags/ Cans	Full Bag Equivalent (in 1/4s)	No Set Out	Clear Bags	Boxes	"Fullness" (in 1/4s)	Overflowing	No Set Out	Bins	"Fullness" (in 1/4s)	No Set Out

Table 6.1 Set-Out Data Table

Once per week during the 12 week pilot period, students canvassed the pilot areas on the morning of blue box collection days, to gather set-out data from Johnsview Village and Swan Lake. Recycling is collected on a weekly basis and garbage is collected bi-weekly. Garbage is co-collected with organics earlier than the recyclables and often students were not successful at recording regular set out patterns of garbage and organic containers as material was already collected prior to students' arrival times. For the most part, data on average set out rates for blue box material was obtained, along with a few weeks worth of garbage and green cart data. This data was compared to the baseline set-out data that was generated by AET consultants in the summer.

6.2 Door-to-Door Satisfaction Survey

Town staff designed a door-to-door survey that was conducted as a follow-up to the implementation of the clear bag pilot. The survey was administered during a 40 day period from May to mid-June 2008. The survey was intended to capture the level of satisfaction of the participating residents and to obtain comments on the following:

- Ease of use;
- Increase in blue box set out; and,
- Acceptability of clear bag.

Surveys were conducted in the early evenings to increase opportunity to capture a broader range of residents. A summary of survey results are included in Appendix 3.

Figure 6.1 depicts a sample of the clear bag satisfaction survey.



Figure 5.1 – Clear Bag Satisfaction Survey

6.3 Waste Auditing

Waste generation and composition studies were carried out in the Johnsview Village pilot area in July 2007, prior to program implementation and again during the pilot in December. AET Consultants along with the assistance of the Town's students conducted the sampling, which consisted of 20 households. In an effort to save on operational costs, the Town chose to combine two pilot programs for audit sampling (blue box lid and clear garbage bags). Further, the Town opted to use a combination of co-op student forces and staff from AET consulting to conduct audit sampling on a limited sampling size and short timeframe. Challenges arouse when information from the audit was examined. Results were inconclusive and not easily comparable

to the baseline data. There was also a broad span of time between the baseline audit and the pilot audit which impacted composition data (summer vs. winter)

Full details of the AET audit report is available in Appendix 4. No noticeable increase in blue box capture rate was observed. Data results suggest that a slight decrease (from 92% to 88%), this is likely due to the limited sample size and some flaws in the sampling methodology. Indeed, a review of the sampling methodology indicated that during the baseline sampling, only participating households were targeted (10 households in total), whereas in the pilot sampling, all 20 households were targeted regardless of participation.

6.4 Promotion and Education

The Town of Markham experiences wide spectrum of multi-cultural demographics. To ensure that all residents understood the clear bag pilot program, students and staff hand-delivered promotional literature in six different languages two weeks prior to the program launch. The delivery of the literature was conducted in the early evenings and on weekends when residents were most likely to be home. Residents were encouraged to ask questions when their literature was presented to them. In addition to the literature, the pilot material was distributed to each householder (clear bags, lids, boxes).

Appendix 5 includes a sample of the literature that was handed out with the clear bags prior to program launch.

6.5 Observations during Clear Bag Pilot

None of the residents indicated a refusal to participate in the pilot program when the literature and containers were delivered to their door. Data does indicate that at the time of the pilot, not all residents chose to use clear bags for waste. Because the focus group results had indicated sensitivity to the clear garbage bag program, residents who set out garbage in opaque bags continued to have their waste collected and were issued reminder notices to participate in the clear bag pilot. It was also noted that residents who did use the clear garbage bags for curbside collection often used smaller opaque grocery bags or white kitchen garbage bags nested inside the larger clear bags. These smaller bags were filled with material that was unidentifiable to the curbside collection drivers and perhaps is indicative of the reason why the waste composition data in the audit did not show noticeable differences between the baseline and pilot program. Further, the promotional literature issued by the Town permits residents to put their waste in an unlimited amount of smaller opaque bags. An excerpt from the literature is as follows:

"You can use grocery bags or other opaque liner bags and put these inside your transparent garbage bags, or you can put your transparent garbage bags out for collection in your regular garbage can."

Figure 6.2 depicts a clear bag full of individual shopping bags hiding the contents of the waste from the collection driver.



Figure 6.2 - Nesting of Smaller Opaque Bags inside Clear Bag

Finally, the Town noted that there were a significant number of households that chose to set out waste in plastic/metal garbage cans, resulting in loss of incentive to use the clear bags

7.0 Pilot Results

7.1 Set-Out Data Results

Set out studies were conducted in both pilot areas over the course of the pilot duration (12 weeks). Results are available in tables 7.1 and 7.2 below. Although waste and green cart data is lacking due to the timing of the sampling, where data was available, it was compared to baseline data.

Based on the information that could be used for data comparisons, during the baseline period (July 2007) residents on average put out the following:

- 1 full blue box per set-out per week;
- 0.7 garbage bags per set out (two weeks); and
- 0.5 green carts per set-out per week.

Comparatively, during the pilot sampling (December 2007), residents on average put out the following:

- 0.9 garbage bags
- 1.3 full blue boxes

This represents a slight increase in overall set out rates. A few variables impact set outs during the month of December, including the increase in packaging items and advertising flyers that are generated during this season. This was confirmed by the results of the pilot audit, which indicated higher generation of paper fibres in December compared to July data.

Interestingly, in the few instances where waste set out data was captured, in one pilot - Johnsview Village - less than half of the households (45%) chose to use clear bags, whereas in the other - Swan Lake - the majority of residents (73%) used the clear garbage bags.

Refer to Tables 7.1 and 7.2 for set out results.

	5-	13-	19-	26-	9-	16-	23-	30-	7-	14-	21-	Average
	Oct	Oct	Oct	Oct	Nov	Nov	Nov	Nov	Dec	Dec	Dec	Average
Percent of Households	749/	75%	740/	60%	60%	020/	740/	75%	7/0/	70%	710/	7/0/
with a Blue Box set out	7470	1570	7470	0370	0370	0570	7470	1370	7470	1370	1170	7470
Total full Blue Box	10	1 2	12	12	12	1 2	1.2	12	1 /	12	12	1.2
equivalents per household	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.4	1.2	1.5	1.2
Percent of households with												
garbage setouts using	n/a	n/a	n/a	n/a	n/a	73%	n/a	76%	n/a	70%	n/a	73%
clear bags												
Percent of households with												
garbage setouts not using	n/a	n/a	n/a	n/a	n/a	22%	n/a	18%	n/a	24%	n/a	21%
clear bags												
Percent of households with												
garbage setouts using	n/2	n/a	n/a	n/a	n/a	5%	n/a	6%	n/a	6%	n/a	6%
both clear and opaque	11/a	11/a	11/a	n/a	n/a	570	11/a	0 /0	n/a	0 /0	n/a	0 /0
bags												

Table 7.1 – Swan Lake Set out Results Post Launch of Clear Bag Pilot

Table 7.2–Johnsview Set out Results Post Launch of Clear Bag Pilot

	2- Oct	11- Oct	16- Oct	23- Oct	6- Nov	13- Nov	20- Nov	28- Nov	4- Dec	11- Dec	18- Dec	Average
Percent of Households with a Blue Box set out	86%	89%	84%	85%	84%	78%	82%	n/a	75%	79%	n/a	82%
Total full Blue Box equivalents per household	1.3	1.4	1.1	1.3	1.3	1.3	1.2	n/a	1.4	1.3	n/a	1.3
Percent of households with garbage setouts using clear bags	n/a	n/a	n/a	n/a	n/a	n/a	45%	n/a	46%	n/a	n/a	45%
Percent of households with garbage setouts not using clear bags	n/a	n/a	n/a	n/a	n/a	n/a	50%	n/a	48%	n/a	n/a	49%
Percent of households with garbage setouts using both clear and opaque bags	n/a	n/a	n/a	n/a	n/a	n/a	5%	n/a	6%	n/a	n/a	6%

7.2 Satisfaction Survey Results

Approximately 700 households were involved in the clear bag pilot. A total of 182 residents responded to the door-to-door survey, representing a 27% response rate. Of the residents who responded, 81% (154 residents) indicated that they used a clear garbage bag during the pilot program. Asked if they felt they recycled more material when they used the clear garbage bags, 51% of respondents indicated they recycled the same amount as before, while 30% felt they recycled more material.

Similarly, when residents were asked if they felt they generated less waste when using the clear garbage bags, 58% indicated they generated about the same amount of waste and 27 percent commented that they felt they generated less waste.

It should be noted that comments received pertaining to privacy differ from comments originally made during the focus group sessions. The focus group perceived that clear garbage bags would impact privacy. When the participating residents in the Swan Lake and Johnsview Village area were asked about their concern for privacy, 60% of the respondents strongly disagreed that clear bags caused a concern for privacy. Further survey response details are presented in Appendix 3.

In summary, it appears that the majority of the residents did not have a concern as it pertains to privacy, and would use the clear bags if it was declared mandatory by the Town. It is not certain under what condition residents would chose to use clear bags (i.e.: inside their garbage cans or with opaque smaller privacy bags) Additionally, residents indicated that they became more aware of the current diversion program as a result of participating in the pilot. Residents also indicated that they did not notice a significant change in their set out patterns but just over half of them (51%) agreed that the clear garbage bag increased their overall awareness of what they put in the clear bag.

8.0 Conclusions and Recommendations

Pilot results as they pertain to the goals of the project are mixed. No noticeable change was observed in recycling capture rates from the baseline to the implementation of the project. It is anticipated that if a larger sampling was conducted over a longer period of time (one week), meaningful quantitative data would have been generated. Similarly for the set-out data results, if data had been collected within a shorter seasonal timeframe (same season), seasonal variables would have been minimized.

From a resident acceptability standpoint, the satisfaction survey feedback indicates that residents do not have as much of a concern about privacy when using clear bags as originally anticipated during the focus group sessions. A cautionary note to this statement is that residents were permitted to place their clear bags in garbage cans and to use an unlimited quantity of small opaque shopping bags inside their clear garbage bags. Additionally, residents indicated that they became more aware of the items they were including in their waste bag. Based on the varied preliminary results, it is anticipated that an extensive promotion and education campaign would be required prior to, and during the clear garbage bag program.

An advantage of the clear garbage bag program is that there is no impact on the current collection program. The Town also found that clear garbage bags act as public awareness tool for residents and an opportunity to reduce the instances of hazardous waste, syringes, smoldering ashes, and glass shards entering into the

curbside garbage bag. Comments from Town staff indicate that the potential health and safety benefits for the collection drivers by using clear garbage bags compensate for the extra communication that may be required to launch the program. The Town further supports clear garbage bags because of the opportunity they offer collection drivers to conduct effective curbside enforcement of the waste management program. Drivers have the ability to spot hazardous waste or other health and safety contamination and leave the bags at the curb with an information sticker alerting the residents of the problem.

Due to methodological auditing and set-out study flaws, results are not conclusive for the effectiveness of the clear garbage bag as a mechanism to increase blue box capture rates. It is recommended that appropriate sampling size and timeframes be established in order to gather comprehensive and meaningful data.

Something that was observed during this project was the high use of plastic garbage cans for curbside set out. The Town found that residents prefer to use plastic garbage cans for aesthetics and for rodent prevention. Drivers dump the contents of a garbage can into the truck and do not pull the bags out of the garbage can. As a cautionary note, prior to a full program launch, a municipality should consider the impact garbage cans have on a clear bag pilot and conduct a curbside set out survey to determine the percentage of cans vs. bags that are being used within their community.

The feedback from the clear bag pilot has generated interest from the Town to proceed further with a possible mandatory clear garbage bag program for the community. The Town intends to target chronic non-recycler offenders where greater than 50% of the garbage bag consists of recyclable material.

In conclusion, several valuable lessons were learned from this project that can benefit other municipalities;

- To ensure adequate monitoring is conducted, consider the option of incorporating a third party consulting firm to assist the municipality
- The decision to combine two or more pilot projects for audit purposes in order to economize is not recommended
- Ensure the areas chosen for the pilot collects good tonnage data and that the pilot area coincides with a single truck route
- Ensure valid data for those baseline and control group (a group where no parameters are altered) is collected
- Proper waste auditing requires a minimum of 100 households (as per Stewardship Ontario's audit protocole specifications)
- Use staff from Stewardship Ontario as a resource to assist with project monitoring and planning



Appendix 2 – Focus Group report

TOWN OF MARKHAM



Residential Feedback:

Waterworks & Waste Management Department





TABLE OF CONTENTS

EXECUTIVE OVERVIEW & RECOMMENDATIONS1
TOWN OF MARKHAM'S RECYCLING PROGRAM1
TOWN OF MARKHAM WATERWORKS
STUDY BACKGROUND & AIMS
BACKGROUND7
STUDY DESCRIPTION:
DETAILED FINDINGS
TOWN OF MARKHAM WATERWORKS
WATERWORKS COMMUNICATION
TOWN OF MARKHAM'S RECYCLING PROGRAM27
PROGRAM FEEDBACK
REACTION TO TRANSPARENT GARBAGE BAGS
REACTIONS TO THE BLUE BOX 'EXPANDER'
APPENDIX
DISCUSSION GUIDE41
MARKHAM –
WATER AND WASTE RESIDENT FEEDBACK41





EXECUTIVE OVERVIEW & RECOMMENDATIONS

Introduction

Two focus groups (one with women and one with men) of Town of Markham residents/heads of households were conducted April 18th. A total of 19 people participated in these sessions that were organized to provide feedback about Markham's Waterworks and the recycling program.

TOWN OF MARKHAM'S RECYCLING PROGRAM

Recycling is the norm; households that do not follow this neighbourhood practice are visible and harshly judged.

Markham residents are proud that their community has led the way in reducing garbage through enthusiastic recycling (blue boxes, green carts and kraft lawn bags). Programs have been developed in concert with residents, using the continuous improvement approach.

Transparent Bags

The garbage bag has come to represent, for those who think they are efficient recyclers, the last bit that is the hardest to reduce. Some people admit that their garbage often contains things that could be re-used – clothing, toys, household gadgets, etc. And, some people believe they are entitled to dispose of personal things (including hygiene products) privately. Transparent garbage bags represent violation of personal privacy, for others it smacked of 'big brother' prying into personal effects.

- The idea of switching from opaque to transparent plastic bags prompted many questions. The primary one was the purpose of requiring residents to reveal the contents of their garbage by using transparent bags. Most people deduced that the intent is to drive more recycling.
- The proposal came as a shock for those who claimed that they are dedicated recyclers must everyone suffer because of a few 'deadbeats' who are not recycling?
- Some people viewed it as an invasion of privacy and questioned whether it is ever justifiable?
- It was evident that women were most affected because they are the main sorters of waste within the home. Men, on the other hand, tended to be less involved in this task; however, they usually carry the bins/containers to the curb for collection.
- Objections softened somewhat when respondents learned that the majority of the garbage bag contents were recyclable (source Mission Green, October 2006 newsletter). They agreed





that the three major categories of recyclable items are the difficult ones to divert: 'yucky' personal things (tissues, personal care items), identity theft documents and cast-offs/'stuff' that can be reused.

Recommended Introduction Strategy:

- 1. Inform residents that 66% of garbage bags have recycled content and that most of the materials can be recycled. Identify the recyclable categories.
- 2. Introduce and enforce mandatory recycling, creating a level playing field.
- 3. Provide tips/solutions on recycled content reduction aimed at three major categories:
- reusables: local charity drop-offs and collection services, community events
- organics: split bathroom waste bins and allow small grocery bags for 'untouchable' personal hygiene items.
- Personal papers/documents: inform residents that the place for shredded paper is the green bin and focus on the need to recycle junk mail
- 4. Promote Town of Markham recycling depots, drop-off points (inc. HHW) and charity collection services
- 5. Feedback provide diversion gains and identify remaining items to be recycled
- 6. Introduce transparent bags only after the above steps have been taken. Allow some small grocery bags (for privacy). Promote and enforce bylaw in tandem with facts about diversion gains.

Blue Box Expander

- The benefits were most evident to men who carry boxes to curb and clean up the litter on windy days. They were very enthusiastic about the Expander.
- The Expander's main benefits are: increase capacity, protection from wind, litter reduction and ease of carrying to and from the curb.
- Women seemed to be less enthusiastic about the Expander, tending to see it as a nuisance for collectors. They might be just as likely to purchase another blue box in order to increase their storage capacity.





The \$5 price point was seen to be reasonable and probably cheaper than a new blue box. Also, it increased storage capacity without demanding a larger footprint for another recycling bin.

TOWN OF MARKHAM WATERWORKS

- Waterworks provides a seamless, quality service consistent with resident expectations. There was little to no evidence of quality concerns or supply fears. Town of Markham can be trusted to provide quality services.
- Waterworks' infrastructure and operations are hidden from public view, including residential meters. Many people had never looked at their water meters.
- While the quality of Markham's water is excellent competition from the 'lifestyle' branded water market and convenience drives purchasing of bottled water. Also, many residents have become accustomed to the non-chlorine taste of Brita filtered water.
- The price of water is comparatively low (energy, gas, taxes), further cost is not linked with usage patterns. It is one of those cheap commodities that are used assuming infinite supply, aside from periodic lawn watering restrictions. Some residents seem to be unaware of the bylaws and indulge in wasteful watering practices.
- Residents agreed that wasting water is normative but are trying to teach themselves and their children more thoughtful practices, i.e. turn the tap off when they brush your teeth. What else should they be doing? The challenge was to quantify how much water they were using given that it is hidden or unknown bulk bimonthly cubic metric household figures are useless for conservers. They are consuming water ignorantly –a point of frustration for many residents.
- Most participants were shocked to learn that the average Canadian uses 343 litres daily this Environment Canada figure prompted many people to think about their behaviour. What reduction steps were recommended? Which activities are the major contributors to this huge volume? Many people felt that water conservation/wise use of water is both logical and necessary; it is part of the mix of new ways of doing things now that the environment matters.
- Water WATCH Newsletter had low recognition. The sample issue (Fall 2006) was judged to be much too complicated and copy dense for the lay reader. Rather it was seen to be written by and directed to technical experts, including plumbers. Residents want facts that apply to them and that will educate them about behaviour; they expressed willingness to modify ingrained actions in order to save water.





EMERGING ISSUES

Participants made the following associations with water usage:

- Conservation of resources is essential recycling is the gateway
- Energy reduction is front of mind; the focus is on new aids such as energy efficient appliances and behaviour change. Residents want to contain the constantly increasing amount they are paying for energy.
- Water conservation is the next big step in conservation; reducing the amount of warm water used for showers, clothes washing etc. saves both energy and water. This is a double saving which residents appreciate.
- Residents expect Markham to be active in water conservation, consistent with the leading edge nature of community
- Canadians want to retain quality of lifestyles and address environmental imperatives; most residents appear to believe that they are compatible.
- Householders are interested in containing or reducing household operating costs; this affects both seniors and families.

RECOMMENDED ACTIONS

Develop a 'Markham is water smart' strategy with detailed plan elements. Communication and public education are essential in converting Markham residents into informed users and conservers. The key target groups: women, men (lawn care) and children.

Waterworks has information of interest to residents; they expect that Waterworks should be providing this service. While the levels of interest vary, the overall subject is one that many residents believe requires more of their attention.

Accessibility is the key to effective communications. Currently, the direct mail newsletter Water WATCH, is the major vehicle for message delivery. Its impact and educational effectiveness can be increased by changes to design, layout and content. The copy needs to be written in simple language, geared to a wide cross section of the population. While residents both want and expect to see items about testing and infrastructural improvements, they are primarily interested in facts that they can apply to their water usage. Copy should be reduced to a minimum with





ample use of visuals in order to quickly and easily convey facts. Colour and design elements are essential to add to its overall visual appeal.

The education program should include:

- 1. Facts 'water usage 101' link with specific actions, including both in-home and lawn/garden watering practices.
- 2. Connect water volumes with actions and costs.
- 3. Create messages in lay terms; the focus should be action-oriented. Reduce technical jargon and content which inhibit most residents.
- 4. Translate water volume (m?) into a meaningful measure such as litres, which can be visualized.
- 5. Set goals to drive behaviour change showing the current typical family usage versus a 'water smart' family consumption volume.
- 6. Provide tools (lawn water gauges, barrels, etc.), incentives/rebates (low flush toilets, low flow shower heads, etc. Residents expect that a meaningful program will include these components.

Reaching Residents – Waterworks & Recycling/Waste Reduction

Residents indicate they can be reached in a variety of ways, including:

- Articles in local newspapers
- Town of Markham generated newsletters, door hangers direct mail
- Events, fairs, mall displays
- Bill inserts
- Via children in school programs (new Ontario environmental curriculum)
- Electronic: website & E-newsletters





As the chart below indicates all or most of the variety of communication channels available to Town of Markham are compatible with content for both Waterworks and Waste Management.

MOST EFFECTIVE WAYS OF REACHING RESIDENTS:	WATER	WASTE	BOTH Water & Waste
Local newspaper/ articles and ads	2	1	16
Newsletter delivered door to door/door hanger	1	2	15
Recycling calendar/ schedule delivered to door	1	4	13
Community event	-	1	11
Posters in community centres, local malls	-	-	10
Town of Markham's website	-	-	10
Insert in bill i.e. hydro	1	-	9
Bus ads/ ads on buses	2	-	7
Electronic newsletter	1	-	7
The children/ children's school	2	2	6

The recommended approach is to adapt the quarterly reader-friendly Mission Green newsletter to include news, tips and feedback about Markham's three environmental services – recycling, water and energy. This makes good sense and would provide residents with a comprehensive approach to three currently separate issues.

It is recommended that residential recycling and energy and water consumption and attitudes be tracked in order to help inform future communication content and conservation initiatives.





STUDY BACKGROUND & AIMS

BACKGROUND

Town of Markham is home to 261,573 people; according to the 2006 Statistics Canada census the population grew 25% since 2001. The Town's mission statement is as follows:

Working with the community to provide high quality municipal services that meet, if not exceeds, the expectations of Town residents and businesses.

Town of Markham's Waterworks and Waste Management departments are planning to jointly conduct a small indepth focus group study. The project will gather input from residents on two issues:

<u>Waterworks</u>

Town of Markham's Waterworks department operates according to the following Mission:

- To provide high quality and sufficient quantity of water supply to all system users with the highest affordable level of service.
- To carry out efficient operation and maintenance of the Town's sanitary sewer system to minimize hazards to public health, safety and property.
- To protect our natural resources, specifically, to conserve the fresh water.

The Department supplies safe drinking water for residential and commercial use and maintains extensive networks of water mains and sanitary sewer lines. Water quality and supply are maintained in tandem with City of Toronto; water is sourced from Lake Ontario.

According to a 2006 Environment Canada report 56% of water provided by municipalities is consumed in-home, yet very little (only 1%) is actually used for drinking.

Most of the 343 litres per capita consumed daily by Canadians is used for dishwashing, laundry, toilets and personal hygiene. Nonetheless, Canadians have come to rely on their municipal governments to provide safe, clean and uninterrupted supplies of water at a very modest cost. Water and wastewater services are a minor household expense. Yet public attention has become focused on the quality and availability of Water – municipal water supply tragedies such as Walkerton resonated across the country. Media reports increasingly provide evidence of pollution and of freshwater scarcity and purchase of bottled drinking water is climbing. It is an opportune time to gather resident's feedback. Probe areas would:

Town of Markham's Waterworks – associations and direct experiences with the department and its services





- Awareness and level of interest in waterworks functions, including repairs due to water main breaks.
- Awareness and response to reply paid service rating option ever participated in this option?
- Reliability any cause for concern?
- Awareness of cost as part of overall fixed household operating expenses. Is it seen as a small fraction of the total cost? Worth comparing water costs to energy costs?
- Presenting water charges what is most meaningful: % of total average household cost, \$X per week, \$X per year?
- Perceived quality of Markham water and related water consumption preferences (tap, filtered and bottled)
- Desired facts and preferred sources what do they want to know about the service and the product?
- Awareness of and interest in print Water Watch. Recall receiving it?
- Reaction to sample copies of Water Watch format and content. Other topics that they would like to have featured,
- Interest in website details and current available content
- Ideal way of reaching them with messages current avenues sufficient or do they need to be enhanced?

Waste Management & Reduction

Currently, Town of Markham's Mission Green three stream residential collections is successfully diverting 68% of solid waste. The Mission's goal of 70% diversion is within sight, however new measures are being considered that could have a significant impact on driving down garbage volumes even further. At last count a significant amount of recyclable or compostable materials continue to be placed in garbage bags.

One strategy that Waste Management wants to explore is the potential impact of stipulating that clear bags would be required for waste. Probes would focus:





- Feedback on current waste collection service blue box, organics and yard waste.
- Immediate reaction to concept of introducing clear plastic bags for waste collection. Is the waste reduction goal evident? Are residents interested in knowing more about the types and volumes of recyclables and organics that are being put out with the garbage? Reaction to some of these facts, i.e. 66% of garbage bags still contains green bags and blue box items.
- Cooperation Would residents be willing to comply with this new approach?
- Introduction approaches should it be phased in? Would a partial step be required one or two clear bags and one opaque bag (three bag limits per collection) with the aim of moving towards exclusively clear bags?
- Impacts What are the perceived benefits and drawbacks of requiring clear garbage bags? Is this seen as sufficient rationale for the loss of privacy inherent in using see-through garbage bags?
- Waste Department Tasks What enforcement methods would be expected and acceptable, i.e. warning stickers, collection refusal, fines, etc.?
- Reaching residents with waste reduction message aware of current options and ideal ways of getting messages out. Print and electronic options. Awareness of Markham's new Mission Green e-newsletter and desired content.

STUDY DESCRIPTION:

The sessions were conducted according to a Discussion Guide, prepared by the consultant, incorporating the research objectives as listed in this document. Prior to terminating each group, respondents completed a short structured questionnaire which captured key responses.

The sessions were conducted in a meeting room located at Town Centre Boulevard. Proceedings were recorded on DVD and on audio tapes by Parashoot Productions. Clients observed the sessions via closed circuit television, in an adjoining meeting room.

Respondents were recruited by a professional recruiting company to ensure for quality participants. In return for their participation, they received \$75 and were provided a meal (6pm session) or a light snack (8pm session).





Recruiting

The focus groups were recruited by national supplier, Sharper Insight using a screening questionnaire developed by the consultant. In return for their participation, respondents received refreshments and a \$75 honorarium.

Informa Market Research is a member of the Market Research and Intelligence Association, Canada's market research organization, and as such adheres to standards set by the organization. This includes engaging only recruiting companies that belong to the Central Files system, as detailed below. This ensures that focus groups conducted by Informa include only people who qualify and avoids the inclusion of the 'professional respondent'.

Analyses and Report Preparation

Complete transcripts were made of the focus group proceedings and input from the questionnaires was tallied. The consultant then carefully reviewed the transcripts and tallies, viewed the video tapes and incorporated impressions that have been gathered during the course of conducting the focus groups. All of this material has been analyzed and carefully distilled into a detailed report. This report includes:

- a description of the research methodology;
- profile of the participants
- synopsis of the results
- analysis of the outcomes, identification of themes,

Recruiting Specifications:

- one group each, male and female
- recruit 10 for 8 or 9 to show
- residents from across the Town, representing all four areas
- head of household/major decision-makers
- must play major role in recycling and paying household bills
- one third of respondents are empty nesters, 50+ years, adults with no children or mature children





- all households must have a minimum of two occupants, no sole dwellers
- ethnicity: one third of respondents of Asian/Chinese origin
- access to curbside collection (single, detached dwellings only)

Women's Group Profile

Age	Town/FSA	Number of children at home	Occupation
38	Markham/L3P	2	Sales/ Healthcare
58	Thornhill/L3T	1	ECE Teacher/ Education
32	Unionville/L6C	2	Custom Inspector/ Fed Gov
38	Markham/L3P	2	Maintenance/ Tool Co.
59	Markham/L3P	1	Financial Services/ Health
42	Milliken/L3R	2	Admin Asst/ Bank
55	Thornhill/L3T	3	College Instructor
37	Unionville/L3R	2	Homemaker
43	Milliken/L3S	4	Library Administrator





Men's Group Profile

Age	Town/FSA	Number of children at home	Occupation
52	Milliken/L3S	2	Sales and Leasing automobiles
38	Markham/L3S	2	Customer service/ Automotive
55	Thornhill/L3T	1	Sales/ Equinox
44	Milliken/L3R	2	Install Commercial satellites
31	Thornhill/L3T	1	Retail/ Sports
50	Thornhill/L3T	2	High school Teacher
33	Unionville/L6E	2	Actuary/ Insurance
28	L3R	Refused	Refused
40	Unionville/L6C	None	Purchaser/ Automation
50	Markham/L6E	3	Retired Pharmacist





DETAILED FINDINGS

Each session was divided into two equal length segments – one for water and one for waste/recycling collection. The order of presentation was rotated; the men's group started with water while the women's group commenced with waste.

TOWN OF MARKHAM WATERWORKS

Introduction:

The discussion covered the following topics:

- Immediate Associations with Waterworks
- Water Supply Consistency & Quality
- Water Rates & Bills
- Recycling leads to Water Conservation
- Reaction to Water Usage Data
- Wasteful Types of Behaviour
- Lawn Watering Time or Volume?
- Conservation Aids Water Barrels
- Water Meters
- In-home Water Add-on/Water Purification Systems
- Rating Waterworks
- Door hangers/Notices
- Water Watch Newsletter from Town of Markham Waterworks
- Suggestions for Future WaterWATCH Articles
- Written Suggestions





- Other ways of communicating with residents
- Town Fairs/Events
- Local Newspaper
- Water Conservation Incentives

Immediate Associations with Waterworks

Town of Markham's Waterworks provides a seamless, reliable service to the point that residents rarely have occasion to think about. Beyond benefiting from the constantly available flow of water from taps and toilets, the only contact with Waterworks is through the bimonthly bill. However, because it comes from the energy provider, Power Stream prime attention is focused on the electricity charge; water and sewage costs are a fraction of the total.

Residents admitted that they knew nothing about Markham's water from infrastructure to source. Did it come from Lake Ontario? Is it the same water as Toronto's? They have had no particular reason to know these things; however some people are starting to become more attuned via the growing global concern about pollution, availability/supply and profligate use.

I think it only kind of brought it to mind once when I came over statistics where somebody—it's—in some countries some people only get to use six litres of water a day. And I'm thinking, Oh, my goodness! I flushed my toilet, that's six litres. Like, you know, and that's a—you know, a energy—water-saving unit already, so and the older ones use 11 or something like that. So you don't really think about it and you don't measure it. You know, I you know, when I saw that, I'm thinking, I should use less water. Let's put a basin of water, wash the dishes and rinse them in one basin. And then you forget it because it's not your usual practice.

Water conservation was the key topic that came to mind when water was mentioned. Many residents expressed considerable interest in this topic describing reduction methods that they had used (taking showers instead of baths) or were contemplating (capturing rain water in barrels for watering the garden). From the outset, conservation content dominated the discussion spanning both general and personal usage comments and queries– was it wiser to wash dishes by hand or in the dishwasher? There was little to no reference about infrastructure matters.

The Town's activity on conservation was limited; a few residents recalled door-to-door visits offering low flow shower heads some time ago. Since then there was no widespread initiative to educate and encourage residents to adopt wiser water use habits. This point was decried by a few of the more vocal participants. Clearly, they would have expected Town of Markham to be on the forefront on this matter. There was evidence however, that Toronto was taking action through a variety of programs – they saw promotions and had heard about them. The rebate program offering up to \$60 for installing low-flow toilets was mentioned.





Water Supply Consistency & Quality

Town of Markham's water supply arrives in homes predictably and upon demand – the tap is turned on or toilets are flushed and predictably water is available. Service interruption is not something that people must fear or contend with. Participants were confident that Waterworks was providing quality service, which is consistent with overall quality delivered by Town of Markham.

I thought over the years with all the taxes I've paid that we had competent people looking after things. This more or less just highlighted it, but I just assumed that after 26 years of paying taxes, that I—there are some competent people looking after stuff.

Occasionally, however, at certain times in the year, the water may smell or taste of algae; this can occur in the summer months. Or some people noted that the level of chlorine, based on taste or odour, might be elevated.

Yes, a very strong smell of chlorine at certain—especially around this time of the year when they get the spring run offs.

On the rare occasion, some time in the past, some respondents recalled that residents were advised to run their taps for a minute before drinking the water. This requirement was due to the old lead pipes, not the quality of the water.

Water Rates & Bills

The cost of water was seen as insignificant, not worth noting or objecting to. In fact some residents were not really sure if the rates had changed recently. Their interest in becoming informed users was based on their belief in environmental matters, not saving a buck. But many pointed out that the significant savings that came from reducing energy for heating water. Women appeared to be most interested in the water facts about 'water smart' bathing and cleaning.

Nonetheless, both men and women tended to be more interested in conservation and how much water they were currently using.

It's like anything, I get a bill and I don't even question it. I pay it and that's it. But like you said, if we had a break down of how much water we use per—per cooking our food, or washing cars, or clothes, or whatever it is, that would help us to—to conserve a little more. And we could use a little less water to wash the dishes and the clothes. And then it would help us do better.

A few thought that it had increased recently but couldn't assign a value to that increase. The cost categories that did get their attention were for electricity and gas; these bills got their attention given the cumulative totals.

We're too busy complaining about gas prices.





There's mortgage, property tax. Then the next big—the next big chunk has to be Hydro. Water is, really, water's pretty low on the totem pole of stuff you've got to pay for. You've got gas.

Comparatively, water was a low interest fixed cost; however some people did note that sewage costs were higher than their water bills. This was the one category that might attract their attention momentarily, although it was still relatively inexpensive compared to the other household operating costs. None of the respondents questioned the cost of water; there were no indications that pricing was an issue.

It seems very consistent.

No, we just pay so much more for other things that it does just sort of get lost in the fray.

	CTION	Customer Set 8:00 a.m. to 4:30 p.	rvice 1-8 m. (Mon-Fri)	877-963-6900	Bill	N 307153286 PLE YO WH E&	ASE DETACH J JR PAYMENT. EN PAYING AT DE	RESIDENTI AND ENCLOSE THIS PORTIO PLEASE BRING ENTIRE BILL OUR OFFICE.	AL N W
AO	COUNT NUM	IBER T	-	SERVICE	AT 222		-	BILLING DA	TE
PL	EASE RET	URN THIS P	ORTIO	N				Dec 29,200	6
								AMOUNT DU	E
_						AMO	UNT PAID	-\$ 203.77	ŝ
000	0900002	40 F	2					DUE DATE	
		. 21.1	-					Jan 22,200	07
_			40	70122000	020670000	020377080	2303880	115	
			:04	367=900			98	5	
ACCOUNT NU	MBER 80-2	3-03880-115		SERVICE AT	- · ·			. P.C.	
SERVICE	FROM	TO	DAYS	RATE CODE	READ BY			BILLING DA	TE
Elect	Oct 18,06	Dec 13,06	56	24	METER REAL	DER		Dec 29,200	5
Water	Det 18,06	Dec 13,06	FEADING	MULT. CO	ISUMPTION UNITS	DESCRIP	TION	AMO	UN
M004584 EL	32144	33	430	1	1286 kWh	Previous Bill		281.2	4
39012833Wtr		Nov 15 281.24	40						
						Your Electric	ity Charges		
	0.058 16.0	1							
	<text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text>	2							
			Service 1-877-963-9600 Par. MarketBILL MARKET MARKET SERVICE AT SERVICE AT ACTO012200000206700000020377080230380016 CA132300MILLING INT CA132300 CA132300 CA132300 CA132300 CA132300002067000002037708023038016 CA1323000 CA1323000020670000002037708023038016 CA1323000 CA1323000020670000002037708023038016 CA1323000 CA132300002067000002037708023038016 CA1323000 CA1323000020670000002037708023038016 CA1323000 CA132300002067000002037708023038016 CA1323000 CA132300002067000002037708023038016 CA1323000 CA132300002067000002037708023038016 CA1323000 CA132300002067000002037708023038016 CA1323000020670000020377080230380160 CA1323000 CA1323000000020377080230380160 CA1323000 CA13230000000020377080230380160 CA132300000000000000000000000000000000000	7					
						Delivery		48.0	\$1
						Regulato	ry Charges	8.7	5
						Debt Ret	irement Char,	ge 9.00	3
						* G.S.T. (Re	g. # 857 503	346) 8.4	5
NEW DOWED	OUTAGE CO	MMUNICATION	SERVIC	F ·		Water Charge		31.1	1.
NEW POWER	OUTAGE CO	Minoritoritori	OLIVIO	-		Sewer Charge		23.2	5
On those rare can now provid reporting and a	e customers ccessing out	en there's a pow with a quick and age information.	er outage l efficient	e, PowerStream way of	n				
Simply call our at 1-877-777-3 Energy provide Loss Factor of	Power Outag 810 or visit of d through ST 3.93 % applie	ge Communicatio ur website at ww ANDARD SERV ed to kWh. Adjus	on Service w.powers VICE SUPI sted kWh	e telephone lin tream.ca PLY 1337	e				
	HYDRO CONSUM	IPTION HISTORY			WATER CONSUL	CONSUMPTION HISTORY	- DAY	AMOUNT DE	E
READ DATE	DAYS .	L286	KWMDAY 23	Dec 13.0	6 56	37	.66	\$ 203.77	1
Dec 13,06	61	1694	23	Oct 18.0	6 61	57	.93	~ /	1
Aug 18 06	65	2068	-0 16	Aug 12 0	6 65	122	1.88	1 DUE DUE	-
Aug 18,06	64	1649	76	lun 14 04	64	76	1.19	DUE DAT	5
Jun 14.06	67	1049	20	Apr 11.0	6 57	18	67	Jan 22.200	97
Apr 11,06	57	1201	22	Eab 12.0	6 62	42	68		
Feb 13.06	02	<text><text><text><text><text><text><text> Cancer Specifie 1.97 Specifie Specifie Construction Specifie Specifie Specifie Specifie Construction Specifie Specifie<!--/specifie</th--> Specifie Specifie Specifie<!--/specifie</th--> Specifie Specifie<!--/specifie</th--> Specifie Specifie Specifie<!--/specifie</th--> Specifie Specifie Specifie Specifie Specifie Specifie Specifie Specifie Specifie<!--/specifie</th--> Specifie<!--/specifie</th--> Specifie Spec</text></text></text></text></text></text></text>	1						
Dec 13.05	60	1385	23	Dec 13.0	5 60	41	.08	tel Jan I	D
				77-963-6900	80	-23-03880-115	Bi	II # 307153286	
		Customer Ser	VICE I-8						
Deuro	-	Customer Ser	VICE 1-8						




While bimonthly water and sewage billing frequency made sense, some respondents noted that it would help them monitor usage comparatively if water usage was itemized on a monthly basis.

So I think if we had it even bi-monthly so that they clock it the way that they do now, so that we can actually see the usage on a month by month basis we can take it. Obviously, in the summer months you're going to use more than the winter months. But I think you—you know, it would certainly be a lot more—a lot more, ah, it would be a lot more beneficial if you could take a look at it and be able to say,Jeez, well, what am I doing, you know, using so much water? Like, Can I cut it down here? Can I cut it down there? What am I doing? You know? Those people that—that wash their driveways, you know, you take a look at it, Gee, I wonder why there's so much ... oh, yeah! I washed my driveway six times last month.

The cost of water was also associated with conservation – this connection appeared to be particularly strong with some male respondents.

Conservation begins at home, however, if you have a monetary number to it, conservation becomes much more easier for the average person to look at. It's incentive. There's—that's the point: you need that incentive.

We—we have all have great, um, ah, aspirations to be good citizens and—of the world, to be very green. But when it comes down, it comes to another kind of green. That's right. It's the colour of money that makes the difference. That's why they raise the prices on stuff.

Some participants cautioned against including educational materials with the bill; their practice was to focus simply on the bill and to recycle all the other leaflets. The preferred way of receiving water related facts was a separate mailing or door hanger.

Recycling leads to Water Conservation

Recycling is the gateway to reducing waste, energy and water, according to study participants.

if you're a recycler, as we all seem to be in this room, I mean, I time my dishwasher and it runs in the middle of the night; because I have a timer on it. So it never runs during peak, you know, during the peak hours. And so there's always these little things that we do, and I don't run the water when you're brushing your teeth.

And I do always think about stuff like that. And, you know, we actually do have sprinklers on our lawn, but it's timed to go off, you know, in the early, early mornings when it doesn't consume—when the energy—it duh—it takes a lot less water to—to do your lawn. So, I mean, it's always on top of mind, but that's just the whole recycling mentality. If you believe in it, you look at every aspect ...

Comparing recycling/waste reduction with water – one is a very public act while the latter is individual and often very private. Only a few activities are visible to neighbours, such as lawn/garden watering and washing of cars and driveways however recycling gains or barriers are visible based on the proportion of recyclables to waste – the weekly parade of blue boxes to garbage bags. Water consumption and conservation, on the other hand, are incremental, hidden and not cumulatively evident.





I think it's less, um, sexy as a topic in terms of like, ah, in comparison with recycling because you put your recyclables out. And when you put your things out you look sort of—you know, your neighbours put it out...Whereas your water usage, it's inside your house. You know, you don't know what your husband uses when he goes to the washroom and turns on the tap, and you don't know what you use when you turn on the tap because it's no measurement. You don't contain it and say, "Oh, you know, it took me this much water to brush my teeth today. Versus, you know, what do people in other countries use? Or what do—do they not have?

The amount of water used, presented in cubic meters (m?) cannot be visualized. Respondents could not translate it into water usage; say for flushing toilets, doing a load of washing, brushing your teeth with the tap running, etc. Hence, the water consumption as noted on the bimonthly bill did not register with residents; rather the prime focus tends to be on the total cost of energy.

I agree fully is that we have no concept of what is too much,

Well, litres is how we interpret any type of liquid measurement.

You know, it's—it's too challenging (cubic meter). But you know what a litre of milk is. Same thing like you know a pound of butter, that's a pound. A litre of milk is a litre.

Comparative standards do not exist for water, whereas Town of Markham residents have the option of putting out a maximum of three bags per biweekly collection and can recycle as much as they want.

Well, if they made you visualize, you know, how many litres it is to flush your toilet and make you visualize how many times you'd have to go to a well to go and carry that water to do it ...

Reaction to Water Usage Data

The facilitator informed participants that recently Environment Canada reported that the per capita daily consumption of water was 343 litres. Reaction was slow initially, several people asked to have this information repeated given that it clearly was new. However, once they absorbed this figure they were startled by this very large amount. They imagined the large meeting room table covered with half litre plastic bottles of water – 646 bottles was a lot, and it just represented one persons share.

Holy smokes!

... if that was gas....

Residents had no idea what is normative water volume usage for a typical family. Are they above or below the average?





Wasteful Types of Behaviour

While residents did not know where they stood in terms of water usage and thought that they should be informed on the subject, they did draw the line on certain actions. Some things are truly wasteful. The stereotypical 'dumb' uses included using water sprinklers on rainy days or letting them run for hours and washing driveways instead of sweeping them. Men mentioned the wisdom of washing a car using a bucket of water rather than running the hose.

Insane? And people who wash their driveways. Stop washing your driveways! How much water does that really waste? So it's—you can think about it's inside your house, but then when we're all outside going, "Why is that on? And why are they doing that?" And so it comes top of mind when you see really ridiculous things.

Lawn Watering – Time or Volume?

In some households lawn watering was handled by men, who according to their wives, could be wasteful. One woman had made sure her husband read Water Watch's lawn watering tips because her attempts to curb the amount of water he used on the lawn had failed. He changed his behaviour when he got the official directions from a reputable expert.

See, and I find I have to show that to my husband rather than telling him. If I say, You know what? You can only fill a tuna tin, or whatever. No, no, no. He's got to read it there rather than what I'm telling him.

Many respondents were not sure how much water was needed – should it be measured in sprinkler time or in volume/depth? It appeared that the former measure, sprinkler time, was favoured by many people. However, some participants were using volume as the guide. One woman had received a handy blue cup designed to measure the amount of water applied to lawns at the Markham Fair. Another person had learned to measure the water using a tuna can – a full can signaled that it was time to turn off the sprinkler. The lawn had sufficient water at that point. This was clearly of interest to several other women who reported that their husbands were overzealously watering the lawns – working on the time measure.

My husband would leave it running forever; a baseball game or something. Like he just—yeah. And it makes me crazy. So I'm like, No, it says here!

I just turn it off after an hour, and then he comes out, What happened to the sprinkler? I don't know.

Awareness of the water usage by-law was limited. One vocal respondent had had a visit from an enforcement officer; this was an exception.

Is that actually a by-law?

I just thought it was a strong recommendation?





Conservation Aids – Water Barrels

Some respondents noted that Town of Markham had not recently made any direct efforts to help residents reduce their water usage. In the past, the Town had distributed low flow shower heads; currently neighbouring communities were being offered incentives to install low flow toilets, shower heads, tap aerators, and water barrels.

A few respondents were particularly interested in installing a water barrel in order to conserve rainwater for garden usage. While it made good sense to them, some others were initially concerned that barrels of water would provide a medium for mosquito breeding (West Nile virus). They appeared to be reassured that barrels did not pose a potential health problem when they were told that the barrels were sealed units.

If we were to get the water barrels it might that might help a little bit. Like I said, you know, couple of hundred gallons a season it's still. When you multiply by the number of homes in Markham, even if only a quarter of us use it, the numbers are—are gigantic.

Water Meters

In keeping with the overall low profile nature of the water delivery system, many respondents were not certain where their water meter was located. Some people suggested that it was probably at the side of their house but had not taken time to have a look at it. Respondents agreed that it was out of sight and not something that they ever thought about.

How do they know? Do we have a water meter that I don't know about? Is it near the gas meter?

A sample of a water meter installation notice helped clarify the issue – it reminded respondents what a meter looked like. But still it did not answer the question of how the Town reads the meter – was it done in person or from the Town's office? This was not a burning question, merely a point of interest, given that there was no quarrel or challenge with their bill.

In-home Water Add-on/Water Purification Systems

A few householders had installed reverse osmosis or other water purification systems – men appeared to be more interested in this equipment than women. More common was Brita water filters; the unit was a fixture in their refrigerator delivering cold, charcoal filtered water. Purchasing bottled water had become normative in some households. As one woman noted - It's the trendy thing to do.

Yeah. It's programmed in our mind that, you know, that's the best thing to do. I don't know if it's doing anything at all, but we do it.

For me, I use the Britta only because it's colder than the tap water. And my son drinks like constantly.

Well, we have the water coming out of the fridge, like, filtered water but we don't even ... I prefer the tap water.





Women noted that the habit of drinking filtered or bottled water was hard to break because of the taste – water straight out of the tap was distinct and comparably less pleasant. However, they agreed that Town of Markham's water was safe, safe enough to give a baby. There was nothing technically unsafe about it; simply they had become accustomed to drinking water that had a different (non-chlorine) taste or that was flavoured.

I buy the flavoured water. I'm kind of hooked to it.

I do bottled water for going out in the car or out and about. That kind of thing, but not at home.





Rating Waterworks

Waterworks received very high ratings for overall satisfaction and for water quality.

Rating – 1 to 10 (1 lowest – 10 lowest)	3-Jan	6-Apr	9-Jul	10	AVERAGE
Quality of water from waterworks	-	-	13	6	9.5
Overall satisfaction with Town of Markham's waterworks	-	-	15	4	9.5
Reliability of waterworks services	-	2	12	5	7.6
Frequency of getting educational information with Town of Markham's waterworks	2	8	9	-	6.3
Clarity of the educational materials	1	10	7	1	4.7

WATERWORKS COMMUNICATION

Door hangers/Notices

Samples of Waterworks' service notification door hanger's i.e. emergency shutdown, sewer flushing, planned repairs, temporary water supply connection, water supply restoration, etc were introduced for comment. None of the respondents recalled having seen any of these door hangers; however their overall design and format was seen, by some, to be much more reader friendly than the Water WATCH newsletters.

a lot easier than this thing every quarterly on your bill. Because honestly you talked about it, nobody even reads this. It's too much jargon, too much—it's too much, you know, it's hard on the eyes. So make it something simple. This comes to your door. We have to open our door. We'll look at it. I'll look at that. I'll look at it and say, "Oh, I should do this. My—oh, my dishwasher is taking this much? Maybe I shouldn't—I should only use my dishwasher when I have big parties on the weekend. During the week I'll just hand, you know. Make it easy for us, you know, because we're not all experts in this field.







Water Watch – Newsletter from Town of Markham Waterworks

Several respondents recalled receiving this newsletter; however it appeared that most of them had given it fleeting attention. One woman indicated that this was something aimed at men, however others who were interested in water conservation did not agree. They recalled articles on low flow toilets and lawn watering tips.









Copies of Water WATCH were circulated for comment. Some respondents recognized the format; however several people noted that it did not have visual appeal. Women compared it to the Mission Green newsletter (waste issues preceded water in the women's group) and saw it to be lacking:

I hate to tell you this, but, um, getting that and getting this, I'm more likely to read this (Mission Green).

That one's a little more interesting to look at. Like it's the format.

I don't know if it's the colours or the format.

I'm interested in wanting to read that, but I'm more likely to (read Mission Green) ..

Like, I mean, we all try to get tips and stuff out of this whereas that's kind of a bunch of ... boxes and like little ...

That one's (Water WATCH) like my RSP statement or something ...

Use one side of it maybe to say what the town is doing. And the other one—the other side maybe to give out household tips as to what you can ...

Male residents were equally critical of Water WATCH. Clearly, both the density of print and the content were not accessible. It was not deemed to be reader friendly in both regards.

Yeah, well, the average person doesn't want to hear about back flow and hose bins(?).

I'm sure this is very helpful to plumbers and stuff like that. But to me, it's really not a whole heck of a lot. I don't think I have any bypassed jumper connections or swivels. I might, I don't know.

...when I first read this that sort of just reassured me especially in light of the Walkerton situation (ref. to Testing Tap Water Every Day, Fall 2006 issue).

Suggestions for Future WaterWATCH Articles:

Respondents were invited to suggest topics that they would like to see covered in future issues of Water WATCH, they included:

I'd—I'd like to know what the—what a good target would be for a household to consume—like let's aim for 20 cubic whatever. Yeah, maybe that would be a good place to—to show what a family (consumes)

But not only that, even specific tasks. Like, you know, I know a washing machine uses a lot of water, but I only use one rinse cycle. You know, you could have two rinse cycles. But like how much water does an average load of dishes do? Or how much water does—I just have no idea.

I'd like to see something about, um, a comparison tap water and bottled water The merits of each.

And more—more, um, garden friendly type tips as far as reducing your water consumption in—on your property.





Like if you have more trees you would use less water. Or like just things that you can do or maybe that the town would be prepared to do. Like grasses that more (water conserving) .. And maybe if there was an education place you could go to and see the different things or get a sample of something.

Tips on how to reduce daily activity water use. Like, you know, how to, um, ah, when you're washing, like if you don't put it all into the dishwasher or whatever, how do you go about—like your normal day-to-day things, but how to reduce the amount you use.

Or things that you might not have known, because I just—again, I don't know where I heard it or read it. But I heard that your dishwasher uses less water than actually doing your dishes by hand.

The men's suggestions for improving Water WATCH content and presentation would make the newsletter more accessible to residents. They wanted action-oriented messages directed to them:

More informative in terms of dollars and cents. You know, saving this much water would save you this much money type of thing would be a little bit more beneficial to me.

Tips on—tips on conservation.

Yeah, tips on conservation...this..is this really doing anything for me? Not a whole hell of a lot. Testing tap water, that's great. Like it's reassuring, like you said, but, you know, how is this really affecting me? So put some dollars and cents.

They could make it a little bit shorter. Rather than doing it on legal paper, just do it on regular sized paper.

And people get—I don't know. I have a (inaudible) this big. It looks like something from my office and I really don't want to read something like I'm at home now. Work time is over.

Something that's a one page—like I was always taught years and years ago, and to this day I still adhere to that, but any report I do, brevity is the soul of wit. And when it runs on for two sides of a—of a legal sized document, it's just too much.

If you have a problem you have to call in the plumber. He's the one who's a little bit more interested in this stuff. I would hope the plumber would know this.

Really, if you look at this—most of this—if you look at this, is the water department saying how great they are. Testing tap water every day. That's reassuring, but that's them saying We're doing our job and we're not like Walkerton. Right? If you take a look here, We're doing the replacement on the water system. We're ensuring the water doesn't go down the drain. All of this is telling us what they're doing for us. There's a small section on the back here in the hidden—hidden sections, but if you're not a hydraulic engineer, it doesn't mean anything. So most of the things that they have on this, with the exception of a couple of things, Give frozen pipes the cold shoulder, etc. A lot of this is the department talking themselves up. I don't know. Maybe I'm wrong, but that's the way I perceive it. That's the way I perceived it in the first place when I read it.





Written Suggestions

The following table lists written comments provided on the Feedback form at the end of the session.

Topics of Most Interest – Waterworks- Male Group	Topics of Most Interest – Waterworks-Female Group
monthly tips on how to conserve water	stress to residents re: watering bylaw in summer, however publish in languages common in the individual communities
use of water	ways to reduse (sic)
quality of water used per duty etc. carwash etc	comparisons-are we good or bad-high consumption or average
change method of measurement	stats on water consumption
educate the public on conservation	conservation
they think it is an infinite resource	comparing how were doing as far as consumption
tips on water conservation (regular)	incentives to reduce i.e. a rebate or a coupon for a garden centre if you reduce by a %
monthly billing instead of every two months	comparison study
None	more tips on reducing
better way to explain water usage	creating more public awareness
water conservation ideas	rainbarrels
newsletter-topics	how to reduce usage
water saving devices installed	how much water use in lives
water usage	in comparison w/ other average families
tips to conservation	ideal targets for use and ways to reduce
procedures to ensure water quality	safety of our drinking water vs. bottled water
education about conservation	how to reduce water use





27

OTHER WAYS OF COMMUNICATING WITH RESIDENTS:

Town Fairs/Events

Some residents had visited the Town of Markham display at local fairs and received useful information, including a blue water measurement cup. However, this type of venue provides limited opportunity for residents – if they can't get near the booth or happen to miss the event. More opportunities for accessing water conservation aids was requested.

Several women mentioned Home Depot's current 'green' program which included lectures and demonstrations on energy saving. This made very good sense and could work in tandem with Town of Markham booths located in local malls.

Local Newspaper

Editorial and ads in The Liberal was also a good way to reach some residents. The newspaper covered topics of local interest and would be expected to provide information about water conservation.

Water Conservation Incentives

Some residents urged Water Works to be pro-active in stimulating water conservation by offering incentives or rewards for reducing usage. In addition, they expected that the Town would offer rebates for installing low flow toilets akin to those provided by Toronto.

Sorry, I just wanted to mention one thing. As far as conserving water, incentives would be nice too. Like, if there was some way they could say, Here, if you can conserve your water this summer by 10% we'll give you \$5 to spend at Sheridan. Or something like that. Like something to make you really go, Okay, we're turning the water off now. Do you know what I mean? Just something—I think people respond to that.

TOWN OF MARKHAM'S RECYCLING PROGRAM

Introduction:

The discussion covered the following topics:

- Program Feedback
- Rating the Recycling Program
- Reaction to transparent garbage bags
- Reaction to Facts introduced from Mission Green newsletter





- Transparent garbage bags: Good or Bad Idea
- Launching transparent garbage bags
- Reactions to Blue Box expander
- Mission Green Newsletter and Topics of Interest

PROGRAM FEEDBACK

Concerns and service complaints:

Town of Markham residents are accustomed to having seamless, predictable collection and when there is an interruption or delay it is memorable. For instance, a few people noted that on a few occasions waste material collection had been delayed by several hours or a day. This was annoying especially in the summer months and when full garbage bags could be raided by hungry raccoons. However, some respondents pointed out that if people were diverting kitchen waste as directed in the green bin, that garbage bag contents would be safe from four legged marauders.

Some residents were annoyed that collectors would not pick up recyclables that had been placed in cardboard boxes or transparent blue bags – logical solutions when they have excess amounts of recyclables.

.. you know, a transparent bag and they can see that it's all tin cans, or all shredded newspaper or something, because most of my stuff is confidential so I have to shred it all. So if I bring all that shredded stuff up, I have you know, it fills a whole blue box and I've got to pack the box down. So, you know, they're—they're very inflexible in regard to that. If it was a transparent bah—if it was a transparent bag or a blue bag, ah, it would give a little bit of flexibility. I've had to go out and buy a third box. You know.

- Collector refusal to pick up construction waste, such as pieces of dry wall was seen as punitive. Forcing residents to take these materials to a depot was seen as overzealous and greedy.
- Refusal to collect recyclables (paper or pop cans for instance) that are in plastic grocery bags that are placed in blue boxes.
- What should be done with styrofoam? Why can't it be recycled?
- Broken glass why can't it be placed in blue box, given that glass gets broken as it is tipped into the truck?





- Insisting that corrugated cardboard boxes be broken down and presented in bundles of precise measurement. It is extremely frustrating for people who think that they have complied with these guidelines to have their bundles left behind.
- Some residents reported that their green bins were vulnerable to crafty raccoons that were able to open the latch. They were relieved to learn from the moderator that the Town would provide an additional latch which addressed this problem.

One thing: they are a stickler for the rules. They will not take anything they don't have to take.

While residents agreed that collectors tended to strictly follow the set-out rules, there were some indications that they also were willing to work with residents and would take extra items (i.e. small amounts of construction waste) on occasion.

Several people noted that Markham's recycling program with the combination of blue boxes and green bins had substantially reduced waste volumes. A few noted that Markham was a leading recycling community, achieving 65% diversion.

If you recycle diligently, you can bring the amount of trash that you put out—you don't have to put out more than one or two—even when you've got company out(?), you can get out(?) of(?) it(?) with one or two bags. But the stuff that you start putting in those blue boxes? It really accumulates. There's lots of stuff.

Rating – 1 to 10 (10 highest – 1 lowest)	3-Jan	6-Apr	9-Jul	10	Average
Ability of recycling to reduce the amount of waste that goes to landfill	-	5	14	-	9.5
Frequency of getting educational information about our recycling program	1	5	13	-	6.3
Reliability of the collectors	1	-	16	2	6.3
Overall satisfaction with Markham's recycling program	-	1	16	2	6.3
Clarity of the educational materials	2	4	12	1	4.7





REACTION TO TRANSPARENT GARBAGE BAGS

The idea of requiring transparent instead of the current opaque black/green garbage bag immediately evoked many questions and reactions. Here is a summary of these points:

- Why? What is the reason for this change? Many people seemed to assume that Markham was considering this step because there must be many recyclables in the bags. This must be needed to catch those residents who were not recycling. Was this an acute problem or were they simply trying to force non-recyclers to use the blue boxes? Did the majority have to "suffer" because of a minority of lazy people?
- Loss of Privacy Some residents immediately resisted the idea it was an invasion of privacy. They should be allowed to keep some things from the prying eyes of neighbours. For instance, one woman kept insisting that she should have the right to hide evidence of her particular food craving (chocolate bars).
- Any Exceptions? Would this mean that small grocery bags filled with kitchen or bathroom waste could no longer be used? Were they supposed to empty these bags into a large transparent bag? What should they use to line their small kitchen garbage bins.
- Cans? Would garbage cans still be acceptable? Could they continue to fill their cans with small grocery bags of garbage? Why force residents who preferred to use garbage cans to purchase one-time use transparent bags?
- Bathroom Items Several women noted that they emptied the bathroom waste bin in the garbage because they did not want to sort it. Picking through the array of used tissues, feminine hygiene items, dental floss, etc. was not a pleasant task. While they knew that the solution was to keep the green bin items (tissues, etc.) separate from the non-recyclable things (dental floss, hair etc.) the bathroom space was too small for two garbage containers. Will Markham force residents to separate "gross" bathroom waste? Or will they allow a few grocery bags for personal items?
- Reusables Residents place non-recyclable item such as kids toys, old clothes, broken flower pots etc. in the garbage because there was nothing else to do with these things. However, some women noted that they passed some items on to charity or to friends. Others were either not aware of local charitable options or did not seem to be interested in making the effort.



- Confusion Even though the majority of items now seem to be part of the recycling/green bin stream, it is hard to keep up with program advances. Some residents admitted that they were lagging behind – they were "confused" by what could and could not be recycled and consequently make mistakes.
- New Habits Room by room recycling would be required in order to ensure that no recyclable items were placed in the garbage.
- Free bags? Does the Town provide the bags? If not, where could they purchase transparent bags? What were they supposed to do with the supply of garbage bags they had on hand?
- More plastic pollution? What will happen to the transparent bags of garbage? Will they be landfilled?
- Enforcement How will the Town monitor this new requirement? Will there be "garbage police" that will inspect each bag for recyclables? Who will enforce it?
- Penalties? What is the penalty for placing recyclables in the garbage? Will they get an 'oops' sticker and will the bag be left behind? Will they be fined for a simple infraction?

Reaction to Fact: 66% of garbage bags contain recyclables

This fact was surprising and explained why Markham was considering introducing transparent garbage bags. Yet those who insisted that they were excellent recyclers thought it did not apply to them, although occasionally a pop can may end up in the garbage. This defense was abandoned when they had an opportunity to see what this recyclable stream consisted of – this information was summarized in the following graph:



What's in our Garbage Bags? (Mission Green Newsletter, Issue 5, October 2006)





This garbage breakdown confirmed what dedicated recyclers suspected, namely that a very small fraction (4%) of the waste consisted of blue box items. The three major categories, reusable items, paper and tissues/personal hygiene products, made sense but many participants seemed to agree that these were the kinds of things they put in the garbage. But what was the solution? Each of the three types of materials posed challenges for recycling. Redirecting reusable items to local charities, for instance, required knowledge and extra time. Free pick-up was ideal, however Goodwill no longer offers this service and others might charge for it. Clothing drop-off bins had some appeal, however, some people suspected that these bins were raided by scavengers or that these materials were shipped to remote locations such as Africa. Men appeared to be less aware of reuse options than women.

It is a time and effort issue...last thing I want to do an a Saturday is make the rounds.

Yeah, the items that could be—could have been donated to charity. You know, it kind of makes you feel guilty.

Twenty-seven percent. That's a lot. That's like one third.

Refusal to recycle personal documents due to identity theft concerns appears to be widespread. Over half (53%) of GTA residents indicated that they did not recycle personal records because of this concern – 2005 Benchmark Study, Enhancing Recycling, Stewardship Ontario's E&E Fund.

Compostable tissues and personal hygiene products pose a separating challenge for many residents. The only suggested solution is to keep this stream of bathroom items separate by using two waste bins. Most householders have not taken this step yet.

Good Idea or Bad Idea?

In the final analysis, the majority (12 out of 19 participants) concluded that requiring residents to use transparent bags for garbage was either a "good idea" or "neither good nor bad". About one third rejected this option – it was a "bad idea".

Question:	Good idea	Bad idea	Neither good nor bad
Do you think that Town of Markham should require residents to place their garbage in transparent bags	5	7	7





Proponents - Those who endorsed the concept felt that it was justified in order to ensure that all households recycled. They would comply if Markham introduced this stipulation.

Opponents – These people rejected transparent bags mainly due to its perceived Draconian tone; it was an invasion of privacy.

Neutral Reactions – About one third were neutral – transparent bags were neither "good" nor "bad". This measure must be necessary, however they hoped that the Town would be flexible and not penalize the occasional blunder.

Launching Transparent Bags

If the Town decided to ban opaque bags, respondents suggested that it should be accompanied by education and gentle enforcement. It would be counterproductive to slap fines on opaque bags or those who placed a few recyclables in transparent bags. Rather, they hoped that the collectors would use their discretion and be patient as residents adapted to the new measure. However, they did support pursuing the minority who are chronic garbage generators who do not use their blue box or green bin.





Men's Comments	Good Idea	Bad Idea	Neither Good nor Bad idea	Statement Female	Good Idea	Bad Idea	Neither Good nor Bad idea
I don't need to be governed for everything I do! Big brother- garbage police		•		maybe set up a snitch line so we can report our neighbors who don't do their part	•		
it does not really matter. The garbage being properly recycled is all that matters			•	however I am required to dispose of my waste I would comply	•		
Good-people will be more diligent about garbage. Bad- people will object because they don't want others looking at their garbage.		•		depends upon consequences for those who never do vs. those who sometimes/ always try to do			•
it would help to ensure recyclables don't go as garbage	•			it might be the necessary step necessary to ensure compliance from people.	•		
yes if it prevents misuse of proper recycling	•			it is again we are talking about plastic			•
gradual changeover may be needed			•	it takes away from our privacy-what would the consequences be if the wrong materials got in the clear bags- too much of a threat		•	
privacy issue for residents		•		doesn't really make a difference to the way I already government my waste			•
privacy-people are not willing to disclose personal information		•		my garbage can does not waste plastic-too big brother a concept		•	
invades privacy		•		we have to buy additional clear bags and what do we do with the green bags- privacy matter too		•	





REACTIONS TO THE BLUE BOX 'EXPANDER'

Most respondents reacted favourably to the 'expander', although it seemed that women deliberate more about its potential strengths and weaknesses than their male counterparts.

Now, that's a smart idea.

It's called keeping recycles off my lawn, that's what it's called

I'd pay an extra five bucks for that.

That's a great idea.

I like it.

Excellent

Litter Reduction - The big plus for many respondents was that this device would help reduce litter. On windy days paper and light plastic items get scattered around the neighbourhood, despite the best attempts to weigh the materials down.

If it was like that, the retrofit, with a retrofitting type- I'd pay five or ten bucks. I don't know how many other people on the street would, but I would because it-on trash day it's terrible (litter).

But you'd have to pile it high to be equivalent to an extra box. And to pile it high and not have it fall all over the place is—is a challenge for my husband. He's—he's the one who takes it out. And, you know, to stack it nice and, ah, because these things all—some of it is round because of the bottles or whatever.

Like, we try to crush the pop cans and whatnot, but some things are not possible and it's hard to sort them in the way of, you know, putting those neater ones at the bottom and the lighter things on the top. And you just sort of throw them in as—as you get them, so it might not be as easy to pile it high.

Because when you go to add the recycling you're going to pop it off and it's all going to fall out, so I'm not sure— I think it looks great. It's nice and neat, but I'm not exactly 100% clear really how—really how much more I'm going to be able to shove in there.

What about the issue though—and somebody talked earlier about the litter, the stuff that gets blown around on a windy day. All this—and papers, etc., even pop cans could ...

So not even only worried about stacking high, just whatever's in there, just closing it off so it's not blowing around.

Collection and Collectors - Women were concerned about the impact it would have on collectors, much more than men. The latter group, women, wondered if it would slow down collectors or make their job more cumbersome? Would the net get caught in the materials and result in more litter or that more things were left behind in the bin?





I wouldn't think it would last very long because if they have to take it off, they're in a hurry. You know, they don't have a lot of time. If they have to take it off, it's going to get...

... for the collectors and it slows them. And it means it's less efficient, so they'll take longer or whatever (inaudible) collections done. So whereas if I had another blue box, it's—they do their job. It's already what—that step that they do.

I think the collectors when they take off the one end, because I 'm assuming the other end, it's screwed on, it's affixed to it...

And then they have to dump the thing over. It's going to get caught up in that thing because it's not that...

I can see it getting caught

Take a little more time and it'll fall to the ground and I'll have to come back out and put them all back into my recyclable bin and put it back out next week.

Increased Capacity - Some women weren't convinced that the expander would add substantially to the amount of materials that could be loaded into the blue box. The preferred option would be to purchase an additional blue box. However, adding another collection container to their existing array (at least two blue boxes, a green cart, and garbage bags) posed a storage problem. In this case, increasing capacity by adapting bins with an 'expander' made good sense.

I think you can actually get a little bit more in there because you can kind of expand it.

Fit more in and keep it in.

Cost – Price was one of the major considerations. Would it be wiser to spend the money on another blue box or to buy an 'expander'? The proposed \$5 cost was seen to be reasonable by most men but some women questioned the actual benefit of it. It should be noted that although the cost of a blue box was almost the same at \$6, some respondents seemed to be under the impression that it was costlier, in the \$10 range.

What costs more – that thing or another blue box?

I wouldn't want to pay the five bucks

I think not everyone will buy that

Durability and Theft - Would it break or get torn? How durable was this net? Or might it get stolen by people who will not pay \$5 for their own? Some women imagined that this would happen, given that their blue box or green bin had been stolen.

Handle Feature – The handle feature enhanced the perceived functionality of the 'expander' so that two blue boxes could be carried out to the curb instead of one at a time. This reduced steps





and saved time.

Men appeared to be mainly responsible for taking out materials for collection and for cleaning up the remains and litter afterwards. Hence, they were the prime market for this new item. Several of them imagined that the 'expander' would substantially reduce the amount of litter that blew on to their property and created blight in their neighbourhood. This would make their job much easier and contribute to the appearance of their property.

Mission Green Newsletter and Topics of Interest

As noted earlier, Mission Green's newsletter was familiar and reader friendly. Residents reported that this was one of the direct mail items that got their attention because it provided useful information, organized in an accessible way.







goodwill

Markham's Goodwill Community Donation Centres

Thornhill Recycling Depot (southeast corner of Bayview Avenue and Green Lane) Open 8 a.m. – 8 p.m. – 7 days a week, 364 days a year. **Yonge Market Place** (Pharmacy Food & Drug) at 7171 Yonge Street Open 8 a.m. – 6 p.m. – 7 days a week, 364 days a year.

GOODWILL ACCEPTS:

- Clothing, shoes, boots, belts & purses
- ✔ Hats, gloves & scarves
- ✓ Books, records, CDs, DVDs, videotapes
- ✔ Games, toys & sporting equipment
- ✔ Housewares: Dishes, glassware, kitchen utensils & lamps
- ✓ Hand tools & small power tools
- ✔ Linens, curtains, blankets, area rugs & towels
- ✔ Computers (Pentium 3's and up, with all parts intact)
- TVs, stereos, radios, VCRs & DVD players

*Please note that goods cannot be purchased at these locations. Goodwill diverts millions of pounds of goods from landfill each year and creates jobs in our community.

Packaging Peeves

While a certain amount of packaging is needed to contain and protect the products we buy, many items are overpackaged. Great waste reduction is possible in this area with very little effort. Non recyclable packaging is a major part of our municipal solid waste.

What can we do?

- When shopping, try to choose the product with little or no packaging
- Complain to the store or company
- Avoid individually wrapped products
- Buy in bulk when practical

Food for Thought...

Global Warming... Climate Change... Fact or Fiction? Agree or Disagree? But... on which side should we err?

EASY STEPS TO A ZERO WASTE HOME (...or darn near)

Make it a Family Event

Make sure everyone in your household knows how and what to recycle and compost. Keep a list of acceptable recyclables and organics handy for everyone's reference.

Use your Green Bin to the Max

Use your Green Bin for all your organic material. Don't forget to include personal waste from bathrooms such as tissues, sanitary products, diapers and pet waste.

Use Clear Bags

Use clear garbage bags for organic overflow that won't fit in your Green Bin. Place the organics-filled clear bag beside your Green Bin for compost collection.

Use Charity Collections

There are many charities that will accept your unwanted items. Check the yellow pages for a local charity donation centre or drop off your gently used items to Markham's Goodwill donation centres in Thornhill. Goodwill accepts used clothing and household items. There are Salvation Army clothing donation bins located at all Markham Fire Stations.

5 Use Markham's Recycling, Electronics and Household Hazardous Waste Depots

Markham operates four recycling depots that accept all blue box materials, scrap metal items, tires, polystyrene, plastic bags, oversized cardboard and used clothing. Electronics and any hazardous materials can be brought to the Household Hazardous Waste depot for recycling.

G Compost in Your Backyard

Yard waste such as leaves, grass clippings and food scraps like coffee grinds and tea bags decompose into outstanding topsoil in a backyard composter.

Grasscycle

Mow without a bag and leave your grass clippings on the lawn to provide mulch and nutrients, save water, and time.

Reduce Household Waste

Try to cut your trash in half. Find a home for unneeded items. Buy in bulk and use reusable containers to store leftovers. Use a refillable coffee mug or water bottle. Avoid over-packaged products. Bring a litter-less lunch to work or school.

Din the Paperless Society

Use e-mail. Send electronic greetings for special events. Use cloth napkins and towels instead of paper to save natural resources, reduce waste, and save money!

Wrap Gifts in Reusable Towels or Use Gift Bags Try avoiding the gift wrap trap – especially during the holiday season. Some great ideas for wrapping alternatives are using a bandana or a scarf, old posters or maps, old sheet music, or a home sewn cloth bag. Or simply use a gift bag. Gift bags can be used over and over.

Garbage - it's yours to reduce!

Tip – SHREDDED PAPER CAN BE PLACED IN YOUR







go to landfills! It's an environmentally friendly store that makes sense! Habitat for Humanity accepts building material donations at their *ReStore* location in Newmarket. Markham residents can donate the following reusable

materials: • Used Working Appliances • Kitchen/Bathroom Cabinets

- Doors
- Flooring Materials
- Lumber
- Plumbing Fixtures
- Electrical Fixtures
 Windows
- Hardware

Tiles

- Quality Renovation Materials
 Countertops
- Paving Stones
 - Roofing

Last year Habitat *ReStores* received seven tonnes of reusable building materials that would have otherwise ended up in landfill.

York Region ReStore 575 Penrose Street Newmarket, ON L3Y 5L5

For more information call 905-868-8723 or visit www.habitat.ca



GREEN BIN FOR COMPOSTING!

Holiday Waste Collection REMINDER!

There will be NO garbage, Blue Box or Green Bin collection on CHRISTMAS DAY, Monday, December 25th and NEW YEAR'S DAY, Monday, January 1st. Collection services will move ahead by one day for all areas for two weeks. Please note that we will be colleting materials on BOXING DAY.

If your regular collection day is: | Your materials will be collected on:

International Control of Control	
MONDAY (AREAS 3 & 4)	 TUESDAY, December 26, 2006 BOXING DAY TUESDAY, January 2, 2007
TUESDAY (AREAS 5 & 6)	 WEDNESDAY, December 27, 2006 WEDNESDAY, January 3, 2007
WEDNESDAY (AREAS 7 & 8)	 THURSDAY, December 28, 2006 THURSDAY, January 4, 2007
THURSDAY (AREAS 9 & 10)	 FRIDAY, December 29, 2006 FRIDAY, January 5, 2007
FRIDAY (AREAS 1 & 2)	 SATURDAY, December 30, 2006 SATURDAY, January 6, 2007

Christmas trees will be collected the week of January 8 - 12, 2007. Please follow your 2007 Waste Collection Schedule. The Waste Management Department wishes you and your family a safe and happy holiday season.

The Waste Hierarchy

Most Preferable

Least Preferable

The waste hierarchy is an internationally accepted guide for prioritizing waste management practices.



It's a Hard Day's Work for Our Waste Collectors

A waste collector was splashed with acid when his garbage truck crushed a bag of garbage that contained a jar of acid. The dangerous liquid burned the collector's skin. Please be careful what you put out for collection. Dangerous materials such as batteries, cleaning products, needles, broken glass and pool chemicals should never be placed in your garbage bags. They are hazardous to the environment and our collectors. Hazardous materials that are poisonous, explosive, corrosive, or flammable should be taken to the Household Hazardous Waste Depot in Markham. Broken glass should be wrapped in newspaper and placed in a closed cardboard box labelled "broken glass". Remember there is a person who must handle your garbage once you no longer need to!





Listed below are written suggestions of topics that could be addressed in future issues of the Mission Green newsletter:

Items of Interest Waste- Male Group	Items of Interest Waste-Female Group
better education	educate recycling ideas to communities in languages common to that specific community
blue box with containment	statistics-tell us how we're doing
different types of waste to be recycled	clear bags
shocked about the amount of garbage that is not really garbage	creating more aware and knowledgeable public through seminars and meetings
types on what are garbage and what are recyclables	recycling actually works-prove our efforts are worth it
expander seems like a good idea	stats on recycling vs. garbage
Newsletter	ways to reduce
new developments	incentives-freebies
trash days	how to recycle more accurately
Recycling	why garden waste not collected on specific days even when in kraft bags





APPENDIX

DISCUSSION GUIDE

MARKHAM – WATER AND WASTE RESIDENT FEEDBACK

April 12, 2007

This Guide lists the topics that will be covered during the course of each two hour session. The actually wording of the moderator's statements and questions will be modified to suit the particular session's participants.

The session will be divided into two sections, waste and water and the order in which they are discussed will be rotated from group to group.

Moderator's introductory comments

Participants are informed that the purpose of this session is to gather feedback for Town of Markham's waste and water divisions. The discussion is focused on hearing from residents about their experiences with these two services and also for introducing some ideas for their consideration.

They are informed that proceedings are being recorded (respondents have already agreed that they can be video and audio-taped) and the sessions are being watched by Town representatives.

The moderator's role is to introduce topics and to help ensure that everyone has a chance to express their thoughts. Also, the moderator will prepare a report that will include a range of remarks and quotations. The identity of participants will not be revealed in any of the research documents. All comments are confidential. There will be no follow-up with participants unless they choose to be contacted, for instance to address a service problem.

The session will be divided into two sections, waste and water. Just prior to completing the session a short questionnaire will be circulated for their completion. Also, participants will be invited to add their name to the list of e-newsletter subscribers.

Opening Discussion and Warm-up

Participants are invited to introduce themselves.





TOWN OF MARKHAM WASTE

Feedback on current waste collection service, with no particular reference initially to any of the waste streams – blue box, organics and yard waste.

Focus Clear Waste Bags

Introduce the concept of introducing clear plastic bags for waste collection.

What is their initial reaction? What is the perceived reason for this measure? Is the waste reduction goal evident? Are residents interested in knowing more about the types and volumes of recyclables and organics that are being put out with the garbage? Reaction to some of these facts, i.e. 66% of garbage bags still contains green bags and blue box items.

- Cooperation Would residents be willing to comply with this new approach?
- Introduction approaches should it be phased in? Would a partial step be required, for example, one or two clear bags and one opaque bag (three bag limit per collection) with the aim of moving towards exclusively clear bags?
- Impacts What are the perceived benefits and drawbacks of requiring clear garbage bags? Is this seen as sufficient rationale for the loss of privacy inherent in using see-through garbage bags?
- Privacy if it emerges as an important factor, invite suggestions. Test reaction to two possible solutions: opaque grocery sacks or permit one opaque bag out of the total of three allowable garbage bags.

Focus on Bin Maximizer (More is Less)

Introduce the blue bin expander in action

Show two options (net and rigid). Note immediate reactions – is this a viable solution for a problem that they are experiencing (insufficient capacity)? Why not buy another blue box? Or is the expander unnecessary (sufficient capacity)? Does the expander seem like a practical solution? Is one better than the other – if so, which one do they prefer? How much would they pay for it? Any major barriers?

- Waste Department Tasks What enforcement methods would be expected and acceptable, i.e. warning stickers, collection refusal, fines, etc.?
- Reaching residents with waste reduction message aware of current options and ideal ways of getting messages out. Print and electronic options. Awareness of Markham's new Mission Green e-newsletter and desired content.





TOWN OF MARKHAM WATERWORKS

- Town of Markham's Waterworks what do residents associate with Waterworks? Have they had any direct experiences with the department and its services
- Awareness and level of interest in Waterworks functions, including repairs due to water main breaks. Indeed, do they know what the department does and have any interest in learning more about it?
- Example of when they might have had contact with Waterworks when work is being conducted in their area they might have been given a reply paid service rating card to complete. Have they ever participated in this option?
- Reliability any cause for concern? Have they ever experienced water quality problems or a disruption in the service?
- Price awareness and sensitivity to increases Awareness of cost as part of overall fixed household operating expenses. Is it seen as a small fraction of the total cost? (Worth comparing water costs to energy costs?) As far as they can recall, when did the price last increase? By how much?
- Presenting water charges what is most meaningful: % of total average household cost, \$X per week, \$X per year?
- Perceived quality of Markham water and related water consumption preferences (tap, filtered and bottled). Do they regularly buy bottled water to consume at home? If so, why bottled instead of tap water? (Is it a quality or 'lifestyle' issue?)
- Desired facts and preferred sources what do they want to know about the service and the product?
- Awareness of and interest in print Water Watch and Annual Water Quality Customer Report. Recall receiving it?
- Reaction to sample copies of Water Watch, and Annual Water Quality Customer Report format and content. Other topics that they would like to have featured.
- Interest in website details and current available content (what information do residents want to see? – why do they go to the website?)





- Ideal way of reaching customers with messages current avenues sufficient or do they need to be enhanced?
- Water Conservation awareness and perceived impact on their community. Have they taken any steps to reduce the volume of water that they use? If so, what have they done? Low flow showerheads and faucets? Impact of statement: the average Canadian uses 343 litres of water daily in their homes (Environment Canada).
- Awareness and behaviour related to summer water use By law.

Prior to the end of each session, a short structured questionnaire will be circulated for respondents to complete. It will consist of a series of closed and open ended questions summarizing basic attitudinal and behavioral elements related to waste and water. Draft copy to be provided for client review next Monday.

Thank respondents for their participation!

STIMULUS MATERIALS (to be provided by Waste and Water divisions)

Waste:

Blue bin expander, blue bin, large opaque and regular garbage bags

List - what's in Markham's residential garbage after blue and green stream diversion

Samples of current most recent newsletter (total 20)

Water

Sample copy of bill

Copy of Annual Water Quality Customer Report

Samples of current most recent newsletter, Water Watch (total 20)



44

Appendix 3 – Customer Satisfaction Survey Results



Slide 1 – People in Household

Slide 2 – % Using Clear Bags for Waste





Slide 3 - % Felt They Recycled More When Using Clear Garbage Bags

Slide 4 - % Felt They Used Green Bin More When Using Clear Garbage Bags





Slide 5 - % of Waste Generated When Using Clear Garbage Bags

Slide 6 – Summary of Statements



Appendix 4 AET Audit Results Residential Waste Audit Report Clear Garbage Bag Pilot Study Town of Markham

Draft Report

Prepared for:



Town of Markham 101 Town Centre Blvd Markham, Ontario L3R 9W3

Prepared by:



AET Consultants Inc. 133 Weber Street North, Suite 3-504 Waterloo, Ontario N2J 3G9 Phone: 519-576-9723 Fax: 519-570-9589 www.aetconsultants.com

January 2008

TABLE OF CONTENTS

EXEC	JTIVE SUMMARY	i
1.0	INTRODUCTION	1
1.1 1.2	Background Objectives	1 1
2.0	WASTE AUDIT METHODOLOGY	2
2.1 2.2 2.3 2.4	Curbside Sample Collections Waste Audit Sampling Process Sorting Methodology Calculations	2 2 2 4
3.0	RESULTS & DISCUSSION	5
3.1 3.2 3.3 3.4 3.5 3.6	Curbside Set-out Results Curbside Waste Generation, Recovery and Composition Blue Box Recyclables Green Bin Organics Residual Waste Pre-Pilot Versus Pilot Audit Results	5 6 8 10 12
4.0	CONCLUSIONS	14
4.1 4.2	Limitations Disclaimer	15 15

List of Figures

Figure 2.1: Waste Audit Set-up Figure 3.1: Clear Garbage Bag Curbside Set-out on Right Figure 3.2: Composition of Blue Box Materials by Weight (Pre-Pilot) Figure 3.3: Composition of Blue Box Materials by Weight (Pilot) Figure 3.4: Composition of Green Bin by Weight (Pre-Pilot) Figure 3.5: Composition of Green Bin by Weight (Pilot) Figure 3.6: Composition of Residual Waste by Weight (Pre-Pilot) Figure 3.7: Composition of Residual Waste by Weight (Pilot) Figure 3.8: Blue Box Capture Rates Pre-Pilot Versus Pilot Figure 3.9: Green Bin Capture Rates Pre-Pilot Versus Pilot

List of Tables

Table 2.1: Material Sort Categories

Table 3.1: Residual Waste and Blue Box and Green Bin Set-out Results

 Table 3.2: Blue Box Generation and Capture Rates

 Table 3.3: Green Bin Generation and Capture Rates

Table 3.4: Pre-Pilot versus Pilot Summary

Appendices

Appendix A: Pre-Pilot Collection Log

Appendix B: Pilot Collection Log

Appendix C: Description of Material Categories

Appendix D: Detailed Audit Sort Results
EXECUTIVE SUMMARY

In the fall of 2007, the Town of Markham began a clear garbage bag pilot study to test the use of clear bags for garbage as a method to eliminate the ease of concealing recyclables in the garbage. The main objective of this study was to monitor the impact of the use of clear bags on waste diversion. AET Consultants Inc. (AET) was retained by the Town of Markham to conduct waste composition audits prior to the pilot program and during the pilot program.

The waste audit approach was adopted from the methodology established by Waste Diversion Ontario (WDO) and Stewardship Ontario (SO) for residential curbside waste audits. For this audit, samples from 20 households were collected on July 17, 2007 (pre-pilot), and the same households were re-sampled on December 18, 2007 (pilot). Garbage, Blue Box and Green Bin materials were audited separately. The results of the two samples were compared in order to determine the effects of clear garbage bags on capture and diversion rates for Green Bin organics and Blue Box recyclables.

A comparison of results from the two audits reveals an overall waste diversion rate decrease from 71.90% (pre-pilot) to 66.88% (pilot). Only four out of ten households that set out waste during the pilot period complied with the clear bag directive; the remainder used standard green or black opaque bags. The clear garbage bags that were placed at the curb often contained opaque bags (kitchen catchers, grocery bags), which made it difficult or impossible to visually identify the types of materials contained inside.

A total of 78.71% of accepted organic materials were being captured in the Green Bin in the pre-pilot audit, while 67.72% of accepted organic materials were being captured in the Green Bin in the pilot audit. A total of 91.17% of accepted recyclable materials were being captured in the Blue Box in the pre-pilot audit, while 87.49% of accepted recyclable materials were being captured in the Blue Box in the pilot audit.

In the pre-pilot audit, divertible materials comprised 51.37% of the residual waste stream (36.87% Green Bin organics, 14.50% Blue Box recyclables); in the pilot audit, divertible materials comprised 70.87% of the residual waste stream (56.13% Green Bin organics, 14.74% Blue Box recyclables).



1.0 INTRODUCTION

1.1 Background

In the fall of 2007, The Town of Markham, with the support of the Federation of Canadian Municipalities, began a pilot study to test the use of clear bags for garbage as a method to eliminate the ease of concealing recyclables in the garbage. The Town of Markham had previously successfully implemented a three-stream program (blue box, green bin, and residual waste) but wished to investigate ways to increase the diversion rates further. Since opaque garbage bags enable residents to conceal recyclables and green bin organics in the garbage, it was hypothesized that requiring residents to use clear garbage bags may reduce the presence of divertible materials in the garbage stream.

The Town of Markham retained AET Consultants Inc. (AET) in 2007 to perform residential waste audits to monitor the impacts of the new program. A pre-pilot audit was conducted on materials collected on July 17, 2007 and a pilot audit was conducted on materials collected on December 18, 2007.

1.2 Objectives

The waste audit study was intended to accomplish the following objectives:

- 1. Determine how much material is being diverted through the Green Bin and Blue Box programs;
- 2. Provide information on the amount of recyclables in the waste stream that are accepted for recycling in the blue box program;
- 3. Provide information on the amount of organics in the waste stream that are accepted for composting in the Green Bin program,
- 4. Compare the results of the December 2007 audit to baseline data collected in July 2007, so as to determine whether the use of clear bags leads to an improvement in the diversion rate of green bin materials and blue box materials.
- 5. To test the use of clear bags for garbage collection to optimize blue box and green bin capture rates.



2.0 WASTE AUDIT METHODOLOGY

The waste audit approach was based on the adopted methodology established by Waste Diversion Ontario (WDO) and Stewardship Ontario for residential waste audits. For this audit, residual waste, Blue Box recycling and Green Bin organics samples were collected at the curb for 20 households.

2.1 Curbside Sample Collections

The sample area was chosen by the Town of Markham staff and consisted of 20 homes in the Johnsview Village neighbourhood. This neighbourhood consists of townhouses, and is populated primarily by lower to middle income families. Residents were not made aware of the audit so as to ensure that they did not change their waste management habits during the study. The same 20 households were sampled for the July (pre-pilot) and December (pilot) audits.

2.2 Waste Audit Sampling Process

The Town of Markham was responsible for the curbside collection of residual waste, organics and recycling from the 20 households on July 17, 2007. On the sampling day, the Town of Markham staff completed a waste collection log, documenting the number and fullness of bags, blue boxes and green bins collected at each home. See Appendices A and B for the curbside collection log sheets. Samples were delivered to a Miller Waste maintenance facility at 112 Bales Dr, East Gwillimbury, Ontario, where AET sorted, analyzed and reported on the material composition of the samples. AET was responsible for the curbside collection of residual waste, organics, and recycling from the same 20 households on December 18, 2007; this material was brought to the Miller Waste material recovery facility (MRF) at 8050 Woodbine Ave, Markham, Ontario, for sorting.

2.3 Sorting Methodology

All of the materials collected during both sampling periods were sorted and weighed. Residual waste, Blue Box and Green Bin samples were sorted and weighed separately. Samples were sorted into 8 major waste groups consisting of 71 individual categories. See Figure 2.1 for the waste audit set-up and sort. Waste categories were based on Stewardship Ontario's waste audit protocol list. The list of sort categories is provided below in Table 2.1. A description of each material category is provided in Appendix C.



Town of Markham Residential Waste Audit Report – Clear Garbage Bag Pilot Study



Figure 2.1 Waste Audit Set-up

Table 2.1	Material Sort	Categories
-----------	---------------	------------

Paper	Plastics	Plastics Cont.	Organics
- Newspaper –	- PET Beverage	 Blister Packaging* 	- Food Waste
Dailies and	Bottles	- Durable Plastic	- Yard Waste
Weeklies	- PET Other Bottles &	Products	- Pet waste
- Newspaper - Other	Jars		
- Telephone Books /	- PET Other	Metals	Other Materials
Directories	Packaging	- Aluminum Food &	- Diapers and Sanitary
- Magazines &	- HDPE Beverage	Beverage Cans	Products
Catalogues	Bottles	- Aluminum Foil & Foil	- Textiles
- Mixed Fine Paper	- HDPE Other Bottles	Travs	- Carpeting
- Shredded Paper *	& Jugs	- Other Aluminum	- Construction &
- Books	- PVC Bottles & Jars	Containers	Renovation
- Other Paper	- Other Bottles, Jars &	- Steel Food &	- Computer / IT
	Juas	Beverage Caps	Equipment
Paper Packaging	- Polvstvrene	- Steel Aerosol Cans	- Telecom Equipment
- Corrugated	Packaging – Rigid*	- Steel Acrosof Cans	- TV & Audio
- Kraft Paper	- Polystyrene	Other Metal	Equipment
- Boxboard / Cores	Packaging -		- Small Kitchen
- Molded Pulp	Expanded	Class	Appliances
- Paper Cups and -	Styrofoam*		- Other Electrical
Paper Ice-Cream	- Wide Mouth Tubs &	- LCBO Clear	- Tires and Other
Containers	Lids		Rubber
- Laminated Paper	- Large HDPE & PP		- Ceramics
Packaging	Paile & Lide	- Coloured	
- Composite Cans	- Polyothylono PE	- Other Glass	- Mattrossos
- Composite Carls	Plastic Rage & Film		- Mattesses
- Gable Top Californs	Plastic Bays & Fillin -	HSW	- WOOU Other Lorge Bulley
	Packaging Delvethylene Directio	- Batteries	- Other Large Bulky
- Tissue/Towening		- Paint & Stain	
	Bags & Film - Non-	- Motor Oil	- Other waste
	Packaging	- Other HSW liquids	
	- Laminated/Other	- Other HSW	
	Plastic Bags & Film		
	- Other Rigid Plastic		
	Packaging		

* Categories added to Stewardship Ontario's waste audit categories for this Study



The material weights were measured using a digital scale to the nearest 1/100^h kilogram and recorded onto sort log sheets. After being weighed, the residual waste, Blue Box recyclables and Green Bin organics were kept separate for disposal by Miller staff.

2.4 Calculations

Residual Waste Generation

The following formula was used to estimate the average residual waste generation weight in kilograms per household per year (kg/hh/yr):

kg/hh/yr = sample material weight (kg) / # of households sampled X 26 weeks/year (bi-weekly collection)

Recyclables and Organics Generation

The following formula was used to estimate the average recyclables and organics generation weight (kg/hh/yr).

kg/hh/yr = sample material weight (kg) / # of households sampled X 52 weeks/year (weekly collection)

Capture Rate

The following formulae were used to calculate the percentage of the accepted recycling and organics materials that were captured in the blue box and green bin.

Blue Box Capture Rate =	Blue Box recyclable weight / (weight of recyclables in the Blue Box + weight of recyclables in the residual waste/2 + weight of recyclables in organic stream) X 100
Green Bin Capture Rate =	Green Bin organics weight / (weight of organics in the Green Bin + weight of organics in the residual waste/2 + weight of organics in the recycling stream) X 100

Diversion Rate

The following formula was used to calculate the percentage of total waste materials diverted from landfill through the recycling and organics collection programs. Note that contamination in the blue box or green bin was not counted towards the diversion rate.

Diversion Rate = (Total weight of Blue Box recyclables + Green Bin organics / Total weight of all waste streams) X 100



3.0 RESULTS & DISCUSSION

3.1 Curbside Set-out Results

A summary of set-out rates for the sampled households is provided in Table 3.1. The pre-pilot collection logs reveal that each household set out an average of 0.66 full garbage bag equivalents per week (1.33 items per bi-weekly collection period). The average number of full garbage bag equivalent set-outs per week was decreased to 0.34 (0.69 per bi-weekly collection period) during the clear bag pilot. Average Blue Box set-outs per household pre-pilot was 0.93 full box equivalents per week, while during the pilot period set-outs decreased to 0.68 full box equivalents per week. The average number of Green Bin set-outs was 0.43 full bin equivalents per week pre-pilot, which decreased to 0.33 full bin equivalents per week during the pilot.

	Pre-Pilot July 2007	Pilot December 2007	Pre-Pilot vs Pilot (+/-)
Number of households sampled	20	20	20
Average residual waste set-outs for all households (full bag equivalents)	0.66 (=1.33 /2wks)	0.34 (=0.69 /2wsk) (10 no set-outs)	-0.32
Average Blue Box set-outs for all households (full box equivalents)	0.93 (1 no set-out)	0.68 (9 no set-outs)	-0.25
Average Green Bin set-outs for all households (full bin equivalents)	0.43 (1 no set-out)	0.33 (10 no set-outs)	-0.10

Table 3.1 Residual Waste, Blue Box and Green Bin Set-out Results

Of the 10 households with residual waste set out during the pilot study, only four had used clear bags as directed; the remainder used opaque (black/green) bags. Under the pilot program, residents who set out garbage in opaque bags still had their waste collected but were given a reminder notice by the Town of Markham monitoring staff. The clear garbage bags that were placed at the curb often contained opaque bags (kitchen catchers, grocery bags), which made it difficult or impossible to visually identify the types of materials contained inside (see Fig. 3.1).



Figure 3.1 Clear Garbage Bag Curbside Set-out on Right

3.2 Curbside Waste Generation, Recovery and Composition

A detailed breakdown of the waste audit results can be found in Appendix D. The weights for every category of material sorted, annual generation rates (kilograms/household/year), and capture rates for recyclables and organics are presented for the pre-pilot and pilot audits.

3.3 Blue Box Recyclables

Table 3.2 summarizes the audit results and capture rates for the pre-pilot and pilot recycling stream (Blue Boxes). The overall capture rate for recyclable Blue Box materials was approximately 91.17% in the pre-pilot audit, but dropped to 87.49% in the pilot audit. Recyclable metals had the lowest capture rate in the pre-pilot sample, at 72.62%, while recyclable plastics had the lowest capture rate in the pilot sample, at 79.57%. Recyclable paper accounted for the largest proportion of the Blue Box stream by weight in both samples (see Figs. 3.2 and 3.3). Non-recyclable waste (contamination) accounted for 4.67% of the total weight of material placed in the Blue Box in the pre-pilot sample, which increased to 7.28% in the pilot sample.



Blue Box Material Category	Pre-Pilot				Pilot			
	Diverted kg	Disposed kg*	Total kg	Capture Rate	Diverted kg	Disposed kg*	Total kg	Capture Rate
Recyclable Papers	58.25	3.17	61.42	94.85%	32.91	4.01	36.92	89.14%
Recyclable Paper Packaging	15.23	3.06	18.29	83.29%	9.42	1.88	11.30	83.40%
Recyclable Plastics	5.07	1.06	6.13	82.78%	3.70	0.95	4.65	79.57%
Recyclable Metals	3.09	1.17	4.26	72.62%	2.88	0.53	3.41	84.46%
Recyclable Glass	12.81	0.71	13.52	94.75%	3.53	0.13	3.66	96.45%
Total	94.45	9.15	103.60	91.17%	52.44	7.50	59.94	87.49%

Table 3.2 Blue Box Generation and Capture Rates

Sample = 20 Households

* Disposed includes blue box materials in the residual waste stream and the Green Bin organics stream



Figure 3.2 Composition of Blue Box Materials By Weight (Pre-Pilot)





Figure 3.3 Composition of Blue Box Materials By Weight (Pilot)

3.4 Green Bin Organics

Table 3.3 summarizes the audit results and capture rates for the organics stream (Green Bin). The overall capture rate for Green Bin organic materials was approximately 78.71% in the pre-pilot audit, dropping to 67.72% for the pilot audit. Excluding materials that can be accepted in both the blue box and green bin (molded pulp, newsprint, corrugated), shredded paper had the highest capture rate at 100% in the pre-pilot audit and the pilot audit. Food waste had the second highest capture rate at 87.51% pre-pilot, and 77.84% for the pilot. The lowest capture rate was for tissue/toweling (31.66% pre-pilot, 41.10% pilot).

Residual waste and/or recyclables (contamination) accounted for 5.21% of the total weight of the pre-pilot Green Bin sample and 5.33% of the pilot sample (see Figs. 3.4, 3.5); note, however, that residents are permitted to use polyethylene film to contain materials in their Green Bins, and this material is included among the non-divertible component in the bins. This material comprised 3.70% of the pre-pilot sample and 2.41% of the pilot sample, omitting the plastic bags, contamination rates are 1.51% for the pre-pilot sample and 2.92% for the pilot sample.



Green Bin Material Category	Pre-Pilot			Pilot				
	Diverted kg	Disposed kg*	Total kg	Capture Rate	Diverted kg	Disposed kg*	Total kg	Capture Rate
**Newsprint	0.09	**	0.09	**	0.17	**	0.17	**
Shredded Paper	0.24	0.00	0.24	100.00%	0.17	0.00	0.17	100.00%
**Corrugated	0.00	**	0.00	**	0.26	**	0.26	**
**Molded Pulp	0.01	**	0.01	**	0.00	**	0.00	**
Tissue/Toweling	1.95	4.21	6.16	31.66%	1.34	1.92	3.26	41.10%
Food Waste	64.52	9.21	73.73	87.51%	44.35	12.63	56.98	77.84%
Pet Waste	7.49	1.67	9.16	81.77%	4.16	5.36	9.52	43.70%
Diapers/Sanitary	7.34	7.00	14.34	51.20%	4.79	6.425	11.22	42.71%
Total	81.64	22.09	103.73	78.71%	55.24	26.33	81.57	67.72%

Table 3.3 Green Bin Generation and Capture Rates

Sample - 20 Households

* Disposed includes materials in the residual waste stream (adjusted for weekly generation) and the Blue Box stream, but **does *not* include dual-use materials (these are considered lost from the blue box program rather than the green bin program and thus are not counted again here).



Figure 3.4 Composition of Green Bin by Weight (pre-pilot)

Town of Markham Residential Waste Audit Report – Clear Garbage Bag Pilot Study



Figure 3.5 Composition of Green Bin by Weight (pilot)

3.5 Residual Waste

Figures 3.6 and 3.7 summarize the composition of the residual waste stream for the pre-pilot and pilot samples, respectively. Approximately 48.63% of the pre-pilot residual waste (by weight) consisted of materials not accepted in either the Blue Box or Green Bin programs; this decreased to 29.13% for the pilot. The largest components of the non-accepted materials in the pre-pilot sample were durable plastic products, accounting for 8.63% of the residual waste stream, and polyethylene plastic bags and film (non-packaging), accounting for 4.83% of the residual waste stream. In the pilot sample, the largest components of the non-accepted materials and film (packaging), accounting for 4.84% of the residual waste stream, and small kitchen appliances, accounting for 4.44% of the residual waste stream.

In both samples, substantial amounts of divertible materials ended up in the residual waste stream. In the pre-pilot sample, acceptable green bin materials represented 36.87% of the residual waste stream; this increased to 56.13% in the pilot sample. The largest component of this was food waste in both samples, representing 15.42% of the residual waste stream in the pre-pilot sample and 26.44% of the residual waste stream in the pilot sample. Similarly, recyclable materials accounted for 14.50% of the residual waste stream in the pilot sample. In the pre-pilot sample and 14.74% of the residual waste stream in the pilot sample. In the pre-pilot sample, the most prevalent recyclable material was mixed fine paper, at 3.03% of the residual waste stream, while in the pilot sample the most prevalent recyclable material was other newsprint (flyers etc), which represented 3.43% of the residual waste stream.



Figure 3.6 Composition of Residual Waste by Weight (pre-pilot)



Figure 3.7 Composition of Residual Waste by Weight (pilot)



3.6 **Pre-Pilot Versus Pilot Audit Results**

Table 3.4 summarizes the audit results for the pre-pilot and pilot audits.

Table 3	3.4 I	Pre-Pilot	Versus	Pilot	Summary	/
1 4 8 10 4			101040		e anna j	,

	Pre-Pilot	Pilot
Green Bin Generation (kg) *	86.13	58.35
Blue Box Generation (kg)*	99.08	56.56
Residual Waste Stream Generation (kg) **	59.71	46.09
Total Waste Generation (kg)	244.92	161.00
Capture Rate - Green Bin (%)	78.71%	67.72%
Capture Rate - Blue Box (%)	91.17%	87.49%
Total Waste Diversion (%)	71.90%	66.88%
 * Total weights for 20 household sample ** Bi-weekly Residual Waste Stream result divided weight for accurate calculations with weekly Greer 	l by 2 to obtain wee Bin and Blue Box	ekly generation

Pre-pilot versus pilot data analysis has revealed that the introduction of the clear bag collection program has not increased the overall curbside waste diversion rate; in fact the diversion rate has dropped from 71.90% to 66.88%. Detailed breakdowns of Blue Box and Green Bin materials, with the capture rates of each material category, are shown in Figures 3.8 and 3.9. As shown in Tables 3.2 and 3.3, above, capture rates have decreased for most materials, although they have increased modestly for recyclable paper packaging, metals, glass, and tissue/toweling. Further studies would be required to determine whether the observed changes in diversion rates represent an anomaly, seasonal fluctuation or a sustained pattern. In particular, it would be desirable to conduct another study once the proper enforcement regime is in place, in order to establish whether increased compliance with the clear bag policy would alter the results of the study.



Figure 3.8 Blue Box Capture Rates Pre-Pilot Versus Pilot



Figure 3.9 Green Bin Capture Rates Pre-Pilot Versus Pilot

The estimated average weight of garbage set out for landfill disposal fell from approximately 155.25 kg/hh/yr for the pre-pilot sample to approximately 119.83 kg/hh/yr for the pilot sample. The estimated average weight of Blue Box materials set out dropped from approximately 257.61 kg/hh/yr pre-pilot to approximately 147.06 kg/hh/yr for the pilot sample. The estimated average weight of Green Bin materials set out dropped from approximately 223.94 kg/hh/yr pre-pilot to approximately 151.71 kg/hh/yr for the pilot sample. Note that annual generation rates (kg/hh/yr) are calculated on the total number of households in the sample group (20), and only 12 of the 20 households in the sample group had set out materials on the day of the pilot audit.



4.0 CONCLUSIONS

The data collected and analyzed by AET Consultants from the July 17, 2007 prepilot waste composition audit and the December 18, 2007 clear garbage bag pilot waste composition audit have yielded the following conclusions:

- 10 of the 20 households in the sample group had garbage set out on the pilot audit date. Only four out of the ten households that set out waste complied with the clear garbage bag directive; the remainder used black/green opaque bags.
- The clear garbage bags that were set out at the curb were often filled with opaque bags (i.e. kitchen catchers, grocery bags), which made it difficult or impossible to visually identify material contents.
- 91.17% of accepted recyclable materials were being captured in the Blue Box in the pre-pilot audit, while 87.49% of accepted recyclable materials were being captured in the Blue Box in the pilot audit.
- The overall waste diversion rate decreased from 71.90% in the pre-pilot audit to 66.88% in the pilot audit.
- The average number of residual waste items set out fell from 0.66 full bag equivalents per household per week (1.33 items biweekly) in the pre-pilot audit to 0.34 full bag equivalents per household per week (0.69 items biweekly) in the pilot audit.
- The average number of Blue Boxes set out decreased from 0.93 full box equivalents per household per week to 0.68 full box equivalents per household per week over the same period.
- The average number of Green Bins set out decreased from 0.45 full bin equivalents per household per week to 0.33 full bin equivalents per household per week over the same period.
- 78.71% of accepted organic materials were being captured in the Green Bin in the pre-pilot audit, while 67.72% of accepted organic materials were being captured in the Green Bin in the pilot audit.
- In the pre-pilot audit, divertible materials comprised 51.37% of the residual waste stream (36.87% Green Bin organics, 14.50% Blue Box recyclables); in the pilot audit, divertible materials comprised 70.87% of the residual waste stream (56.13% Green Bin organics, 14.74% Blue Box recyclables).



- Non-recyclable waste in the Blue Box accounted for 4.67% of the total weight of the pre-pilot sample but 7.28% of the total weight of the pilot sample.
- Non-compostable waste in the Green Bin accounted for 5.21% of the total weight of the pre-pilot sample and 5.33% of the pilot sample.

4.1 Limitations

Seasonal variability, holidays and weather, among other factors, can affect the amount and composition of waste, organics and recyclables generated by households. Collecting multiple samples over several weeks and seasons would help smooth out uncharacteristic occurrences in single sample audits. Further studies are recommended to determine if Green Bin and Blue Box set outs and generation rates remain constant over the bi-weekly residual waste collection schedule. It was assumed that Green Bin and Blue Box set out and generation rates were the same on weeks when residual waste is not collected. Annual generation rates (kg/hh/yr) and set-out rates were calculated based on the original pre-pilot sample group of 20 houses, whether or not they had set-outs during the pilot audit. Larger sample sizes (50-100 households) are also recommended for any future studies to obtain more representative results. The pre-pilot sample selection methodology of choosing only households with setouts may not be representative of average neighbourhood set-out and generation habits. It is recommended that future sample selection methodology select a pre-determined sample group, considering all households within the group as part of the sample, regardless of whether or not they have set-outs.

4.2 Disclaimer

AET Consultants makes no warranty and assumes no liability for the information contained in this report outlining the waste audit results. These results reflect measurements made from a one day sample (1 week Green Bin & Blue Box, 2 weeks Residual Waste) as described in the methodology. As such, waste generation measurements should be considered snapshots and may not reflect accurately conditions across all Markham households at all times of the year. These reported generation and diversion rates more accurately reflect the quantity of each material generated over one (Green Bin & Blue Box) and two week(s) (Residual Waste) for the sample area and have been extrapolated to calculate annual rates based on the annual collection schedule.



Town of Markham Residential Waste Audit Report – Clear Garbage Bag Pilot Study

Respectfully submitted,

AET CONSULTANTS INC.

Mike Keenan, BSc, BA Environmental Technician Ben Dunbar, BES, CEPIT, LEED AP Project Coordinator



Appendix 5 Clear Bag Pilot Sample P&E Literature

Dear Johnsview Village Residents,

Thanks to the high participation in Markham's Mission Green recycling program, Markham now diverts 70% of our waste from landfill – the highest recycling rate in Canada.

As an environmental leader, Markham is always looking for new and innovative ways to reduce our waste and to keep our community clean. Johnsview Village has been chosen to participate in a pilot program to;

- Increase recycling and composting
- Reduce injury and hazards for the collection crew
- Eliminate hazardous materials from the garbage stream
- Reduce litter from the blue box collection

You have just received a kit containing forty (40) transparent garbage bags, ten (10) blue recycling bags, a list of what goes in the blue box and green bin, and a new type of blue box lid has been installed on one of your blue boxes.

To participate in the pilot, all you have to do is;

- 1. Use the transparent garbage bags provided for your garbage (no more green or black bags)
- Pull the blue box lid netting over the top of your blue box, so that it covers your recyclables, and clip the hook over the edge when you put your recycling out for collection
- 3. Use the transparent blue bags only to set out overflow recyclables at the curb when your blue boxes are full

If you have privacy concerns about using transparent bags for your garbage, you can use grocery bags or other opaque liner bags and put these inside your transparent garbage bags, or you can put your transparent garbage bags out for collection in your regular garbage can.

There is no change to your collection schedule. The pilot program begins now and will last until the end of December or until your supply of bags runs out.

The Town will closely monitor the program to see if the use of the clear bags increases recycling, and reduces the amount of litter on our streets and hazardous materials in the garbage stream. In a few weeks, Markham staff will visit you with a survey. Your feedback on what you think of this collection program is greatly appreciated.

Thank you in advance for helping the Town of Markham explore new opportunities to improve our services. Please feel free to our Contact Centre at (905) 415-7535 if at any time you have any questions about this pilot project or any other waste management issues.

Sincerely,

Valerie Burke Councillor, Ward 1