The Use of Clear Bags for Garbage as a Waste Diversion Strategy: Background Research on Clear Garbage Bag Programs across North America

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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.

Clear Bag Program: This term refers to a program that requires clear bags for garbage as a means to maximize waste diversion.

Clear Bag Communities: This term refers to all municipalities, counties, and regions that were surveyed as part of this study.

HHW: Household Hazardous Waste

IC&I: Industrial, Commercial, and Institutional

MRF: Materials Recovery Facility

PAYT: This is the acronym for 'pay as you throw'. It is synonymous with the 'User Pay' term as defined below, and was frequently used by the American survey participants.

User Pay: In the context of this report, user pay refers to the fee that must be paid for garbage disposed. Although the fee can be charged by weight, most of the examples in this report refer to a fee charged per bag (e.g. the fee paid for a 'bag tag' or a municipal branded garbage bag). In Ontario, user pay programs are considered a Best Practice for maximizing the capture of Blue Box material.

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Executive Summary

There is growing interest across Ontario and other parts of North America in the use of clear bags for garbage as a strategy to divert material from the waste stream. The purpose of this report is to identify and provide background research on clear bag programs in Canada and the United States with the aim to inform Ontario municipalities of its potential as a waste diversion strategy. It highlights the main elements of each program, the challenges faced, program impacts, lessons learned, and provides suggestions for other municipalities attempting to do the same. The research for this project was conducted by Quinte Waste Solutions and funded by Stewardship Ontario's Effectiveness and Efficiency Fund. The research was conducted in 2007 and is based on data collected from 25 survey respondents from Canada and the United States. This includes 22 respondents representing clear bag programs in current operation and 3 respondents representing jurisdictions that tried to propose, or terminated a clear bag program for garbage. Over 50 clear bag programs in current operation were found through this background research, including programs identified during the survey process and afterward. These programs are summarized in Table ES-1 and further information is provided in Tables ES-2, ES-3, and ES-4.

A 'clear bag' (CB) program refers to the use of a bag that is completely transparent or see-through. Some jurisdictions allow the use of tinted bags, however; this is not the case with most of the programs surveyed through this research. The use of clear bags for garbage supports waste diversion in several ways. First, people are motivated to recycle due to social pressure. They want to avoid public scrutiny such as neighbours taking notice if they do not recycle. Secondly, clear bags serve as a prompt. If people forget to separate recyclables from the garbage, they are constantly reminded by the 'clear bag' because they can view its contents. Clear bags also prompt people to reflect on their waste disposal habits and encourage them to consider waste diversion options. Lastly, using clear bags helps waste collectors monitor for compliance with existing waste management regulations.

Clear bag programs in the following jurisdictions were surveyed: Nova Scotia, Ontario, Prince Edward Island, Maine, New Hampshire, New York, Wisconsin, and Nebraska. Clear bag programs are rapidly spreading in Nova Scotia and are gradually appearing in Ontario. There were fourteen Ontario programs identified through this research.

According to all but one of the 22 survey respondents who participated in this study, clear bag requirements lead to increased recycling tonnage. The majority of survey respondents further report the clear bag program had a positive impact on overall waste management costs. In Canada, Nova Scotia is considered a leader in applying the concept. The Province has been very proactive in collecting data to track the results of their programs. These results reveal that the 13 Nova Scotia municipalities, which have had the program in place for two years (April 2005 to April 2007) experienced a 41% decrease in residential waste, a 35% increase in residential recycling, and a 38% increase in residential organics collection.[1]

The majority of jurisdictions with the most clear bag program activity have recycling by-laws and/or a landfill ban addressing recyclables in place. According to the findings from this research, implementing such instruments at the state/provincial level likely triggers the creation of innovative waste diversion programs such as clear bag requirements.

Several key issues must be considered before implementing a clear bag program. The main concern reported by the public was the issue of privacy. People were concerned about others being able to view

[1] Results are based on the total data collected for all thirteen municipalities.

the contents of their garbage. Privacy issues must be addressed before implementing a program. Most municipalities permit an opaque bag(s) of some sort, which is commonly referred to as a 'privacy bag'. Only three survey respondents reported that privacy bags are not permitted in their program (i.e. all garbage must be placed loosely in the clear bag). The insufficient supply of clear bags was the second most common concern. Retailers should be given sufficient notice to ensure that they have enough clear bag supplies to meet the demand. Some municipalities also sold clear bags to address the initial bag shortage. Likewise, sufficient notice must be given to the public to help them with the transition and to give them a chance to use up their solid coloured bags. The waste reduction coordinators in Nova Scotia recommend a minimum of six month's notice to help the public, retailers, and the municipality, make the transition.

Proper enforcement is a key element of clear bag programs. Non-compliant bags are rejected at curbside for all clear bag programs surveyed with municipal arranged curbside collection. With only one exception, all of these programs leave a sticker or tag informing the resident of the infraction. Enforcement should be supported by a mandatory recycling by-law. All Canadian respondents reported having a mandatory recycling by-law in place, as did 10 of the 13 American respondents. Allowing nesting of solid coloured/tinted bags of garbage in the clear bag defeats the purpose of the program. While this practice is common in the U.S., the majority of Canadian respondents (five out of nine) stated that this practice is not permitted.

This background research shows that clear bag requirements for garbage have a positive impact on waste diversion. Although the concept is fairly new to Ontario, it should be considered as a viable option for waste reduction programs. Even with automated cart-based systems, there is an opportunity to use clear bags for overflow materials, as demonstrated by Prince Edward Island's combined 'black cart and clear bag' collection program. Although changing the bag colour seems trivial, it is a worthwhile strategy, which should not be overlooked. The use of clear bags encourages people to separate their waste, and helps collectors monitor garbage for misplaced recyclables and other items banned from disposal. Most importantly, placing garbage in a clear bag prompts people to reflect on their waste disposal habits and encourages them to consider waste diversion options.

Table ES-1 provides an overview of all existing clear bag programs that were identified through this research project. Table ES-2 provides more details on the surveyed programs. Table ES-3 provides more details on the clear bag programs that did not participate in the survey or were identified after the survey was completed. Table ES-4 summarizes clear bag programs that have been discontinued.

Please note the following regarding Tables ES-1 to ES-4:

- 'NA' indicates that the information was not provided
- 'Nature of Clear Bag Program' refers to the type of clear bag program
  - Standard – refers to a typical program where residents may purchase any brand of clear bag (completely see-through or transparent). If tinted is also allowed, it will be specified in the table.
  - Municipal Branded Bag – refers to a clear bag that has the municipal logo and is provided and sold by the municipality. In all cases, a user (PAYT) fee has been incorporated into the price of the bag. If a bag contains another type of logo, it is specified in the table.
  - 'Other Waste Management Program Elements' refers to other relevant waste reduction programs
  - 'Recycling' - refers to a jurisdiction that has curbside collection of recycling.
  - 'Depot Recycling' - refers to a jurisdiction that only has recycling at a depot or waste site.

Table ES-1: Overview of Existing Clear Bag Programs

Municipality or Region	Pop.	Start Date	Type of Bag	Privacy Bag Allowed?	Included in Survey?
Ontario, Canada					
Municipality of Algonquin Highlands, Ontario	2,000	Jan. 2008	clear or tinted	yes	
Municipality of Bluewater – Bayfield Ward only, Ontario	1,000	March 2009	clear	yes	
Municipality of Central Huron (Ward 1 and 3 only), Ontario	7,800	March 2009	clear or tinted	yes	
Municipality of Centre Hastings, Ontario	4,386	June 2008	clear	yes	
Municipality of Dysart et al, Ontario	5,000	Sept. 2007	clear or tinted	yes	
Municipality of Highlands East, Ontario	2,700	Jan. 2008	clear	yes	
Municipality of Huron East (Seaforth Ward and Tuckersmith Ward only), Ontario	5,500	March 2009	clear or tinted	yes	
Town of Goderich, Ontario	7,500	March 2009	clear or tinted	yes	
Township of Algonquin Highlands, Ontario	2,000	Jan. 2008	clear or tinted	yes	
Township of Amaranth, Ontario	3,500	Jan. 2005	clear	yes	✓
Township of Ashfield-Colborne-Wawanosh (Colborne Ward only), Ontario	5,258	March 2009	clear or tinted	yes	
Township of East Luther Grand Valley, Ontario	2,526	Aug. 2004	clear	yes	✓
Township of Edwardsburgh Cardinal, Ontario	6,689	March 2002	clear municipal branded	yes	✓
Township of Galway-Cavendish & Harvey, Ontario	5,284	spring 1994	clear	no	✓
Township of Madoc, Ontario	1,940	June 2008	clear	yes	
Township of Minden Hills, Ontario	5,500	Jan. 2008	clear	yes	
Township of Rideau Lakes, Ontario	10,500	1998	clear	yes	
Township of Stone Mills, Ontario	6,956	Jan. 2008	clear municipal branded	yes	
Township of Wollaston, Ontario	730	Sept. 2007	clear	yes	
Village of Lucknow, Ontario	1,100	March 2009	clear or tinted	yes	
City of Guelph, Ontario	115,000	March 2003	clear	no	✓
Rest of Canada					
Region 2A (Counties of Antigonish and Guysborough), Nova Scotia	29,290	Oct 05 to Mar 07	clear	yes	✓
Region 2B (Eastern Sub-Region – Pictou County), Nova Scotia	49,000	Jan. 2006	clear	yes	✓
Region 7 (Western Region – Counties of Yarmouth and Digby), Nova Scotia	45,007	April 2007	clear	yes	✓

Municipality or Region	Pop.	Start Date	Type of Bag	Privacy Bag Allowed?	Included in Survey?
Province of Nova Scotia (33 of the 55 municipal units have clear bag programs – including the 3 regions stated above)	Province: 940,000	earliest started in 2002	clear	may be allowed – depending on municipality	
Province of Prince Edward Island	138,000	2002	clear	yes	✓
United States					
Town of Antrim, New Hampshire	2,600	2007	clear or tinted	yes	
Machias Region, Maine (towns of Machias, Marshfield, Roque Bluffs, Whitneyville)	3178	early 1990's	clear municipal branded	yes	
Town of Eliott, Maine	6,000	mid-1990's	clear	yes	
Town of North Berwick, Maine	5,000	July 2000	clear municipal branded	yes	✓
Towns of Norway and Paris, Maine	12,000	July 2001	clear	yes	✓
Town of Topsham, Maine	10,000 +	Spring 1993	clear municipal branded	yes	✓
Town of Nantucket, Massachusetts	11K- 70K	1996	clear	no	
Jefferson City, Missouri	40,000	1995	clear hauler branded	yes	
Omaha, Nebraska	417,456	April 1994	clear	yes	✓
Town of Bethlehem, New Hampshire	2,000	1996	clear municipal branded	yes	
Town of Lancaster, New Hampshire	3,000	late 1990's	clear municipal branded	yes	
Town of Littleton, New Hampshire	6,000	July 1993	clear municipal branded	yes	
Town of Milton, New Hampshire	5,000	1993	clear or tinted	yes	
Town of Troy, New Hampshire	1,980	July 2000	clear municipal branded	yes	✓
Town of Whitefield, New Hampshire	2,038	2003	clear municipal branded	yes	
Allegany County, New York	50,000	mid-1990's	clear or tinted	yes	
Chenango County, New York	55,000	1994	clear or tinted	yes	
City of Courtland, New York	20, 000	1992	tinted blue municipal branded	yes	
City of Newburgh, New York	28,259	Oct. 2005	clear	yes	✓
Fulton County, New York	55,073	1993	clear or tinted	yes	✓
Village of Hamburg, New York	11,000	2000	clear or tinted	yes	✓
Village of Homer, New York	3,478	1990	clear	yes	✓
City of Fennimore, Wisconsin	2,367	1989	clear	yes	✓
City of Marshfield, Wisconsin	19,000	1993	clear or tinted	yes	
City of Sheboygan Falls, Wisconsin	7,300	Nov. 1989	clear	yes	✓
Columbia County, Wisconsin	55,000	1990	clear	yes	✓
Oconto County, Wisconsin	38,000	Jan. 1995	clear or tinted	yes	✓
Village of West Salem, Wisconsin	4,731	N/A	clear	N/A	

Table ES-2: Summary of the 22 Clear Bag Programs in North America that were Surveyed

Table ES-2							
Municipality or Region	**Population**	**Start Date**	**Nature of Clear Bag Program**	**Program Recipients (SF/MF)**	**Small non-clear bags or 'Privacy Bags' allowed inside clear bag?**	**Other Waste Management Program Elements**	**Main Reason for Program Implementation**
CANADA							
City of Guelph, Ontario	115,000	March 2003	standard	single	no	• recycling • organics • mandatory recycling by-law	• boost recycling • increase organics collection
Township of Amaranth, Ontario	3,500	January 1, 2005	standard	single	yes	• recycling • organics • mandatory recycling by-law	• boost recycling • improve disposal of HHW
Township of East Luther Grand Valley, Ontario	2,526	August 2004	standard	both	yes	• recycling • organics • partial PAYT (2 free bags) • mandatory recycling by-law	• boost recycling • increase organics collection • improve disposal of HHW • concern over landfill space
Township of Edwardsburgh Cardinal, Ontario	6,689	March 2002	municipal branded	both	yes	• recycling • PAYT • bag limits • mandatory recycling by-law	• boost recycling • concern over landfill space
Township of Galway-Cavendish and Harvey, Ontario	5,284	spring 1994	standard	both	no	• depot recycling • mandatory recycling by-law	• boost recycling • one landfill site would not receive Certificate of Approval for extension unless recycling increased
Region 2A (Counties of Antigonish and Guysborough), Nova Scotia	29,290	October 2005 to March 2007 depending on the municipality	standard	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	• recycling • organics • bag limits • mandatory recycling by-law • province-wide landfill ban on recyclables and organics	• boost recycling • increase organics collection

Table ES-2

Municipality or Region	Population	Start Date	Nature of Clear Bag Program	Program Recipients (SF/MF)	Small non-clear bags or 'Privacy Bags' allowed inside clear bag?	Other Waste Management Program Elements	Main Reason for Program Implementation
Region 2B (Eastern Sub-Region – Pictou County), Nova Scotia	49,000	January 2, 2006	standard	both	one regular size opaque garbage bag for personal items is allowed per collection	• recycling • organics • bag limits • mandatory recycling by-law • province-wide landfill ban on recycling and organics	• boost recycling • increase organics collection
Region 7 (Western Region – Counties of Yarmouth and Digby), Nova Scotia	45,007	April 2007	standard	both	one regular size opaque garbage bag for personal items is allowed per collection	• recycling • organics • bag limits • mandatory recycling & organics by-law • province-wide landfill ban on recycling and organics	• boost recycling • increase organics collection
Province of Prince Edward Island	138,000	2002	standard	both	yes - must be left untied	• recycling • organics • mandatory source separation (organics and recycling)	• boost recycling • increase organics collection
UNITED STATES							
Norway and Paris, Maine	12,000	July 20, 2001	standard	both	yes	• recycling • PAYT • mandatory recycling by-law	• boost recycling • proper disposal of HHW • to monitor product going to incinerator
Town of North Berwick, Maine	5,000	July 2000	municipal branded	both	yes	• depot recycling • PAYT	• boost recycling • reduce solid waste costs
Town of Topsham, Maine	10,000 +	spring 1993	municipal branded	both	yes	• depot recycling • PAYT • mandatory recycling by-law	• boost recycling • increase backyard residential composting • landfill closed
Omaha, Nebraska	417,456	April 1994	standard	single	yes	• recycling • bag limits	Compliance with state-wide ban on disposing yard waste in landfill

Table ES-2

Municipality or Region	Population	Start Date	Nature of Clear Bag Program	Program Recipients (SF/MF)	Small non-clear bags or 'Privacy Bags' allowed inside clear bag?	Other Waste Management Program Elements	Main Reason for Program Implementation
Town of Troy, New Hampshire	1,980	July 2000	municipal branded	both	yes	• depot recycling • PAYT	boost recycling
City of Newburgh, New York	28,259	October 15, 2005	standard	both	yes	• recycling • bag limits • mandatory recycling by-law	• boost recycling • increase organics collection • landfill cost concerns
Fulton County, New York	55,073	1993	standard (also allow tinted bags)	both	yes	• recycling • mandatory recycling by-law	boost recycling
Village of Hamburg, New York	11,000	2000	standard (also allow tinted bags)	both	yes	• recycling • organics • mandatory recycling by-law	• boost recycling • concerns over landfill space and costs
Village of Homer, New York	3,478	1990	standard	multi	yes	• recycling • bag limits • mandatory recycling by-law	• boost recycling • concerns over landfill costs and space
City of Fennimore, Wisconsin	2,367	1989	standard	both	yes	• recycling • organics • mandatory recycling	• boost recycling • concern over landfill costs
City of Sheboygan Falls, Wisconsin	7,300	November 6, 1989	standard	both	yes	• recycling • mandatory recycling by-law	• boost recycling • increase organics collection and backyard residential composting • proper disposal of HHW • concern over landfill costs
Columbia County, Wisconsin	55,000	1990	standard	both	yes	• recycling • mandatory recycling by-law	• boost recycling • concern over landfill costs
Oconto County, Wisconsin	38,000	January 1995	standard (also allow tinted depending on mun.)	both	yes	• recycling • mandatory recycling by-law	• boost recycling • landfill space & cost concerns

Table ES-3: Summary of 34 Clear Bag Programs in North America that were not Included in Survey

Table ES-3							
Municipality or Region	**Population**	**Start Date**	**Nature of Clear Bag Program**	**Program Recipients (SF/MF)**	**Small Non-Clear Bags or 'Privacy Bags' allowed within Clear Bag?**	**Other Waste Management Program Elements**	**Main Reason for Program Implementation**
Municipality of Algonquin Highlands, Ontario	2,000	Jan. 2008	standard (also allow tinted bags)	both	yes	• depot recycling • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space and costs
Municipality of Bluewater – Bayfield Ward only, Ontario	1,000	March 2009	standard	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	• recycling • PAYT	concern over landfill space and lifespan.
Municipality of Central Huron (Ward 1 and 3 only), Ontario	7,800	March 2009	standard (also allow tinted bags)	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	recycling	• boost recycling • concern over landfill space • proper disposal of HHW
Municipality of Centre Hastings, Ontario	4,386	June 2, 2008	standard	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	• recycling • bag limits	• boost recycling • concern over landfill space
Municipality of Dysart et al, Ontario	5,000	Sept. 2007	standard (also allow tinted bags)	both	yes	• depot recycling • mandatory recycling by-law	• boost recycling • concern over landfill space and costs
Municipality of Highlands East, Ontario	2,700	Jan. 2008	standard	both	yes	• recycling • mandatory recycling by-law	• boost recycling • concern over landfill space and costs
Municipality of Huron East (Seaforth Ward and Tuckersmith Ward only), Ontario	5,500	March 2009	standard (also allow tinted bags)	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	• recycling • PAYT • mandatory recycling by-law	• boost recycling • concern over landfill space
Town of Goderich, Ontario	7,500	March 2009	standard (also allow tinted bags)	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	• recycling • bag limits • PAYT	• boost recycling • proper disposal of HHW • concern over landfill space and costs. • improve worker safety
Township of Algonquin Highlands, Ontario	2,000	Jan. 2008	standard (also allow tinted bags)	both	yes	• depot recycling • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space and costs

Table ES-3

Municipality or Region	Population	Start Date	Nature of Clear Bag Program	Program Recipients (SF/MF)	Small Non-Clear Bags or 'Privacy Bags' allowed within Clear Bag?	Other Waste Management Program Elements	Main Reason for Program Implementation
Township of Ashfield-Colborne-Wawanosh (Colborne Ward only), Ontario	5,258 (for entire township)	March 1, 2009	standard (also allow tinted bags)	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	• recycling • PAYT	boost recycling
Township of Madoc, Ontario	1,940	June 2, 2008	standard	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	• recycling • bag limits	• boost recycling • concern over landfill space
Township of Minden Hills, Ontario	5,500	Jan. 2008	standard	both	yes	• depot recycling • mandatory recycling by-law • partial PAYT	• boost recycling • to support enforcement of mandatory recycling by-law • concern over landfill space
Township of Rideau Lakes, Ontario	10,500	1998	standard	both	yes	• recycling • organics depot • bag limit • PAYT • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space and costs
Township of Stone Mills, Ontario	6,956	Jan. 2008	municipal branded bag	both	1 small privacy bag per clear bag	• recycling • mandatory recycling by-law • PAYT	• boost recycling • to support enforcement of mandatory recycling by-law • concern over landfill space and costs
Township of Wollaston, Ontario	730	Sept. 2007	standard	both	yes	• depot recycling • mandatory recycling by-law	• boost recycling • to support enforcement of mandatory recycling by-law • concern over landfill space
Village of Lucknow, Ontario	1,100	March 2009	standard (also allow tinted bags)	both	1 privacy bag per clear bag (no larger than 20 by 22 inches)	• recycling • PAYT • mandatory recycling by-law	• concern over landfill space and lifespan • boost recycling • proper disposal HHW

Table ES-3

Municipality or Region	Population	Start Date	Nature of Clear Bag Program	Program Recipients (SF/MF)	Small Non-Clear Bags or 'Privacy Bags' allowed within Clear Bag?	Other Waste Management Program Elements	Main Reason for Program Implementation
Nova Scotia (33 of the 55 municipal units have clear bag programs – 3 regions were included in the survey)	Population of Province: 940,000	earliest program started in Richmond County (Cape Breton) in 2002	standard	program applies to any residential material collected at curbside	privacy bag may be allowed – depending on municipality	• recycling • organics • disposal bans – recycling and organics • bag limits (varies depending on municipality)	• boost recycling • increase organics collection • meeting the spirit of disposal bans, fairness, concern for the environment
UNITED STATES							
Town of Antrim, New Hampshire	2,600	2007	standard (also allow tinted bags)	both	yes	• depot recycling • mandatory recycling by-law	• boost recycling • concern over landfill space and costs • concern over solid waste management costs • to support enforcement of mandatory recycling by-law • recycling revenue
Machias Region Transfer Station, Maine Town of Machias Town of Marshfield Town of Roque Bluffs Town of Whitneyville	 2,155 503 279 241	early 1990's	municipal branded bag - bags state the Bay Area Transfer Station and list the 4 towns included in program	both	yes	• depot recycling • PAYT	• boost recycling • proper disposal of HHW • concern over landfill costs
Town of Eliott, Maine	6,000	mid-1990's	standard	both	yes	• depot recycling • mandatory recycling by-law	• boost recycling • (recycling revenue) • to ensure compliance with mandatory recycling by-law • concern over landfill space and costs • concern over solid waste management costs

Table ES-3

Municipality or Region	Population	Start Date	Nature of Clear Bag Program	Program Recipients (SF/MF)	Small Non-Clear Bags or 'Privacy Bags' allowed within Clear Bag?	Other Waste Management Program Elements	Main Reason for Program Implementation
Town of Nantucket, Massachusetts	11,000 (70,000 in high season)	1996	standard	both	no	• depot recycling • depot organic collection • mandatory recycling by-law • biodegradable packaging by-law: anything packaged in Nantucket must be in biodegradable or compostable packaging (no Styrofoam cups or plates, plastic bags etc.)	• boost recycling • increase organics collection • proper disposal of HHW • concern over landfill space and costs
Jefferson City, Missouri	40,000	1995	hauler branded bag (company that does curbside garbage collection for city)	both (applies to 3 units or less for multi-family)	yes	• depot recycling (drop-off stations throughout the city and waste site) • PAYT	• boost recycling • proper disposal of HHW • concern over landfill space and costs • to comply with state-wide disposal ban on yard-waste
Town of Bethlehem, New Hampshire	2,000	1996	municipal branded bag	both	yes	• recycling • PAYT	• boost recycling • proper disposal of HHW • concern over landfill space and costs
Town of Lancaster, New Hampshire	3,000	late 1990's	municipal branded bag	both	yes	• recycling • bag limit • PAYT	• boost recycling • proper disposal of HHW • concern over solid waste management costs • concern over landfill space
Town of Littleton, New Hampshire	6,000	July 6, 1993	municipal branded bag	both	yes	• depot recycling • PAYT	• boost recycling • concern over landfill space and costs • "3 E's": Environment, Equity (everyone pays for their own garbage), Economics (save costs)

Table ES-3

Municipality or Region	Population	Start Date	Nature of Clear Bag Program	Program Recipients (SF/MF)	Small Non-Clear Bags or 'Privacy Bags' allowed within Clear Bag?	Other Waste Management Program Elements	Main Reason for Program Implementation
Town of Milton, New Hampshire	5,000	1993	standard (also allow tinted bags)	both	yes	• depot recycling • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over municipal solid waste costs
Town of Whitefield, New Hampshire	2,038	2003	municipal branded bag	both	yes	• depot recycling • PAYT • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space and costs
Allegany County, New York	50,000	mid-1990's	standard (also allow tinted bags)	both	yes	• recycling depot • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space and costs
Chenango County, New York	55,000	1994	standard (also allow tinted bags)	both	yes	• depot recycling • PAYT • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space and costs
City of Courtland, New York	20, 000	1992	municipal branded bag (tinted blue)	both	yes	• recycling • PAYT • mandatory recycling by-law • The landfill will charge private haulers triple the tipping fee if they do not enforce program requirements (the City hires a private company for waste collection).	• concern over landfill space and costs • equity – everyone pays for their own garbage
City of Marshfield, Wisconsin *Please note: The Village of West Salem, Wisconsin also has a clear bag program*	19,000	1993	standard (also allow tinted bags)	both (up to 4 units for multi-family)	yes	• recycling • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space and costs

Table ES-IV: Clear Bag Programs Discontinued

Table ES-IV Municipality or Region	Population	Start Date and Reason for Discontinuing	Nature of Clear Bag Program	Program Recipients	Small non-clear bags or 'Privacy Bags' allowed?	Other Waste Management Program Elements	Main Reason for Program Implementation
*** City of Worcester, Massachusetts	177,000	never implemented – decided to use yellow tinted bags in order to avoid more controversy (PAYT was being introduced at the same time)	municipal branded bag	both	NA	• recycling • PAYT	budget driven
Town of Walpole, New Hampshire	4,000	Clear bags started in the 1980's. In early 2000, they switched to yellow tinted bags because it is easy to distinguish from other bags. This helps to monitor for non-property owners that may try to dump garbage at the site.	municipal branded Note: It is difficult to see what is in the yellow tinted bag. The main purpose is to easily identify a PAYT bag, to ensure everyone is paying the user fee.	both	yes	• recycling • PAYT • mandatory recycling by-law (not enforced)	boost recycling
Columbia County, New York	63,000	• 1990 • duration: 6 months • program terminated due to public outcry over privacy issues	• municipal branded bag • switched to a municipal branded opaque (gray) bag	both	yes	• depot recycling • PAYT • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space and costs
City of Elmira, New York	30,000	• started in mid-1970's • terminated in 2005 when a private company purchased the landfill and 5 transfer stations from the county (the private company began accepting waste from other jurisdictions making enforcement difficult)	standard	both	no	• recycling • bag limits • mandatory recycling by-law	• boost recycling • proper disposal of HHW • concern over landfill space
Chittenden County, Vermont	152,000	a voluntary clear bag program for drop-off centres started in 1992 and was discontinued a couple of years later – see Special Cases section for details	county branded bag	both	NA	depot recycling PAYT	NA

Table ES-IV							
Municipality or Region	**Population**	**Start Date and Reason for Discontinuing**	**Nature of Clear Bag Program**	**Program Recipients**	**Small non-clear bags or 'Privacy Bags' allowed?**	**Other Waste Management Program Elements**	**Main Reason for Program Implementation**
*** City of Oak Creek, Wisconsin	32,200	started before 1997 and discontinued in 2000 – changed to an automated collection system	standard	both	yes	recycling	• boost recycling • concern over landfill space

******* Identifies programs surveyed though this project

1.0 Background

Quinte Waste Solutions investigated the use of clear bags for waste disposal as a means of increasing waste diversion. Municipalities with clear bag programs were identified across Canada and the United States and surveyed. Programs of this nature are not widespread in North America but the concept is growing in popularity, and is worth researching as a potential strategy for increasing recycling. This project is supported by Stewardship Ontario's Effectiveness and Efficiency Fund and Quinte Waste Solutions.

2.0 Scope and Methodology

Communities that implemented or experimented with clear bag programs were identified after an extensive search was conducted across the United States and Canada via various consultations with government and recycling organizations, and information requests sent on numerous list-serves and email lists in the Spring of 2007. In total, 44 organizations (including 12 Canadian and 32 American) were contacted and asked to complete a five page survey covered the following themes:

- Service Area and Population
- Waste Diversion Program Profile and By-Laws
- Clear Bag Program Specifics
- Public Feedback and Response
- Program Barriers and Unintended Side Effects
- Cost Impact
- Lessons Learned

Please refer to Appendix 1 for a sample of this survey. Alternative surveys were devised for municipalities that had terminated or tried to propose a clear bag program (refer to Appendices 2 and 3). Twenty-five surveys were completed, representing a 57% response rate. Twenty-two of these surveys were completed by participants (13 American and 9 Canadian) representing clear bag programs in operation. The remaining three surveys were completed by participants representing jurisdictions that tried to propose or terminated a clear bag program.

Other clear bag programs were identified after the survey process was completed. Over 50 existing programs, 5 discontinued programs, and 2 programs that never past the proposal stage, were found throughout the course of this research project. These programs are highlighted in the Executive Summary tables.

The jurisdictions that participated in the survey are listed on the next page.

Communities with Clear Bag Programs in Current Operation:

Canada

- Municipality of Guelph, Ontario
- Township of Amaranth, Ontario
- Township of East Luther Grand Valley, Ontario
- Township of Edwardsburgh Cardinal, Ontario
- Township of Galway-Cavendish and Harvey, Ontario
- Region 2A (Counties of Antigonish and Guysborough), Nova Scotia
- Region 2B (Pictou County), Nova Scotia
- Region 7 (Western Region – Counties of Yarmouth and Digby), Nova Scotia
- Province of Prince Edward Island

United States

- Norway and Paris, Maine
- Town of North Berwick, Maine
- Town of Topsham, Maine
- City of Omaha, Nebraska
- Town of Troy, New Hampshire
- City of Newburgh, New York
- Fulton County, New York
- Village of Hamburg, New York
- Village of Homer, New York
- City of Fennimore, Wisconsin
- City of Sheboygan Falls, Wisconsin
- Columbia County, Wisconsin
- Oconto County, Wisconsin

Community that Terminated a Clear Bag Program:
City of Oak Creek, Wisconsin

Communities that tried to Propose a Clear Bag Program:
Region of Durham, Ontario
City of Worcester, Massachusetts

Description of Clear Bag Program

The use of clear bags for garbage supports waste diversion in several ways:

- **Social Pressure:** People are motivated to recycle when using clear garbage bags due to social pressure. By nature, people want to demonstrate they are responsible and avoid the public scrutiny.

- **Clear Bags Serve as a Prompt:** If people forget to separate recyclables from the garbage, they are constantly reminded by the ‘clear bag’ because they can view everything inside of it. Clear bags also prompt people to reflect on their disposal habits and encourage them to consider waste diversion options.

- **Monitoring and Enforcement:** Using clear bags helps waste management staff monitor for recycling placed in garbage and enforce proper separation of materials.

3.0 Background Information on the 22 Clear Bag Communities Surveyed

A summary of background information on the clear bag communities surveyed is provided below. Additional information, including an overall waste diversion program profile of these communities, can be found in Appendix 4.

Population and Households

The majority of respondents (15 out of 22) represented clear bag programs currently operating in communities with a population under 39,000. This included 5 out of 9 Canadian respondents and 10 out of 13 American respondents. Half of the 22 clear bag communities had less than 5,000 households. The population of Canadian communities was evenly spread throughout the population categories ranging from the under 5,000 category to the 100,000 to 150,000 category. The clear bag community surveyed with the largest population was Omaha (417,456), Nebraska for the U.S., and the Province of Prince Edward Island (138,000) followed by the Municipality of Guelph (115,000) for Canada.

Scope of Program

All clear bag communities surveyed from Canada and 11 out of the 13 clear bag communities surveyed from the U.S. have full scale programs for all households. When asked what household type is served by the program, the majority reported both single family and multi-family households. Clear bag requirements apply to curbside pick-up of garbage for 18 clear bag communities and only to the rural depot or landfill for the rest. The IC&I sector is included in the program for the majority of Canadian and minority of American clear bag communities.

Garbage and Recycling Collection Arrangement and Ownership of MRF

The majority of respondents (15 out of 22) reported that garbage and recycling collection is arranged by the municipality. Half of these respondents reported that the municipality hires a private firm to do the collection and half reported that municipal staff is hired (in one case, both hiring arrangements were reported because the respondent represented more than one municipality). MRF ownership for the Canadian clear bag communities is evenly split between private and public. Most of the American clear bag communities have a publicly owned MRF.

Common Waste Diversion Program Elements

The majority of Canadian municipalities with clear bag programs also have curbside collection of organics and backyard compost programs. This is not the case in the American municipalities surveyed. All of the Canadian and most of the American survey respondents reported having a permanent HHW depot and or HHW collection events. Also, the majority of survey respondents have leaf and yard waste collection.

Waste Diversion Program By-Laws

All of the Canadian respondents and 10 out of 13 American respondents reported having mandatory recycling by-laws. This finding makes sense because such supporting by-laws serve as tools to encourage and enforce recycling. Pay-as-You-Throw (PAYT) Programs are not prevalent - only two respondents from Canada and five respondents from the U.S. reported having some form of PAYT in place. In these cases, the clear bag requirements are incorporated with PAYT as a complementary effort to boost recycling. It is also important to note that 8 out of the 22 clear bag communities were subject to provincial or state-wide regulations addressing recycling including mandatory recycling and landfill/disposal bans.

4.0 Provincial/State Level Initiatives Relevant to Clear Bag Programs

In total, 42 out of the 44 clear bag programs originally identified through this research are located in the Northeastern region of North America. It is therefore likely that the concept spread from the early adopters of the practice to other nearby jurisdictions. As stated previously, the 22 clear bag programs surveyed are from the following jurisdictions:

- Nova Scotia
- Ontario
- Prince Edward Island (hybrid version)
- New York
- Maine
- Nebraska
- Wisconsin
- New Hampshire

Several clear bag programs were identified in each jurisdiction, except for Nebraska where only one was found. The earliest of the clear bag programs surveyed started in 1989 in the cities of Fennimore and Sheboygan Falls, Wisconsin. The majority of the American programs surveyed started in 1995 or earlier, whereas, almost all of the programs surveyed in Canada started in 2000 or later.

The survey findings indicate that mandatory recycling by-laws and landfill/disposal bans addressing recyclables have spurred the creation of clear bag programs in certain areas. Out of the seven jurisdictions where most of the clear bag activity was identified, Nova Scotia, P.E.I., Wisconsin, and New York have laws stipulating mandatory recycling and/or a disposal ban on recycling. With the exception of Wisconsin, all of these places also have container deposit return-systems.[2] In Canada, the highest level of clear bag activity is found in Nova Scotia, where the concept is rapidly spreading across the province. Also, P.E.I. has a hybrid of the clear bag program (a cart based system where excess garbage must be placed in a maximum of two clear bags) and is the only state/provincial jurisdiction identified in North America where clear bag requirements are mandatory throughout the entire territory.

P.E.I. has province-wide mandatory source separation (recycling and organics) and Nova Scotia has disposal bans on organics and recyclables. Clear bag requirements were applied province-wide in P.E.I., only two years after recycling was mandated in 2000. The disposal bans addressing recycling in Nova Scotia became effective in 1995. Although the clear bag programs did not start until over a decade later, the disposal bans still served as a driver.[3]

In the United States, no state-wide information was available to determine whether clear bag programs were a growing trend. There is a state law in both Wisconsin and New York, which requires all municipalities to have mandatory recycling by-laws. Wisconsin takes it a step further by banning recyclables from landfill and stipulating that municipalities must enact local laws ensuring that banned materials stay out of the waste stream. Interestingly, five out of the eight survey participants from Wisconsin and New York indicated that their programs started around the same time as mandatory recycling.[4]

Based on this evidence, it is safe to assume that provincial/state level initiatives that encourage recycling lead to waste reduction initiatives such as clear bag programs at the municipal level. Given that Nova Scotia and P.E.I. have the most progressive waste diversion regulations of all jurisdictions

[2] Out of the three places that do not have mandatory recycling or a landfill/disposal ban addressing recycling, Maine is the only place that has a full scale container deposit return system. Ontario has a deposit-return system but it only applies to wine, beer, and spirit containers.
[3] Consultation with Bob Kenney, Solid Waste-Resource Analyst, Nova Scotia Environment, April 10, 2008.
[4] This includes 3 out of the 4 survey participants from Wisconsin and 2 out of the 4 survey participants from New York.

surveyed in this study, a snapshot of waste-related activities in these provinces is included below. Additional information on Ontario is also provided.

4.1 Nova Scotia

Nova Scotia serves as a leading example for clear bag programs. The Province has been very proactive in collecting data to determine the effectiveness of clear bag usage and the results indicate that it is a proven success for driving diversion. Data obtained for thirteen Nova Scotia municipalities indicate the following results[5] after two years of program implementation (April 2005 to April 2007):

- residential waste decreased by 41%[6]
- residential recycling increased by 35%
- residential organics collection increased by 38%[7]

The data was obtained from Nova Scotia's Provincial Datacall survey. The results over the two year period can be directly attributed to clear bag requirements because no organics collection programs started during this time-period. Also, the recycling statistics are not the result of capturing the 'low hanging fruit', as recycling programs were established in the mid to late 1990's.

According to Bob Kenney, Solid Waste-Resource Analyst with Nova Scotia Environment, waste diversion in the Province is driven by disposal bans, diversion credits, the deposit return system, an integrated waste management strategy, stricter waste disposal standards, metrics, stewardship, and research and development.[8] Disposal bans became effective in 1995 for recyclables[9] and compostable organic materials, among other items. Diversion credits provide an incentive to municipalities to maximize their diversion. In 2007, municipalities received approximately $26 per tonne of waste diverted[10]. The funding is derived from the Province's container return system, which is managed by the non-profit Resource Recovery Fund Board (RRFB). Half of the RRFB net revenues are provided to the municipalities for their recycling efforts and the other half is distributed to the seven provincial regions for approved waste diversion programs such as composting, education, and public awareness campaigns.[11]

These disposal bans and diversion credits lead to an integrated waste management strategy, which includes the implementation of recycling, composting, and clear bag programs, significant education investments, and municipal by-laws. Stricter waste disposal standards lead to higher waste disposal costs, and therefore more competitive waste diversion programs. Metrics including diversion rates, disposal rates, and comparative recycling, organic, waste collection, and processing rates are measured at regular intervals. These in turn inform the development of effective policy. The Province is indeed very active in collecting performance data for waste diversion programs and sharing it with municipalities. To some extent, this motivates municipalities to strive for continual improvement. Also, producers of items such as beverage containers are becoming more 'active stewards' of their products. Lastly, it is important to have research and development funding in order to identify collection and

[5] Total results for County of Richmond, District of West Hants, District of Guysborough, Pictou County (which has six municipal units), County of Antigonish, and the Towns of Antigonish, Canso, and Mulgrave.
[6] Residential waste refers to the waste collected at curbside. Small quantities of IC&I are collected curbside in some municipalities.
[7] This data does not include Antigonish County because they started clear bag requirements the same time as they rolled out the organics collection program.
[8] Consultation with Bob Kenney, Solid Waste-Resource Analyst, Nova Scotia Environment, April 10, 2008.
[9] Recyclables banned from disposal include beverage containers, corrugated cardboard, newsprint, glass food containers, steel/tin cans, and selected plastics.
[10] Consultation with Bob Kenney, Solid Waste-Resource Analyst, Nova Scotia Environment, April 10, 2008.
[11] Halifax Business Directory and Community Information , *Personal: Recycling at Bottle Depots.* Web Site Accessed on June 2008: http://www.foundlocally.com/halifax/Personal/GoodsRecycling.htm

recycling processes that maximize diversion and minimize costs, especially for difficult to divert materials.

As waste diversion continues to be driven by these and other factors, clear bag programs will continue to spread across the province as part of the solution. At present, 33 of the 55 municipal units in Nova Scotia have clear bag programs in place. The three respondents that participated in this survey indicated that provincial regulations - the ban on the disposal of recyclable and compostable items, and stricter waste disposal standards in particular - have driven them to use clear bags.

4.2 Prince Edward Island

Prince Edward Island has a container deposit-return system, mandatory source separation of recyclables and organics, and a hybrid version of the clear bag program. In 2000, mandatory recycling and curbside collection of recycling was introduced province-wide. However, it was impossible to enforce because the collectors could not view contents of opaque garbage bags. To alleviate this problem, clear bag requirements were introduced province-wide in 2002, with the last region making the transition in November of that year. At the same time, curbside collection of organics and mandatory separation of waste also extended across the province. The recycling tonnage collected for the Province doubled from the baseline year (from 7,161 tonnes in 2001 to 14,415 tonnes in 2003). This can be directly attributed to the clear bag requirements, which made the enforcement of recycling possible.

Each municipality provides residents with one 240 L green container for organics and one 240 L black container for garbage. Residents are allowed to use a maximum of two clear bags (or rigid containers) for any excess garbage and recycling must be placed in blue tinted bags. They are encouraged to place waste loosely in the containers/clear bags. If smaller non-clear bags (ex. grocery bags) full of waste are placed in a container/clear bag, these non-clear bags must not be tied. This is a province-wide program, which applies to all 138 000 residents (approximately 63 000 households) in both single and multi-family households, and to those commercial establishments that use plastic bags for garbage. The parties that were the most influential in driving this clear bag initiative were the Island Waste Management Corporation and the Government of PEI. Heather Myers, Disposal Manager for Island Waste Management Corporation, explains that the decision to use black containers is beneficial because it supports waste reduction and enforcement. Less garbage bags are used and the collection drivers are able to see inside the containers to ensure that recyclables/organic materials are not being disposed in the garbage.

4.3 Ontario

In Ontario, municipalities with a population of at least 5,000 are required to have a recycling program in place.[12] A Blue Box Program Plan was created by Waste Diversion Ontario[13] in 2003, to support recycling programs across the province. The Program is funded partly by industry stewards (the companies that introduce packaging and printed paper into Ontario's consumer market place) and partly by municipalities. Also, the Province has a deposit-return system for wine, beer, and spirit containers. Clear bag programs are much less prevalent in Ontario than in the two maritime jurisdictions described above. This is likely due to the fact that there are no provincial disposal bans for recyclables or organics in place or provincial regulations stipulating mandatory source separation.

[12] This applies to municipalities (with a population of 5,000 or more) that are served by a waste management system. This is according to the 3R's regulations of the Ontario Environmental Protection Act, which require that 3R activity (reduce, reuse, recycle) be done by some municipalities and IC&I sectors. The 3R's regulations apply to non-hazardous solid waste from residential and IC&I sources.

[13] Waste Diversion Ontario was created under the Waste Diversion Act.

5.0 Survey Findings

This section describes the results of the surveys, which are broken down by the following themes:

5.1 Required Methods for Placing Garbage in Clear Bags
5.2 Privacy Bags
5.3 Program Monitoring and Enforcement
5.4 Main Goals and Factors Driving the Clear Bag Program
5.5 Impacts of Clear Bag Program on Waste Diversion
5.6 Evidence of Program Impacts
5.7 Program Impacts from a Cost Perspective
5.8 Influential Groups, Individuals, Committees
5.9 Feedback from the Public
5.10 Level, Timing, and Triggers of Feedback
5.11 Public Relations
5.12 Consulting the Public
5.13 Program Barriers
5.14 Promotions, Education, and Public Outreach
5.15 Unintended Effects
5.16 Lessons Learned

Additional information is included in the Appendices. The main highlights of the survey findings are provided in the paragraph below.

Survey respondents indicated that the top two reasons for implementing a clear bag program were to increase the diversion of material from disposal, followed by improving the monitoring and enforcement of the waste diversion program requirements. The survey evidence demonstrates that clear bag requirements are an effective tool for enforcing recycling. All programs surveyed with municipal arranged curbside collection have monitoring for, and enforcement of clear bag requirements. Most programs reject non-compliant bags at curbside with a sticker explaining the infraction. Allowing opaque bags full of garbage to be placed in clear bags is standard practice in the United States. The majority of Canadian respondents indicated that this practice is not permitted because it is difficult to monitor for program compliance. Privacy issues were the main public concern. The main program barrier was the lack of clear bag supplies followed by social barriers such as negative attitudes. The majority of respondents reported an increase in recycling tonnage as a direct impact of the clear bag program. Most of the respondents reported that the clear bag program was beneficial from a cost perspective and had positive impacts on waste management costs. Overall, the results from the survey indicate that clear bag programs are an effective strategy for boosting recycling.

5.1 Required Methods for Placing Garbage in Clear Bags

According to the survey responses, there are two different types of 'Clear Bag' instructions conveyed to residents by municipalities:

Method 1: **All garbage must be placed loose in clear bags. Small opaque bags (ex. kitchen catchers or grocery bags) full of garbage cannot be placed inside the clear bags.** The majority of Canadian respondents (five out of nine) stated that they do not allow small opaque bags full of garbage to be placed in clear bags because this defeats the purpose of the program. Opaque bags (ex. kitchen catchers) full of garbage must be emptied into the clear bag. Conversely, in the United States, all but one respondent (City of Fennimore, Wisconsin) reported that small opaque bags full of refuse are allowed to be placed in the clear garbage bags.	

Method 2: **Small opaque bags (ex. kitchen catchers or grocery bags) full of garbage are permitted inside clear bags.** Four out of the nine Canadian respondents indicated that this was permitted. Out of these four, the respondent from P.E.I. is the only one that stated small opaque bags full of garbage must be untied if they are placed in a container or clear bag. Allowing small opaque bags full of garbage to be placed in clear garbage bags was a common practice in the United States.	

5.2 Privacy Bags

Some municipalities allow for privacy bags in order to address the issue of privacy, which is the most commonly-cited public concern. A privacy bag is an opaque bag where personal waste items considered private can be placed; the bag size permitted varies depending on the municipality. Seven out of the nine Canadian programs surveyed allow privacy bags of some sort – four of them allow an unlimited number of opaque bags full of garbage to be placed in clear bags and three permit the use of a privacy bag. These three programs are located in Nova Scotia, where two regions allow one regular size opaque garbage bag to be used per collection period and one region allows one small opaque kitchen catcher size bag to be placed in each clear bag. Only two of the nine Canadian programs surveyed, do not permit any 'privacy bags'. Both of these programs are located in Ontario and include the Municipality of Guelph and the Township of Galway-Cavendish and Harvey. Most American programs do allow for multiple 'privacy bags' as described in the section above, even though they do not formally reference the term.

5.3 Program Monitoring and Enforcement

Survey findings revealed that clear bag requirements were enforced in all of the programs with municipal arranged curbside collection. This is most likely due to the fact that all of the Canadian and most of the American municipalities surveyed had mandatory recycling by-laws. Non-compliant bags are left at the curb, along with a sticker or tag informing the resident of the infraction. Please refer to Appendix 5 for an example of the enforcement stages. In the case of those programs that do not have curbside collection, enforcement is carried out at the depot by the landfill attendant (clear bags are checked for recyclables and residents who bring solid bags must empty their contents in front of the attendant). Only two respondents reported not having any enforcement in place; both were depot programs in the United States.

According to Nicole Haverkort, Regional Coordinator for Antigonish and Guysborough counties in Nova Scotia, the clear bag program is beneficial from a cost perspective because it enhances compliance with the waste management program: "It is the single most important program to assist with program compliance as it makes it easy for the hauler to identify any problems and reject at the curb. The rejection results in a sticker being left on the bag that educates the person on their error to be fixed for the next collection".

P.E.I. Example – The Importance of Clear Bag Requirements in Enforcement
Clear bag requirements were implemented province-wide to help enforce an existing mandatory recycling requirement. Residents are allowed to place garbage loosely in a container and may use up to two clear bags for any excess garbage. Containers and clear bags with mixed contents are rejected at the curb by the collector, who leaves a tag indicating the reason for rejection. Also, an FYI tag will be left if collectors realize the contents are mixed after they dump a container in the truck. In the case that solid coloured bags arrive at the facility, the contractor hauler must pay a $15 penalty per bag. This makes the contractor hauler more accountable in monitoring for proper bags. The recycling tonnage collected for the Province more than doubled over the first year (2003) that the provincial-wide clear bag requirements were fully implemented. This example clearly demonstrates the difference between an enforceable recycling program and one that is not; and the key role that clear bag requirements play in enforcement.

5.4 Main Goals and Factors Driving the Clear Bag Program

Main Goals

The vast majority of respondents (17 out of 22) stated that the main goal is to increase the diversion of material from disposal. Improving the monitoring and enforcement of the waste diversion program was the second most stated goal (8 out of the 22 respondents). Please refer to Appendix 6 for a breakdown of all of the stated goals. All of the respondents stated that they had met their main clear bag program goals. The only exception was a respondent who indicated they had not reached their goal yet because 'it is an ongoing process'.

Main 'Drivers' Behind the Clear Bag Program

Respondents were asked to identify the main 'drivers' behind the clear bag program. With one exception, all survey respondents indicated that a main driver behind the clear bag program was the desire to boost recycling. Concern over landfill costs and/or space was also a common driver for both Canada and the U.S. Increasing organics collection was a common driver in Canada but not in the U.S. This is not surprising considering that seven out of the nine Canadian respondents reported having curbside collection of organics compared to only two out of the thirteen American respondents. Although the vast majority of respondents reported having HHW depots/collection events and leaf and yard waste collection, increasing HHW or leaf/yard waste collection was rarely reported as a major driver. Please refer to Appendix 7 for more information on the main drivers behind the clear bag program.

5.5 Impacts of Clear Bag Program on Waste Diversion

An overwhelming 21 out of the 22 survey respondents reported an increase in recycling tonnage as an impact of the clear bag program for garbage. The only exception was Omaha, Nebraska where recycling was introduced at the same time as clear bags, thereby making it difficult to attribute any changes in recycling tonnage to clear bags. The majority of survey respondents noticed a significant increase in recycling tonnage immediately after the program started.

In Canada, two thirds of respondents (six out of nine) identified an increase in organics collection as a program impact. The Town of Topsham, Maine, was the only program in the U.S. that reported an increase in organics, which is collected at the waste site. A small minority of respondents reported increases in backyard composting, HHW collection, or leaf and yard waste. Please refer to Appendix 8 for a detailed breakdown of program impacts identified by the survey respondents.

5.6 Evidence of Program Impacts

Survey participants were asked: "What statistics or other forms of evidence show that your clear garbage bag program has resulted or did not result in the increased diversion of material from landfill?"

Although 21 out of the 22 survey participants reported that the clear bag program had a positive impact on recycling tonnage collected, many of these respondents reported other contributing factors. While 7 out of 9 Canadian respondents and 4 out of 13 American respondents directly attribute increased recycling tonnage to their clear bag program, the remainder indicated other factors were at play. These factors include introducing clear bags simultaneously with other initiatives, including PAYT, a recycling program, curbside collection of recycling, or a bag limit. The evidence provided by survey respondents

is presented below and categorized according to results directly attributed to clear bag programs and results related to a number of factors including clear bag requirements.

5.6.1 Program Results Directly Attributable to Clear Bag Requirements

Township of Amaranth, Ontario

The program started on January 1, 2005 and was driven by concerns over landfill space and the desire to boost recycling and improve HHW collection. The main goal stated is to promote recycling. No other programs were introduced at the same time and increases in recycling tonnage collected and backyard residential composting were identified as program impacts. No data is available because garbage weights and recycling statistics are not tracked. Carry Homes, Deputy-Treasurer, asserts that although no figures can be offered, the program has definitely had a positive impact. A case in point is that the Township has not had to dig a new landfill cell as often as before.

Township of East Luther Grand Valley, Ontario

The landfill was closing on December 31, 2005 and the municipality had to devise a plan on how to manage the waste. Reducing garbage and increasing recycling are the main goals of the clear bag program, which started in August of 2004. The main driver behind the clear bag program initiative was the need to boost recycling and increase the collection of organics and household hazardous waste, as the municipality could no longer rely on the landfill. Although no recycling data was provided, the program impacts identified were increased recycling tonnage collected, and increased organics and leaf and yard waste collected. This can be directly attributed to clear bag requirements because no other programs were introduced at the same time. The recycling program was established in 1991 (approximately) and Grand Valley (the urban area) had an organics collection program after 2000.

The Municipality of Guelph, Ontario

Guelph's waste management program is unique in nature. Recycling collection commenced in 1992 followed by a Blue/Green system in 1996, where organics were placed in a green bag and garbage and recyclables were both placed in a blue bag. The recyclables were extracted from the garbage stream and sorted at the MRF. In 2003, a third 'clear bag' stream was added for garbage only. Now they have a blue/green/clear system, which required a $5 million capital investment to retrofit the MRF to process the additional stream. The main driver and goal behind the clear bag program is to ensure that recyclables or compostable materials are not lost to the waste stream. The decision to make this change was based on both projected cost savings and increased diversion. The new system entails an extra sorting step. Instead of the MRF separating the recyclables from the garbage stream, the residents must do the separating at source. Further to that, misplaced recyclables will be extracted from garbage, and recyclables and organics will be checked for contamination at the processing facility. Although the clear bag program has resulted in increased recycling and organics collection, consistent and reliable data was not available at the time of study. According to Jennifer Turnbull, former Waste Coordinator for the Municipality, the use of clear bags has raised people's awareness of what is going in the landfill, which leads to less waste generated by residents as a result.

Prince Edward Island (mandatory organics separation and curbside collection of organics were introduced at the same time but mandatory recycling had already started prior to clear bag requirements)

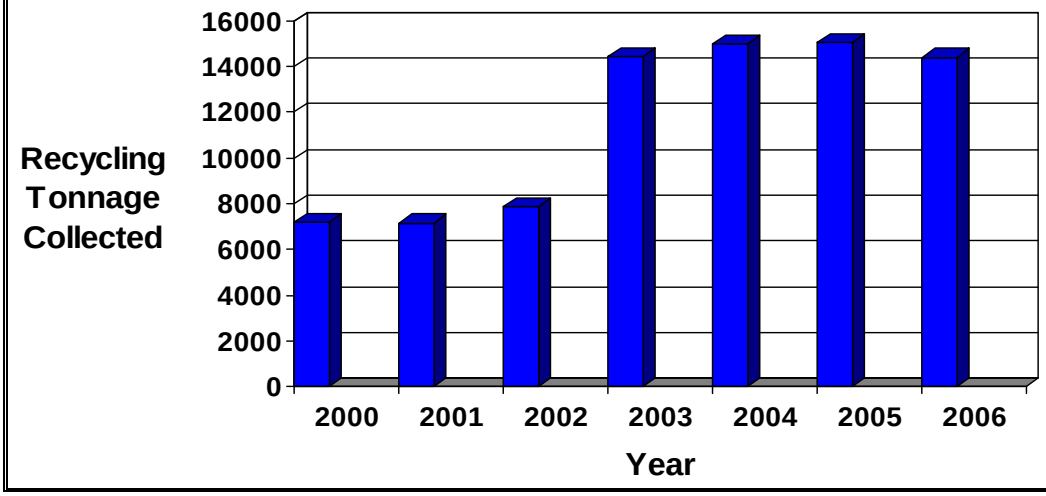
P.E.I. has a hybrid of the clear bag program. Residents use a 240 L black container for garbage and are allowed to use a maximum of two clear bags/containers for any excess garbage. Concerns over landfill costs and space, and the desire to increase waste diversion were the main drivers behind the

program. The main program goal is to achieve maximum diversion of waste through source separation. The attainment of this goal was made possible by the use of clear bags, which allowed the waste collectors to fully monitor and enforce program requirements. A 65% diversion rate[14] was achieved in 2003, one year after clear bag requirements and mandatory source separation were enforced across the Province. The most recent diversion rate provided was 63% for 2006. No baseline data is available to do a pre and post comparison for waste diversion because not all municipalities collected garbage weights. Although it is known that waste diversion increased, only the recycling portion can be directly attributed to clear bag requirements because mandatory organics separation and curbside collection of organics were introduced at the same time as clear bag requirements.

There was a significant increase in recycling tonnage collected immediately after the clear bag program was fully implemented. This increase can be directly attributed to the introduction of clear bag requirements because the Province already had mandatory recycling since 2000. The recycling tonnage doubled from 7161 tonnes in 2001 (baseline year) to 14 415 tonnes in 2003 (when the program was fully implemented province-wide), as illustrated in Figure 1 below. Since this time, the recycling tonnage collected has remained relatively consistent, however; it is a conservative estimate. Unlike garbage, not all recycling from the business sector is counted because there has been a trend over the past few years for businesses to market recyclables on their own. Please refer to Appendix 9 for recycling tonnages and relevant provincial wide programs and regulations introduced since 2000. Overall, the 100% increase in recycling tonnage collected after the first year of the program's full roll-out demonstrates the effectiveness of using clear bag requirements as an enforcement tool to boost recycling.

Figure 1: Impact of Clear Bag Requirements on Recycling in P.E.I.

Mandatory Recycling Introduced in 2000 and Clear Bag Requirements Fully Implemented in 2003



Source: Data for this chart was provided by Heather Myers, Disposal Manager for Island Waste Management Corporation, August 2008.

[14] The diversion rate includes organics (including boxboard), recyclables (ex. cardboard, paper, newspaper, magazines, office and household paper, milk cartons, tetra-pak containers, glass, metal containers, plastic with codes 1 through 5), scrap metal, and beverage containers collected from the deposit return system.

Nova Scotia – Eastern Region 2A (Counties of Antigonish and Guysborough)

All of the existing clear bag programs in this Region started between October 2005 and March 2007, depending on the municipality. The main goals behind the clear bag requirements include increasing diversion, meeting diversion targets, and achieving compliance with disposal bans (including many recyclable materials and organics). These goals and the concern over landfill costs and space, serve as drivers behind the clear bag program. The program impacts include an increase in recycling and organics collection, and backyard composting. Over the past three years (April 2005 to end of March 2008), the region has experienced the following impacts in the residential sector:

- 37% decrease in garbage tonnage collected
- 71% increase in recycling tonnage collected

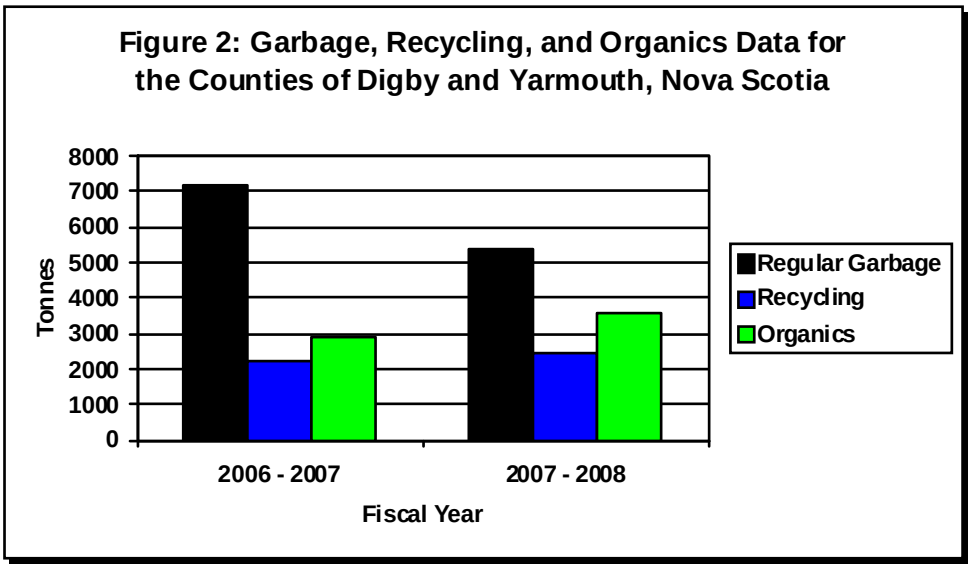
It is safe to say that the increase in recycling is due to the use of clear bags because this region already had a well-developed recycling program, which started in the mid-1990's. The use of clear bags has also resulted in increased organics collection in the two programs that offer curbside collection of organics. The Town of Antigonish experienced a 52% increase in organics collection over the same three-year time period mentioned above. This can be directly attributed to the use of clear bags as the curbside collection of organics had already been implemented since September of 2002. The County of Antigonish also had a significant increase in organics collected but it is not a direct program impact because organics collection and clear bag requirements started at the same time. Overall, it is evident that the requirement for clear bags has led to an increase in residential recycling and organics collection, and a decrease in garbage.

Nova Scotia – Region 7 (Counties of Yarmouth and Digby)

The clear bag program was introduced in April 2007 and the main goal is to increase diversion (namely recycling and organics). Concern over landfill costs and the desire to improve waste diversion serve as the main drivers behind the program. The program impacts identified were increased recycling and organics tonnages collected, and an increase in requests for green carts (for organics collection) and education sessions at businesses and community groups. Also, haulers started changing their routes to accommodate the increase in recycling and organics tonnages collected. It is evident that public participation in diverting waste has been enhanced. The Region experienced the following results after one year of implementing the program (April 2007 to end of March 2008):

- residential garbage tonnage decreased by 25%
- residential recycling tonnage increased by 12%
- residential organics tonnage increased by 24%

It is important to note that the collection programs for recycling and organics were well developed before the clear bag program started in April 2007 (the recycling program started in the mid-1990's and organics collection started in 2000). The achievements stated above are direct results of clear bag requirements and are displayed in Figure 2**.**



Note: 2006-2007 is the baseline as clear bag requirements were in place for 2007-2008.
Source: Nicole Haverkort and Amy Hillyard, Clear Bag Increases Diversion Presentation, Nova Scotia, April 2008.

Nova Scotia – Eastern Region 2B (Pictou County)

The main goal of the clear bag program is to encourage people to sort properly. The main drivers behind the program were concerns over landfill costs, the desire to boost recycling and organics collection, and the need to ensure compliance with Nova Scotia solid waste regulations. The landfill closed December 31, 2005, due to government regulations. Given that there no longer was a landfill, the Region wanted to decrease its garbage generation. Arrangements were made to dispose waste at a second generation landfill located outside of the Region's jurisdiction. The Region receives revenue through garbage tipping fees. From an economic perspective, it is more expensive to recycle because the amount of garbage decreases as well as the revenue derived from it. Despite the economics, Leisa Stuart, Educator for Pictou County Solid Waste, asserts that it is "certainly more beneficial to recycle resources". For the two years since the clear bag program started in January 2006:

- garbage has decreased by 30%
- recycling has increased by 9%
- organics has increased by 27%

The Region already had a recycling program in place since the mid-1990's and organics collection started in June of 1997, so it is safe to say that the results directly stemmed from the clear bag program.

Village of Hamburg, New York

The clear bag program started in mid-2000. A recycling program has been in place since the early 1980's (the Village of Hamburg was the first municipality to start recycling in the State of New York). The main drivers behind the clear bag program were the desire to boost recycling and concerns over landfill costs and space. The program has been successful in reaching its goal of increasing the recycling rate, which has risen from about 50% since the program started to 70% at the beginning of 2007. This has resulted in more revenue from selling recyclables and less tipping fees at the landfill. According to Anne Alessi, Assistant to the Superintendent of Public Works, "The clear bag law took tons and tons of recyclable materials out of the waste stream and therefore cut our landfill costs drastically."

Fulton County, New York

The State of New York required by law, that all municipalities enact local recycling by-laws by September 1, 1992. During this year, the County of Fulton enacted a mandatory recycling by-law and implemented a recycling program. Clear bag requirements were mandated by local law in 1993, with the main goals of increasing recycling (also reported as the 'main driver') and monitoring the garbage to ensure it did not contain recyclables. According to the survey respondent, striving to meet this goal is a constant and ongoing process. There is no baseline data because garbage was not weighed before the program started. Increased recycling tonnage collected was identified as a clear bag program impact.

Columbia County, Wisconsin

Boosting recycling is the main goal of the clear bag program, which was initiated in 1990; the same year that recycling was mandated in the State of Wisconsin. A recycling program has been in place since 1981. The main drivers behind the clear bag initiative were concerns over landfill costs and the necessity to boost recycling. Although data was not available, an increase in recycling collection was identified as the sole program impact.

Oconto County, Wisconsin

A recycling program has been in place since 1992 (approximately). The clear bag program started in 1995; the main goal is to have control over proper disposal of materials. There were a couple of main drivers behind the initiative; the need to boost recycling, and concerns over landfill costs and space. An increase in recycling collection was reported as the sole program impact. Although data was not available, the respondent knew recycling had increased based on discussions with attendants about citizen recycling. Also, the number of complaints from attendants has decreased because more citizens are recycling properly.

5.6.2 Program Results not Directly Attributable to Clear Bag Requirements

Note to readers regarding municipalities in the State of Maine that were surveyed: The recycling rates reported for these municipalities include municipal recyclables[15] *and bulky recycling*[16]*. The rate is adjusted by adding an additional 5% in order to account for diversion through the container return system. Also, municipalities in Maine that were surveyed do not have organics curbside collection programs.*

Town of North Berwick, Maine (clear bag program started same time as PAYT)

Clear bag requirements started in July of 2000 and the initiative was driven by the need to boost recycling and reduce solid waste costs. PAYT started at the same time and was incorporated into the clear bag fee. The main goal was to ease the solid waste cost pressure on the taxpayers and move it to a user pay system. In addition, the Town had a goal of reducing solid waste disposed and increasing the amount of recycling. According to Dwayne Morin, Town Manager, "The Town has tracked our waste since 1994 and this has proven the program (Clear Bag PAYT) has successfully reduced the amount of waste being sent to the incinerator". The positive results cannot be directly attributed to clear bag requirements because it was introduced with PAYT simultaneously. However, it is safe to assume that

[15] Municipal recyclables include office paper, cardboard (OCC), old newspaper, old magazines, mixed paper, glass, aluminum cans/foil, tin cans, plastics, 'other materials', food (ex. food scraps), compost (ex. hay) – no leaf and yard waste included, reused materials, and universal waste (only electronics and mercury products).
[16] Bulky recyclables include: shingles, sheet rock, white goods (fridge), metals, LYW, and wood.

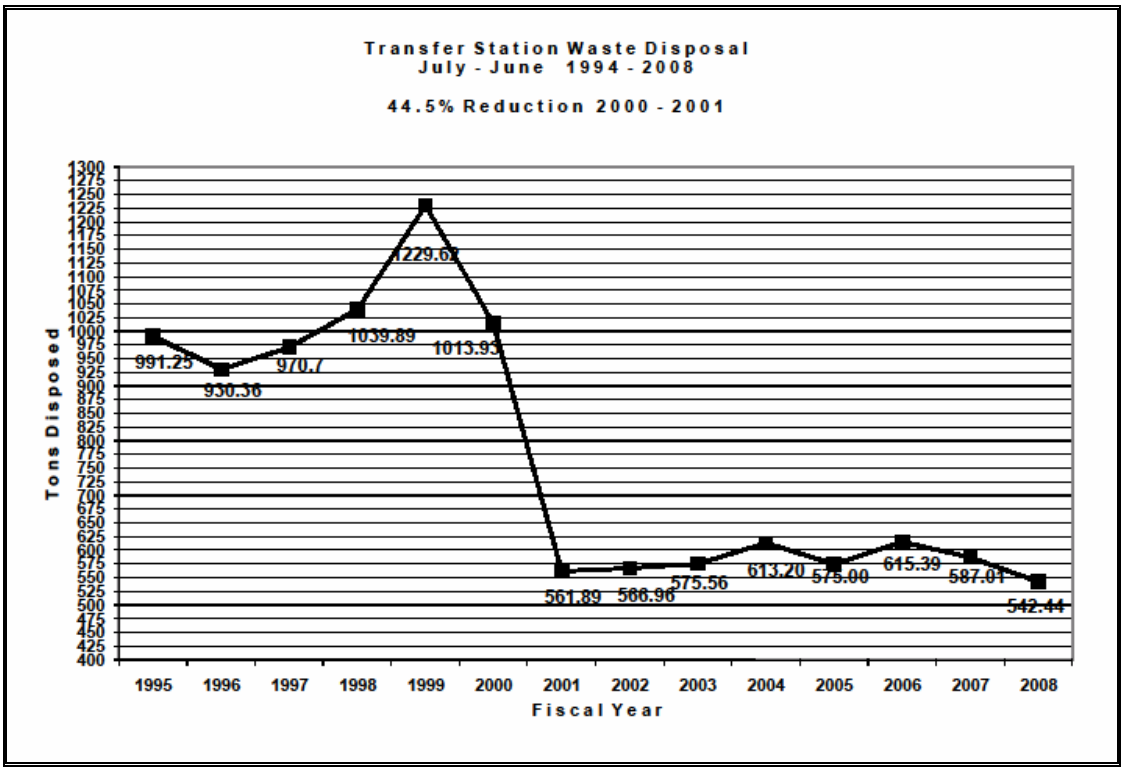
clear bags had some impact. By the end of 2001, the recycling rate increased to 53% from 30% in 1999.[17] It is important to note that a recycling program was established in the 1980's.

Although the clear bag program started in July 2000, there was a significant drop in waste being sent to the incinerator from 1999 to 2000 and a dramatic drop from 2000 to 2001. Please refer to Table 1 below for the waste tonnages. The decrease in waste disposal before the program's implementation was due to a variety of reasons. Some people started to decrease their waste disposal in preparation for the upcoming change and others wanted to show that they could decrease garbage generation without PAYT. Overall, there was a dramatic decrease in waste disposal (667.73 tonnes or 54%) from 1999 to 2001. This is further illustrated in Figure 3.

Table 1: Waste Tonnage Change 1999 – 2001 for the Town of North Berwick, Maine

Year	Waste Disposed (Tonnes)	Change in Waste Disposal Tonnage from Previous Year	Percent Change in Waste Disposal Tonnage from Previous Year
1999	1229.6		
2000	1013.9	215.7	- 17.5%
2001	561.9	452	- 44.6%
Total Decrease in Waste Disposal from 1999 to 2001: 667.7 tonnes or 54.3%			

Figure 3: Impact of a PAYT Clear Bag Program (introduced in July 2000) on Waste Disposal for the Town of North Berwick, Maine



Source: Provided by Dwayne Morin, Town Manager for the Town of North Berwick.

[17] Information provided by the Maine State Planning Office in May 2008 and is based upon data submitted by the municipality.

Norway-Paris, Maine (it is believed that the clear bag program started at the same time as the recycling program)

The main goals driving the clear bag program initiative, which started on July 20, 2001, are to promote more recycling and monitor product contents going to the incinerator. An additional driver behind the program is to increase HHW collection. According to the Director-Treasurer of Norway-Paris Solid Waste Inc., the goals are being met because the recycling rate has increased and there have not been any complaints from the incinerator vendor. Increasing recycling has resulted in the reduction of garbage going to the incinerator, which has lowered waste management program costs. The recycling rate has increased from 25% in 2000 to 30% in 2005, which is the most recent data provided.[18] It is important to note that the program also has PAYT and it is believed that the recycling program started around the same time as the clear bag program.

Town of Topsham, Maine (clear bag program started same time as PAYT)

The main goal behind the clear bag program was to reach the State's goal of achieving a 50% recycling rate by 1994. In order to reach this goal, Topsham started mandatory recycling in October 1991 and PAYT combined with clear bag requirements in the Spring of 1993. This goal was attained as the recycling rate increased from 37% in 1993 to 51% in 1994[19]. By 1995, the recycling rate had increased to 57%[20]. No data prior to 1993 was available. In addition to the desire to boost recycling and backyard composting, the clear bag initiative was driven by the landfill closure and replacement with a transfer site and recycling centre. Organics (food scraps – no meat) and leaf and yard waste are collected at a drop-off site. An increase in backyard residential composting and the collection of recycling, organics, and leaf and yard waste were all identified as program impacts. The most recent recycling rate provided was 65% for 2006.

City of Omaha, Nebraska (clear bag program started the same time as recycling program)

The City of Omaha started a clear bag program in April of 1994, which was driven by the need to keep leaf and yard waste out of the waste stream. The main program goal was met, which was compliance with a state-wide ban on yard waste in landfill. Yard waste is now being composted instead of being sent to landfill. This was identified as the only program impact. It is difficult to identify the impact on recycling because clear bag requirements were introduced the same time as the recycling program.

Town of Troy, New Hampshire (clear bag program started the same time as PAYT program)

The clear bag initiative was driven by the need to boost recycling. The Town of Troy does not have curbside collection for garbage or recycling. Residents must take their garbage and recycling to the depot or hire a private hauler. The State set a legally-mandated goal of 40% recycling by the year 2000. In order to reach the goal of increasing recycling, the Town of Troy started a clear bag PAYT program in July of 2000.The PAYT fee was incorporated into the price of the Town's clear bags. Even though a recycling program has been in place since the early 1990's, there was a significant increase in recycling tonnage immediately after the clear bag PAYT program started. Although the State is still attempting to reach the 40% goal, the Town of Troy exceeded this goal by the end of 2003.

The most recent municipal recycling rate reported by the State of New Hampshire is 21% for 2006, which is only about half of the Town of Troy's 2006 municipal recycling rate of 44%. The Town's recycling rate increased to 47% in 2007. According to James Dicey, Public Works Director, the

[18] Information provided by the Maine State Planning Office in May 2008 and is based upon data submitted by the municipality.
[19] Ibid
[20] Ibid

response is getting better every year and the 35% of the town's population that originally opposed the program, has dropped to 25% at maximum.

Village of Homer, New York (clear bag program started the same time as recycling program)

Clear bag requirements started around 1990. This initiative was mainly driven by concerns over landfill space and costs, and the need to boost recycling. The main goal of the clear bag program is to monitor for recycling to ensure that the program works. Although no data was available, the survey respondent reported that the goal was met because the amount of recyclables collected has increased and the garbage tonnage going to landfill has decreased. The main program impacts identified were increases in backyard residential composting and the collection of recycling and leaf and yard waste. These results cannot be directly attributed to clear bag requirements because the recycling program started at the same time. The waste management program also includes bag limits but does not include user fees (PAYT).

City of Newburgh, New York (clear bag program started the same time as bag limits)

On October 15, 2005, a clear bag program was implemented in the City of Newburgh. It was driven by an effort to address the city's concern over landfill costs and to boost recycling and leaf and yard waste collection. The main goal stated is to monitor for recycling and to ensure that garbage and building waste are not mixed with leaves. According to the survey respondent, reaching this goal is an ongoing process and they have experienced some success. Increases in recycling and leaf and yard waste collected were identified as program impacts. Although there has been a significant increase in recycling, it cannot be directly attributed to clear bag requirements because bag limits were introduced at the same time. The bag limit varies depending on the type of household. For example, a single family household has a three bag limit. From 2004 to 2007, the quantity of recyclables collected has increased over 100% and the amount of waste going to landfill has been reduced substantially. In 2004, approximately 30 tonnes of recyclables were collected per month and over 1000 tonnes of garbage on average was going to landfill per month. As of 2007, the amount of recyclables collected averaged between 80 to 90 tonnes per month and the amount of garbage going to landfill averaged between 700 to 800 tonnes per month.

City of Fennimore, Wisconsin (clear bag requirements started the same time as recycling program)

The clear bag program in the City of Fennimore is one of the earliest of all clear bag programs surveyed in Canada and the United States. Encouraging residents to recycle is the main goal behind Fennimore's clear bag program, which started in 1989. The initiative was driven by concerns over landfill costs and the need to boost recycling. Fennimore's respondent is the only American one that stated the nesting of opaque bags full of garbage inside the clear bag is not allowed. An increase in the tonnage of recyclables collected was identified as the sole program impact. The recycling program and clear bag requirements were introduced at the same time, so it is difficult to pinpoint the direct impacts of clear bag use. The 375 tonnes of recyclables collected for 2006, translated into a savings of about $12 000 in tipping fees. A partial PAYT program started June 15, 2007.

City of Sheboygan Falls, New York (clear bag requirements started the same time as recycling program and household hazardous waste collection depot) The clear bag program in the City of

Sheboygan Falls is one of the earliest of all clear bag programs surveyed in Canada and the United States. It started in 1989 and the main goal is to comply with the State mandate of reducing the amount of waste destined for landfills and incinerators in New York. Also, the State law required that all municipalities enact local recycling by-laws by September 1, 1992. The main drivers behind the clear

bag requirements were concerns over landfill costs and the desire to increase the collection of recycling, household hazardous waste, and leaf and yard waste, and to increase backyard residential composting. The goal of complying with the State mandate was met and an increase in recycling tonnage collected was identified as the program impact. The positive recycling results cannot be directly attributed to clear bag requirements because the recycling program was introduced at the same time.

Township of Galway-Cavendish and Harvey, Ontario (clear bag program started same time as recycling program)

Residents must take their garbage and recycling to the landfill or transfer stations. The clear bag program started in the Spring of 1994 and is the oldest of all Canadian clear bag programs surveyed. The main program goal is to ensure that residents are removing recyclables from the garbage stream. The Township could not receive a Certificate of Approval extension for its four landfill sites unless recycling increased. This fact was a major driver behind the clear bag program initiative. It is important to note that the recycling program started at the same time as the clear bag requirements. Although no specific garbage or recycling tonnage data was provided (garbage weights were not collected at the landfill sites), an increase in recycling tonnage collected was identified as a clear bag program impact. Also, the Township received a Certificate of Approval extension for all of its landfill sites.

Township of Edwardsburgh/Cardinal, Ontario (clear bag program started same time curbside pick-up of recycling)

The Township consists of the Township of Edwardsburgh and the Village of Cardinal. Recycling was introduced in the early 1980's and user fees in the form of 'bag tags' were introduced in 1991. In March 2002, the Township decided to supply clear bags for garbage, which incorporated the user fee in place of the 'bag tags'. Concern over landfill space and the desire to boost recycling were drivers behind the clear bag program. The main goal is to encourage people to utilize the recycling program and the municipality believes this goal is being met. Increased recycling tonnage was identified as a program impact. There has been a slight increase in the amount of recyclable materials being collected by the contractor for curbside pick-up. This increase could be the result of the clear bags and/or curbside pick-up for recycling, which started at the same time. Also, the type of plastic recyclables collected expanded from codes 1 and 2 prior to the program to now include codes 1 to 7.

5.7 Program Impacts from a Cost Perspective

Overview of responses from the questions, 'Was the program beneficial from a cost perspective?' and 'Do you have any suggestions on how to minimize costs?'

Please refer to Appendix 10 for all responses in table format. Overall, the clear bag program was beneficial from a cost perspective, as reported by 18 out of the 22 respondents. The question did not apply to the Municipality of Guelph's situation because the change to clear bags involved the addition of a third stream for waste collection, which required a $5 million capital investment to retrofit the MRF to accommodate the change. The respondent from the Township of Edwardsburgh Cardinal was the only Canadian survey participant who stated that the program was not beneficial from a cost perspective. In this case, the user fee was incorporated into the clear bag. The bags are more expensive for the Township to purchase compared to the 'bag tags'. In the U.S., one respondent did not answer the question and the other believed it was not beneficial cost-wise, however; he stated to consider what is being diverted from the landfill and the fact that recycling is State mandated. All respondents had their own unique suggestions on how to minimize costs, which are included in Appendix 10**.**

Overview of responses to the question: 'How did the clear bag program affect your waste management program costs?'

The majority of respondents (12 out of 22) reported an overall positive impact on waste management costs. The clear bag program affected waste management costs in a variety of ways. Five out of nine Canadian survey participants reported a positive impact on waste management costs. Essentially, it was less expensive to recycle and compost for a variety of reasons such as expensive waste tipping fees, transfer costs, processing costs, and the associated costs with running out of landfill space. In the U.S., 7 out of 13 respondents indicated a positive impact on waste management costs. Some of the lowered costs stemmed from reducing tonnage sent to an incinerator, recycling revenue, avoiding expensive landfill costs in the long term, collecting user fees, and reducing the amount of waste and associated decrease in tipping fees. None of the American respondents and only two of the nine Canadian respondents reported an overall negative impact on waste management costs. The Township of Edwardsburg Cardinal, Ontario, experienced a cost increase due to the associated costs from the decision to incorporate the user fee into a Township branded clear bag, and the decision to provide curbside recycling collection, which coincided with the start of the clear bag program. In Pictou County, Nova Scotia, the increase in recycling and decrease in garbage resulted in more costs, due to the waste management costing structure. The Region receives revenue from garbage tipping fees, so a decrease in garbage naturally translates into a decrease in revenue. Leisa Stuart, Educator for Pictou County Solid Waste, concludes that it is more beneficial to recycle resources, even if it is more expensive to do so. For the survey participants that reported waste management cost impacts, Tables 2 and 3 on the following pages highlight and categorize their responses, according to positive and negative cost impacts.

Table 2: Impact of Clear Bag Program on Waste Management Costs - Canada

	Positive Cost Impact	Negative Cost Impact	Overall Cost Impact
Nova Scotia – Eastern Region 2A (Antigonish and Guysborough Counties)	Recycling and composting are a cheaper option for the taxpayer because they now have a 2nd generation landfill, which entails double the tipping fee. The tipping fees include: $68.60 per tonne for garbage (does not consider line hauling costs) $45 per tonne for recycling $55 per tonne for organics (these fees do not include collection or transportation costs)	The initial cost impact to get the program launched: Additional staffing costs - The cost for promotions and hiring two educators over a six month period for the District of Guysborough and the County of Antigonish was $55,000.	Positive Impact on Costs
Eastern Sub-Region: Region 2B (Pictou County), Nova Scotia	They feel that it is definitely a beneficial program for the environment.	There was a decrease in revenue and an increase in costs due to the decrease in garbage and an increase in recycling. They receive revenue from garbage tipping fees, so a decrease in garbage naturally translates into a decrease in revenue. The increase in recycling results in additional collection and processing costs etc.	Negative Impact on Cost "While it is certainly more beneficial to recycle resources, economically, it is more expensive".
Western Region: Region 7 (Counties of Yarmouth and Digby), Nova Scotia	Decreased transfer costs as waste is sent outside of the region. Organics and recycling are processed in the region. The following are tipping fees: Garbage costs $110.00 per tonne Recycling costs $95.00 per tonne Organic material costs $89 per tonne (these fees do not include collection or transportation costs)		Positive Impact on Costs
Township of Galway-Cavendish and Harvey	Saved landfill space and therefore increased lifespan of landfill; which is less expensive than operating transfer stations.		Positive Impact on Costs
Township of Edwardsburgh/Cardinal		Selling the township branded clear bags increased the costs, as did hiring a contractor to do door to door pick-up throughout the municipality. They did not have recycling curbside pick-up before the clear bag program. People used to take it to the landfill.	Negative Impact on Costs

	Positive Cost Impact	Negative Cost Impact	Overall Cost Impact
Municipality of Guelph	Source separating the waste materials from the recyclables significantly reduced processing costs (however, a $5 million capital investment was required to retrofit the MRF to process the new clean "Dry" stream). The decision to make the program change was based on both projected cost savings and increased diversion.	Promotion and Education Costs: The approximate cost for the promotion and education component was $80, 000 (does not include costs for consultant services or the extra curbside/telephone support staff and associated resources). This amount also covers a small percentage of other standard waste-related communications not related to the program change.	Positive Impact on Costs
Prince Edward Island	Less contamination going into the landfill cell and incinerator.		Positive Impact on Costs

Table 3: How Clear Bag Program Affected Waste Management Costs - United States

	Positive Cost Impact	Negative Cost Impact	Overall Impact on Costs
Norway-Paris, Maine	Lowered costs by reducing tonnage to incinerator.		Positive Impact on Costs
Town of Topsham, Maine	User fees pay for 50% of operating costs (transfer site and recycling). Revenue from recycling pays for 25% of operating costs and tax base revenues pay for the remaining 25% of operating costs.		Positive Impact on Costs
Town of North Berwick, Maine	Reduced overall cost of the solid waste budget. Since the program's inception, the Town has moved 80% of the cost for solid waste management from the tax rolls to a user pay system (meaning 80% of all solid waste management costs come from user pay fee revenue).		Positive Impact on Costs
City of Omaha, Nebraska	Cost Benefits: Avoiding extra landfill costs in long-term and complying with state landfill bans (ex. yardwaste). The City does not own the landfill. Waste Management Inc. owns and operates the landfill. Although the county regulates the tipping fees (ie. sets limits of increases), these fees would most likely increase if landfill costs increase. An increase in cost could result from having to close a landfill and purchase a new one.	It is cheaper to send everything to landfill than to separate (ex. using three trucks for collection is more expensive than using one). The highest costs are the collection costs. Although revenues from recyclables generate over half a million dollars, collection costs are approximately this amount too. The compost facility (for yard waste) earns approx. $200 000 in revenue but the collection and compost processing costs are more.	Neutral
Town of Troy, New Hampshire	Total waste management costs paid by the Town of Troy have decreased by 20% over the first five years of the clear bag program. At the same time, there was an increase in per unit waste management costs due to increased tipping fees and transportation costs (taking the garbage to landfill). When factoring in the per unit waste management cost increase over the first five years of the program, the actual decrease in costs is estimated to be 40%. Waste management costs include everything (garbage & recycling management). The profit from selling the bags has helped to fund the program.		Positive Impact on Costs
City of Newburgh, New York	Drop in tonnage to landfill. Tipping fees are $75 a ton for solid waste and $25 a ton for recyclables. These were set prices since the clear bag program started. Revenue is received for paper and cardboard. Clearly, recycling more decreases the costs.		Positive impact on costs.

	Positive Cost Impact	Negative Cost Impact	Overall Impact on Costs
Village of Hamburg, New York	"The clear bag law took tons and tons of recyclable materials out of the waste stream and therefore cut our landfill costs drastically." It is definitely more cost effective to recycle. Recyclables are collected at the same time as garbage in the same truck. As such, there is minimal collection and labour costs associated with collecting recyclables. The contents of the truck are sent to the transfer site. Then the recyclables are transported to the MRF, which is approximately 20 miles from the transfer site. This works out to be less expensive than the costs to collect garbage and pay the tipping fees. Revenue from recyclables used to be about $10 a tonne, but it has been approximately $7.50 a tonne over the last few years. On the other hand, landfill tipping fees have increased from about $25 a tonne to $31.50 a tonne, so it is essential that recyclables are diverted from the garbage stream.		Positive Impact on Costs
Oconto County, Wisconsin	Since 1995, the life of the landfill has been extended by at least 15 years.		Positive Impact on Costs

5.8 Influential Groups, Individuals, Committees

Survey respondents were asked to identify any individuals or groups who played an influential role in driving the clear bag initiative. In total, 12 out of 22 respondents (6 from Canada and 6 from the U.S.) identified groups as being the most influential in getting the clear bag program started, which mainly consisted of elected officials, as well as staff and volunteer citizens in some cases. The next most influential were staff and committees such as recycling or solid waste committees; both were identified by six respondents each. Only one respondent from each country identified an individual that was influential in initiating the clear bag program. Please refer to Appendix 11 for the detailed breakdown of responses.

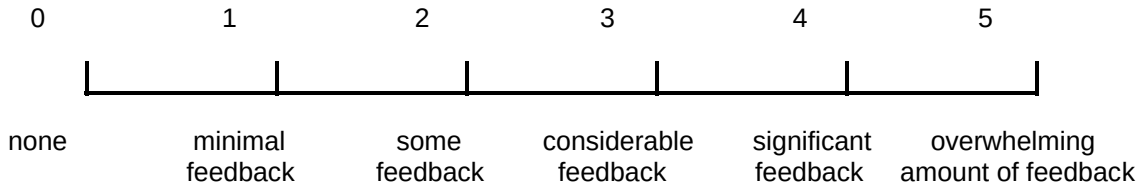
5.9 Feedback from the Public

Overall, the main feedback from the public was the concern over privacy, as reported by 12 of the 22 respondents. Some people did not feel comfortable placing their personal items in a clear bag. Interestingly, eight out of the nine Canadian respondents reported privacy as a concern, whereas; only four American respondents referenced this as a concern. Concern over the insufficient supply of clear bags was the second most common concern as reported by 6 of the 22 respondents. All of the Canadian respondents reported negative comments from the public with three of them also mentioning positive feedback. The majority of U.S. respondents reported negative comments only, while two of the respondents attributed the minimal negative feedback to consulting the public.

Please refer to Appendix 12 for all of the public feedback identified. Most of the public communicated their concerns via phone calls to regional or municipal staff, followed by calls to politicians. Others aired their concerns by writing letters to the newspaper, and through public meetings and events. Please see Appendix 13 for more information on communication methods used for public feedback. It is interesting to note that the Municipality of Guelph obtained public feedback from surveys, and concerns were voiced through a web site created by a vocal citizens' group.

5.10 Level, Timing, and Triggers of Feedback

Survey respondents were asked to rank the level of public feedback received according to the following scale:



Overall, the average level of feedback ranking was 2.6. American respondents reported a slightly higher level of feedback received with 2.7 compared to an average of 2.4 from Canadian respondents. Although this is a minimal difference, it is important to note that a higher proportion of American respondents reported that they had consulted the public about the clear bag program. Respondents were asked to identify the points in the planning, development, implementation, and operations process, where they received a public response. Most of the public feedback was received during the implementation phase. Respondents were also asked to identify what triggered the public feedback.

The most prevalent responses were ‘actions of a community leader’ and the ‘newspaper’. Please see the tables in Appendix 14, which identify the timing and the triggers of the public feedback received.

5.11 Public Relations

Approximately half of the respondents for both Canada and the U.S. stated that a public relations campaign was implemented. All of the public relations campaigns were executed in anticipation of the public’s response. Please refer to Appendix 15 for a description of public relation activities.

5.12 Consulting the Public

In total, 10 out of the 22 survey respondents stated that the public was consulted about the clear bag program. This included one third of Canadian respondents and over half of the American respondents. Although none of the respondents indicated that they had a formal consultation process, they did consult the public via Town/Council meetings, public hearings, and public meetings. The Municipality of Guelph also conducted extensive research and promotion and education including surveys and focus groups. Please refer to Appendix 16 for a breakdown of responses.

Here are some successful examples of gaining public acceptance:

- *Town of North Berwick, Maine:* The Town appointed a committee to review all solid waste options, and to help create and implement a program. The Committee consisted of the Town Manager, Solid Waste Manager, and volunteers from the public. The idea for a PAYT clear bag program came out of these committee discussions. **Four public hearings** were held throughout the year and there was no public outcry outside of these hearings. Approximately 90 to 95% of people were against PAYT at the start of each meeting. The Solid Waste Manager showed how it would directly decrease the tax rate. By the end of each meeting, 90 to 95% were in favour of it. **The public hearing culminated into a Town vote** where residents voted in favour by more than a 3 to 1 ratio.

- *Town of Troy, New Hampshire:* **A couple of open Town meetings** were held before initiating the program, which **led to a Town vote.** Approximately 65% of residents voted in favour of the program. The Public Works Director, Jim Dicey, stated that the implementation of the program went smoothly.

- *City of Fennimore, Wisconsin:* **Public meetings were held by the sanitation committee twice per month over a year,** until about one month before the program roll-out. After each meeting, the committee wrote a newspaper article addressing public concerns, and/or addressed concerns via subsequent meetings. Due to this ongoing communication, no complaints were received when the program was implemented.

5.13 Program Barriers

The 22 survey participants were asked if they encountered any barriers to implementing the clear bag program. All but one survey participant responded to this question. The main barrier reported was the insufficient supply of clear bags, followed by social barriers.

Insufficient Supply of Clear Bags: 12 respondents identified this as the main barrier. Many municipalities sent letters and visited the retailers to inform them of the clear bag requirements in advance of the change. However, the retailers seemed to underestimate the demand of clear bags,

especially when people tended to purchase clear bags at the last minute. The following is an excerpt from the survey responses regarding the availability of clear bags:

> The bag availability required ongoing, and in some cases assertive communications with bag suppliers and retailers. Delivery and stocking arrangements originally committed to were not always adhered to, resulting in the City's need to urgently make some bags available at municipal sites until the supply issue could be addressed. It was also very difficult in terms of communicating the challenges to residents and how we were addressing them in a timely and effective manner.

Example of the Challenge in Providing Sufficient Clear Bag Supplies

Clear bags used to be required for recyclables in the Western Region of Nova Scotia. Then the region switched to tinted blue bags for recycling at the same time as the clear bag requirement for garbage was introduced. Although it was assumed the retail stores would have a sufficient stock of clear bags prior to the launch of the clear bag program (as they used to be required for recyclables), retailers still had trouble stocking enough clear bags for garbage. Stores ran out of blue recycling bags and clear garbage bags, even though they were given six months notice.

Social Barriers

Social barriers were reported by seven respondents and consisted of negative feedback/attitudes, which subsided over time. In the Village of Hamburg, New York, the program was mandated legally and the “local law took care of most complaints”. The Town of North Berwick, Maine included citizens in the process by organizing public hearings, which were very effective as described by Dwayne Morin, the Town Manager: “At first all the Public Hearings were filled with very negative comments and attitudes regarding the program. After presentation of the facts and the process, the citizens attending the hearings, even though they were against the program when they entered the Public Hearing, were in favor when they left.”

Some residents complained they were being punished, even though they had been recycling for a long time. City staff pointed out that while they were diligent recyclers, many of their neighbours still had not come on board with recycling and that this program would force them to do so. Most of these residents agreed because the response appealed to their sense of fairness.

Overall Remarks for Program Barriers

Please refer to Appendix 17 for a list of all barriers communicated by respondents and excerpts from the survey responses. In consideration of the experiences shared by the survey participants, it is strongly recommended that every effort is made to ensure a sufficient supply of clear bags. This may require the municipality to intervene and sell clear bags during the initial program implementation phase. Also, it is important to invest in a public outreach campaign for several reasons. The public needs to be informed of the upcoming program and how to properly sort their waste well in advance, in order to help them make the transition and to achieve social acceptability of the program. An outreach campaign should be ongoing because there will always be newcomers and tourists who need to be informed, and the public will be more compliant if they know their efforts are making a difference.

5.14 Promotions, Education, and Public Outreach

Approximately two thirds of both Canadian and American respondents delivered promotion, education, and/or public outreach for the program. This included 6 out of 9 Canadian respondents and 9 out of 13 American respondents. The general strategies reported by survey participants included the following:

- Advertisements placed in radio and newspapers
- (using television as a media form was reported by two American respondents)
- Distribution of informational literature to all residents (ex. flyers, newsletters)
- Gaining media support in the form of news articles
- Inserts in tax bill mailings
- Public information sessions
- Communication with retailers, waste collectors, and other parties involved in the process such as private contractors
- Visits to schools, municipal meetings, and other public venues

Examples of Public Outreach Efforts shared by Survey Participants

Hiring Extra Educator Staff to help the Public during the Transition

Eastern Sub-Region: Region 2A (Antigonish and Guysborough Counties), Nova Scotia
Two educators were hired for a six month period (one each for the District of Guysborough and the County of Antigonish). While the other areas in the region relied on the work done by the existing Regional Coordinator, the extra staff provided the needed support for the program roll-out. Some of the outreach strategies included sending a promotional package with a clear bag sample to all residents, organizing public information sessions, communicating with retailers and businesses, and creating a new sorting guide. The total cost for the two educators and promotion costs for the District of Guysborough and the County of Antigonish was approximately $50, 000.

The Municipality of Guelph
Extensive research, promotion, and education work was conducted including the completion of surveys, focus groups, and the organization of public meetings etc. The Municipality employed consultants who conducted research and provided recommendations. Additional curbside and telephone support staff were also hired for several months following the program change to help residents with the transition. The approximate cost for the promotion and education component was $80, 000, which did not include the amount spent on consultant services, and the extra curbside/telephone support staff and associated resources. This amount also covers a small percentage of other standard waste-related communications not related to the program change.

Working with the Press to Obtain their Support

Town of North Berwick, Maine
The local press was included in the process and reporters attended the four public hearings held throughout the year. “The local press was very supportive and did a few free stories to educate the public. The press attended the hearings and heard the objections and how people changed their minds in the end. They spoke to the objections in the articles and provided good PR”. In addition to public hearings, the Town organized public mailings and dedicated one of their quarterly newsletters to PAYT and recycling.

Using Television as a Media Form

City of Sheboygan Falls, Wisconsin
The City produced a short film explaining the new program, which was aired on the local cable station. Public outreach consisted of the cable film and newspaper articles, which did not require much funding.

A Ride-Along with Waste Collectors

Fulton County, New York
The County implemented a 'No Black Bag' campaign, which included advertisements, press releases, and visits by the recycling coordinator at schools, public venues, and municipal meetings. 'No Black Bag' stickers and fliers were given out to garbage crews and private haulers to use. Promotional work continues today and the recycling staff participate in a 'ride-along', where they ride with waste collectors for each garbage route. Education is provided on the clear bag program, including what constitutes an unacceptable level of contamination. A waste collector may be hesitant in being strict because residents might complain if their garbage is not picked up, or they may go to the extreme and not accept anything, which will cause public frustration. For this reason, collectors must be educated on the importance of enforcement and when to enforce. The 'ride-along' has continued on an annual basis and serves as a refresher.

5.15 Unintended Effects

Unintended effects are program effects that were not intended to occur and can be either positive or negative. Eight respondents (three Canadian and five American respondents) reported unintended effects. Over half of these respondents (five out of the eight respondents) reported negative unintended effects, while the rest reported positive ones. To view the responses in the form of a table, please refer to Appendix 18. The following unintended effects were identified:

Negative Unintended Effects

A small segment of the population is not willing to abide with the program requirements.
(reported by one Canadian and one American respondent)
Some of these residents eventually "gave-in" and complied, while the remaining arranged for private collection or used 'burn barrels'.

Garbage dumping was done by a small segment of the population on a temporary basis.
(reported by one Canadian and one American respondent)
"A couple of residential customers 'opted out' and arranged for a private hauler to pick up their waste and bring it to a landfill site outside of the municipality. We did not undertake any investigation into this, but suspect the waste was being dumped illegally as our neighbouring municipal landfill sites all accept waste only from residents within that municipality. This does not appear to be an issue any longer". (Respondent from Ontario – suspects that most of these residents 'gave-in' and used clear bags)

"Some dumping on private properties due to pricing issues. The dumping lasted about two years and was done by less than 10% of the population".
(Respondent from Maine)

One American program experienced challenges in getting private and municipal collectors to consistently enforce the program county-wide.

One program in the U.S. had to contend with a law suit. Please see the Special Cases section, 'A Legal Challenge' for more information on the law suit.

Positive Unintended Effects

Increased public awareness (reported by two Canadian respondents).

"People literally seeing what they were throwing away increased awareness about the wastefulness of modern lifestyles, and generated a waste reduction dialogue in the community at least, and at best some behaviour changes". (Respondent from Ontario)

"Program opened up the door to mass public education on the whole program. It was new and got people talking who were never interested before. We really used the cost factor, at the time we were changing to a second generation landfill (double the tipping fee), recycling and composting were about to become the cheaper option for the tax payer. We also indicated that with fewer landfills in the province, it was more likely that provincial inspectors would be around checking loads and could reject and fine if it was not properly sorted". (Respondent from Nova Scotia)

Improved waste reduction behaviour (reported by one Canadian and one American respondent)
The Ontario respondent linked enhanced awareness to positive behaviour change. By contrast, the American respondent from New York reported that residents became more conscientious in properly setting out their garbage due to inspectors providing warnings and enforcing program requirements.

Improved enforcement (reported by one American respondent)
"Cleaner streets, more control of what goes into the trucks. People started to take greater care in setting out their garbage and keeping their grounds clean because inspectors were out giving warnings and enforcing proper set-out requirements. Also, people cannot place garbage loosely in can, so there is less of a mess". (Respondent from New York)

5.16 Lessons Learned

The survey participants made the following suggestions based on their 'lessons learned' from implementing a clear bag program.

Suggestion Based on 'Lessons Learned'	Number of Survey Respondents
Make Every Effort to Ensure Sufficient Supply of Clear Bags	5
It is Necessary to have Public Education throughout the Process	5
Get Citizens Involved during the Planning and Development Process	3
Program must be Supported by a Clear Bag By-Law	3
Consult Other Places that have Experimented with Clear Bag Programs	2
It is Essential to have a Clear Definition of a 'Clear Bag'	2
It is Important to Include Haulers throughout the Process	2
Provide Ample Time to Allow Retailers and Residents to Make the Transition	2
Provide Information for Newcomers	2
It is Important to have Consistent Communication	2
Introduce Changes Step by Step rather than Simultaneously	1
Make sure there is a Sufficient Supply of the Necessary Containers for Waste	1

Suggestion Based on 'Lessons Learned'	Number of Survey Respondents
Diversion	
Introduce Legislation to Ban the Sale of Opaque Bags	1
If the Municipality Decides to Sell Clear Bags, test them for Strength and Durability	1
Have a Solid Plan to Get Recyclables to Market	1
Be prepared to consider the following: 1. Where can residents purchase the clear bags? (inform them) 2. What to do if the resident does not want to cooperate? 3. Where can the resident bring their garbage if they do not want to place the clear bag on the curb? 4. Is the municipality going to issue tickets for non-compliance?	1

Five survey respondents shared positive remarks and indicated they would not have done things differently.

6.0 Special Cases

This section outlines special cases that are worth highlighting in order to provide examples of some of the challenges and unique situations encountered when trying to introduce, implement or operate a clear bag program.

6.1 The Region of Durham's Past and Current Efforts to Propose a Clear Bag Program

Background

Durham Region (population of 586 000) lies immediately east of the City of Toronto. The Region provides collection and processing services to six of its eight member municipalities (Whitby and Oshawa have retained responsibility over collection). A curbside organics collection program was rolled out region-wide in 2006, with the exception of these two municipalities. There are no mandatory waste diversion by-laws in effect in the Region.

Attempt to Propose a Clear Bag Program

Staff researched and introduced the concept of clear bag requirements, which was discussed during the development of Durham Region's long-term waste management strategy plan. It was also considered by the Public Works Committee and Durham Region's Council, but it never materialized. The goal was to encourage residents to more actively participate in the Region's waste diversion programs and the main driver behind the concept was to increase diversion to the highest level possible. This full scale program would have applied to approximately 175 000 single family households. The proposal allowed for smaller, opaque bags full of garbage to be placed inside the clear bag and residents with certain medical conditions and those with three or more children under the age of three would have had the option of using non-clear bags. They would have been required to complete an application form and if accepted, a special tag would have been applied to any non-clear bag.

In the Spring of 2005, Council decided not to proceed with the clear bag program due to timing and public concerns. First, it was felt that residents should be given enough time to adjust to the source

separated organics program before introducing further changes. Also, people need sufficient lead time to make the switch to clear bags as explained by Katherine Ross-Perron, Waste Management Technician: “It seems most reasonable for the Region and those area municipalities who collect garbage locally to gradually phase in the curbside enforcement of clear plastic bags. Many residents may have a stockpile of black or green plastic bags in their homes and the retailers in the community will need to modify their garbage bag inventory and ordering procedures to accommodate this change”.

The second factor that influenced Council’s decision was public concern. Although the proposal never reached the formal public consultation stage, an article on the possibility of a clear bag program featured in the Public Works newsletter generated a certain amount of negative responses, mainly related to the privacy issue. The two Durham staff members who participated in this study noted the importance of allowing sufficient lead time to develop and present issues to Council, especially concerning privacy.

In November 2008, Region staff secured authority from Council to implement a Clear Bag pilot project for two collection routes in Pickering and Clarington (approximately 1500 homes). The pilot will focus on increased capture rates of recyclables and will run for three months commencing in January 2009. Drawing from the experience of the Town of Markham (Clear Bag Pilot Project - October to November 2007) where voluntary participation rates were low, the Region of Durham is proposing mandatory participation for residents on the selected routes, in order to ensure that sufficient data is collected. This is important to determine the full extent of additional waste diversion resulting from the use of clear bags.

6.2 A Legal Challenge – Village of Hamburg, New York

The clear bag program was introduced by the Village of Hamburg in mid-2000. Two residents filed a law suit against the municipality over privacy issues about a year after the program started. These individuals were concerned that the waste collectors would take the time to look into these bags to see what they could see out of their own personal interest. It took almost two years to resolve the case, which was ruled in favour of the Village of Hamburg. According to the court ruling, once residents place garbage at the curbside (area between sidewalk and curb), it is considered public property. The outcome of the clear bag program was certainly worth the challenges faced by this municipality. Anne Alessi, Assistant to the Superintendent of Public Works attested that; “The clear bag law took tons and tons of recyclable materials out of the waste stream and therefore cut our landfill costs drastically. Any time you can cut costs in any way for a municipality is a plus for its residents and the tax base”.

6.3 The Case the Yellow Tinted Bag Program – City of Worcester, MA

Back in 1992, the City of Worcester (population of approximately 177 000) was under pressure to implement a Pay-as-You-Throw (PAYT) program and to convert the city’s recycling program from depot to curbside collection in a short time-span. City staff were also contemplating the idea of a clear bag program, but were hesitant to implement so many changes at once. While the City faced significant opposition to PAYT, staff were responsible for the program roll-out details including the decision of whether or not to implement a clear bag requirement. In an effort to strike a compromise and to avert a negative response mainly around the privacy issue, the PAYT program was rolled out in 1993, with a yellow tinted bag (as opposed to a clear bag) requirement.

Although the public was not formally consulted, the program generated a great deal of controversy mainly related to residents’ refusal to pay for the bags, and the City received an overwhelming amount

of feedback.[21] People attended Council meetings, and a few dozen of the numerous letters sent to a local newspaper were published. The City set up a customer service center to handle the public calls, as they were receiving hundreds of calls per week and per day at some points. The actual colour of the bags went practically unnoticed. In the wake of such resistance to the PAYT program, the City embarked on an intensive six week public relations campaign[22], resulting in the successful implementation of the program.

Ultimately, the decision to require yellow tinted bags was the result of having to implement several changes in a short timeframe. Although monitoring for recyclables is easier using clear bags rather than tinted ones, staff felt it was a reasonable compromise given the situation. The main recommendation they offer to those considering clear bag programs, is to take time to conduct background research in order to learn what other municipalities have done. Unfortunately, this was not an option for staff as they had too many issues to address in a short time period, and they did not want to "add fuel to the fire" by requiring clear bags.

6.4 The Case of a Clear Bag Program Terminated – The City of Oak Creek, Wisconsin

Overall, five places that discontinued their clear bag program were identified – please see Table ES-IV for a summary of these programs. The City of Oak Creek (population of 32, 200), Wisconsin, was the only survey participant from this group. Oak Creek's program started over a decade ago and was terminated in 2000. Although it boosted the tonnage of recycling collected[23], the program was terminated because the municipality went to automated pick-up for garbage and recycling. This case example is reflective of the growing trend in North America towards the automation of collection systems, where bins are used instead of plastic bags. Although this trend may represent a barrier to the proliferation of clear bag programs, there is opportunity for municipalities with cart based programs to incorporate clear bag requirements for excess garbage, as demonstrated by P.E.I.'s waste program.

6.5 The Discontinuation of a Clear Bag Pilot Program for Waste Depots

Chittenden County, Vermont (population of 152 000) comprises one quarter of the State's population. It is the largest waste management district in Vermont. With minor exceptions, waste collection is left to the free market and there are municipal drop-off centres for garbage, recycling, HHW, and reusable items. Nancy Plunkett, Waste Reduction Manager for Chittenden County Solid Waste Management Association, recalled that clear bags were offered in 1992 for about two to four years. They were used on a voluntary basis but the initiative was discontinued for the following reasons:

- People complained about privacy issues.
- People who were used to bringing their garbage in barrels did not understand why they had to line their barrels with clear bags now; they pointed out the waste in that practice.
- It was discovered that some people were avoiding PAYT fees by emptying their pre-paid clear bags into the trash containers at the drop-off centres when no one was looking and reusing them.
- Supplying the bags was an additional cost to the program.

[21] The survey respondent was asked to rank the level of public feedback received on a scale of 1 to 5. The numeric rankings represent the following: none (0), minimal (1), some (2), considerable (3), significant (4), overwhelming (5).
[22] The campaign cost approximately $50 000 (U.S.), including in-house and private firm work, but it was worth $150 000 (U.S.) due to the private firm's pro-bono work.
[23] The results cannot be directly attributed to clear bag requirements because curbside collection of recycling was introduced at the same time.

7.0 Overall Recommendations

While conducting background research across North America, most of the clear bag activity was found in Nova Scotia, PEI, Ontario, New York, Wisconsin, Maine, and New Hampshire. Generally, the American programs were established earlier than the Canadian programs.

Using clear bags encourages people to recycle due to social pressure (ex. fear of public scrutiny and the desire to demonstrate responsible citizenship). Clear bag requirements make it easier for collectors to monitor and enforce waste management regulations. More importantly, it serves as a prompt for people to recycle and reflect on their overall waste disposal habits. The use of clear bags is an effective strategy for municipalities with manual waste collection operations. Although the North American trend towards automated collection systems acts as a deterrent to the spread of clear bag programs, there are opportunities to combine the two elements, as demonstrated by the 'black cart and clear bag' waste collection program in Prince Edward Island.

The following recommendations are based on the research findings derived from the results of surveys completed by 22 survey participants (13 American and 9 Canadian participants) representing clear bag programs currently operating in North America.

Provide sufficient notice of the program start date to help the retailers and residents make the transition. For example, the waste coordinators from the Province of Nova Scotia, which has one of the highest levels of clear bag activity in North America, suggested to provide at least **six months notice** to help all parties with the transition.

Try to get citizens involved in the process. Consulting the public beforehand translates into less problems encountered during program implementation. Please refer to the section 'Consulting the Public' for successful examples of public involvement from the United States.

Be prepared to address privacy issues. The issue of privacy was the main public concern, which was reported by12 of the 22 respondents, including 8 of the 9 Canadian respondents. Most respondents allowed for a privacy bag of some sort. Although it is possible to implement a clear bag program without permitting any privacy bags (as demonstrated by the Municipality of Guelph and the Township of Galway-Cavendish and Harvey), privacy concerns still must be addressed.

Clear bag requirements and recycling should be made mandatory with a supporting by-law. This will provide support for front-line staff who have to enforce the program. All of the Canadian respondents and 10 out of the 13 American respondents reported having mandatory recycling by-laws.

It is important to enforce the clear bag program requirements by leaving non-compliant bags at curbside with a notice indicating the infraction. All municipalities surveyed with curbside collection left non-compliant bags at the curb. It is highly recommended that collectors place a tag or sticker on non-compliant bags indicating the infraction.

Attendants should enforce the clear bag requirements at the waste site. For example, some waste site attendants refuse to accept opaque bags and others require residents to open up the garbage bag and remove any recyclables.

There must be a clear definition of a 'clear bag', in order to avoid confusion amongst the public purchasing the bags and the collectors enforcing the program requirements. The waste collectors from Nova Scotia stated that they did not allow tinted bags because it would cause confusion as to what is acceptable. In order to avoid public frustration, they required a completely see-through and non-tinted bag.

With the exception of privacy bags, do not allow the nesting of opaque bags full of garbage in the clear bag because this defeats the purpose of the program. Only one American respondent and five out of the nine Canadian respondents stated that the nesting of opaque bags full of garbage was not permitted. All respondents representing municipalities that permitted this practice still reported successful results. However, it does not enable one to completely see through the bags, which lessens the ability for collectors and waste site attendants to fully enforce compliance. It also diminishes the effects from social pressure and the clear bag serving as a prompt (viewing contents of personal household waste can encourage personal reflection of waste disposal habits). For maximum results, it is recommended to not permit this practice.

In the cases where collection is contracted out to a private company: To help ensure that private municipal waste collectors are enforcing program requirements, there should be a penalty for those that do not. For example, a fine for any non-clear bags or clear bags containing recyclables, that are spotted being collected or entering the landfill/transfer site. This may be difficult if the municipality does not operate the landfill/transfer site, or the collection is completely left to the private sector. In this case, the municipality should find an alternative strategy to ensure accountability such as spot checks.

Clear bag requirements should apply to all intended program recipients, whether they have municipal collection or a private hauler. Clear bag requirements should apply to all residents (or institutions/commercial establishments if IC&I sector is included in the program), no matter how they choose to have their garbage collected. If the program applies only to collection organized by the municipality, this leaves a 'loophole' where a resident may opt for a private hauler in order to avoid the clear bag requirements. Although it is difficult to enforce the program with all haulers, applying the program requirements consistently to everyone may deter some people from changing haulers to avoid participation in the program.

A public relations campaign should be executed in anticipation of the public's response. This includes public outreach such as information sessions and the use of various forms of media.

Include relevant staff and haulers in the program development and implementation process and provide sufficient education and training. They are the front-line educators, so time must be invested in educating them on the importance of the program, as well as the program requirements and proper enforcement. For example, waste reduction staff from Fulton County, New York have 'ride-alongs', where recycling staff ride with the waste collectors to ensure consistency in enforcement and that the drivers are fully educated and trained. It is proactive to include staff throughout the process. They can offer a 'front-line' perspective and provide insightful information such as program practicalities.

Considering the growing interest across Ontario in clear bag programs, Waste Diversion Ontario should consider tracking clear bag use through its annual data-call process. Currently, Waste Diversion Ontario is required to report on the use of bag tags and bag limits but not clear bags. This strategy should be tracked because it has the potential to become a widespread practice in Ontario. The information should prove to be useful to municipalities considering clear bag requirements.

The above recommendations are based on the prior experience of municipalities that have implemented a clear bag program. These recommendations are intended to help municipalities that are considering such a program. Clear bag requirements serve as a 'starting point' for further waste reduction efforts, or as a complementary addition to an existing waste management program. The findings clearly demonstrate that it is an effective strategy for diverting waste from disposal.

Sources Consulted for this Research

List-serve and Email Lists: Information Request for Places that have Experimented with Clear Bags for Garbage

British Columbia
Tracey Weldon, Information Services Coordinator for the Recycling Council of B.C. sent the information request to all of the Solid Waste Coordinators in January 2007.

New Brunswick
Don Shea, Executive Director of New Brunswick Solid Waste Association sent the information request to all of the solid waste associations in the Province on September 12, 2007.

AMRC
Ben Bennett, Manager of Projects and Communications for the AMRC (Association of Municipal Recycling Coordinators) provided the results of an email enquiry sent to all AMRC members regarding clear bag programs in the summer of 2006.

Virginia and rest of North America
Christine McCoy, Solid Waste Planner for the City of Alexandria and Board Member of the Virginia Recycling Association, Virginia sent the information request on April 5, 2007 via the following list-serves:

1. Green Yes - Grassroots Recycling Networks
2. JTR Net - EPA's Jobs Through Recycling
3. VRA - Virginia Recycling Association Member Listserv
4. NRC - College and University's Council (CURC)
5. Community Recyclers Council

North America
Consultation with Lori Scozzafava, Board of Director Member of Maryland Recycling Coalition, in April of 2007 – She agreed to add information request to the SWANA list-serve – division of waste reduction and composting. There are 7600 SWANA members overall and 600 subscribers to the waste reduction and composting division.

Indiana
Michelle Cohen, Executive Director of Indiana Recycling Coalition sent information request on May 1, 2007 to the OPPTA list-serve (Office of Pollution Prevention and Technical Assistance – for Indiana) This list-serve covers most of the Solid Waste Management Districts – they are local units of government that cover one or multiple counties. They run their own waste programs and/or they know about programs happening in cities within their borders.

Missouri
Katy D'Agonstino, Planner for the Missouri Department of Natural Resources sent information request on April 2007 to:
A list-serve for 20 solid waste management districts – these organizations are well-informed of waste diversion initiatives.

New York
Diane Fisher, Administrative Assistant for NYSAR3 (New York State Association for Reduction, Reuse, and Recycling), sent information request to all members of the state recycling coalition on April 30, 2007.

Oregon
Betty Patton, Resource Director (a staff member) of Association of Oregon Recyclers sent information request via her list-serve on April 24, 2007, and asked all of her relevant contacts.

Vermont
Nancy Plunkett, Waste Reduction Manager for the Chittenden County Solid Waste Management Association sent information request on April 17, 2007 to the Vermont Solid Waste and Recycling Coordinators Listserve.It is managed by the Vermont Department of Environmental Conservation. All of the solid waste district and solid waste alliance coordinators receive it, as well as some coordinators for individual municipalities that are not part of a district or alliance. It also includes state solid waste staff, private solid waste consultants, and a variety of other interested parties.

The Following Organizations and Individuals were Contacted for Information on Places that have Experimented with Clear Bag Programs for Garbage

Canadian Contacts

Alberta
Christina Seidel, Executive Director, Recycling Council of Alberta
Date of contact: January 7, 2007

British Columbia
Ivo Beitsma, Executive Director, Coast Waste Management Association
Date of contact: December 20, 2006

Tracey Weldon, Information Services Coordinator, Recycling Council of BC
Date of contact: January 3, 2007

Manitoba
Randall McQuaker, Executive Director, Resource Conservation Manitoba
This is a non-profit centre for applied sustainability. Date of contact: July 16, 2007

Kimberly Balance, Senior Policy Analyst, Association of Manitoba Municipalities
Date of contact: August 8, 2007

New Brunswick
Angela Mahoney, Public Relations Manager, Westmorland-Albert Solid Waste Corporation
Date of contact: March 29, 2007

Don Shea, Executive Director, New Brunswick Solid Waste Association.
Date of contact: September 12, 2007

Newfoundland
Allan Scott, Councillor for Gander
He is also the regional contact for the Central Newfoundland Waste Management Committee.
Date of Contact: April 3, 2007

Ontario
Ben Bennett, Manager of Projects and Communications,
Association of Municipal Recycling Coordinators
Date of contact: November 21, 2006

Greg McDonald, National Coordinator, Waste Reduction Week in Canada,
Recycling Council of Ontario
Date of contact: January 2006

Nova Scotia
Consultation with Bob Kenney, Solid Waste-Resource Analyst, Nova Scotia Environment.
Date of contact: April 10, 2008.

Prince Edward Island
Heather (Chowen) Myers, Disposal Manager, Island Waste Management Corporation
Date of contact: March 29, 2007

Quebec
Patrick Legault, Eco Enterprises Quebec
Date of contact: April 2, 2007
This is a private non-profit organization, which represents companies that market containers and packaging & printed matter in Quebec.

Recyc Quebec
This organization is responsible for supporting recycling in Quebec.
Date of contact: April 2, 2007

The following unions were also contacted but no assistance was received:
Federation of Quebec Municipalities
Union of Municipalities of Quebec (UMQ)

Saskatchewan
Joanne Fedyk, Saskatchewan Waste Reduction Council (SWRC)
Date of contact: 2007

American Contacts

Alabama
Karl Frost, State Recycling Coordinator for Alabama, Alabama Department of Economic and Community Affairs. Date of Contact:: April 2007

Alaska
Ray Paddock, Solid Waste Alaska Network, Council of Tlingit & Haida Indian Tribes (CCTHITA), Juno, Alaska. Date of Contact: April 12, 2007

Arizona
Laura Newman, Recycling Educator, Arizona Department of Environmental Quality
Date of Contact: April 13, 2007

California
Barbara Souza, Manager, California Resource Recovery Association (CRRA)
Date of Contact: April 10, 2007 (clear bag information was not available)

Connecticut
Winston Averill, Board of Directors, Connecticut Recyclers Coalition
Date of Contact: April 24, 2007

Florida
Association Representative, Recycle Florida Today
Date of Contact: April 2007

Hawaii
Hawaii State Department of Health

- City and County of Honolulu
- County of Maui
- County of Hawaii
- County of Kauai

Date of contact: April 12, 2007

Illinois
llinois Recycling Association Date of contact: April 2007

Chris Newman, Environmental Scientist, EPA (Region 5), Chicago, Illinois Date of contact: April 2007

Kansas
Kristine Hicks, Environmental Scientist, Bureau of Waste Management, Kansas Dept. of Health and Environment Date of contact: April 24, 2007

Kentucky
Leslie King, Branch Manager, Recycling and Local Assistance Branch, Division of Waste Management, State EPA Date of contact: April 2007

Maine
Sam Morris, Senior Planner, Waste Management and Recycling Program, Maine State Planning Office, Maine Date of contact: April 23, 2007 and numerous times afterwards in 2007 and 2008.

Victor Horton, Executive Director of the Maine Resource Recovery Association (MRRA) sent information request on April 23, 2007 to all of his relevant contacts.

Massachusetts
Joseph Lambert, Masschusetts Department of Environmental Protection
Date of contact: April 27, 2007

Michigan
Nancy Hawkins, Executive Director, Michigan Recycling Association
Date of contact: April 24, 2007

Nebraska
Cindy Smilley, Director, Keep Omaha Beautiful Date of contact: May 9, 2007

New Hampshire
Donald Maurer, Supervisor of Solid Waste and Technical Assistance, New Hampshire Department of Environmental Services Date of contact: May 29, 2007

New Mexico
Jill Hubert, Former Manager for Santa Fe's Waste Management, State Environment Department Date of contact: April 12, 2007

English Bird, Executive Director, New Mexico Recycling Coalition
Date of contact: April 12, 2007

New York
David Hurd, Director of Office of Recycling for Outreach and Education at the Council of Environment of NYC and a member of the Board of Directors for New York State Association for Reduction, Reuse, and Recycling (NYSAR) Date of contact: April 2007

Debbie Jackson, Solid Waste Management Specialist for New York State's Department of Environmental Conservation, Division of Solid and Hazardous Waste Materials
Date of Contact: April 28, 2008

Pennsylvania
Amy Zuckett, Director of Education, Professional Recyclers of Pennsylvania
Date of contact: April 2007

Texas
Kurt Fenstermacher, Manager of Recycling, Waste Management, City of El Paso, Texas
Date of contact: April 2007

Washington
Diana Leland, Membership Services Director Date of contact: April 11, 2007

Wisconsin
Cynthia Moore, Team Leader of 5 regions, Department of Natural Resources
Date of contact: spring 2007

Jason Johns, National Solid Waste Management Association
Information request was sent in the spring of 2007 to the Alliance of Cities, which represents all of the cities in Wisconsin.

Consultation with Karin Sieg, Executive Director of AROW (Association of Recyclers of Wisconsin) on April 11, 2007. She sent information request to her relevant contacts including the Board of Directors of AROW and stated that she may forward it to AROW's member list-serve if she deems it necessary.

Vermont
Nancy Plunkett, Waste Reduction Manager for the Chittenden County Solid Waste Management Association. Telephone consultation: April 2007
Liz Helrich, Program Manager, Central Vermont Solid Waste District
Telephone Consultation: April 2007

Other
Nora Goldstein, Executive Editor, BioCycle, Advancing Composting, Organics Recycling & Renewable Energy Date of contact: April 2007

National Recycling Coalition, Washington, D.C. Date of contact: April 14, 2007

Athena Bradley, Northeast Recycling Council, Vermont
Date of contact: April 18, 2007

Halifax Business Directory and Community Information, *Personal: Recycling at Bottle Depots.* Web Site Accessed on June 2008: http://www.foundlocally.com/halifax/Personal/GoodsRecycling.htm

This was a comprehensive research project and not all organizations/individuals contacted are listed here. Information on other states not mentioned on this list was received from some of the contacts above.