

Clear Bag Requirements for Garbage: A Better Practice of Innovative Recycling Program Compliance?

Report on the Clear Garbage Bag Program in Centre Hastings and Madoc Township



E & E Fund Project Number 312



Stewardship
ONTARIO

Prepared by:

Allison Ross
Independent Consultant
Belleville, Ontario
Email: aeross77@gmail.com

July 2009

Cover Picture Note: picture displays a clear garbage bag, fibrous and non-fibrous recyclables, and a bag of recyclable plastic film.

Acknowledgements

This Project has been delivered with the assistance of Quinte Waste Solutions and 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 author(s), and the Association of Municipalities of Ontario and Stewardship Ontario accept no responsibility for these views. Stewardship Ontario and Quinte Waste Solutions would like to express its sincere thanks to all individuals who contributed to this project. Special mention should be made to the Councils of Madoc Township and the Municipality of Centre Hastings for developing a clear bag program that was successful in reducing material to the landfill and boosting recycling.

The author would like to thank QWS staff, the Municipality of Centre Hastings, Madoc Township, and the following individuals:

Doug Parks, CAO of the Municipality of Centre Hastings, **Christine Mitchell**, Treasurer/Tax Collector for Madoc Township, **Dave Moore**, Head of Waste Collection for Madoc Township, and **Bim McFaul**, Supervisor for Centre Hastings Waste Collection Staff, for their support and helpfulness in providing information.

John Dixie, Technical Advisor for Stewardship Ontario who provided valuable feedback for the report.

Dave Douglas, President of VisionQuest Environmental for providing information for the preliminary research.

Glossary of Acronyms and Terms Used

Blue Box: This refers to a blue plastic container that is used by Ontario residents and some commercial and institutional organizations, for the storing and collection of material for recycling as part of the Province's Blue Box Program Plan.

Blue Box Diversion: Refers to the diversion of blue box material (accepted for the recycling program) from the total waste material collected.

Clear Bag Program: This term refers to a program that requires clear bags (that are completely see-through) for garbage as a means to maximize waste diversion.

HH: Households

HHW: Household Hazardous Waste

IC&I: Industrial, Commercial, and Institutional

User Pay: In the context of this report, user pay refers to the fee that must be paid for garbage disposed (e.g. the fee paid for a 'bag tag'). In Ontario, user pay programs are considered a Best Practice for maximizing the capture of Blue Box material.

QWS: Refers to Quinte Waste Solutions, which operates the recycling collection program for the Municipality of Centre Hastings and Madoc Township.

Study Area: The study area includes all of Centre Hastings and the west half of Madoc Township (garbage could not be weighed for the entire township due to resources). Some of the recycling data results apply to all of Madoc Township and Centre Hastings – it will be specified in that case.

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.

Table of Contents

Executive Summary	1
1.0 Introduction	2
2.0 The Waste Management Issue	3
3.0 Project Goals and Objectives.....	3
4.0 Community Profile and Project Scope	3
5.0 Description of the Program Process	4
5.1 Program Development.....	4
5.2 Program Requirements and Timeline for Program Roll-Out	5
5.3 Program Enforcement.....	6
6.0 Promotion and Education	7
7.0 Barriers	10
8.0 Public Feedback	11
9.0 Overview of Data Collection Methods Used to Provide a 'Before and After Snapshot'	14
9.1 Primary Data Collection Results	15
9.1a Total Municipal Garbage and Recycling Tonnages Collected for the Study Area	15
9.1b Blue Box Diversion Rates Based on Municipal Garbage and Recycling Tonnage.....	17
9.2 Results of Pre and Post-Program Waste Audit.....	20
9.3 Results of Visual Curbside Assessments.....	22
9.4 Results of Pre and Post-Program Telephone Surveys	24
10.0 Clear Bag Program Impacts.....	28
10.1 Program Impacts – Analysis of Blue Box Diversion Results	29
10.2 Program Impacts – Blue Box and Garbage Set-Outs	30
10.3 Program Impacts – Garbage and Recycling Weights	31
10.4 Program Impacts - Gap between the Increase in Recycling and the Decrease in Garbage.....	32
10.5 Program Impacts – Use of Privacy Bags	34
10.6 Program Impacts – Brief Analysis of Waste Disposal Habits.....	34
10.7 Summary of Clear Bag Program Impacts	35
11.0 Program Participation - Voluntary Program Versus an Enforced Program.....	36
12.0 How the Findings Compare to the Clear Bag Programs Surveyed in Nova Scotia.....	38
13.0 Lessons Learned	38
14.0 Concluding Remarks and Recommendations.....	40

List of Figures

	Page
Figure 1: Residential Recycling Tonnage Collected from Curbside and the Depot for all of Madoc Township and Centre Hastings	15
Figure 2: Curbside Waste Generation for Centre Hastings and the West Half of Madoc Township (Tonnes of Garbage and Recycling - Pre and Post Clear Bag Program Enforcement)	16
Figure 3: Curbside Waste Generation for Centre Hastings and the West Half of Madoc Township (Blue Box Diversion – Pre and Post Clear Bag Program Enforcement)	17
Figure 4: Madoc Township's Blue Box Diversion Rates	18
Figure 5: Centre Hastings' Blue Box Diversion Rates	19

Figure 6:	Combined Sample Group Results: Total Waste Generated (kg) (Waste Audit – Pre Clear Bags and After Enforcement)	21
Figure 7:	Combined Sample Group Results: Percent Composition by Weight (Waste Audit – Blue Box Diversion Rates)	21
Figure 8:	Overall Waste Stream Generated (Visual Curbside Assessment – Blue Box Diversion Rates)	23
Figure 9:	Post-Program Compared to Pre-Program Recycling Habits (Reported by Post-Program Telephone Survey Respondents)	24
Figure 10:	Post-Program Compared to Pre-Program HHW Disposal Habits (Reported by Post-Program Telephone Survey Respondents)	25
Figure 11:	Frequency of Privacy Bag Use (Reported by Post-Program Telephone Survey Respondents)	26
Figure 12:	Number of Pre and Post-Program Survey Respondents that Burn Garbage (Telephone Survey Results: Pre-Clear Bags and After Enforcement)	27
Figure 13:	Disposal Methods Used Other than Curbside or Landfill: Pre vs. Post-Program Survey Participants (Telephone Survey Results: Pre-Clear Bags and After Enforcement)	27
Figure 14:	Use of Privacy Bags in July 2008 (Based on Visual Curbside Assessment Results)	34
Figure 15:	Total Garbage Set-Outs using Clear Bags Exclusively - All Areas Combined (As a Percent of Total Household Set-Outs each Month)	36

List of Tables

	Page
Table 1: Estimated Self-Haul Garbage Weights (tonnes) Collected at the Landfill for the First Five Months of Enforcement Compared to the Year Before	16
Table 2: Average Blue Box and Garbage Set-Outs per Household per Week (Visual Curbside Assessment – Voluntary Program and After Enforcement)	22
Table 3: Average Blue Box Set-Outs per Household per Week (Telephone Survey Results – Pre and Post-Program)	25
Table 4: Average Garbage Bag Set-Outs per Household per Week (Telephone Survey Results – Pre and Post-Program)	26
Table 5: Blue Box Diversion Rates for All Data Sources	29
Table 6: Average Number of Blue Box Set-Outs Before and After Enforcement (Based on Supplementary Data – Full Blue Box Equivalents per Household per Week)	30

Table 7: Average Number of Garbage Bag Set-Outs Before and After Enforcement (Based on Supplementary Data – Full Garbage Bag Equivalents per Household per Week)	30
Table 8: Recycling Weights Before and After Enforcement (for all Data Sources)	31
Table 9: Garbage Weights Before and After Enforcement (for all Data Sources)	31
Table 10: Garbage Bag Tallies in Madoc Township (Voluntary Program vs. Enforcement)	37
Table 11: Clear Bag Program Results for Centre Hastings and Madoc Township Compared to the Nova Scotia Municipalities – Change in Tonnages Collected and the Blue Box Diversion Rate	38

List of Appendices (presented under separate cover)

- Appendix 1: Visual Display of Clear Garbage Bag Requirements
- Appendix 2: Media Invitation for Program Launch
- Appendix 3: Press Release
- Appendix 4: Recycling Information Distributed to the Public and Media
- Appendix 5: Clear Bag Program FAQ Sheet Distributed to the Public and Media
- Appendix 6: Sample of a Newspaper Advertisement
- Appendix 7: Residential Recycling Tonnage Collected – Breakdown of Results by Area
- Appendix 8: Average Number of Full Garbage Bags Set Out per Participating Household
Based on the Supplementary Data
- Appendix 9: Pre-Program Telephone Survey Questionnaire
- Appendix 10: Post-Program Telephone Survey Questionnaire

Executive Summary

The following report reviews the roll-out and impacts of a clear bag program that was launched on Jan. 7, 2008 in two rural municipalities in central-eastern Ontario: the Municipality of Centre Hastings and Madoc Township (combined population of 6,326). This report focuses on the impacts of clear bag requirements on blue box diversion and presents a number of considerations and recommendations for other municipalities planning to implement a clear bag program.

The municipalities decided to introduce a clear bag program to address the challenge of reducing material sent to their landfill and to increase recycling. Initially, there was considerable public opposition to the program, which mainly stemmed from the fact that residents were not given enough time to provide public input and make the transition to clear bags. The municipal councils responded by extending the Feb. 4, 2008 date of enforcement to June 2, 2008. Surprisingly, privacy concerns were not a major issue for residents, and less than one third opted to use a small privacy bag within their main clear bag when the program was enforced.¹

Program Monitoring and Results: The main data sources used to determine the program impacts were municipal garbage and recycling weights. Supplementary data included pre and post-program enforcement waste audits, curbside monitoring, and telephone surveys. Key findings based on this data include:

- Enforcement is clearly a key component of a successful clear bag program:
 - less than one third of households participated when the program was voluntary
 - participation more than doubled within the first month of enforcement
 - participation increased to 78% by the second month
 - bag tallies in the fall of 2008 indicated that close to 100% of the garbage set-outs were in clear bags
- The blue box diversion rate increased by 12 percentage points based on the municipal recycling and garbage tonnage data collected (when comparing baseline data in October/November 2007 to the same timeframe in 2008 and for data collected during the second month of enforcement).
- A 9% increase in municipal recycling collected based on curbside and depot tonnage data for the first 6 months of enforcement compared to the same timeframe in 2007.
- A 34% decrease in municipal garbage collected based on curbside tonnage data collected in October/November 2008 compared to the same timeframe in 2007.

There was a major gap between the decrease in garbage and increase in recycling tonnage collected. While this gap cannot be fully explained, contributing factors include an increase in backyard composting, an increase in the diversion of glass as Ontario's wine and spirits bottle-return program entered its second year of operation, and a decrease in HHW disposed in the waste stream. Madoc Township and Centre Hastings did not report any increases in the dumping of garbage. Increasing economic uncertainty may have contributed to the overall decrease in garbage set out at the curb; however, control data obtained from other local municipalities did not reveal any major decreases in garbage tonnage. A rise in the burning of garbage in rural areas appears to be a contributing factor. An education campaign on the environmental health impacts of burning garbage should be considered. It is possible that the two-bag limit introduced in September 2008 had some influence on the results but it is likely limited as most households were already within this limit during the clear bag program.

¹ Based on a curbside assessment of over 100 households (representing the study area) in June and July 2008.

Overall, the implementation of clear bag programs by these two municipalities was a great success and served as a useful learning and improvement opportunity. The goals of reducing material sent to landfill and boosting recycling were achieved. In addition, the program helps ensure that garbage set-outs are free from HHW and in compliance with health and safety regulations. A 12 percentage point increase in diversion is a positive change for a new program with only 6 months of full enforcement. Madoc Township and Centre Hastings can serve as a model for other municipalities who may benefit from the sharing of this experience. Although this study focused on blue box diversion specifically, it is reasonable to conclude that clear bag requirements serve as an excellent starting point for any waste reduction initiative.

1.0 Introduction

In context of this report, a clear bag is a non-tinted plastic garbage bag that is completely see-through or transparent. A picture of a typical clear bag is included on the front cover of this report. The use of clear bags has a significant impact on how people address their waste because it prompts them to reflect on their disposal habits and encourages them to consider other waste diversion options. This strategy supports waste diversion in several ways. First, it helps waste management staff to monitor for recycling in the garbage stream and enforce proper separation of material. Second, clear bags serve as a prompt to recycle because people can view everything inside of it. Finally, social pressure serves as a motivator; people want to demonstrate they are responsible and avoid public scrutiny.

Stewardship Ontario and Quinte Waste Solutions investigated clear bag requirements to determine if this strategy had potential for increasing the diversion of blue box material (E&E 177). The scope of this background research included all of Canada and the United States. Clear bag programs in the following jurisdictions were surveyed: Nova Scotia, Ontario, Prince Edward Island, Maine, New Hampshire, New York, Wisconsin, and Nebraska. All but one of the twenty-two clear bag program communities reported that the use of clear bags had a positive impact on the recycling tonnage collected. Over 50 clear bag programs were identified during the survey process and afterward. The survey findings were shared at various venues and compiled into a formal report, which also includes further analysis, and an updated summary table of all existing clear bag programs (www.stewardshipontario.ca/bluebox/eefund/projects.htm#177).

The preliminary research findings demonstrated that clear bag usage for garbage was a worthwhile strategy to field test. Madoc Township and the Municipality of Centre Hastings were already intending to implement a full-scale, permanent clear bag program and offered to be a study area. Stewardship Ontario and Quinte Waste Solutions (QWS) provided financial and labour support to help the municipalities implement and monitor the clear bag program. The purpose of this study (E&E 312) was to examine the program process and impacts to determine if other municipalities would benefit from this program, and to provide a case example for municipalities considering clear bag requirements. The study findings for Centre Hastings' and Madoc Township's clear bag program are included in this report.

It should be noted that Stewardship Ontario also supported a clear bag pilot test in Markham, Ontario (E&E 285). The Town of Markham conducted a clear bag pilot test for three months in two of its communities, where residents participated in a voluntary clear bag program. No noticeable change was observed in blue box diversion rates; however, the results were not conclusive as there were design flaws in the monitoring program. The Town found that privacy issues were not as much of a concern as originally anticipated and that residents became more aware of the current diversion program as a result of the pilot. The Town also found that clear garbage bags allowed collectors to identify hazardous wastes or potential safety issues.

2.0 The Waste Management Issue

The Municipality of Centre Hastings and Madoc Township were faced with the issue of how to extend the life of the local landfill and were concerned with the amount of recyclable material entering the landfill. These two municipalities share ownership of the Centre Hastings-Madoc Township landfill - Centre Hastings is responsible for 60% of the cost and Madoc Township is responsible for 40% of it. The landfill does not accept residential and IC&I waste from other municipalities.

The landfill has been operating since the 1970's and a recycling depot was established on the site in the mid-1980's. Prior to the clear bag program, all residents that dropped off waste at the landfill had to pay a \$2 user fee for any garbage bags that contained recyclable materials. The landfill attendants found it challenging to monitor for recyclables in the garbage because it was impossible to view contents of the garbage bags. Curbside collection of recycling for both municipalities has been in place for over a decade.² No waste reduction measures such as user fees, bag tags, or strict bag limits have ever been applied to garbage collected at the curb.

3.0 Project Goals and Objectives

The main goals of the project were to conduct a study to analyse the development and implementation of a clear bag program in Centre Hastings and Madoc Township, examine the program impacts, and share the findings and recommendations with other Ontario municipalities.

The main objectives were to:

- Assist the Municipality of Centre Hastings and Madoc Township with their clear bag program development and implementation, and provide advice based on information gathered from the clear bag program background research.
- Provide program monitoring by gathering pre and post-program data using several methods including telephone surveys, waste audits, visual curbside assessments, and the collection of municipal recycling and garbage tonnage data, in order to determine the change in amount of garbage and recycling collected, and the blue box diversion rate.
- Examine the entire program process by addressing all aspects (timing, promotion and education, barriers, public feedback, enforcement and compliance etc.) in an effort to make appropriate recommendations.

4.0 Community Profile and Project Scope

Madoc Township (population of 1,940) and Centre Hastings (population of 4,386) are located in Hastings County, which is situated in central-eastern Ontario. The clear bag program entails a full scale program roll-out, which includes all residents in Centre Hastings and Madoc Township whether they use curbside garbage collection, take the garbage to the landfill, or do both. These two municipalities have a combined population of 6,326 and a total of 3,262 households. The clear bag program also applies to organizations in the IC&I sector³ if they use municipal curbside collection or take garbage directly to landfill.

² Curbside collection of recycling started in 1991 for Centre Hastings and before 2001 for Madoc Township (the records only go back until 2001).

³ The IC&I sector comprises about 15% of the total weight for curbside collection of garbage.

Both municipalities are rural areas with a range of hamlets, rural residential properties, farms, and seasonal residences. Although not culturally mixed, this area has a range of social-economic levels and ages. The Municipality of Centre Hastings was formed from the amalgamation of Huntingdon Township (population of 2,939) and the Village of Madoc (population of 1,447). There are 2,378 households in Centre Hastings and approximately 21% of them are considered seasonal. Madoc Township has 884 households and there are very few seasonal residents.

5.0 Description of the Program Process

5.1 Program Development

The Landfill Committee consisting of two councilors from Centre Hastings and one councilor from Madoc Township, recommended on May 9, 2007 that the municipalities proceed with a clear bag program. On July 17, 2007, the Municipality of Centre Hastings and Madoc Township both agreed at the Bi-Council Meeting to approve the start-up of a clear bag program for January 1, 2008.

In August of 2007, QWS started to work with the municipal politicians and staff to help them initiate the clear bag program. Information and advice provided by QWS based on the clear bag background research (E&E Fund Project 177) included:

- In order to address privacy issues, some municipalities allow for a privacy bag of some sort and Canadian examples were provided. A minority of municipalities did not offer it but were still successful.
- Most of the clear bag programs are supported by a mandatory recycling by-law.
- Some municipalities allow exemptions from certain program requirements in special cases. Examples were provided from the research.
- Most of the clear bag programs enforce the clear bag requirements by leaving the non-compliant bag at the curb with a sticker or tag indicating the reason.
- It is crucial to properly inform retailers to help ensure they have a sufficient supply of clear bags (including kitchen-catcher size bags). The municipalities should also consider selling clear bags to help until retailers have a consistent supply of clear bags available.
- Starting the program in January does not provide sufficient time to effectively inform and help the public make the transition.
- Residents should receive a direct mailing about the program requirements with relevant recycling information prior to the program start date.

The municipalities planned to publicly announce the program together, once the program requirements were formally approved. A media launch was held on Dec. 10, 2007 to officially announce the program starting Jan. 7, 2008 with full enforcement commencing Feb. 4, 2008 (this date was eventually moved to June in response to public feedback). The public was informed of the new requirements through advertisements in the newspapers (Dec. 21 and Dec. 28, 2007) and on the radio, and through local cable station announcements, public information sessions, and addressed direct-mail. More information on the media campaign is included in Section 6.

5.2 Program Requirements and Timeline for Program Roll-Out

Program Requirements – please refer to Appendix 1 for a visual display of program requirements.

Program requirements for Centre Hastings and Madoc Township included the following:

- All garbage must be placed in clear bags, which are completely see-through or transparent and do not include tinted or opaque bags.
- Recyclables and/or household hazardous waste are not to be placed in the clear bag.
- Any size of an opaque bag full of garbage is not to be placed inside the clear bag because this defeats the purpose of the initiative. The only exception is the 'privacy bag' noted below.
- Out of consideration for people's privacy, one opaque or solid coloured 'privacy bag' full of garbage is allowed to be placed in the clear bag. The maximum size of this 'privacy bag' is 20 by 22 inches.
- If an opaque bag is used to collect garbage such as a white kitchen catcher or grocery bag, the contents of the bag must be emptied into the clear bag. If the opaque polyethylene bag is clean, it may be recycled; otherwise, it should be placed in the garbage.
- Garbage cannot be placed loose in a garbage can; it must be in a clear bag and tied if it is to be placed in a garbage can.
- The size of the clear plastic bag should be approximately 91cm (26 inches by 36 inches) or smaller.
- Non-compliant bags will be left at curbside with a sticker indicating the reason.
- Non-compliant bags will not be accepted at the landfill.
- The program applies to all residents and IC&I that use curbside collection and the landfill.

Original Timeline for Program Implementation

- January 7, 2008 – clear bag program commencement with a one-month grace period (no enforcement)
- January 22, 23, and 24, 2008 – public information sessions organized to provide recycling and program related information
- February 4, 2008 – the start of program requirement enforcement
- June 1, 2008 – two bag limit begins with a one month grace period
- July 1, 2008 – enforcement of two bag limit begins

There was public opposition because the municipalities did not provide enough notice to help residents make the transition. The short timeframe to implement the change posed a great challenge, which is further described in the barriers section. The municipal councilors responded to the public's concern by moving the enforcement date to June 2008. The revised timeline is outlined below.

Revised Timeline for Program Implementation

(in response to public feedback at the January information sessions)

- January 7, 2008 to June 1, 2008 – voluntary clear bag program
- June 1, 2008 – the start of program requirement enforcement
- September 1, 2008 – two bag limit begins with a one month grace period
- October 1, 2008 – enforcement of two-bag limit begins

5.3 Program Enforcement

The municipal councils extended the enforcement date from February 4 to June 1 of 2008, in order to provide more time for residents to make the transition. Once enforcement started, garbage was not accepted at the landfill⁴ or curbside if it was not in a clear bag or contained recyclables and/or household hazardous waste. Non-compliant bags were left at curbside with an attached sticker indicating the infraction. Both municipalities agreed that the waste collector would apply the following 'rule of thumb' for rejecting material: any bag would not be accepted if it contained more than two recyclables. This would help ensure that residents would not be penalized for misplacing the odd recyclable item and would support more consistency when collectors had to make judgment calls on what constitutes an acceptable set-out. In practice, Madoc Township applied this 'rule of thumb', while Centre Hastings began to reject bags if they contained more than three recyclables.

The program requirements apply to everyone (both residents and IC&I) with municipal curbside collection. Anyone that uses the landfill must also comply, including residents, IC&I, and private haulers. This is an incentive for private haulers to enforce the program with their clients. If they collect non-clear bags, they must re-bag items in a clear bag before disposing in the landfill. Clear bags are not sold at the landfill.

Madoc Township started full enforcement immediately in June 2008, and Centre Hastings eased in the enforcement. In June, the waste collectors for Centre Hastings tagged and left non-clear bags at curbside. All clear bags were collected unless it was evident that the resident was not making any effort to recycle (eg. numerous obvious items such as plastic pop bottles). Full enforcement started in July for Centre Hastings.

A bag-limit was introduced in September of 2008 for both municipalities. Enforcement commenced immediately for Madoc Township, while Centre Hastings had a one-month grace period with enforcement starting in October of 2008. Residential households are allowed two bags per week, and industrial and commercial establishments are allowed six bags per week.

Main Complaints from Residents about Bags Not Being Picked Up

The main complaints from residents of Centre Hastings were:

- Bags being rejected without a sticker indicating the reason - People were not aware of what they did wrong, so they were not able to rectify it for the next collection.
- Inconsistency in enforcement - Although such a complaint was infrequent, the collector may miss the excess recyclables and accept the bag, sending mixed messages.

⁴ In the past, a bag containing garbage with recyclables was accepted at the landfill but the resident had to pay a \$2 fee per bag and remove the recyclables. Now, the bag fee is no longer charged and bags are not accepted if they contain recyclables and/or are not clear.

The municipality found that in most cases where bags were not picked up, a personal visit from the collector was effective in resolving the issue.

In Madoc Township, the most common infraction was using a non-clear bag. There were very few complaints from the homeowners about rejected garbage bags. Most of the calls to the municipal office were for information about the location and schedule of the landfill.

Challenges in Enforcement

Centre Hastings: All bags from apartment and community bins⁵ are collected because it is difficult to enforce the program requirements for the following reasons:

- difficult to see what is in the bins
- onerous to identify where the material originated

Compliance in apartment buildings is not much of an issue in Centre Hastings because there are only a few of such buildings⁶ and a number of them have private collectors. The municipality reported no major problems with the community bins and many residents in the neighbourhood pay close attention to ensure that no one (eg. outsiders) is abusing it.

Lake Bins – Seasonal and permanent residents that live by a lake share what are called ‘lake bins’ for garbage collection. The lake bins have been a challenge since the program started because they are not monitored and are sometimes used by non-residents. For this reason, all bags are collected whether they are compliant or not.

Madoc Township: There are no apartment buildings and seasonal residents are not a factor in Madoc Township. As such, the township does not face any challenges associated with the use of apartment, lake, or community bins.

Exemptions: Centre Hastings allowed a privacy bag limit exemption for special cases, where the resident demonstrated that they needed more than one privacy bag per clear bag. In total, Centre Hastings granted 7 exemptions from 7 applications. Madoc Township did not allow for exemptions from the program requirements.

6.0 Promotion and Education

Madoc Township and Centre Hastings developed a promotional and educational plan together and relied on financial support from QWS and Stewardship Ontario and labour support from QWS. To officially announce the program start date (Jan. 7, 2008 with enforcement Feb. 2, 2008), councilors and QWS gave a presentation to the media on Dec. 10, 2007, which was video taped for a local cable station. Advertisements were placed in the two local newspapers on Dec. 21, 2007 and Dec. 28, 2007. QWS participated in radio interviews, which were aired on two local radio stations in December and January. Three public information sessions were organized in January to provide information related to the program. There was a radio-advertising blitz and the municipality ran a public notice in two local newspapers, to remind people of the enforcement date and notify them of the public information sessions. Ratepayers were sent a direct mailing on March 3, 2008 (for Madoc

⁵ Community bins are located in neighbourhoods where people place their garbage bags in a communal bin rather than at curbside.

⁶ According to the Supervisor of Waste Collectors for Centre Hastings, there are approximately 4 apartment buildings on 7 the municipal route and a few 6-plexes.

Township) and April 2, 2008 (for Centre Hastings), with information on recycling and the clear bag program requirements including the new enforcement date of June 2, 2008. During the month of May, Madoc Township sent out reminders of the enforcement date and program requirements to residents not in compliance yet.

Timing posed a challenge to promotion and education in two ways. First, it was a short timeframe to promote a full-scale waste management program change. There was only one month to inform and educate the public before the program started. Second, December is not the ideal time to have a communications campaign because people are occupied with holiday season social gatherings, vacation plans, and shopping etc. It is difficult to disseminate information when there is a flood of consumer advertising.

More information on the promotional and educational initiatives including the effectiveness are provided below:

Local Press Coverage

- **Media Launch and Newspaper Articles:** The clear bag program was announced Dec. 10, 2007 with a media launch event. Appendix 2 contains a sample of the media invitation. A media package was provided to all attendees and included a copy of the press release (Appendix 3), recycling information (Appendix 4), an FAQ sheet for the clear bag program (Appendix 5), and sample clear bag pictures. Reporters from the Community Press, Shield, and Intelligencer provided excellent coverage of the program on Dec. 12 and Dec. 14, 2007. It was also video-recorded and aired on the local cable station.
- **Radio Interviews:** A QWS consultant was interviewed for Mix'97 news (aired December 16, 2007) and CJBQ weekend news (11 minute interview aired on January 6, 2008). In addition to this coverage, the program was also mentioned in the community news on several occasions.

Effectiveness of Local Press Coverage: The media can have a significant influence on the public. There was a positive reception by the media who highlighted the important elements of the clear bag program in newspaper articles and radio interviews. The newspaper articles were extremely helpful because they thoroughly explained the clear the program requirements and communicated that it was a 'tried and true' program by sharing results from other successful programs in Canada.

Newspaper: Newspaper advertisements funded by Stewardship Ontario and QWS for the clear bag program were placed twice in the two main local newspapers on Dec. 21, 2007 and Dec. 28, 2007. A copy of the newspaper advertisement is included in Appendix 6. Centre Hastings placed an advertisement in both papers on Jan. 18, 2008 to inform people of the public information sessions. The program was also mentioned in the local media's community event listings.

Effectiveness of Newspaper Advertisements: It is difficult to determine the level of public response but the ads in December most likely did not draw maximum attention due to the timing. The news ads in January for the public information sessions were considered effective because of the high turnout.

Radio: A radio campaign funded by Stewardship Ontario and QWS was prepared for the week of Jan. 21, 2008. Advertisements were aired throughout the week (Monday to Thursday) during targeted times in the morning, afternoon, and evening on the following **4 local radio stations:** CJBQ (800am), Mix'97, Classic Hits 95.5, and COOL 100.1 (country music station). People were notified of the public information sessions and reminded of the Feb. 2, 2008 enforcement date (changed to June 2 after the public information sessions). **The advertisements were aired 24 times in total.**

Effectiveness of Radio Promotions: It is believed that the radio ads were highly effective due to the high turnout at the public information sessions.

Direct Mailing: Information on recycling and the clear bag program with the new enforcement date of June 2, 2008 was mailed to ratepayers. The direct mailing included information on the clear bag program and recycling (Appendices 4 and 5 as previously referenced in the media launch section under local media coverage). The information was inserted with the tax bills mailed to Madoc Township ratepayers on March 3, 2008. Centre Hastings mailed the information on April 2, 2008 with a letter provided by municipal council.

Effectiveness of Direct Mail: It is safe to assume that direct mail was an effective strategy because residents communicated at the public sessions that they expected information sent to them.

Public information Sessions: Public information sessions were held from Jan. 22, 2008 to Jan. 24, 2008 inclusive. A radio blitz was prepared to inform the public of these sessions – it is outlined in the radio section above. The Municipality of Centre Hastings ran a public notice in the two local papers on Jan. 18, 2008. Please refer to the Public Feedback section for further information on this event.

Effectiveness of Public Information Sessions: This venue directly targeted public information needs. People had the opportunity to ask questions, while the councilors had an opportunity to directly address public concerns. This forum moved the politicians to change the enforcement date, which immediately increased public buy-in.

Hauler Education: Haulers have a significant influence in the process because residents rely on them to answer questions. It is crucial to ensure that haulers are fully educated on the program, so they can communicate with the residents and properly enforce the program. The following steps were taken to involve haulers in the process:

- Participated in a ride-along (shadowed a waste collector) on Dec. 5, 2007 to understand the collection process, which would help in preparing the educational initiatives.
- Delivered an education session for haulers on Dec. 6, 2007 for the purpose of reviewing the program requirements and the enforcement process.
- The public works manager and the supervisor of the collectors provided ongoing reminders of the program requirements during regular collector meetings.
- Created an information booklet for the haulers, which was incorporated into the education session. Collectors could use it as a quick reference tool.

Effectiveness of Hauler Education: The haulers were receptive to the education session because it included them in the process and provided a forum to ask questions and give feedback. They were interested in learning about the clear bag research findings from other municipalities, and were engaged by the fact that the strategy was a ‘tried and true’ practice that works. The ride-along was an effective way to better understand the collection process and the haulers expressed appreciation for the activity. The waste collector supervisors for both municipalities attested that the hauler information booklet was a useful resource⁷.

Retailer Education: Retailers need sufficient time to change over their stock. It is essential to inform and educate them well before the program start date. On Nov. 16, 2007, retailers were visited directly by a councilor and QWS to explain the program and provide informational materials. The main retailers were visited at least three times and the shelf space was observed to track the progression of the stock changeover. Clear bag supply contacts were provided to retailers that were having some challenges.

Effectiveness of Retailer Education: Conducting follow-up visits with retailers to ensure they were preparing for the change was a necessary but time-consuming process. Most of the retailers were very cooperative but the last minute demand for clear bags was underestimated – this was a typical experience with other municipal clear bag programs as well.

⁷ Interview with Bim McFaul, Waste Collector Supervisor for Center Hastings collection staff, and Dave Moore, owner of the company that provides curbside waste collection service for Madoc Township.

Other Promotion and Education Initiatives:

- **QWS and Municipal Office Staff** - Staff was informed and educated early in the process and asked to track calls related to the program.
- **IC&I Sector** – An email was sent to the IC&I sector (via a Chamber of Commerce Representative) about the clear bag program – this sector comprises a small portion of curbside collection.
- **Clear Bag Sponsors** - Clear bag donations were sought. Canadian Tire and Maunco donated clear bag samples, which were distributed at the information sessions.
- **Reminders issued in May of 2008 – one month before enforcement:**
 - Madoc Township waste collectors dropped off reminder slips regarding the clear bag program requirements and enforcement date to those residents not in compliance yet.
 - The local cable station aired a reminder of the program and its enforcement date.
 - A local newspaper article included a reminder of the program's enforcement date.

7.0 Barriers

The main program barriers in the background research were the lack of clear bag supplies followed by social barriers such as negative attitudes. Centre Hastings and Madoc Township encountered the same barriers but social barriers superseded the lack of clear bag supplies. Both of these barriers stemmed from the primary barrier in this particular case - the unrealistic timing for program implementation. The main program barriers experienced by Madoc Township and Centre Hastings are described below:

Unrealistic Timing – There was not enough lead-time to develop and implement the program effectively (with the original timeline). Once the program requirements were passed, there was one month to notify the public of the start date. This was insufficient time for the public to become aware of the changes and adjust to them.

Social Barriers - There was a huge wave of negative response from Centre Hastings and Madoc Township residents, which reached its highest peak during the public information sessions. This served as a major roadblock to achieving social acceptance of the program. The municipality relied on the one-month grace period in January to help inform the public because of the challenge in reaching people with the message during the December holiday season. The original February enforcement date was fast approaching and many residents still had uncertainties about the process. The public was generally supportive of the clear bag concept. Many residents, however, felt like the municipalities were forcing the program on them with no consideration that they needed time to make the transition. This social barrier started to fade once the councilors changed the enforcement date.

Inconsistent Clear Bag Supplies - The clear bag background research revealed that an insufficient supply of clear bags was a common issue, no matter how much the retailers prepared. The experience in Centre Hastings and Madoc Township was no exception. In this case, the main challenge was the inconsistent supply of clear bags rather than the lack of clear bags in general, especially close to the enforcement date. It was an inconvenience for residents who sometimes had to contact numerous stores before they could find some. The public was informed (at public information sessions and the municipal offices) of places that agreed to supply clear bags in the local and neighbouring communities.

Kitchen Catchers - Residents that used kitchen catchers now have to dump the contents loosely into the clear bag, unless the kitchen catcher is clear. There is a lack of clear kitchen catchers in the marketplace, so suppliers of such products had to be sourced. This information was provided at the public information sessions and the municipalities, and to some retailers.

8.0 Public Feedback

Although it is typical to receive negative feedback during the initial change, the negative response from Centre Hastings and Madoc Township residents escalated into a public outcry. The negative feedback kept mounting with phone calls to the municipal offices, and eventually reached its pinnacle at the public information sessions.

Public Information Sessions

Information sessions were organized to provide information on the program and address public questions and concerns. An advertisement was placed in two main local newspapers on Jan. 18, 2008 and a radio campaign blitz was prepared for the week of Jan. 21, 2008. The sessions were held on the following dates with a total of over 300 people in attendance.

Dates of Public Information Sessions

Date	Location	Approximate number of people in attendance
January 22, 2008	Ivanhoe (in Centre Hastings)	75
January 23, 2008	Village of Madoc (in Centre Hastings)	200
January 24, 2008	Madoc Township	50

The agenda included the following:

- an introduction to the information session - by a council member
- highlight of findings from background research on clear bag programs found in Canada and the U.S. – by QWS
- review of the clear bag program requirements and a refresher of the recycling program and tips – by QWS
- question and answer period – by QWS and councilors

There was a display highlighting the program requirements and the background research findings on other clear bag programs in U.S. and Canada. A recycling information sheet was distributed to all attendees and information materials on composting and household hazardous waste were available at the display site. Clear bags donated by Maunco Inc. and Canadian Tire, were distributed to attendees as samples.

The public information sessions turned into public consultation sessions because they were the only public meetings for residents to express concerns. Most people were supportive of the concept behind the clear bag program; however, it was clear from the public comments that the priority for most attendees was to discuss concerns, rather than attend an information session about recycling and the new garbage set-out requirements. The main concerns stemmed from the short timing in program implementation and the subsequent lack of time for the public to provide feedback, become fully informed, and prepare. The councilors responded by postponing the enforcement date near the end of the second information session. As a result, there was no public outcry at the last information session, which focused on providing information and answering questions on the program requirements and recycling.

Main Concerns Communicated at the Public Information Sessions

The top public concerns in order of prevalence were timing of program roll-out – more time was needed to inform and help the public prepare, lack of opportunities for public input, clarification on what is recyclable to ensure they will not be penalized, clear bag supplies, how to handle kitty-litter, how to handle organic material, privacy issues, and what to do with large quantities of leftover dark bags. Public feedback from the information sessions is described below.

Timing of program roll-out: More time was needed to inform the public and help them prepare to make the transition. The February 4, 2008 enforcement date was not realistic.

No information was sent by municipalities to the residents: Residents expected that information be sent to them. The councilors responded by sending relevant program information via direct mail.

No public consultation: Some people questioned why there was not a public consultation session before the program started.

Some people thought the recycling program might have changed: Many residents were asking a lot of recycling questions because they thought that the recycling program might have changed. Given that QWS was assisting the municipality with their clear bag program roll-out, some people assumed that a new recycling program was also being introduced.

Clarification on what is recyclable: Residents had a plethora of recycling questions because they wanted to make sure they were separating material properly and would not be penalized. For example, what should they do with plastic cutlery and how much residue on a paper plate is acceptable? The amount of product packaging in the market-place is overwhelming – how to handle this packaging was not always obvious. People were assured that they only had to recycle the items listed in the QWS hand-out and follow its basic guidelines.

Clarification on the level of strictness when enforcing: People needed assurance that the collectors would be reasonable in enforcement. Would they be penalized for the odd tiny recyclable item dropped in the garbage? If they placed soiled paper in the garbage, would the collector view it as recyclable? The public was informed that the drivers were directed to be reasonable and give them the benefit of the doubt.

Clear bag supplies: It was a challenge to purchase clear bags because of the inconsistent supply at certain retail stores. There is a shortage of clear kitchen catchers in the market place, so suppliers had to be sourced. Residents at the information sessions were informed of all retailers that agreed to supply clear bags (and kitchen catcher size).

Kitchen catchers: Throwing non-clear bags (eg. kitchen catchers) full of garbage into the main clear bag defeats the purpose of the program. The public was asked to empty contents of these bags loosely into the clear bag and recycle the plastic bag if it is clean. Many residents complained that this is a messy process and liked the convenience of tying and tossing the kitchen catchers into the clear bags. Also, some residents liked re-using their white grocery bags as kitchen catchers. The public was informed that they are permitted to tie and toss bags full of garbage into the main bag if they are clear; however, the main goal is to reduce waste including retail bags and kitchen catchers.

How to handle kitty litter: There was an old by-law that did not permit kitty-litter in the garbage, which was impossible to enforce before the clear bag program. During the public information sessions, the public was informed that their garbage would not be picked up if it contained kitty-litter. This added fuel to the fire because many people were unaware of this by-law and were used to throwing kitty-litter in the garbage. Residents were not sure how to dispose of it. Councilors responded to this concern by amending the by-law in order to allow the disposal of kitty-litter in the garbage.

What to do with compost material: It was remarkable how the clear bag requirements prompted people to reflect on overall disposal habits. For example, many people questioned the habit of placing organics in the garbage or requested that an organics collection program be implemented.

Privacy issues: Concern over privacy never became a dominant issue - it was overshadowed by concerns over the lack of time for the public to make the transition. In anticipation of privacy concerns, the municipalities offered the option to use a small privacy bag for each clear bag. This appeared to address most privacy concerns. Some people were not comfortable with the idea of being able to view their garbage because of the 'ick factor'. It was acknowledged that change is not always comfortable and it is important to not lose sight of the main goal, which is to reduce waste.

What to do with a large amount of leftover non-clear bags: Centre Hastings offered a bag exchange to address this concern. This offering seemed to curtail the complaints. The bag exchange started in mid-January and only four people requested exchanges, which involved 340 bags in total.⁸ There was no particular cut-off date – people no longer requested them. Madoc Township did not offer a bag exchange program and reported that no more than five residents inquired about this matter.

Confusion about what organization was driving the program: Some residents were not clear that the municipalities were responsible for developing and implementing the program. The role of QWS was to assist with the program roll-out. The promotional literature contained both the municipal and QWS logos. This may have caused confusion about which organization was implementing the program. Also, the majority of the promotional work was done by QWS, as directed by the Landfill Committee. As a result, QWS had the foremost presence in the media (media launch event, radio interviews etc.).

Inconsistencies with what the recycling drivers were collecting: Although cardboard containers with metal lids such as frozen juice containers are collected in the recycling program, several residents communicated that the collectors were rejecting them. Residents were directed to call QWS for any collection discrepancies. QWS has a computer system that can identify the collectors for each household, so they can be notified to rectify the situation. The QWS presenter communicated the issue to the relevant managers to help ensure collectors were aware of how to deal with these items.

Other feedback: People were concerned that placing waste loose in a clear bag will make a mess and attract animals.

Public Feedback from Phone Calls to the Municipal Offices

The municipal offices tracked some of the public calls and summarized the feedback. Before the program was announced Dec. 10, 2007, most of the phone calls were related to garbage pick-up issues and the collection schedule. Afterwards, the majority of calls was about the clear bag program and mainly consisted of negative feedback – there was not a lot of support for the change. Some people thought the change was not needed and others believed that there would be bags in the ditches and lake bins etc. By the program start date (Jan. 7, 2008), it was clear that many residents were not fully informed. Municipal staff had to constantly affirm that there were no changes in what items should be recycled or placed in the garbage. After the first day of enforcement in June 2008, the municipal office for Centre Hastings reported receiving 17 phone calls. Although a few calls were of an angry nature, most of the calls were from people who forgot and were double-checking what to do. A significant number of calls were related to the privacy bag requirement. QWS did not receive a high volume of calls with respect to recycling. Near the enforcement date, there were several requests from resort or building managers for material to support their recycling depot such as carts, extra labels, and recycling information to provide their clients/tenants.

⁸ In January 2008, three residents exchanged 100 bags. In February 2008, one resident exchanged 40 bags. This information was provided by the Municipality of Centre Hastings.

9.0 Overview of Data Collection Methods Used to Provide a 'Before and After Snapshot'

An overview of the data collection methods used is provided below, followed by the 'before and after' results.

Primary Data Collection – Municipal Recycling and Garbage Weights: Municipal recycling and garbage tonnage data were compiled (**see sub-section 9.1a**) and diversion rates were calculated from this data (**see sub-section 9.1b**). This is the most important data source because it includes recycling and garbage collected for the entire population of the study area rather than a sample. All municipal recycling collected from the curbside and the recycling depot program is weighed by QWS. Garbage for Madoc Township and Centre Hastings is sent directly to landfill without being weighed. For the purposes of this study, the municipalities agreed to weigh curbside garbage periodically using local scale facilities. Due to limited resources, Madoc Township only weighed curbside garbage from the west half of its township. Garbage bags dropped off by residents at the landfill are not weighed; however, the head landfill attendant always tracks the number of bags and estimates that the average bag weight is 20 pounds (9.1 kg) - these figures were used to estimate the self-haul garbage weights.

Please note: The curbside recycling data for Madoc Township includes some depot recycling (from Centre Hastings and Madoc Township residents) because it is collected with the township's curbside recycling and could not be separated.

Supplementary Data Collection Methods: Garbage could not be weighed throughout the entire study because it required extra time and resources. For this reason, supplementary data collection methods were used to reinforce the primary data collection findings and provide more in-depth information to determine the change in waste composition, the level of program compliance, and people's waste disposal habits such as the number of set-outs.

- **Waste Audits** -- Integrated Environmental Waste Services conducted curbside waste audits over a two-week period in September 2007 and 2008. The data sample consisted of 3 sets of 10 households, each from a different location in order to better represent the study area. All garbage and recycling set out by the 30 households was tracked and weighed. The data was compiled and analysed to determine pre and post blue box diversion rates, set out practices, waste composition, and compliance with clear bag requirements (**see sub-section 9.2**).
- **Visual Curbside Assessments** - A visual curbside assessment was conducted before (April 2008) and after (June and July 2008) the program was enforced. The assessment included 138 households in 4 locations throughout the study area. QWS staff tracked the number of garbage bags and blue boxes worth of material set out for each household, and compliance with clear bag requirements. In addition, recycling and garbage was weighed for nearly 1 out of every 5 set-outs (**see sub-section 9.3**).
- **Pre and Post- Program Telephone Survey on People's Waste Disposal Habits** - A pre-program telephone survey was conducted in November 2007 and a post-program enforcement telephone survey was conducted in August 2008. Each survey consisted of 100 randomly selected households. The responses were compiled and analysed to determine if people's waste disposal habits had changed. (**see sub-section 9.4**).

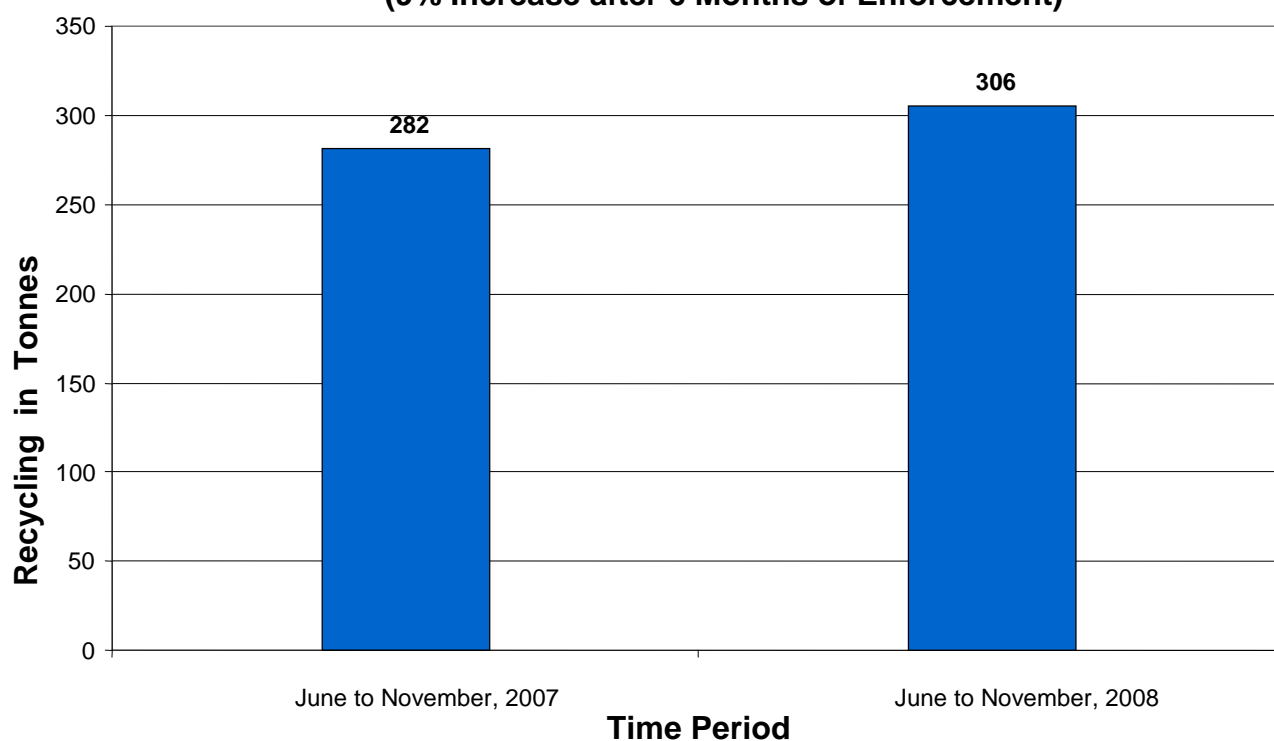
Limitations: There are some limitations to the data used for this study. First, garbage was not weighed throughout the entire study, so diversion rates are based only on the periods when the municipalities weighed garbage. Second, this was a short-term study so diversion rates are sometimes compared for different months throughout the study. Any changes could be due to seasonal factors. An effort was made to control seasonal variables by collecting some of the post-program data in autumn - the same season that baseline data was collected. Third, the waste audit, visual curbside assessment, and telephone survey data are sample data only, so they serve to supplement the municipal garbage and recycling tonnage data. Lastly, it is possible that precipitation could have affected the material weights.

9.1 Primary Data Collection Results

The following sub-sections (9.1a and b) present the municipal garbage and recycling tonnage data, which were used to determine the change in blue box diversion for the study area.

9.1a Total Municipal Garbage and Recycling Tonnages Collected for the Study Area

Figure 1
Residential Recycling Tonnage Collected from Curbside and the Depot
for all of Madoc Township and Centre Hastings
(9% Increase after 6 Months of Enforcement)



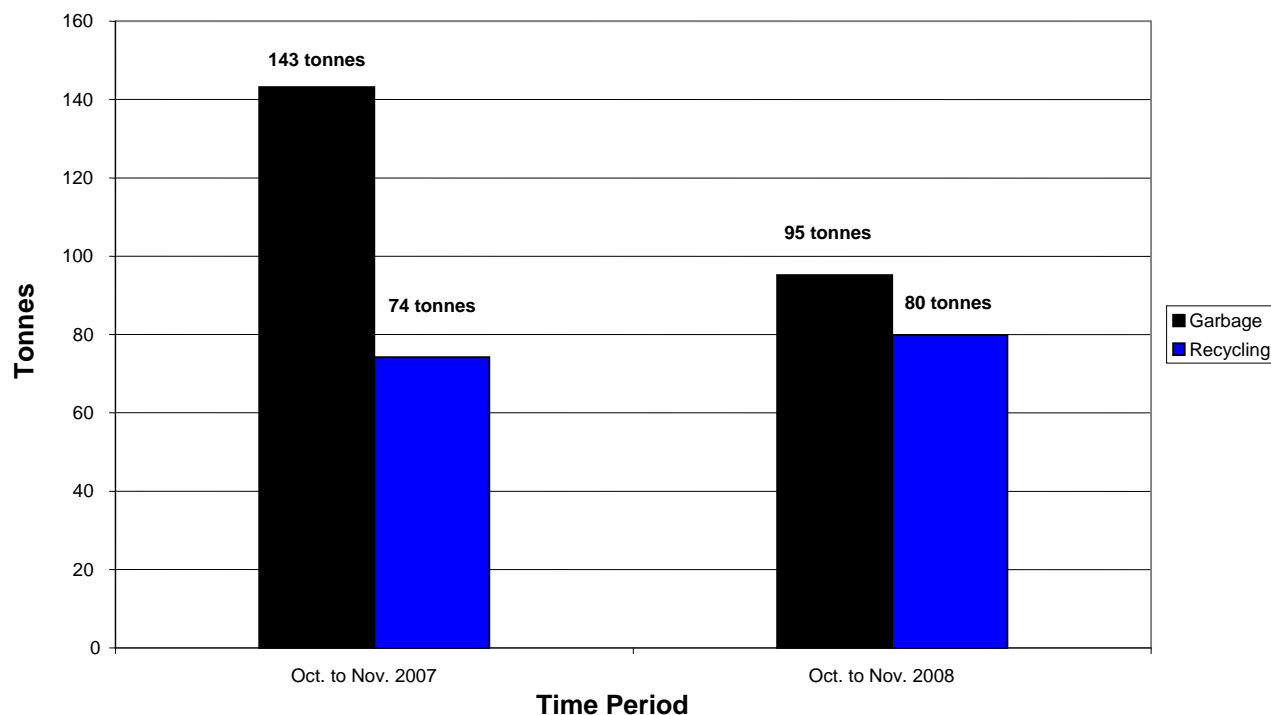
Please note: A two-bag limit was introduced in September 2008; however, results from the supplementary data reveal that the average set-out per household was already within the limit with the clear bag program.

Residential recycling tonnage collected increased by 9% for the first 6 months of enforcement compared to the same timeframe in 2007. Appendix 7 contains a breakdown of results by area - there was only a 2% increase in the rural areas compared to a 22% increase in the urban area (Village of Madoc).

Municipal Garbage and Recycling Tonnages for the Study Area – Pre and Post Program: Unlike recycling, yearly garbage tonnage is not available because garbage is not typically weighed. For the purpose of this study, baseline pre-program garbage weights were collected for 8 weeks in autumn 2007 and compared to the same timeframe in 2008 when enforcement was in place. The following graph displays garbage and recycling tonnages during this timeframe.

Figure 2

**Curbside Waste Generation for Centre Hastings and the West Half of Madoc Township
Pre and Post Clear Bag Program Enforcement
(34% Decrease in Garbage Tonnage and an 8% Increase in Recycling Tonnage)**



Please note: Recycling data includes some depot recycling (for Madoc Township and Centre Hastings residents) because it could not be separated from Madoc Township's curbside collection data. The clear bag program was enforced June 2, 2008. A two-bag limit was introduced September 1, 2008; however, results from the supplementary data indicate that the average garbage bag set-out was already within this limit with the clear bag program.

Total tonnage (garbage plus recycling) decreased by 20% for the study area. Total garbage tonnage collected at curbside decreased by 34%. Total recycling tonnage collected at curbside and the recycling depot increased by 8%.

Self-Haul Garbage Collected at Landfill

The tonnage of 'self-haul' garbage brought to the landfill decreased by 55% when comparing June to October 2008 with the same timeframe in 2007.

Table 1: Estimated Self-Haul Garbage Weights (tonnes) Collected at the Landfill for the First Five Months of Enforcement Compared to the Year Before

	Madoc Township	Centre Hastings	Entire Area
5 months in 2007 (June to Oct.)	95	18	113
5 months in 2008 (June to Oct.)	43	8	51
Total Change in Tonnes	(52)	(10)	(62)
Percent of Change	(55%)	(56%)	(55%)

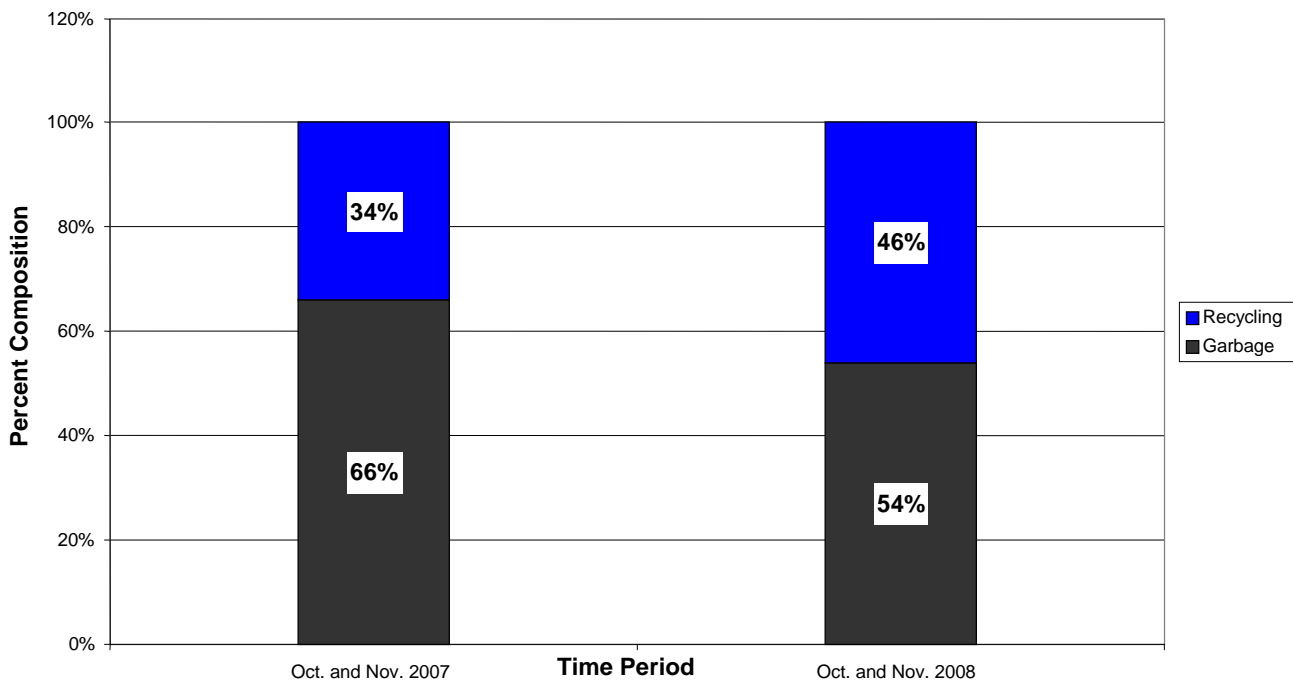
Note: The June to October timeframe was chosen because the landfill is open one less day starting in November. The weights are based on bag counts – the head landfill attendant estimates that the average bag weight is 9.09 kg.

9.1b Blue Box Diversion Rates Based on Municipal Garbage and Recycling Tonnage

Municipal recycling and garbage tonnages collected for Centre Hastings and the west half of Madoc Township were used to calculate the blue box diversion rates, which are displayed in the three graphs below. Recycling is collected and weighed by QWS year round. Municipal garbage is collected by a private contractor in Madoc Township, and by municipal staff in Centre Hastings. It is not typically weighed because there are no scales at the landfill. Both municipalities agreed to use local scale facilities to weigh garbage at certain points during the study. The dates that garbage was weighed vary by municipality. For this reason, the blue box diversion rates for Madoc Township and Centre Hastings will be shown separately, except for the first graph where both municipalities agreed to collect pre and post weights in autumn 2007 and 2008.

Figure 3

**Curbside Waste Generation for Centre Hastings and the West Half of Madoc Township
Pre and Post Clear Bag Program Enforcement
(A 12 Percentage Point Increase in Blue Box Diversion)**

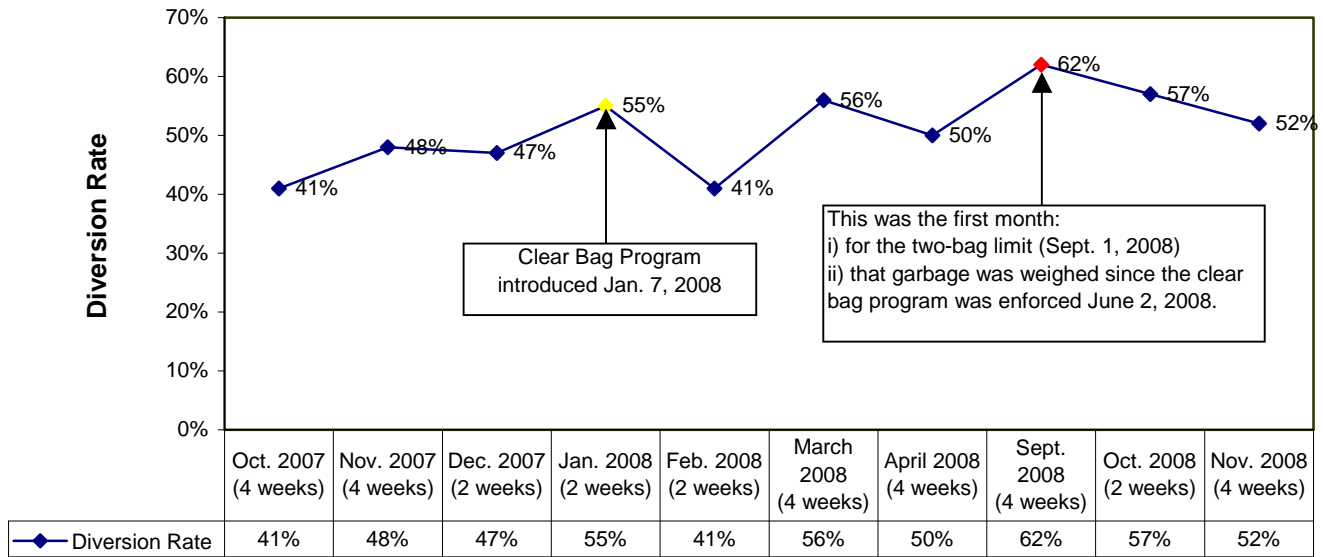


Please note: The clear bag program was enforced June 2, 2008. A two-bag limit was introduced September 1, 2008; however, results from the supplementary data indicate that the average garbage bag set-out was already within this limit with the clear bag program. The data above includes material collected at curbside for the study area (and some depot recycling, which could not be separated because it is collected with Madoc Township's curbside recycling).

According to the comparison in the above graph, blue box diversion increased 12 percentage points for the study area.

Figure 4

Madoc Township's Blue Box Diversion Rates Pre-Clear Bag Requirements, Voluntary Period, and After Enforcement



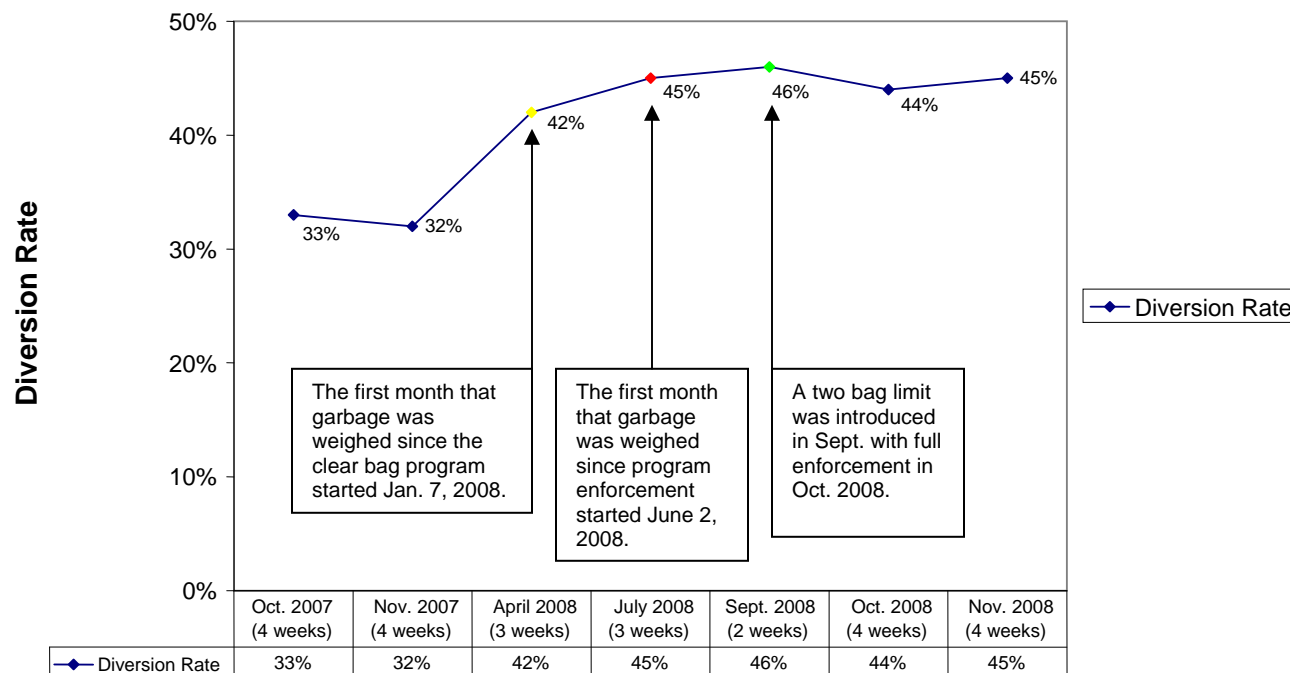
Collection Dates that Garbage was Weighed by the Township

Please note: Information is based on all available curbside data provided by Madoc Township (so some months may not include 4 weeks: data was collected for the first half of December, 2 weeks in mid-January, last half of February and October). Some depot recycling is included because it is collected with Madoc Township's curbside recycling and could not be separated. A two-bag limit was enforced in September 2008 but supplementary data revealed that average bag set-outs were already within this limit with the clear bag program.

The above graph shows blue box diversion rates for each collection period when garbage was weighed by Madoc Township. A two-bag limit was introduced in September 2008 but supplementary data shows that average bag set-outs were already within this limit – see Appendix 8 for details. There was a 6 percentage point increase in the average blue box diversion rate when the program was voluntary and diversion increased by a further 6 percentage points when the program was enforced. In total, the blue box diversion rate increased by 12 percentage points after enforcement was in place compared to before the program was introduced. It is interesting to note that the blue box diversion rate was high for January and then decreased throughout the winter collection periods until the start of March. Perhaps this was due to people trying to prepare in January for the original enforcement date of Feb. 4, 2008. Similarly, the increase that started in March is likely due to people preparing for the new enforcement date. This increase coincided with a direct mailing sent March 3 with information on the clear bag program and recycling, and a reminder of the June enforcement date. When looking at the above graph, there is a cyclical pattern with an upward trend; however, even the low points in the cycle from the spring (April) onwards are higher than the low points prior to this time. It should be noted that there is an outlier in the dataset for November 2008 and if this point is removed, the diversion rate is 62% instead of 52%.

Figure 5

Centre Hastings' Blue Box Diversion Rates Pre-Clear Bag Requirements, Voluntary Period, and After Enforcement



Collection Dates When Garbage was Weighed by the Municipality

Note: Information is based on all available curbside data provided by Centre Hastings (so some months may not include 4 weeks: data was collected for the first 3 weeks in April, last 3 weeks in July, and 2 weeks mid-September). A two-bag limit was enforced in September 2008 but supplementary data revealed that average bag set-outs were already within this limit with the clear bag program.

The above graph shows monthly diversion rates for the periods when garbage was weighed by Centre Hastings. There was a 9 percentage point increase in the blue box diversion rate when the program was voluntary (April 2008 weight collection periods) compared to before the program started (2007 weight collection periods). This increase could be due partially to residents preparing for enforcement, as a direct mailing was sent to residents on April 2 with information on recycling and the clear bag program, and a reminder of the June enforcement date. The blue box diversion rate gradually continued to increase after enforcement started from 42% in April (voluntary) to 45% in July (enforced), and then started to level off at 45% once the two-bag limit was introduced. The graph above illustrates that most of the increase in diversion had occurred before the bag limit was introduced. Overall, there was a 12 percentage point increase in the blue box diversion rate when comparing July 2008 to October and November of 2007 before the program started.

Summary of Blue Box Diversion Results

- The blue box diversion rate increased 12 percentage points for the study area, when comparing municipal curbside garbage and recycling tonnage data collected for 8 weeks in autumn 2008 to the same timeframe in 2007.
- In Madoc Township, there was a 12 percentage point increase in the blue box diversion rate when comparing the average rate when enforcement was in place to the rate before the program was introduced.
- In Centre Hastings, there was a 12 percentage point increase in the blue box diversion rate when comparing the rate in July when enforcement was in place to the average rate before

the clear bag program was introduced.

9.2 Results of Pre and Post-Program Waste Audit

Integrated Environmental Waste Services conducted a waste audit with a visual curbside assessment for two weeks in mid-September 2007 and 2008. The full waste audit report is included under a separate cover. The sample included 30 households from the following areas: 10 households in the Village of Madoc (Elgin St.), 10 households in Centre Hastings (Springbrook Rd.), 10 households in Madoc Township (O'Hara Rd. & Mill Rd.)

The waste audit objectives were to:

- evaluate the clear bag pilot program impact on the overall waste generation totals;
- measure the differences in the entire waste stream prior to and post-program implementation;
- assess the specific set-out practices prior to and post-program launch; and
- compare the different material capture rates pre and post-pilot start.

Summary of Pre and Post-Program Waste Audit Results

- the visual curbside component of the waste audit revealed:
 - the average number of full garbage bags set out per household decreased by half from 2.4 bags to 1.2 bags
 - the average number of recycling set-outs decreased slightly from 2.4 to 2.2 full blue boxes per household
- the average weight of garbage set out per household decreased by 41% from 14.0 kg in 2007 to 8.3 kg in 2008
- there was an 18% decrease in average weight of blue box material set out per household⁹ from 6.1 kg in 2007 to 5.0 kg in 2008
- the composition of recyclables in the garbage stream decreased from 14% in 2007 to 11% in 2008
- there was a 10% increase in the blue box diversion rate from 29% in 2007 to 39% in 2008 by weight (when removing blue box contaminants, there was a 9% increase from 27% to 36%)

Other Findings from the Waste Audit

Compliance: Out of the 36 clear bags collected during the 2008 two-week waste audit, 67% contained recyclables and 28% had more than 1 privacy bag. All except one of the 37 garbage bags collected were clear.

Participating Households: Fewer households set out garbage, while more set out recycling.¹⁰ In 2007, 60% of the sample group had recycling set out and 64% had garbage set out. The opposite occurred in 2008; 64% of the sample group had recycling set out and 60% had garbage set out.

HHW: The weight of HHW set out in garbage and/or recycling, decreased by 66% from 2007 to 2008. The composition of HHW in the entire waste stream decreased by 47% from 0.53% in 2007 to 0.28% in 2008.

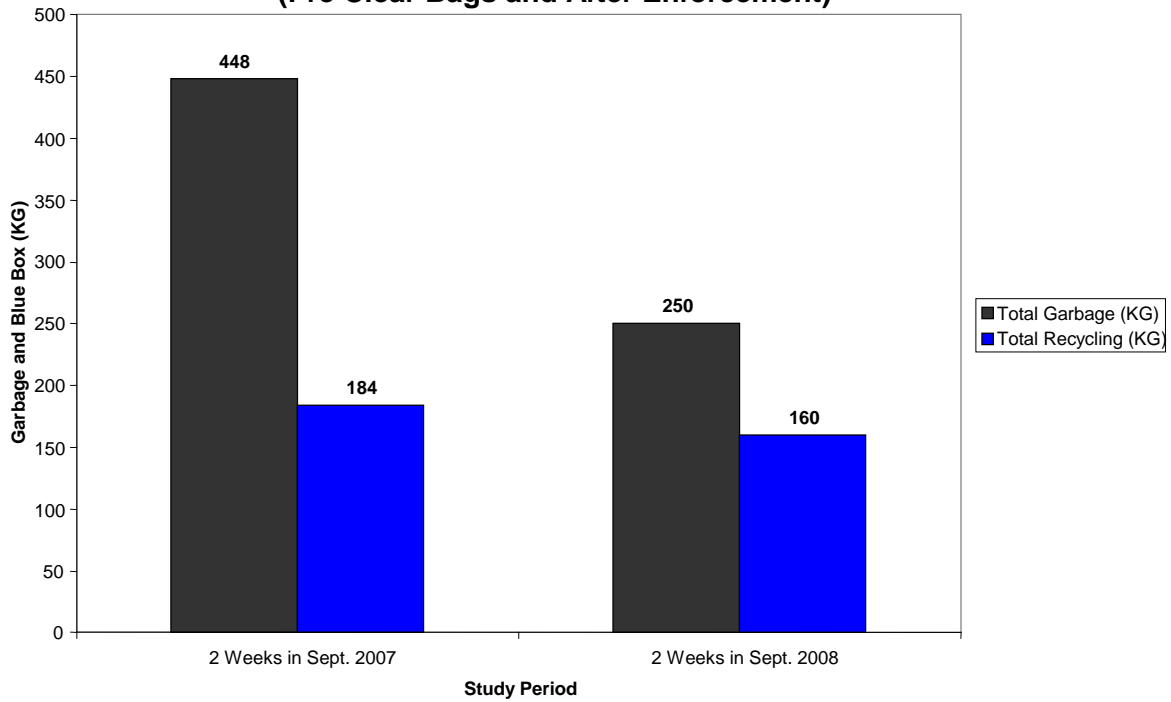
Organics: The composition of organics in the entire waste stream remained the same at 34% for both the 2007 and 2008 waste audits.

⁹ The average weight of blue box material without contamination set out per household also decreased by 18% from 5.6 kg in 2007 to 4.6 kg in 2008.

¹⁰ This may be an impact of the clear bag program, however; some residents may transfer waste directly to the landfill. 20

Figure 6

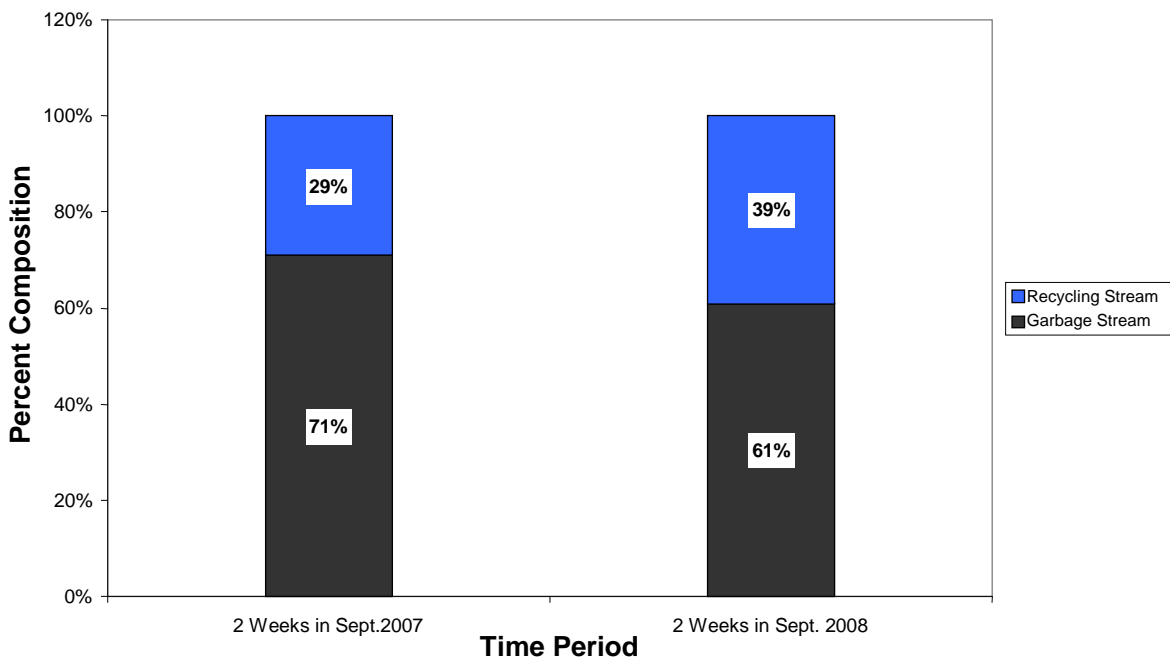
**Combined Sample Group Results: Total Waste Generated (kg)
(Pre Clear Bags and After Enforcement)**



Please note: The 2007 data is based on 32 household set-outs for garbage and 30 household set-outs for blue box. For 2008, the data is based on 30 household set-outs for garbage and 32 household set-outs for blue box.

Figure 7

**Combined Sample Group Results: Percent Composition by Weight
(Pre Clear Bags and After Enforcement)
10 Percentage Point Increase in Blue Box Diversion**



When removing blue box contaminants, the waste audit revealed there was an increase of 9% in the actual recycling diverted - from 27% to 36%. Based on the results, the clear bag program appears to have positive results in lowering the amount of recyclables and garbage transferred to the landfill.

9.3 Results of Visual Curbside Assessments

Data was provided from a visual curbside assessment conducted by QWS when the program was voluntary (April of 2008) and enforced (June and July 2008). The three-month assessment consisted of 138 households¹¹ located in the following areas:

1. North Huntingdon (28 households)
2. South Huntingdon (47 households)
3. Village of Madoc (23 households)
4. Madoc Township (40 households)

The main purpose of this assessment was to determine the change in recycling and garbage set-outs. It also addressed disposal habits including compliance with the clear bag requirement and the use of privacy bags. Recycling and garbage was weighed for approximately 1 out of every 5 set-outs, and blue box diversion rates were calculated to determine the change immediately after enforcement started.

Garbage and Recycling Set-Outs

The table below shows the average blue box and garbage set-outs per household when the program was in place on a voluntary basis (April 2008), and after enforcement started (June and July 2008).

Table 2: Average Blue Box and Garbage Set-Outs per Household per Week

	April 2008 Voluntary Clear Bag Program – No Enforcement	June 2008 First Month of Enforcement	July 2008 Second Month of Enforcement
Full Blue Boxes Set Out per HH (based on actual blue box set-outs)	1.5	1.4	1.4
Full Garbage Bags Set Out per HH (based on actual bag set-outs)	1.4	1.2	1.3
Weight of Blue Box Material (kg) Set Out per HH (based on total blue box set-outs weighed)	5.9 kg	5.7 kg	5.5 kg
Weight of Garbage (kg) Set Out per HH (based on total bag set-outs weighed)	8.6 kg	7.8 kg	8.1 kg
<i>Please note: The numbers are based on actual set-outs (and set-outs weighed) to be consistent with the set-out data provided by the waste audit described in Section 9.2.</i>			

Based on actual set-outs, the average number of full blue boxes and garbage bags set out per household slightly decreased from April to June and July of 2008.¹² The average weight (kg) of material set out per household decreased by 7% for blue box material and 9% for garbage.¹³

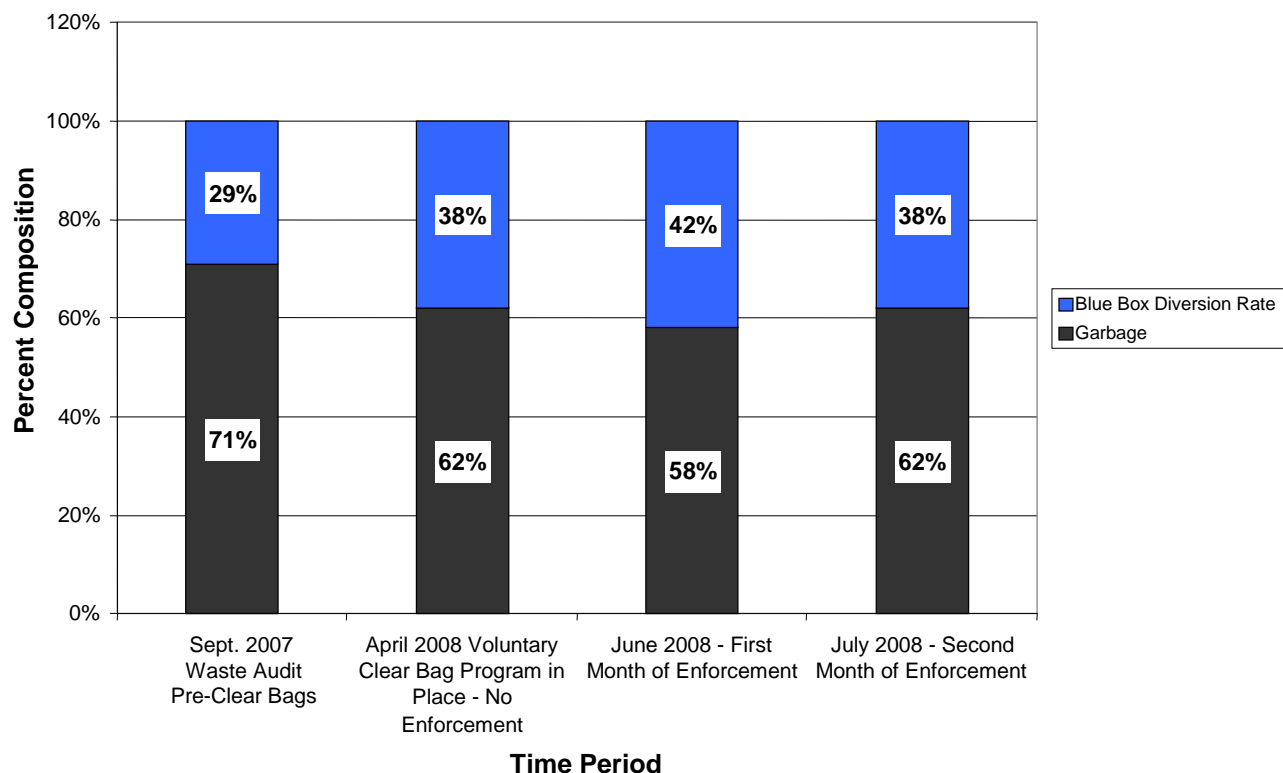
¹¹ The goal was to assess at least 100 households in case some households did not participate in curbside collection.

Blue Box Diversion Rates

Overall, the blue box diversion rate increased 11 percentage points from 29% in September 2007 to an average of 40% once enforcement started in the summer (June/July). See graph below with notes.

Figure 8

Overall Waste Stream Generated (Pre Clear Bags, Voluntary Period, and After Enforcement)



Please note: Sept. 2007 waste audit data (sample of 30 households) from Section 9.2 is used as the baseline. The rest of the diversion rates are based on recycling and garbage weights tracked for approximately 1 out of every 5 households from the visual curbside assessment.

Compliance with Clear Bag Requirements: The visual curbside assessment results in the table below indicate that enforcement boosts participation in the program.

	April 2008 (voluntary program)	June 2008 (first month of enforcement)	July 2008 (second month of enforcement)
Percent of total household set-outs that used clear bags exclusively.	25%	55%	78%

Use of Privacy Bags: The curbside assessment showed that only one quarter of set-outs in June and less than one third (29%) in July had privacy bags. While the percent of set-outs with privacy bags in Madoc Township doubled from 13% in June to 26% in July, it stayed relatively the same in Centre Hastings (29% in June and 30% in July). Program enforcement encouraged compliance with the one privacy bag limit per clear bag; out of the set-outs with privacy bags, a quarter had too many privacy bags in the first month of enforcement (June) compared to only 8% in the second month (July).

¹² The trend was similar for the change in the average number of set-outs based on total possible set-outs.

¹³ When comparing April's weights to the lowest weight from either June or July.

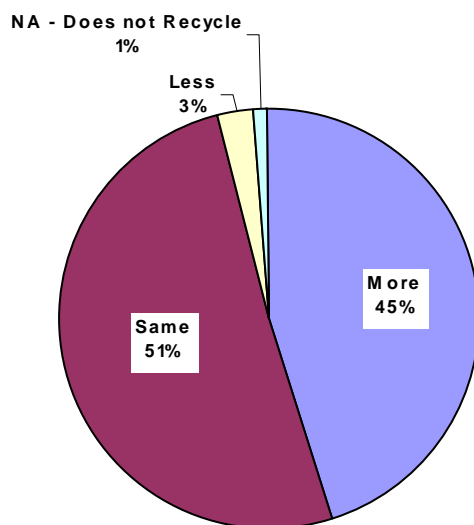
9.4 Results of Pre and Post-Program Telephone Surveys

A telephone survey on people's waste disposal habits was conducted before the clear bag requirement (November 2007) and after enforcement was in place (August 2008). Each survey consisted of a sample of 100 randomly selected people. Please refer to Appendices 9 and 10 for the survey questionnaires. The results are described under the following themes: waste disposal habits, recycling and garbage set-outs, frequency of privacy bag use, level of non-compliance, and burning of garbage.

Waste Disposal Habits

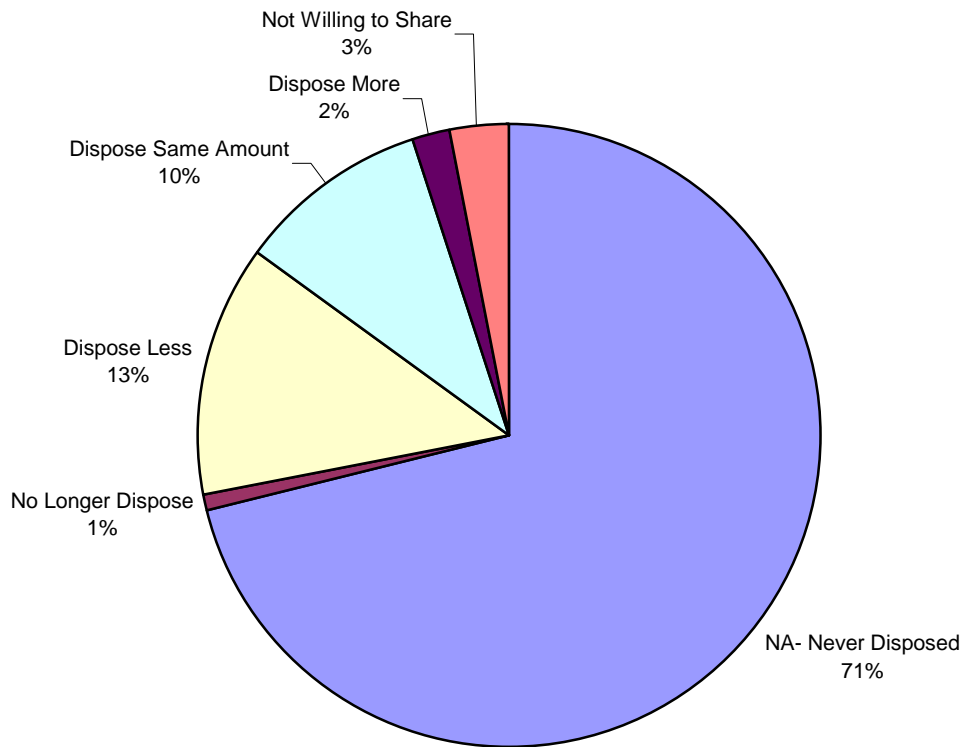
- The majority of post-program respondents (59%) reported they are reflecting more on their waste disposal habits and trying to separate more items from the garbage now.
- A similar percentage of post-program survey respondents (99%) and pre-program survey respondents (98%) reported that they recycle.
- The following pie graph displays the reported recycling habits of post-program survey respondents compared to before the program was in place. 45% reported recycling more – almost half (49%) of these respondents reported they are recycling more in order to comply with clear bag requirements.

**Figure 9: Post-Program Compared to Pre-Program Recycling Habits
(as reported by post-program telephone survey respondents)**



- Approximately 66% from the pre and post-program telephone surveys reported they are composting food organics; however, 14% of post-program survey respondents reported they are composting more of it now.
- Post-program survey respondents were asked if they dispose more or less HHW into the garbage compared to before the clear bag program was in place. 13% of survey respondents reported they dispose less HHW into the garbage now.

Figure 10: Post-Program Compared to Pre-Program HHW Disposal Habits (as reported by post-program telephone survey respondents)



Change in Recycling and Garbage Set-Outs

Recycling: The change in blue box set-outs presented below is not consistent with the waste audit and visual curbside assessment results, which indicate a decrease.

Table 3: Average Blue Box Set-Outs per Household (Full Blue Box Equivalents per HH per Week)

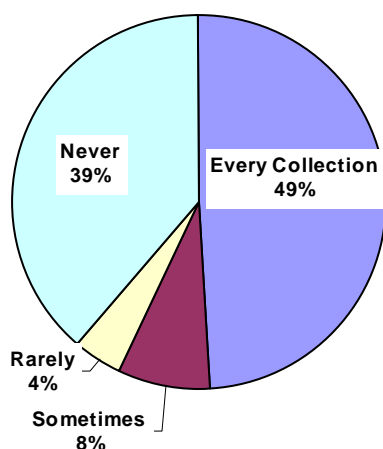
	Centre Hastings	Madoc Township	Entire Area
Average Number of Blue Boxes Set Out per Household for November 2007	1.2	0.9	1.1
Average Number of Blue Boxes Set Out per Household for August 2008	1.7	0.9	1.5
Total Change in Average Number of Blue Boxes Set Out per Household	+0.5	0	+0.4
Percent Change for Above	+42%	0%	+36%

Garbage: The change in garbage set-outs presented in the following table is consistent with the waste audit and visual curbside assessment results – all of these data sources indicate a decrease.

Table 4: Average Garbage Bag Set-Outs per Household (Full Garbage Bag Equivalents per HH per Week)

	Centre Hastings	Madoc Township	Entire Area
Average Number of Bags Set Out per Household for November 2007	1.2	0.8	1.1
Average Number of Bags Set Out per Household for August 2008	0.8	0.5	0.7
Total Change in Average Number of Bags Set Out per Household	-0.4	-0.3	-0.4
Percent Change for Above	-33%	-38%	-36%

Figure 11: Frequency of Privacy Bag Use Reported by Post-Program Telephone Survey Respondents



- Over 40% of survey respondents reported that they never or rarely use a privacy bag (39% - 'never' and 4% 'rarely').
- Almost half of the survey respondents (49%) reported they use one every time.

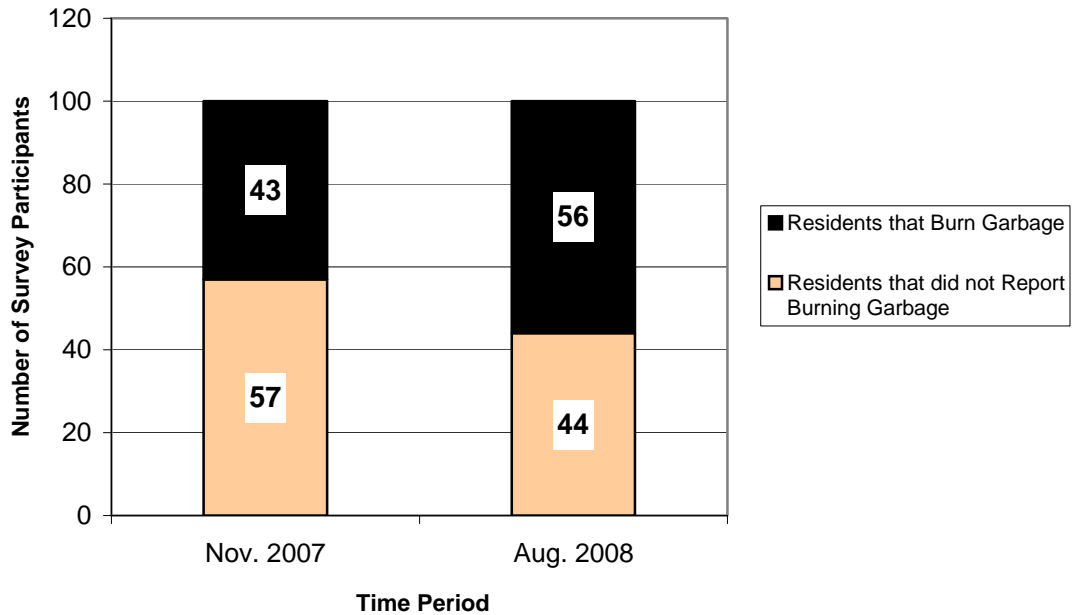
The Level of Non-Compliance

The vast majority of survey respondents reported that they never place recyclables in a privacy bag (97%) or the clear bag itself (88%). The majority of respondents that reported doing so stated that it is rarely done.

Burning of Garbage

The number of survey respondents that reported using burning as a method for garbage disposal increased by almost one third after the clear bag program started (from 43 to 56).

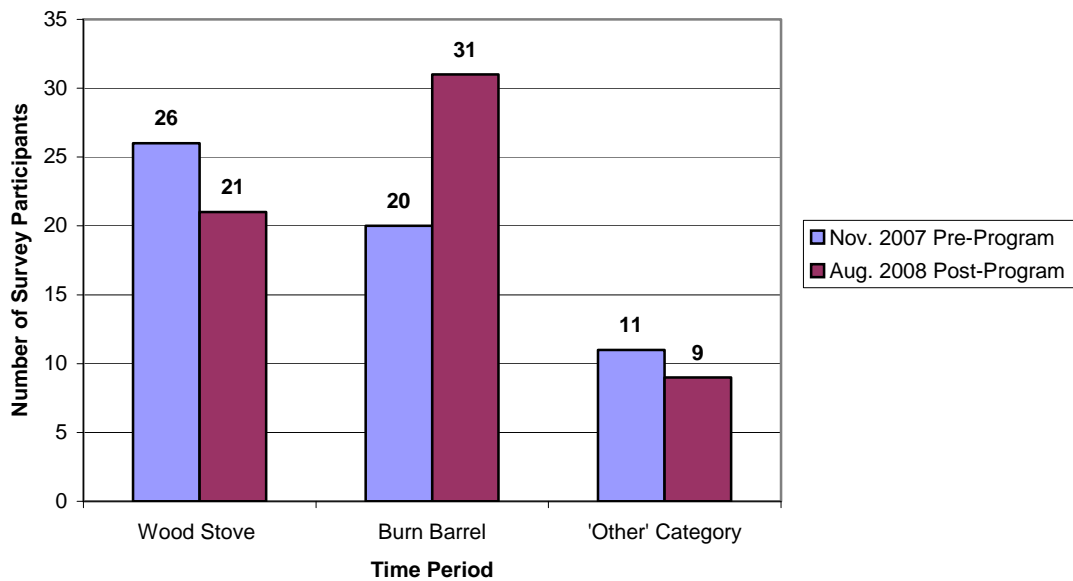
Number of Pre and Post-Program Survey Respondents that Burn Garbage (out of 100 households for each sample)



Most of this increase can be attributed to burn barrel usage, which increased by 55% (from 20% to 31% of respondents) – please see graph below.

Figure 13

Disposal Methods Used Other than Curbside or Landfill Pre vs. Post Program Survey Participants (out of 100 households for each sample)



Please note: The 'other' category means all disposal methods other than the ones mentioned above. While there was a decrease in this category, the 'other' methods pertaining to burning actually increased mainly due to more households using fire pits.

The post-program survey indicates that burn barrel users are burning more recyclable material:

- paper products are burned by 97% of burn barrel users compared to 75% from the pre-program survey
- plastic products are burned by 36% of burn barrel users compared to 10% from the pre-program survey

Summary of Telephone Survey Results

The majority of post-program survey respondents reported they are reflecting more on their waste disposal habits and trying to separate more material from the garbage. Although almost all pre and post-program survey respondents reported to recycle, 45% from the post-program survey reported they are recycling more compared to the year before – half of this portion stated they are doing so to comply with clear bag requirements. The average number of blue boxes worth of material reported to be set out increased, while the average number of garbage bags set out decreased. The percent of respondents composting food scraps remained almost the same; however, 14% from the post-program survey are composting more of this item now. Almost the same proportion shared that they are now disposing less HHW into the garbage. The use of privacy bags is not as high as originally anticipated – only half of the respondents reported using one on a regular basis. The vast majority reported they have never placed recyclables in the privacy bag or the main clear bag. Despite the reported increase in garbage burning, the survey results show that the clear bag program had a positive influence on people's waste disposal habits. The results support the positive findings from the other sources of data collected.

10.0 Clear Bag Program Impacts

The key findings from the results described in Section 9 are identified below and examined in the subsections that follow. Please note that the study area refers to all of Centre Hastings and the west half of Madoc Township, unless specified otherwise.

- Blue box diversion increased by approximately 12% from a rate of 33% to 45%.
- There was a decrease in the amount of material set out; there was a larger drop in the amount of garbage set out compared to blue box material. The decrease in the amount of blue boxes set out per household is likely due to factors other than the clear bag program.
- There was a 9% increase in municipal recycling collected based on curbside and depot tonnage data for the first 6 months of enforcement compared to the same timeframe in 2007.
- There was a significant gap between the increase of 6 tonnes in recycling and the decrease of 48 tonnes in garbage (for the 8-week period in autumn of 2008 compared to the same timeframe in 2007).
- The use of privacy bags was not as high as anticipated.
- The majority of people are reflecting more on their overall waste disposal habits and trying to separate more items from garbage.

10.1 Program Impacts – Analysis of Blue Box Diversion Results

Overall, there was approximately a 12 percentage point increase in the blue box diversion rate. This main finding is based on the municipal recycling and garbage tonnage data collected for the study area.¹⁴ All of the diversion rates derived from the supplementary data sources reinforce this finding (within the range of 2%). A summary of the blue box diversion rates collected for each data source is included in the following table.

Table 5: Blue Box Diversion Rates for All Data Sources

Data Source and Timeframe	2007 Pre-Program	2008 After Enforcement	Increase in Blue Box Diversion
Municipal Garbage and Recycling Tonnage Collected at Curbside for the Study Area: Oct./Nov. 2008 compared to Oct./Nov. 2007	34%	46%	+12%
Municipal Garbage and Recycling Tonnage Collected at Curbside for Centre Hastings: July 2008 compared to Oct./Nov. 2007 <i>(Madoc Township did not weigh garbage during enforcement before the bag limit was introduced)</i> Note: The diversion rates in this row are referenced as the main finding¹⁵	33%	45%	+12%
Supplementary Data - Waste Audit: 2 weeks in September 2008 compared to the same for 2007	29% (excluding contamination)	39% (excluding contamination)	+10%
Supplementary Data - Visual Curbside Assessment: June/July 2008 compared to September 2007 baseline data from waste audit	29%	40%	+11%

A two-bag limit was introduced September 1, 2008 and may have influenced some of the results; however, it is safe to assume that the increase in blue box diversion can be attributed to the clear bag program as the average bag set-out was already within the two-bag limit during the clear bag program - see Appendix 8 for supporting data. Also, the majority of the population experienced a 12 percentage point increase in blue box diversion before the bag limit was in place – see second row of above table. The visual curbside assessment yielded similar results.

¹⁴ The entire study area includes curbside garbage and recycling for all of Centre Hastings and the west half of Madoc Township (and some depot recycling from Centre Hastings and Madoc Township residents, which could not be separated from the township's data). Garbage was not weighed for all of Madoc Township due to limited resources.

¹⁵ The diversion rates in this row will be referenced as the main finding because: a) the diversion rates that include Madoc Township data are slightly inflated because they include some depot recycling, which could not be separated from the data and b) Centre Hastings's forms close to 70% of the study area by population. 29

10.2 Program Impacts – Blue Box and Garbage Set-Outs

There has been a general decrease in the average number of blue boxes and garbage bags set out each week - see the two tables below.

**Table 6: Average Number of Blue Box Set-Outs Before and After Enforcement
(Based on Supplementary Data – Full Blue Box Equivalents per Household per Week)**

	Waste Audit	Visual Curbside Assessment	Telephone Survey
Before Enforcement	2.4 pre-clear bags (Sept. 2007)	1.5 voluntary program (April 2008)	1.1 pre-clear bags (Nov. 2007)
After Enforcement	2.2 (Sept. 2008)	1.4 (June and July 2008)	1.5 (Aug. 2008)
Percent Change	- 8%	- 7%	+ 36%

Blue Box: The number of full blue box equivalents set out slightly decreased for the waste audit and curbside assessment (note: the curbside assessment has the same sample size as the telephone survey). Although the increase from the telephone survey data appears quite high, it may be that people are generally recycling more waste, regardless of the total generated.¹⁶ It is interesting to note that the average set-out (1.4) after enforcement from the curbside assessment is similar to that from the telephone survey.

**Table 7: Average Number of Garbage Bag Set-Outs Before and After Enforcement
(Based on Supplementary Data – Full Garbage Bag Equivalents per Household per Week)**

	Waste Audit	Visual Curbside Assessment	Telephone Survey
Before Enforcement	2.4 pre-clear bags (Sept. 2007)	1.4 voluntary program (April 2008)	1.1 pre-clear bags (Nov. 2007)
After Enforcement	1.2 (Sept. 2008)	1.2 (June 2008) 1.3 (July 2008)	0.7 (Aug. 2008)
Percent Change	- 50%	- 7%	- 36%

Garbage: The waste audit and telephone survey revealed a significant drop in garbage set-outs. The curbside assessment data reinforces the decrease in set-outs, although its change is less dramatic as it relies on baseline data when the voluntary program was in place.

¹⁶ The telephone survey results could be inflated because of people reporting what they should be doing, instead of actual practice.

10.3 Program Impacts – Garbage and Recycling Weights

Municipal tonnage data is the best indicator of actual change because it is for the entire population, not just a sample. This data revealed a notable increase in recycling and a dramatic decrease in garbage. The data from the waste audit and curbside assessment revealed a decline in the weight of material being set out in general.

Table 8: Recycling Weights Before and After Enforcement (for all Data Sources)

	Total Municipal Recycling Tonnage (collected from curbside and the recycling depot for all of Madoc Township and Centre Hastings)	Waste Audit (kg per household per week)	Visual Curbside Assessment (kg per household per week)
Before Enforcement	282 tonnes pre-clear bags (June to November 2007)	6.1 kg pre-clear bags (mid-Sept. 2007)	5.9 kg voluntary program (April 2008)
After Enforcement	306 tonnes (June to November 2008)	5.0 kg (mid-Sept. 2008)	5.6 kg (average for June and July 2008)
Percent Change	+ 9%	-18%	- 5%

Recycling Weights: Municipal recycling tonnage data was collected from curbside and the recycling depot for all of Madoc Township and Centre Hastings. There was a 9% increase in total recycling tonnage collected, when comparing 2008 with 2007 and for the timeframe included in the table above. The increase in the urban area was significant, while it was minimal for the rural area.

In contrast, the results from the waste audit and curbside assessment show that the average weight of blue box materials set out has decreased. However, this downward trend in set-outs does not mean that people are recycling less because the overall diversion rate increased.

Table 9: Garbage Weights Before and After Enforcement (for all Data Sources)

	Total Municipal Garbage Tonnage (collected from curbside for study area ¹⁷)	Self-Haul Garbage Dropped off at the Landfill	Waste Audit (kg per household per week)	Visual Curbside Assessment (kg per household per week)
Before Enforcement	143 tonnes pre-clear bags (Oct./Nov. 2007)	113 tonnes pre-clear bags (June to Oct. 2007)	14.0 kg pre-clear bags (mid-Sept. 2007)	8.6 kg voluntary program (April 2008)
After Enforcement	95 tonnes (Oct./Nov. 2008)	51 tonnes (June to Oct. 2008)	8.3 kg (mid-Sept. 2008)	8.0 kg (average for June and July 2008)
Percent Change	- 34%	- 55%	- 41%	- 7%

¹⁷ Study area includes all of Centre Hastings and the west half of Madoc Township.

Municipal Garbage Weights: Municipal curbside garbage tonnage dropped by 34%. This dramatic decrease is reinforced by the supporting data; the waste audit revealed a 41% decrease in the weight of garbage bags set out, and self-haul garbage to the landfill decreased by an estimated 55%. In addition, curbside assessment data revealed a decrease (7%), although not as significant because it compares 'after enforcement' results to a baseline when the program was voluntary (and there was only a month between the before and after data collection rather than one year).

Important Notes: The decrease in the weight of garbage set out is consistent with the decrease in municipal garbage tonnage data. The decrease in the weight of recycling set out is contradictory to the increase in municipal recycling tonnage data. Possible reasons for this contradiction include the inherent limitations of data samples, monthly fluctuations in material generated, and some residents opting to use the recycling depot during the summer months.

The dramatic decrease in garbage compared to the increase in recycling suggests that some of the garbage is being diverted by means other than recycling.

10.4 Program Impacts - Gap between the Increase in Recycling and the Decrease in Garbage

There was a significant gap between the increase of 6 tonnes in recycling and the decrease of 48 tonnes in garbage for the 8-week period in autumn of 2008 compared to the same timeframe in 2007. Some possible factors accounting for this gap are explained below and include:

- Slight increase in composting
- Increase in burning garbage
- Less glass in the recycling and garbage streams
- Economic uncertainty
- Decrease in disposal of HHW
- Other factors

Slight Increase in Composting: Municipal staff from Centre Hastings and Madoc Township did not receive many calls related to composting. This is already a common practice in rural areas; some residents let the organics decompose naturally on the land or feed the animals with it. There is no evidence suggesting there was a significant increase in composting. The composition of organics in the entire waste stream remained the same at 34% for both the 2007 and 2008 waste audits. Approximately two-thirds of both pre and post-program telephone survey respondents reported composting food-scrap; however, 14% of post-program respondents are composting more food scraps than before.¹⁸ Attendees of the public information sessions may have been encouraged to compost. Some of them questioned the practice of placing organics in the garbage and asked how to handle it – composting information was distributed at the session's display table.

Increase in Burning Garbage: This appears to be an unintended program effect and may have contributed to the significant drop in garbage tonnage, particularly for the rural areas. The telephone survey results indicate that the practice of burning garbage (all burning methods including woodstove, burn barrel, and fire pit) increased by almost one third (from 43% to 56%) after the clear bag program started. Most of this increase can be attributed to burn barrel usage. In addition, the municipalities received some complaints about residents burning garbage shortly after enforcement started. This practice may be one of the reasons why recycling tonnage collected in 2008 from the rural areas (Huntingdon Township and Madoc Township) increased by only 2% compared to 22% from the main settlement (Village of Madoc).

¹⁸ An additional 5% reported that they started to compost food scraps and 5% stated they had stopped.

The burning of garbage is not a new issue¹⁹ and municipalities intending to start a clear bag program should be prepared to address it. Like the case in Centre Hastings and Madoc Township, an increase in the burning of garbage was experienced in Richmond County, Cape Breton Region of Nova Scotia. Paul Parry, Inspector and Educator for the County, shared that improved enforcement with ongoing education is necessary to motivate people to stop.

Less Glass in the Recycling and Garbage Streams: There was a significant decrease in coloured glass set out in mid-September 2008 compared to the same for 2007, based on the results from the waste audit. The total quantity of coloured glass set out in recycling decreased by 89% from 2.88 kg in 2007 to 0.31 kg in 2008 – for the overall sample group of 30 households. No coloured glass was set out as garbage in 2008 compared to 1.09 kg set out in 2007. Until 2008, there were no major fluctuations in the amount of glass collected by QWS for its service area of 9 municipalities including Centre Hastings and Madoc Township²⁰; coloured glass decreased by 185 tonnes from 2007 to 2008.²¹ This 25% decrease may be partly due to Ontario's deposit return system for wine and spirits containers. Although this deposit-return program started Feb. 5, 2007, participation was higher when it entered the second year, as people learned about the new system and had time to adjust their habits to fully participate.²²

Economic Uncertainties: The economic downturn could have contributed to the dramatic decrease in the amount of garbage disposed; however, control data from nearby municipalities showed there were no major decreases in the garbage tonnage data collected for 2008 compared to 2007.²³ This suggests that the economic downturn may not have been a significant factor.

Decrease in Curbside Disposal of HHW: The waste audit revealed a 66% decrease in the disposal of HHW at curbside (in garbage and/or recycling), and the composition of it in the entire waste stream decreased by 47%. HHW forms less than 1% by weight of the entire waste stream²⁴, so the decrease may account for only a small portion of the decrease in garbage. Thirteen percent of the post-program telephone survey respondents reported disposing less HHW in the garbage.

Other Factors Considered: The following factors were considered and deemed to be insignificant.

Backyard Dumping – People feared that backyard dumping would become a major problem. Both municipalities reported that there was no increase in backyard dumping of garbage after the program started.

Private Collection – Residents could have opted for private collection if they did not want to participate; however, both municipalities stated that this did not occur. There is little incentive to do so because all garbage disposed in the landfill has to be in clear bags, so residents would still have to use clear bags if they hired a private collector (unless the garbage was disposed elsewhere). Residents already pay for municipal curbside collection through their taxes, so it does not make sense financially to pay for a private hauler.

¹⁹ A 2001 Environics survey on the garbage disposal habits of Ontarians residing in rural areas and small villages, towns, and cities, revealed that one-quarter burn their own garbage.

²⁰ Consultation with Rick Clow, General Manager of Quinte Waste Solutions.

²¹ Coloured glass collected by QWS decreased from 750 tonnes in 2007 to 565 tonnes in 2008. The composition of coloured glass in the waste stream by weight, decreased from 5.3% in 2007 to 4.5% in 2008.

²² The Beer Store. *Responsible Stewardship: The Next Piece 2007-2008*. The Beer Store, 2008. Page 20, Para.2

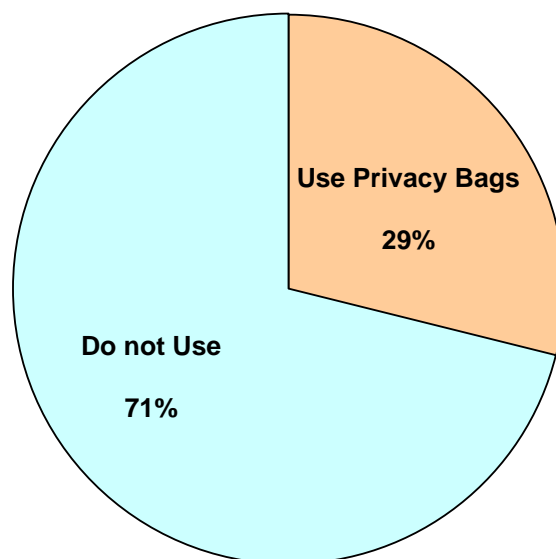
²³ Control data was collected from the following areas: City of Belleville, City of Quinte West, Prince Edward County, Township of Smith-Ennismore-Lakefield (part of the County of Peterborough), and City and County of Peterborough.

²⁴ This is according to the waste audit.

10.5 Program Impacts – Use of Privacy Bags

The background research on clear bag programs in Canada and the U.S. showed that one of the main public concerns was the issue of privacy. The use of privacy bags was less than anticipated in Madoc Township and Centre Hastings. Privacy bag usage was tracked for the curbside assessment conducted on 138 households in June and July 2008. Only one quarter of set-outs in June and less than one third of set-outs (29%) in July had privacy bags.

**Figure 14: Use of Privacy Bags in July 2008
(Based on Visual Curbside Assessment Results)**



10.6 Program Impacts – Brief Analysis of Waste Disposal Habits

The results of the post-program telephone survey indicate that the majority of people are now reflecting more on their overall waste disposal habits and trying to separate more items from garbage. This finding is reinforced by the increase in blue box diversion based on the municipal tonnage data, waste audits, and curbside assessments. Although almost all of the pre and post-program telephone survey respondents reported recycling, 45% of post-program respondents reported they are recycling more. Almost half of these respondents recycling more reported they were doing so to comply with the clear bag requirements. In addition to recycling, respondents reported trying to separate other items from the garbage - 14% reported composting more and 13% are disposing less HHW into the garbage now. The HHW telephone survey results are reinforced by the waste audit, which found a decrease in HHW in the garbage and recycling streams.²⁵

²⁵ The composting results from the telephone survey are not reinforced by the waste audit: the percent composition of organics in the total waste stream (garbage and recycling) remained the same for the waste audit. 34

10.7 Summary of Clear Bag Program Impacts

The results of this study indicate that the clear bag program had a positive impact on waste diversion. The key finding was the 12% increase in blue box diversion from 33% to 45%²⁶, based on the municipal recycling and garbage tonnage data. This is a notable improvement for a program that has been in place for 11 months, including 6 months of enforcement.

Most of the supplementary data points to a decrease in both the amount of material and number of garbage bags and blue boxes set out (there was a larger drop for garbage). The decrease in the amount of recycling set out contradicts the increase in municipal recycling tonnage collected. There could be any number of reasons for this contradiction (eg. inherent limitations in using data samples, monthly fluctuations in material generated, residents opting to use recycling depot during summer months etc.). Interestingly, the use of privacy bags was not as high as originally anticipated. Curbside data from the first two months of enforcement revealed that less than one third of garbage set-outs had privacy bags.

There was a major gap between the increase of 6 tonnes in recycling and the decrease of 48 tonnes in garbage for the 8-week period in autumn of 2008 compared to the same timeframe in 2007. It is also estimated that self-haul garbage to landfill dropped by 55%. Some of the factors that may have contributed to this gap are the increase in the burning of garbage, a possible slight increase in composting, and the decrease of glass and HHW in the recycling and garbage streams. The significant decrease in garbage disposed at curbside could be partially due to the increasing economic uncertainties; however, control data from nearby municipalities does not support this idea. There is no definitive answer to explain the entire gap. When looking at the history of other waste reduction programs in the local area, the dramatic decrease in garbage is not uncommon. For example, the City of Trenton experienced a 59% decrease in garbage after user pay was introduced Feb. 16, 1996.²⁷ Only part of this decrease could be explained.²⁸ The City of Belleville and Sidney Township experienced similar results after starting user pay programs.²⁹

Clear Bag Program - Impact on Costs for Centre Hastings and Madoc Township

The greatest cost saving is derived from extending the lifespan of the landfill, which is owned by both municipalities. The new estimate of the landfill's lifespan is 56 years, which is more than double the original lifespan estimate of 26 years (reported by the Municipality of Centre Hastings). More recycling has resulted in an estimated annual recycling cost increase of \$1094 for Madoc Township and \$3,344 for Centre Hastings.

The most important outcome is that Centre Hastings and Madoc Township achieved their program goals of decreasing material sent to landfill and improving recycling diversion. It is clear from the data analysis that people are reflecting more on their waste disposal habits.

²⁶ Centre Hastings' diversion rates are used because a) it forms the majority of the study area's population, and b) the diversion rates that include Madoc Township data are slightly inflated because depot recycling could not be separated from it.

²⁷ The weight of garbage going to landfill was an average of 59% less than the previous year for the first 5 months of the user pay program for Trenton. The number of garbage lifts per household per week decreased by 58% from 1.2 pre-user pay to 0.51 after the user pay program. Figures were obtained from a Quinte Waste Solutions document on selected extracts from reports concerned with user pay in the Quinte Area (refers to page 18 of 'Blue Box 2000:1995 and Interim '96 User Pay and page 13 of 'Blue Box 2000:1996 Final Report).

²⁸ Wright, Karen. *City of Trenton User Pay Garbage System Implementation – Final Report*. Foxboro, Ontario: Karyn Wright Enterprises, April 1996. Page 7, Para. 1.

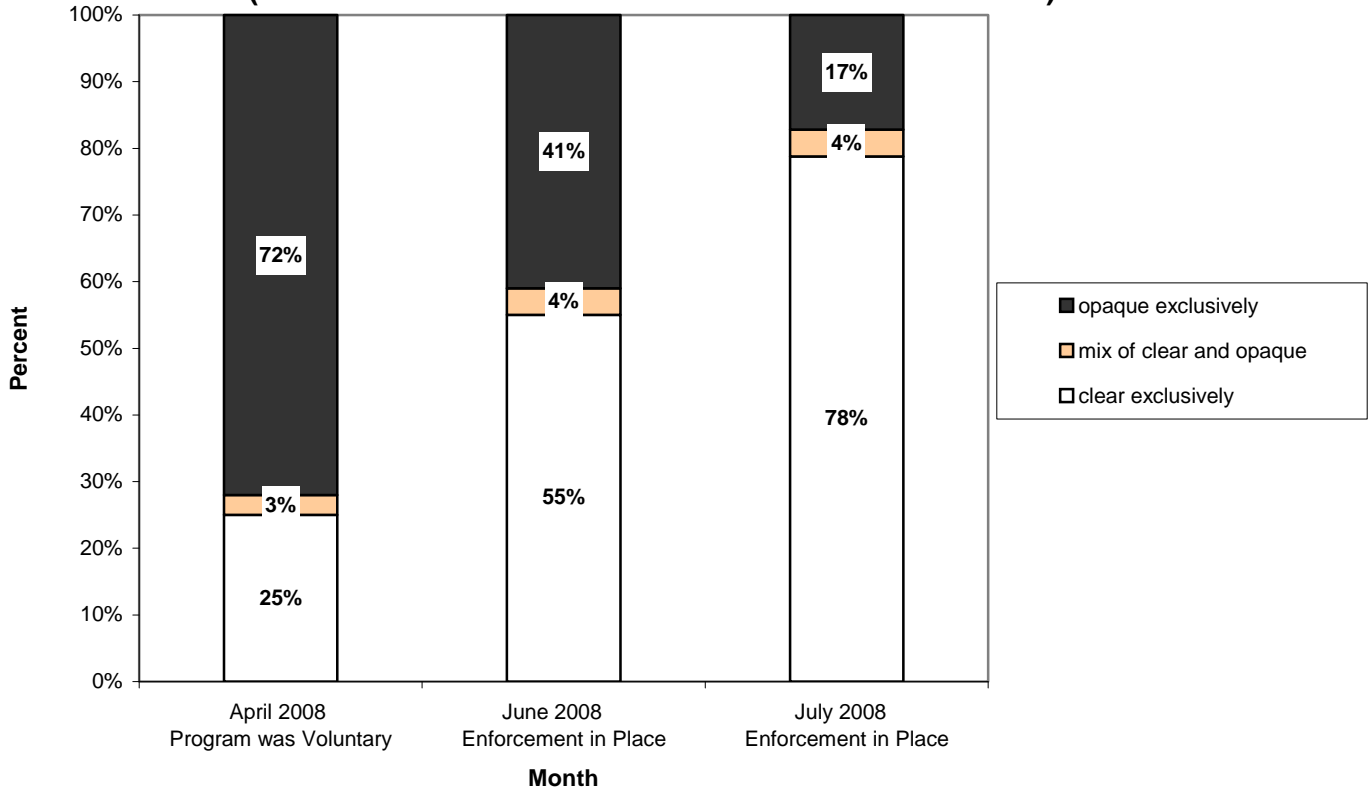
²⁹ The number of garbage lifts per household each week decreased by 51% for Belleville and 55% for Sidney Township – data based on QWS document in above footnote.

11.0 Program Participation - Voluntary Program Versus an Enforced Program

This study demonstrates that a clear bag program is most effective when enforced. During the voluntary program, less than one third of households set out clear bags exclusively. The majority of households participated once the clear bag program requirements were enforced in June 2008. Refer to the graph below for the results of the visual curbside assessment of approximately 138 households - the use of clear bags increased dramatically after enforcement started.

Figure 15

**Total Garbage Set-Outs using Clear Bags Exclusively - All Areas Combined
(As a Percent of Total Household Set-Outs each Month)**



One quarter of households set out clear bags exclusively in April before enforcement. Clear bag usage more than doubled once enforcement started in June. By July, 78% of the households were using clear bags exclusively. The post-program waste audit of 30 households conducted for 2 weeks in mid-September 2008 revealed that 97% of garbage bags collected were clear. It is evident that there is a co-relation between enforcement and increased participation in clear bag usage. Furthermore, the percent of non-compliant set outs with too many privacy bags decreased from 25% in June to 8% in July.

In addition to the data above, Madoc Township took the initiative to conduct garbage bag tallies. The tallies that occurred during the voluntary program showed that approximately one third of all bags set out were clear; however, there was 100% compliance with the clear bag requirement by November 2008 – see table 10.

Table 10: Garbage Bag Tallies in Madoc Township

	Voluntary Program		Enforcement
	All of Madoc Township Last 2 weeks in January 2008	Madoc Township – West Side Only April 14, 2008	Madoc Township - West Side Only Nov. 10, 2008
Total bags	693	411	288
# of clear bags	222	126	288
# of clear bags as a percent of total bags	32%	31%	100%
<i>Please note: A household (hh) participation tally was also conducted in the west side of Madoc Township on April 14, 2008. Of the 160 hh pick-ups in the tally, 32% of households set out clear bags only, 9% set out a mix of clear and opaque bags, and 59% set out non-clear bags only.</i>			

A significant portion of the total increase in blue box diversion (compared to the baseline rate) occurred during the voluntary phase of the program, yet the results above show that less than one third of households used clear bags during this phase (refer back to Figures 4 and 5 for a breakdown of blue box diversion rates for Madoc Township and Centre Hastings). This suggests that the increase in blue box diversion during the voluntary program was likely due to people adjusting their disposal habits to prepare for enforcement.

The clear bag usage results from this study demonstrate that clear bag requirements must be enforced in order to achieve maximum participation. The Town of Markham's clear bag pilot project experience echoes the same sentiments. Its voluntary program pilot of three months did not yield maximum participation, even though clear bags were provided to all households.³⁰ The importance of enforcement is also reflected in the background research of clear bags in North America (E&E Project 177), where clear bag requirements were enforced in all programs surveyed with municipal arranged curbside collection.

³⁰ The Town of Markham commenced a clear bag pilot study in the Fall of 2007. **Clear bags were supplied** to the two participating neighbourhoods of Johnsville Village (400 townhouse units representing middle income families in the younger to middle age demographic) and Swan Lake Village (300 single family residential community - middle to upper income and an older demographic). The percent of participating households in Johnsville Village and Swan Lake Village was 45% and 73% respectively.

12.0 How the Findings Compare to the Clear Bag Programs Surveyed in Nova Scotia

Nova Scotia serves as a leading example for the implementation of clear bag programs and has been diligent in tracking results for performance measurement. The table below compares the results of the Centre Hastings and Madoc Township study to the clear bag programs in Nova Scotia that were surveyed for the background research. The change in recycling tonnage is similar to the results experienced by Pictou County and the Counties of Yarmouth and Digby, which are displayed in the table below. The increase in blue box diversion and drop in garbage³¹ is closer to what the 13 Nova Scotia municipalities experienced after two years of program implementation.

Table 11: Clear Bag Program Results for Centre Hastings and Madoc Township Compared to the Nova Scotia Municipalities – Change in Tonnages Collected and the Blue Box Diversion Rate

	Centre Hastings and Madoc Township (11 months after program started January 2008, including 6 months of enforcement)	Counties of Yarmouth and Digby, Nova Scotia (one year after program started April 2007, including 9 months of enforcement)	Pictou County, Nova Scotia (one year after enforcement started in April 2006)	13 Municipalities in Nova Scotia (2 years of operation: April 2005 to April 2007)
Percent Change in Total Garbage Collected	- 34%	- 25%	- 22%	- 41%
Percent Change in Total Recycling Collected	+ 9%	+ 12%	+ 11%	+ 35%
Percent Change in Total Organics Collected	no organics collection	+ 24%	+ 12%	+ 38%
Percentage Point Change in Blue Box Diversion	+ 12%	+ 4%	+ 4%	+ 10%

13.0 Lessons Learned

Six major lessons were learned from the study of Centre Hastings' and Madoc Township's clear bag program.

1. *It is important to build in time to provide opportunities for public input before undertaking any major policy or program changes.*

Providing opportunities for public input is a crucial step for achieving public acceptance of the program. If the public were consulted well before the program started, the public's concerns and needs could have been addressed in advance. This proactive approach would have allowed for a smoother implementation process. Many residents felt that the program was being forced on them because of the short notice and

³¹ The waste audit revealed a 41% drop in garbage, and self-haul garbage dropped off at the landfill by residents from Madoc Township and Centre Hastings is estimated to have decreased by 55%. 38

the lack of opportunity for public input. While it is important to consult the public, it should be noted that many Canadian clear bag programs surveyed did not have a formal public consultation process but enough notice was provided so people had time to provide input in various forms.

2. *It is crucial to provide residents with sufficient notice of the clear bag program to allow them to plan and make the transition.*

The clear bag program was officially announced to the public one month before it started. It was evident from the public reaction that more time was needed to make the transition. Residents needed time to use up their solid coloured bags, obtain clear bags, become educated on the process, and make any necessary adjustments so they could fully participate in the program. The municipalities responded by postponing the February enforcement date to June. This provided more time to disseminate the necessary information before enforcement.

3. *Direct Mail is an effective strategy to build public awareness of the clear bag program before it starts.*

Residents should receive clear bag program and recycling information by direct mail in addition to other promotional venues. Newspaper/radio ads and public information sessions are effective but they do not reach everyone. In response to public comments at the information sessions, both municipalities agreed to send clear bag program and recycling information by direct mail prior to the new enforcement date.

4. *The increased presence of councilors advocating the municipality's program enhances program credibility.*

There was significant public opposition to the program at the first public information session because the public wanted more presence from the councilors. QWS presented at the session and answered most of the questions – only one councilor attended to speak about the program. For the next public information session, all of the municipal councilors attended and the Reeve addressed the public. The increased presence of councilors conveyed the message that this was an important program that had the support of council and would benefit residents and the entire municipality. The more presence that a municipality has in advocating the change, the more it helps in engaging the public and enhancing program credibility. People are receptive to this straightforward and upfront approach.

5. *There should be a coordinated effort among staff from the garbage and waste reduction programs; however, it is important to be clear that only the garbage program is changing.*

It can be difficult to implement a program when two separate entities are involved. In this case, Centre Hastings and Madoc Township were responsible for the clear bag garbage program and QWS operated the recycling program. When implementing a public outreach campaign, it is important to be upfront about who is responsible for the clear bag program and to emphasize that the only change is to the garbage program. In retrospect, it was not appropriate to start a media or public information session with QWS presenting the municipality's new program requirements. It gave the impression that QWS was in charge of the clear bag program and/or that the recycling program had also changed, resulting in more public enquiries.

6. *Public Consultation and Information Sessions Should be Separate Events*

It was evident from the first two public information sessions that the program was not fully accepted by the public. Delivering a presentation on recycling and how to set out garbage to comply with program requirements, before addressing the public's larger concerns was like putting the 'cart before the horse'. The public information sessions were lengthy as a result. It would be more effective to develop a separate workshop on these matters, based on the information needs identified from the public meetings.

14.0 Concluding Remarks and Recommendations

The key finding from this study was that clear bag requirements have a positive impact on diversion. Centre Hastings and Madoc Township achieved a dramatic reduction in material sent to landfill and a 12% increase in the blue box diversion rate from 33% to 45%³² over the first 11 months of the program, including 6 months of enforcement. From a program implementation perspective, this study demonstrated the importance of enforcement in achieving maximum participation and providing sufficient time for all stakeholders to make the transition.

Potential Impacts on other Waste Programs in the Quinte Region: It is difficult to estimate what impact clear bag requirements would have if they were implemented in the seven other municipalities serviced by Quinte Waste Solutions because unlike Madoc Township and Centre Hastings, these municipalities have full user pay programs. A clear bag program should have a positive impact on diversion for these municipalities but not likely to the extent experienced by Madoc Township and Centre Hastings. Even if an increase in blue box diversion is not reached, a clear bag requirement is beneficial because it supports the health and safety of the collectors, who can more easily screen bags for safety hazards. It serves as a complementary tool to the user pay program and could be used to encourage compliance with the waste program regulations including the proper disposal of household hazardous waste, and organics if a mandatory source separation program is introduced. Although this study focused on blue box diversion specifically, it is reasonable to conclude that the use of clear bag requirements is a key step to enhance any waste reduction initiative.

Recommendations for Other Municipalities Planning a Clear Bag Program

Based on the experience in Centre Hastings and Madoc Township, the following recommendations are made for other municipalities planning a clear bag program.

1. **Sufficient notice should be provided to all stakeholders including the public, retailers, municipal staff, haulers, and attendants at waste collection sites:** 6 months to one year's notice should be provided at a **minimum**. More than a year's notice is ideal especially if the program includes IC&I organizations, which typically purchase large quantities of bags. Some retail stores need more time to change because the purchasing is done at the corporate level.
2. **Provide opportunities for public input:** Seek public input well in advance of the program start date. Consulting the public and addressing concerns beforehand will help generate public support for the change and allow for a smoother implementation process.
3. **Use various channels to maximize public outreach:** Information should be disseminated through a variety of channels such as radio, newspapers, direct mail, web sites etc. If the recycling program has not changed – this must be emphasized to avoid misunderstandings.

³² Centre Hastings' diversion rates are used because a) it forms the majority of the study area's population, and b) the diversion rates that include Madoc Township data are slightly inflated because depot recycling could not be separated from it. 40

4. **Inform all program recipients by addressed direct mail well in advance of the program start date:** Newspaper, radio, and Internet promotion and education campaigns are effective but do not reach everyone. The clear bag program requirements should be communicated directly through letter mail to help ensure that residents are fully informed.
5. **Develop a public workshop devoted solely to reviewing the clear bag program requirements and relevant programs such as recycling to address any questions or misunderstandings:** This should be done after receiving public input and achieving public acceptance of the program.
6. **Consult waste collectors when developing the program to help create a realistic enforcement process that works:** Participate in ride-alongs with waste collectors to develop a better understanding of the collection process. This will assist in creating an effective yet efficient enforcement process.
7. **Seek support from front-line staff and educate them on the value of the program and its requirements:** Municipal staff and waste collectors are influential in promoting the program because of their direct interactions with the public. Education is essential to help office staff and waste collectors understand the importance of clear bag requirements, so they can convey this message to the public. Share other municipal successes, so staff knows this is a 'tried and true' program that works. Provide education in some form including information sessions and reference materials that staff can use on the job. Review the recycling program with staff to ensure they are aware of what items are acceptable in the blue box and the clear bag.
8. **Inform retailers selling garbage bags:** It is important to identify the shopping patterns of residents to ensure all relevant retailers are informed (this could include retailers from neighbouring communities). Send program information to the retailers and ensure the relevant managers/staff receive it.
9. **Be persistent with retailers to ensure there is a sufficient and consistent supply of clear bags:** Follow-up with the retailers several times – seek confirmation of their commitment. In person meetings are the most effective in encouraging cooperation.
10. **Ensure there is an adequate supply of clear kitchen catcher bags in the marketplace:** Be prepared for a demand in clear kitchen catcher bags from residents who prefer to tie and toss them into the garbage (the new requirement does not permit opaque bags full of garbage to be placed in the clear bag).
11. **Consider stepping in and selling clear bags during the initial transition:** Even though some retailers made great efforts to stock enough clear bags, there was still an inconsistent supply of clear bags.

12. **A bag exchange program is recommended if residents do not have sufficient time to use up non-clear bags:** This will help eliminate some public frustrations. Even if sufficient notice is provided, be prepared to address special cases where a resident or organization purchased a high volume of bags before being aware of the program.
13. **Be prepared to address privacy concerns:** In the case of Centre Hastings and Madoc Township, privacy concerns never became a dominant issue, however, the municipalities were prepared to respond to such concerns.
14. **Be prepared to offer exemptions to the size/number of privacy bags for special cases and have an application procedure in place for such exemptions:** Exemptions are usually not necessary for cases where baby diapers or feminine hygiene products are disposed.
15. **Participation rates are higher when the program is mandatory:** No more than one third of households used clear bags when the program was voluntary but the vast majority switched to clear bags when the program was enforced.
16. **Waste reduction staff should participate periodically in ride-alongs (shadowing) with waste collectors to share information, reinforce each other's roles, and help ensure consistency in enforcement:** This requires additional staff time but it is worthwhile to do because it is an effective way to determine if the program is being enforced properly.
17. **Increased visibility of elected officials in supporting the program enhances program credibility:** The elected officials should send the message that they strongly believe in the program for the betterment of their community by actively engaging the media (eg. media interviews and photo opportunities) and having a strong presence at public sessions.
18. **Municipal staff should be prepared to address possible garbage dumping issues - please note that Centre Hastings and Madoc Township did not report any increases in garbage dumping:** The background research on clear bag programs in Canada and the U.S. indicated that this was not a major issue and any such activities were short-lived.
19. **Consider implementing an education campaign on the environmental health impacts of burning garbage:** The study revealed that the burning of garbage appears to be an unintended impact of the clear bag program. Municipalities should consider organizing an education campaign to address this issue, especially if they are planning to introduce a clear bag program in the rural areas.