319.

A Waste Recycling Strategy for The County of Northumberland Final

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1.0 Introduction

This Waste Recycling Strategy (Strategy) was initiated by the County of Northumberland (County) to develop a plan to increase the efficiency and effectiveness of its recycling program and to maximize the amount of Blue Box material diverted from disposal. This plan will be updated at least every five years.

Specifically, the purpose of this Strategy is to:

- Maximize Best Practices funding;
- Identify and demonstrate continuous improvements toward Best Practices;
- Clarify long term Blue Box diversion goals; and
- Identify cost effective options to maximize Blue Box diversion for the County.

The County's obligations for managing municipal waste include the following:

- Weekly residential curbside collection of waste;
- Weekly single stream curbside collection of recyclables;
- County owned and operated (3) waste disposal/transfer sites;
- County owned and operated (4) municipal household special waste depots (MHSW) and (1) Blue Box depots at County owned disposal sites;
- County owned and operated single stream Material Recovery Facility (MRF); and
- County owned and operated leaf and yard waste drop off sites at each of the 3 disposal sites.

The County faces a few waste management challenges that this Strategy can address including:

- Large geographic area and extensive level of curbside service; and
- Relatively high program cost.

This Strategy was developed with financial support from the Continuous Improvement Fund (CIF). The CIF's *Guidebook for Creating a Municipal Waste Recycling Strategy* was used to help develop this Strategy.

2.0 Overview of the Planning Process

This Strategy was prepared by environmental consulting firm 2cg Inc and County staff.

The development of the Strategy included the following steps:

- Gather relevant data from the County;

- Meet with County staff to review data and walk through Strategy format;
- Gather and compile additional information from County to prepare draft Strategy;
- Submit Draft report to County staff for input;
- Request feedback on County website; and
- Prepare final Strategy

The next steps include:

- Council endorsement of this Waste Recycling Strategy;
- Council decision on which initiatives to implement.

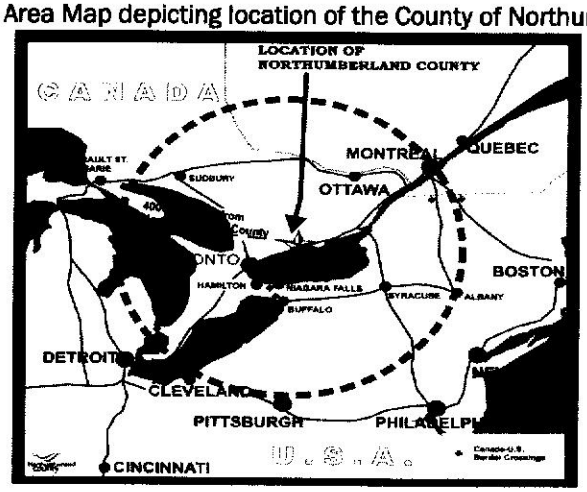
3.0 Study Area

The study area for this Strategy is the County of Northumberland, located between the Region of Durham and Quinte West, along the 401 corridor on the North shore of Lake Ontario. The geographic area of the County in relation to other urban centres is depicted in Figure 1.

This Waste Recycling Strategy addressed the following sectors:

- Residential single family;
- Residential multi-family; and
- Seasonal residential sector.

Figure 1 Area Map depicting location of the County of Northumberland



4.0 Public and Stakeholder Consultation Process

Stakeholder groups included in this consultation included:

- County staff; and

- County council.

The public and stakeholder consultation process followed the development of this Strategy and consisted of the following activities:

- Meetings with staff to present Draft report and discuss current situation and receive input and guidance into possible enhancements to recycling program; and
- Posting of Final Report on the municipal website and submission of Final Report to municipal council to endorse.

5.0 Stated Problem

Management of municipal solid waste, including the diversion of Blue Box materials, is a key responsibility for all municipal governments in Ontario. The factors that encourage or hinder municipal Blue Box recycling endeavors can vary greatly and depend on a municipality's size, geographic location and population.

The challenges facing the County are:

- High curbside collection costs and large geographic service area;
- Decrease in Blue Box weights and increases in Blue Box volumes (plastics); and
- Higher than average operating costs of the MRF reflecting a higher than average residual rate.

The key drivers that led to the development of this Waste Recycling Strategy include:

- Maximize Best Practices funding; and
- Implement Monitoring Program.

6.0 Goals and Objectives

This Strategy development process identified a number of goals and objectives for the County which is presented in Table 6.1.

Table 6.1 County's Recycling Goals and Objectives

Waste Recycling Goals and Objectives	
Goals	**Objectives**
To improve the cost-effectiveness of recycling for County residents.	In 2011, aim to reduce current collection cost per tonne by minimum **25%** through implementation new collection contract that commenced December 2010. Similarly, in 2011, investigate the options

	to upgrade the container processing line at MRF and assess the financial feasibility of these upgrade options.
To maximize diversion of residential Blue Box/recycling program.	In 2011, aim to divert **25%** of municipal solid waste through the Blue Box program with implementation of simple measures (Priority Initiatives Table e.g. enhancements to P&E program). Beyond 2011-12 consider aiming toward the target to divert **35%** of municipal solid waste through the Blue Box program with the implementation of more comprehensive measures (Future Initiatives Table).
To increase capture rate in the recycling program.	To monitor current capture rate (**46%**) and strive to increase Blue Box capture rate to the Rural Regional target of **75%.**

7.0 Current Solid Waste Trends, Practices and System and Future Needs

Community Characteristics
The reported population for the County of Northumberland is 83,043. The major urban areas are Cobourg (18,000 residents), Port Hope (10,000 residents) Brighton (4,000 residents) and Campbellford (3,500 residents). The area of the County is approximately 3,000 square kilometers composed of a mix of urban and rural areas.

The County is home to 35,019 single family households, minimal multi-family residents and 2,657 seasonal residents, generally occupied during the months of May to October.

Currently, the County has the following policies and programs in place to manage residential solid waste:

- Full User Pay ($2.75/bag/week) with no free bags;
- Maximum three bag limit;
- Solid Waste Management By-law 15-10, dealing with Collection of waste and recyclables and application of fees for these services;
- Enhanced Blue Box program;
- `Recycle Clean' Promotion and Education Program; and
- Tipping fees at landfill site.

The County enforces mandatory recycling as part of the waste by-law and will reject contaminated recyclables at the curb with supporting information stickers. The County's bagged based program does not encourage the use of Blue Boxes although

recycling bags for residents providing the bags are see through (clear or clear blue)

Existing Recycling Programs and Services

Curbside wastes and recyclables are collected by National Waste Inc. At the time of this Strategy, National Waste was just awarded a new 8 year contract with 2 one year renewal terms. The contract came into full effect on December 1st, 2010. The intent of the new collection contract is to reduce collection costs by a minimum of 25% over the upcoming operating year (2011). Three rural depot sites located at the County owned and operated landfill sites are collected through public forces. The County provides roll-off services to the depot sites and to the County operated MRF.

The County offers weekly single stream collection of recyclables. Recyclables are collected through a bagged based program and are co-collected with the weekly waste program. The County has a maximum three bag waste limit and a full user pay structure ($2.75 per bag with no free bags). The County collects an expanded range of Blue Box material which includes the following:

Containers	Fibres
• Glass bottles and jars	• Newspaper, flyers, magazines, inserts
• Metal food and beverage containers & foil	• Office paper, fine paper, envelopes
• Empty aerosols and paint cans	• Non-metallic wrapping materials, greeting cards
• Plastic containers (1-7) inclusive of film, excluding expanded polystyrene	• Boxboard, corrugated cardboard, brown paper bags
• Polycoat	• Hard and soft cover books

Photo 1 depicts recyclable collection set outs.

Photo 1 Average Waste and Recyclables Set Out

The curbside and depot trucks deliver Blue Box material daily to the Northumberland Material Recovery Facility (MRF) located along the 401 in Grafton, ON.

Photo 2 depicts this 55,000 square foot single stream MRF.

Photo 2 Northumberland MRF

Overall the program appears to work fairly well but collection and processing costs associated with the program have been historically high, compared to other municipalities within the Rural Regional grouping.

Important collection and processing related milestones that may affect how services are administered within the County include:

1. The County commenced the new waste and recycling collection contract with National Waste (December 1, 2010);
2. Submission of funding request to CIF to assist with capital upgrades to the container processing line at the MRF; and
3. Securing formal agreement with the City of Kawartha Lakes to process their Blue Box material.

Current Waste Generation and Diversion

Table 7.1 depicts the total waste quantities managed by the County in 2009.

Table 7.1 2009 Total Waste Quantities (Residential and IC&I)

Waste Material (2009)	Quantities (Tonnes)
Yard Waste Depot	2,032
Municipal Waste Collection	7,246
Residential Waste Drop Off	6,895
Tires	269
Northumberland BB Collection	6,704
Northumberland BB Depot Collection	524
MHSW & E-Waste	273
C&D Wastes	346
Residential Self Haul Scrap Metal	551
Total	**24,840**

In 2009, the County managed 24,840 tonnes of residential waste generated within the boundaries of Northumberland County. Of this 7,228 tonnes was collected through the Blue Box program (curbside and depot). Tonnages processed at the MRF from outside municipal contracts (City of Kawartha Lakes and IC&I contracts) were not included in this total.

Table 7.2 summarizes the current waste generation and **Blue Box** diversion rates. To ensure the accuracy of the County's Blue Box diversion rate, calculations in the table below depict the actual Blue Box tonnes marketed by the County.

It is important to note that the Strategy focus is on the Blue Box program and reference to diversion rates and capture rates is specific to Blue Box recyclables and does not incorporate overall waste diversion rates from other sources (SSO, MHSW, etc).

Table 7.2 County's Residential Blue Box Diversion Rate (2009)

Residential Solid Waste Generated and Diverted (Through Blue Box Only)		
Residential Waste Stream/ Blue Box Material	**Tonnes**	**Percent of Total Waste**
Total Waste Generated	24,840	-
Papers (ONP, OMG, OCC, OBB and fine papers)	4,460	18.0%
Metals (aluminum, steel, mixed metal)	334	1.3%
Plastics (containers, film, tubs and lids)	386	1.6%
Glass	490	2.0%
Total Blue Box Recyclables Diverted from Landfill	**5,670**	**22.8%**

In 2009 there was a contamination rate of about 20.5% (i.e. 7,228 tonnes collected-5,670 tonnes marketed/7,228 tonnes collected * 100).

Table 7.3 indicates the County's current Blue Box diversion rate is on par for its WDO municipal grouping.

Table 7.3 Residential Blue Box Diversion Rate Comparison to Rural Regional Rate (2009)

Average Blue Box Diversion Rate (2009)	
County of Northumberland	22.8%
Municipal Grouping: Rural Regional	22.6%

In 2009, the net overall recycling cost for the County was $2,512,744. This represents all costs associated with the Blue Box program inclusive of curbside and depot costs, MRF operating costs, promotion and education costs, revenue received from material sales, and a portion of administration costs as it relates to the Blue Box specific to the County. Details of the County's residential Blue Box (BB) costs are depicted in Table 7.4.

Table 7.4 County's Residential Blue Box Gross Costs (2009)

Item	Costs	%
BB Curbside Collection Contract	$ 986,718.75	33
BB MRF Northumberland Operating Costs	$ 1,171,103.12	39
BB MRF Facility Costs	$200,001.64	7
BB MRF Equipment Depreciation Costs	$258,817.71	9
BB Depot Costs	$ 32,463.69	1
BB Promotion Costs	$122,000.50	4

BB Administration/Municipal Costs	$ 124,709.00	4
BB Interest Costs	$118,375.00	4
Total BB Gross Costs	**$ 3,013,237.83**	
Revenue	**-$500,493.00**	
Total Net BB Costs	**$2,512,744.00**	

Itemizing the individual cost centres of the County's Blue Box program, the MRF actual operating costs represents 39% of the overall program costs followed closely with the Blue Box collection costs (33%). Remaining costs reflect maintenance, promotion, capital depreciation of rolling stock and administration costs.

To report accurate overall costs, Table 7.5 depicts total tonnes (i.e. 7,228 tonnes) managed by the County Blue Box programs (curbside, depot and processed at the MRF). On this basis it shows that the net annual recycling costs for the County are slightly **above average** for the WDO Rural Regional municipal grouping when using the total Blue Box tonnes managed by the County.

Table 7.5 County's Residential Blue Box Costs vs. Rural Regional Program Costs (2009)

Recycling Cost (per tonne per year)	
County of Northumberland (Net Costs per 7,228 Collected Tonnes)	$348/tonne
Municipal Grouping: Rural Regional (Gross Program Costs)	$ 401/tonne
Municipal Grouping: Rural Regional (Net Program Costs)	**$ 331/tonne**

It is important to note that the WDO Datacall calculates net costs of marketed material only and WDO performance factors reflect this calculation.

On this basis it is important to note that the WDO Datacall website postings depict County Blue Box net costs as $504/tonne, (costs per marketed tonnes) representing one of the highest program costs within the Rural Regional grouping.

What is unique to the County residential Blue Box costs is that the costs are calculated at a higher rate than the Rural Regional average cost, primarily due to the County's higher than average residual rate in the WDO reporting year of 2009 and not as a full reflection of overall operating costs.

Potential Waste Diversion

The County's current waste composition was estimated using data from the CIF Waste Recycling Strategy Guidebook (i.e. Rural Regional; District of Muskoka).

It is estimated, as depicted in Table 7.6, that approximately 11,675 tonnes of Blue Box materials are available in the waste stream.

Table 7.6 Potential Available Blue Box Material

Current and Potential Diversion			
Waste/Resource Material	**Composition (%) (Rural Regional Sample Audit- District of Muskoka)**	**Total Residential Waste Generated (tonnes)**	**Total Blue Box Material in Waste Stream (tonnes)**
Papers (ONP, OMG, OCC, OBB and fine papers)	28	24840.0	6955.2
Metals (aluminum, steel, mixed metal)	3		745.2
Plastics (containers, film, tubs and lids)	9		2235.6
Glass	7		1738.8
Total Blue Box Materials	**47**	**24,840.0**	**11,674.8**

The current capture rate of collected Blue Box materials is **61%** (i.e. 7,228 tonnes collected/11,675 tonnes).

The WDO Datacall calculates Blue Box diversion and capture rates on marketed material (5,670 marketed tonnes in 2009). On this basis (referencing marketed tonnes) the current capture rate of all Blue Box materials is **48%** (i.e. 5,670 tonnes collected/11,675 tonnes). For reporting clarity to match WDO calculations, this Strategy will use marketed Blue Box tonnes.

Rural Regional municipalities have a recommended a target capture rate of 75% or 3,086 additional tonnes, as depicted in Table 7.7.

The County would need to capture an additional 3,086 tonnes of additional Blue Box material to achieve this target (i.e. 8,756-5,670=3,086).

Table 7.7 Capturing 75% of Available Blue Box Material from County's Residential Waste Stream

Current and Potential Diversion			
Waste/Resource Material	Total Available in Waste Stream (tonnes/year)	Currently Recycled (tonnes)	Potential Increase (tonnes/year)
Papers (ONP, OMG, OCC, OBB and fine papers)	5,216.4	4,460.0	756.4
Metals (aluminum, steel, mixed metal)	558.9	334.0	224.9
Plastics (containers, film, tubs and lids)	1,676.7	386.0	1,290.7
Glass	1,304.1	490.0	814.1
Total Blue Box Materials	**8,756.1**	**5,670.0**	**3,086.1**

Capturing 75% of Blue Box material from the County's residential waste stream has the potential to raise its **Blue Box diversion rate to about 35%** (i.e. 5,670 marketed Blue Box tonnes + 3,086 projected tonnes / total residential waste of 24,840). The 3,086 additional tonnes would increase Blue Box diversion by about 12 percentage points.

Anticipated Future Waste Management Needs

It is anticipated that the County's growth rate is approximately 1% per annum over the next 10 year planning period.

Table 7.8 depicts the expected growth rates for solid waste generation and Blue Box material recovery (based on a projected population growth rate of 1% and 75% Blue Box capture rate).

Table 7.8 Forecasting 75% Capture of Blue Box Material from County's Residential Waste Stream

Anticipated Future Solid Waste and Blue Box Recovery Rates			
	Current Year	Current Year + 5	Current Year + 10
Population	83,043.0	88,146.6	93,563.9
Total Waste	24,840.0	26,366.6	27,987.0
Blue Box Material Available	8,756.1	9,294.2	9,865.4

Residual Waste

The County made reducing their high residual rate a priority in 2008 with the launch of their extensive promotion and education "Recycle Clean" program. Table 7.9 depicts the progress on reducing residual rates.

Since the launch of this program there has been a 22% increase in recyclables processed and a 32% reduction of residue at the MRF.

Table 7.9 Overview of MRF Performance (2008 -2010)

County of Northumberland MRF	2008	2009	2010	% Change
Total MRF Tonnes Processed (Res. & IC&I)	13,136	15,670	16,063	22% increase
Total MRF Tonnes of Residual (Res. & IC&I)	3,854	2,791	2,611	32% decrease
Total Tonnes Marketed (Res. & IC&I)	9,282	12,879	13,452	45% increase
Revenue Per Marketed Tonnes	$150.00	$86.00	$124.00	17% decrease

It will be important for the County to continually seek out methods to reduce their overall residual rate to improve overall effectiveness and efficiency ratings (Performance Rating) from WDO. The steady decrease in residue is a trend the County intends to further improve through promotion and education and supported with possible MRF upgrades.

To help with this process an in-bound residual audit was conducted as part of this Strategy (Section 7.1).

7.1 Inbound Residual Waste Audit

An inbound residual audit of Blue Box material was conducted in April 2011 at the MRF to examine the composition of residential material entering the MRF. The three day audit sampled material collected from the residential collection trucks from the following areas:

- Urban areas of the Municipalities of Trent Hills and Brighton;
- Rural areas of the Municipality of Brighton and the Township of Cramahe;
- Township of Alnwick Haldimand;
- Town of Cobourg; and
- Urban areas of the Municipality of Port Hope.

The purpose of the audit was to determine the types and quantities of residue (i.e. improperly prepared recyclables such as plastic film and non-recyclable contamination) included with recyclables.

7.1.1 Inbound Residual Audit Methodology

The County tracked residential curbside trucks through their on-line GIS tracking system to select trucks carrying only residential material. The truck was flagged by County staff and delivered to the MRF. The truck tipped a portion of its load in a designated area of the tipping floor away from other inbound material.

Representative samples of approximately 100 kg per sample were collected from an average of 5 trucks per day for an average sampling of 700 kg per day. Material was sorted by a crew of four into the following categories.

Recyclables:

- Fibre (News, Flyers, Cardboard, Boxboard, Milk Cartons, Juice Boxes);
- Plastic (All container plastics);
- Bagged Film Plastic (as per Recycle Clean Program);
- Glass (All container glass); and
- Metal (All steel and aluminum cans).

Non-Recyclables:

- Loose Film (Not bagged together as per Recycle Clean);
- Composites (Plastic lined bags, chip bags, laminates, photos, etc);
- Contaminated Recyclables (Unopened and bagged newspapers, cardboard pop cases with outer plastic wrapping, paper bags filled with plastic film, cookie bags with rigid plastic inserts, etc);
- Polystyrene (Expanded foam);
- Food wastes;
- Pet wastes;
- Paper toweling; and
- Scrap metal.

Photo 3 depicts the sorting area.

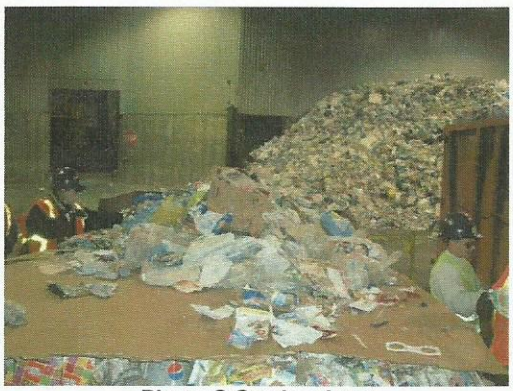


Photo 3 Sorting Area

A summary of the results is presented in the following sections.

7.1.2 Urban Areas of the Municipalities of Trent Hills and Brighton

A breakdown of residential Blue Box material collected from urban areas of the Municipalities of Trent Hills and Brighton on Thursday, April 14th was sampled on Monday, April 18th. (Appendix B presents details of residual audit information). A total of three inbound samples were sorted representing a total weight of 321 kgs.

Figure 7.1 depicts the breakdown between recyclable and non recyclable wastes entering the MRF from the sample area. Approximately 14% of the inbound recyclable wastes were classified as non-recyclable due to either inappropriate material preparation (i.e.: loose plastic film, bagged newspapers), contamination (i.e.: cans flattened into film) or was not a recyclable product within the County Blue Box program (i.e. Styrofoam, textiles).

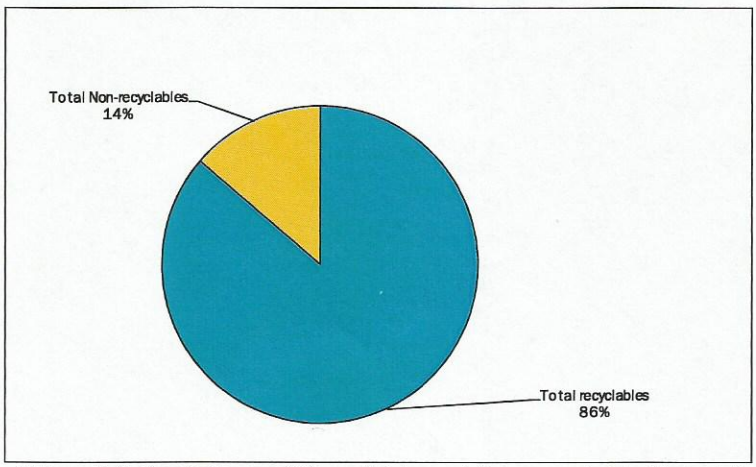


Figure 7.1 Breakdown of Recyclable and Non-recyclable Material

Figure 7.2 presents a breakdown of key recyclable material found in the inbound residential material collected from the two areas (86% of total material sampled). Paper fibres represent 65% of the recyclable material in this sampling.

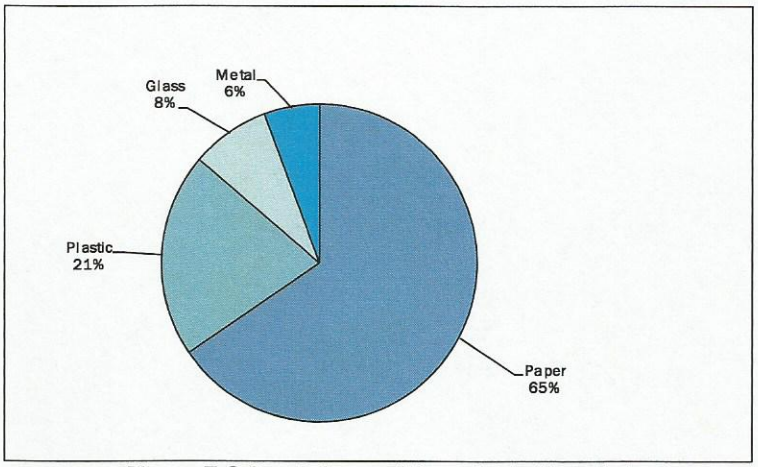


Figure 7.2 Breakdown of Recyclable Material

Figure 7.3 presents the composition of non-recyclable material found in the inbound residential material collected from the urban areas of the Municipalities of Trent Hills and Brighton. Loose film was the greatest residual waste in these samples (40%) followed by contaminated recyclables (15%) and composite material (11%). Specific to this area, a very small portion of residents bagged their plastic bags. A total of 3 bags of plastic film bags were found in this sampling but all were contaminated with materials other than plastic film (plastic bottles, bags bagged in paper).

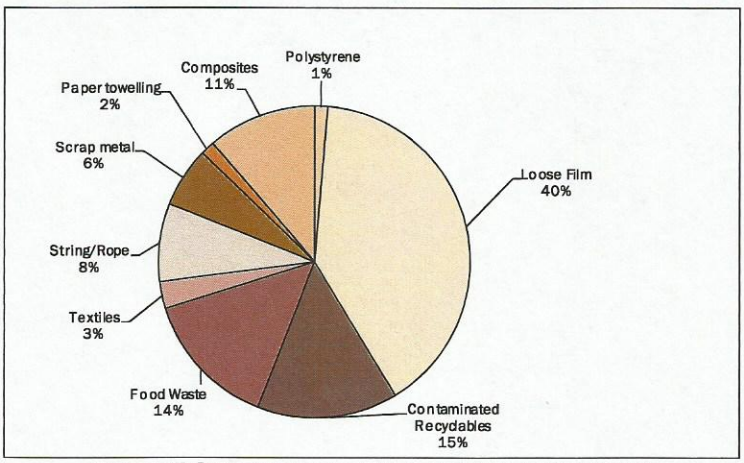


Figure 7.3 Breakdown of Non-Recyclable Material

7.1.3 Rural Area of the Municipality of Brighton and Township of Cramahe

A breakdown of residential Blue Box material collected from the rural areas of the Municipality of Brighton and Township of Cramahe on Monday April 18th was conducted. Sampling occurred on the same day. (Appendix B presents details of residual audit information). A total of three inbound samples were sorted representing a total weight of 311 kgs.

Figure 7.4 depicts the breakdown between recyclable and non recyclable wastes entering the MRF from the sample area. Approximately 9% of the inbound recyclable wastes were classified as non-recyclable.

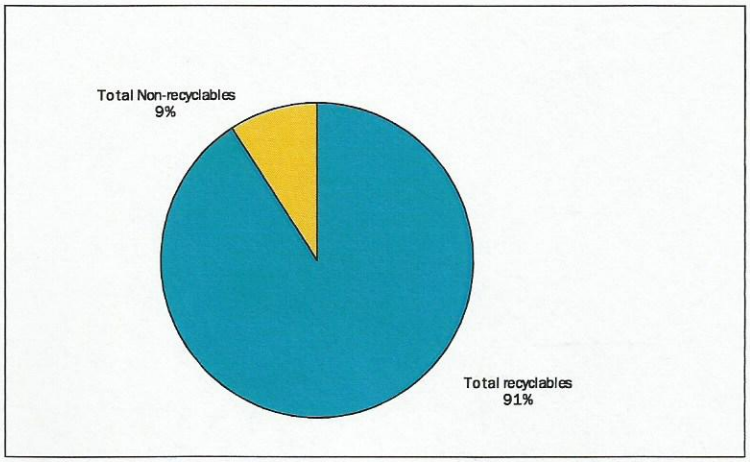


Figure 7.4 Breakdown of Recyclable and Non-recyclable Material

Figure 7.5 presents a breakdown of key recyclable material found in the inbound residential material collected from the two areas (91% of total material sampled). Paper fibres represent 80% of the recyclable material in this sampling.

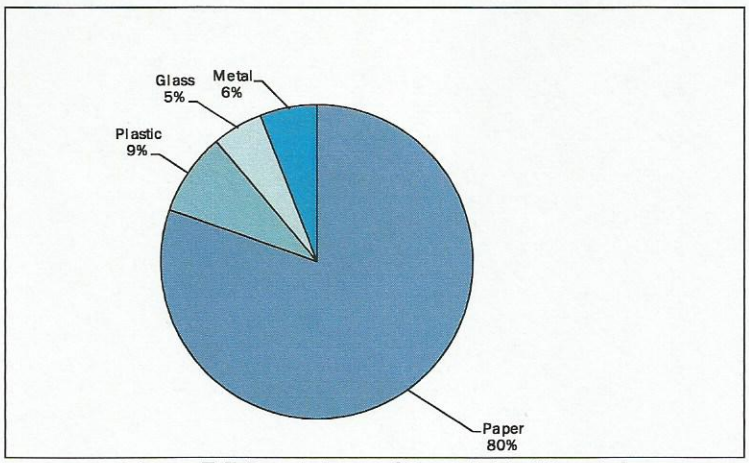


Figure 7.5 Breakdown of Recyclable Material

Figure 7.6 presents the composition of non-recyclable material found in the inbound residential material collected from the rural area of the Municipality of Brighton and the Township of Cramahe. Composite material represented the greatest residual waste in these samples (41%) followed by loose film (34%) and contaminated recyclables (12%). Specific to this area, there were several pet food (dog food) bags that are lined with plastic as well as photographs, and many loose chip bags. A few more residents bagged their plastic bags compared to the urban areas of the Municipality of Brighton and Trent Hills. It appears that contaminated recyclables

were a result of over compaction on the collection vehicles for this area. Cans and plastics were flattened together and could not be separated.

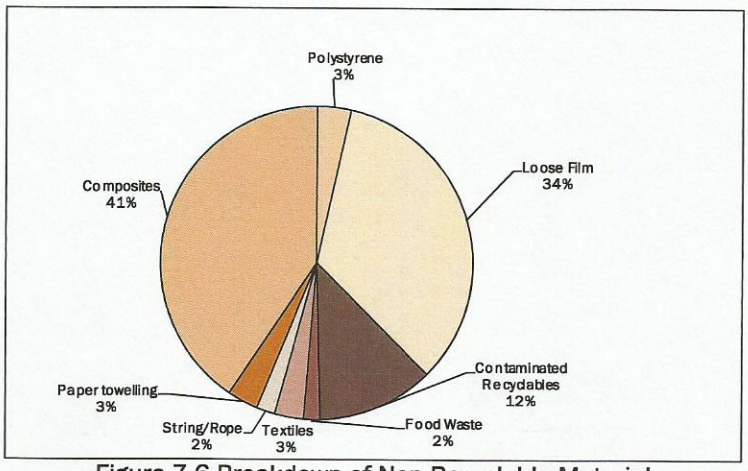


Figure 7.6 Breakdown of Non-Recyclable Material

7.1.4 Township of Alnwick Haldimand

A breakdown of residential Blue Box material collected from the Township of Alnwick Haldimand on Tuesday April 19th was conducted. Sampling occurred on the same day. (Appendix B presents details of residual audit information). A total of three inbound samples were sorted representing a total weight of 312 kgs.

Figure 7.7 depicts the breakdown between recyclable and non recyclable wastes entering the MRF from the sample area. Approximately 8% of the inbound recyclable wastes were classified as non-recyclable.

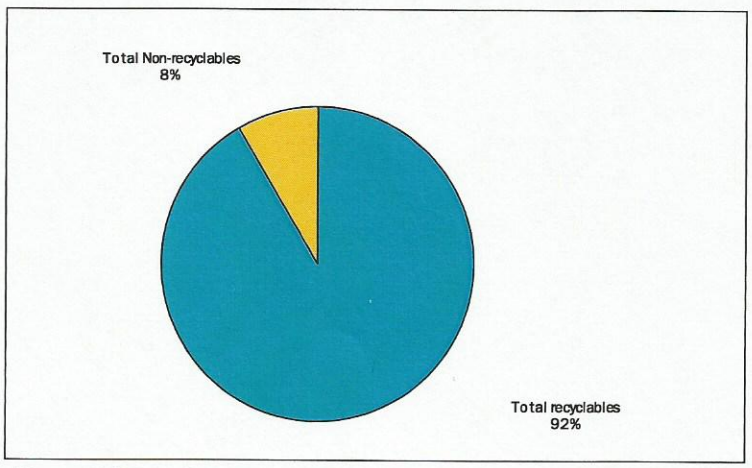


Figure 7.7 Breakdown of Recyclable and Non-recyclable Material

Figure 7.8 presents a breakdown of key recyclable material found in the inbound residential material collected from the Townships (92% of total material sampled). Paper fibres represent 70% of the recyclable material in this sampling.

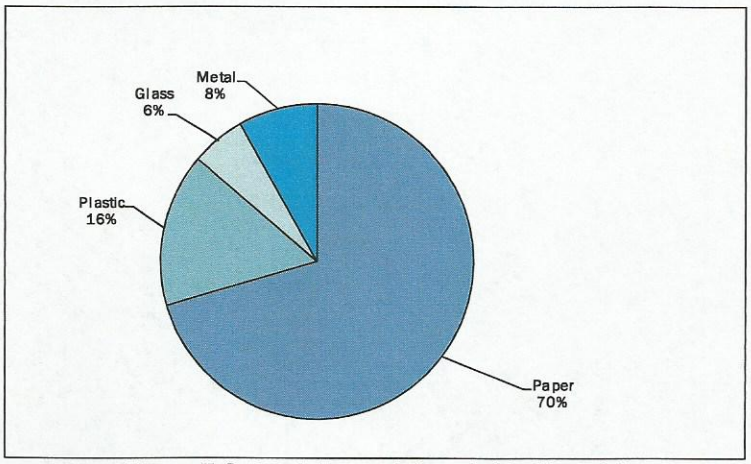


Figure 7.8 Breakdown of Recyclable Material

Figure 7.9 presents the composition of non-recyclable material found in the inbound residential material collected from the Township Alnwick Haldimand. Contaminated recyclables represented the greatest residual waste in these samples (38%), followed by composite material (25%) and loose film (22%). Specific to this area, there were a number of residents who discarded delivered newspapers and magazines that were unopened and remaining in the original plastic wrapping. Additionally, residents discarded water bottle and pop cases with the plastic outer shell wrap affixed to the cardboard case. Similar to the Municipality of Brighton and Township of Cramahe, there were several pet food (dog food) bags that are lined with plastic as well as photographs, and many loose chip bags. For this area contaminated recyclables were not a result of over compaction but were caused by improper recycling by residents.

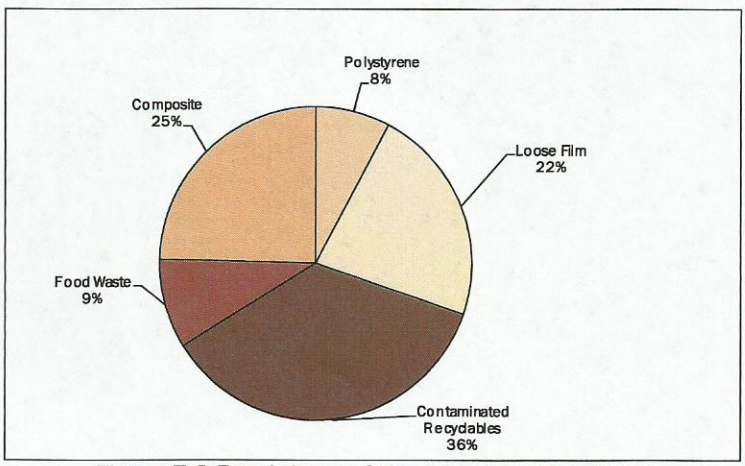


Figure 7.9 Breakdown of Non-Recyclable Material

7.1.5 Town of Cobourg

A breakdown of residential Blue Box material collected from the Town of Cobourg on Tuesday April 19th was conducted. Sampling occurred on April 19th and April 20th. (Appendix B presents details of residual audit information). A total of five inbound samples were sorted representing a total weight of 539 kgs.

Figure 7.10 depicts the breakdown between recyclable and non recyclable wastes entering the MRF from the sample area. Approximately 5% of the inbound recyclable wastes were classified as non-recyclable for the Town of Cobourg.

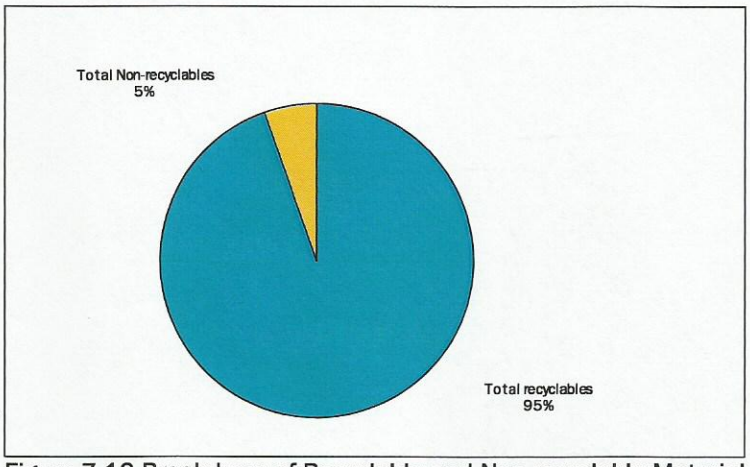


Figure 7.10 Breakdown of Recyclable and Non-recyclable Material

Figure 7.11 presents a breakdown of key recyclable material found in the inbound residential material collected from the Town (95% of total material sampled). Paper fibres represent 70% of the recyclable material in this sampling.

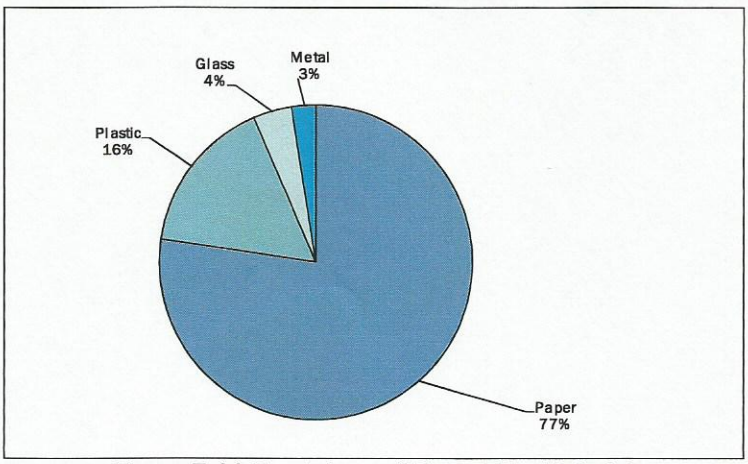


Figure 7.11 Breakdown of Recyclable Material

Figure 7.12 presents the composition of non-recyclable material found in the inbound residential material collected from the Town of Cobourg. Loose film

represented the greatest residual waste in this sample area (35%) followed closely by composite material (31%) and contaminated recyclables (29%). Specific to this area, there were very few bags of film with a large portion of loose film (milk bags, bread bags, shopping bags) mixed throughout the Blue Box or Bag. Composite material was in the form of chip bags, cookie bags with inserts, cigarette packages with foil inserts, tissue boxes with cans placed inside the box. Similar to other areas, there were a number of residents who discarded unopened newspapers/ magazines that were in the original plastic wrapping.

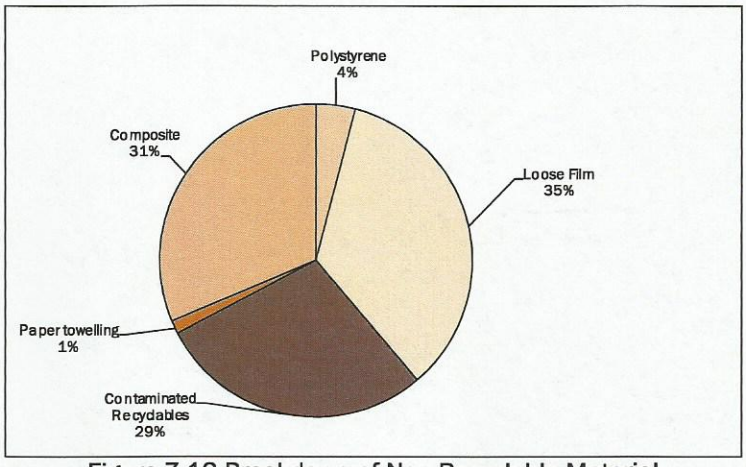


Figure 7.12 Breakdown of Non-Recyclable Material

7.1.6 Municipality of Port Hope Ward 1

A breakdown of residential Blue Box material collected from Ward 1 of the Municipality of Port Hope on Wednesday April 20th was conducted. Sampling occurred on the same day. (Appendix B presents details of residual audit information). A total of five inbound samples were sorted representing a total weight of 545 kgs.

Figure 7.13 depicts the breakdown between recyclable and non recyclable wastes entering the MRF from the sample area. Approximately 4% of the inbound recyclable wastes were classified as non-recyclable for the Municipality of Port Hope Ward 1.

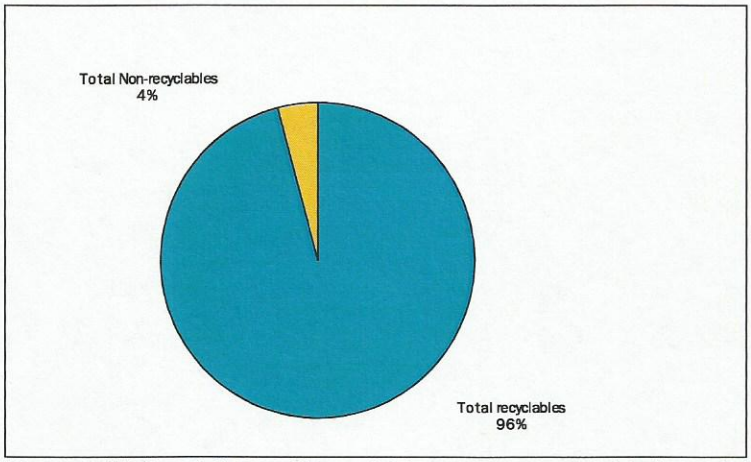


Figure 7.13 Breakdown of Recyclable and Non-recyclable Material

Figure 7.14 presents a breakdown of key recyclable material found in the inbound residential material collected from the Municipality (96% of total material sampled). Paper fibres represent 77% of the recyclable material in this sampling.

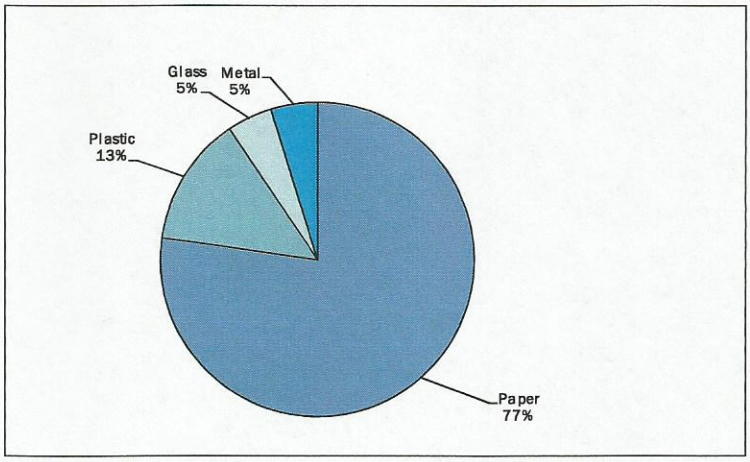


Figure 7.14 Breakdown of Recyclable Material

Figure 7.15 presents the composition of non-recyclable material found in the inbound residential material collected from Ward 1 of the Municipality of Port Hope. Loose film represented the greatest residual waste in this sample area (45%) followed closely by composite material (36%) and contaminated recyclables (13%). Specific to this area, there were very few bags of film with a large portion of loose film (milk bags, bread bags, shopping bags) mixed throughout the Blue Box or Bag similar to the Town of Cobourg. Composite material was in the form of chip bags, cookie bags with inserts, cigarette packages with foil inserts. Similar to other areas, there were a number of residents who discarded unopened newspapers/ magazines that were in the original plastic wrapping.

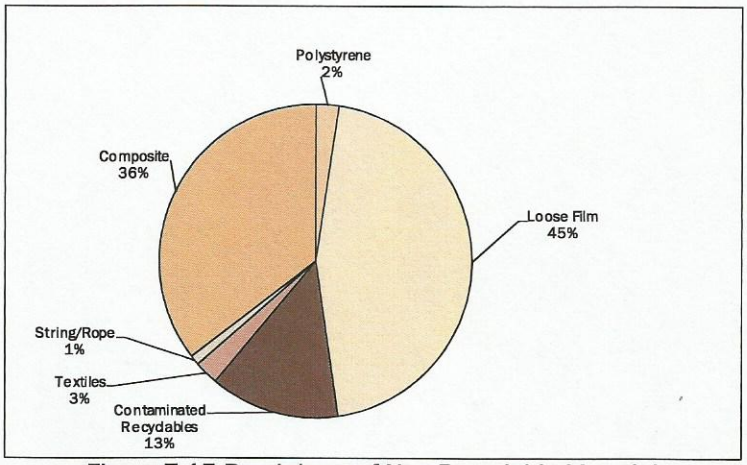


Figure 7.15 Breakdown of Non-Recyclable Material

7.1.7 Overview

A summary of all data from each area as well as overall data is presented in Table 7.10 (Appendix 2). Photos (4-8) of residual waste are also presented in Appendix 2. During the three days of sampling, a total of 19 samples were conducted, for a representative weight of 2,039 kg.

Figure 7.16 depicts the overall breakdown between recyclable and non recyclable wastes for all sample areas.

Overall, approximately 7.4% of the inbound residential recyclable materials were not recyclable with the urban areas of the Municipalities of Trent Hills and Brighton depicting a higher residual rate (14%) and the Town of Cobourg and Municipality of Port Hope (Ward 1) depicting the lower residual rates (5%).

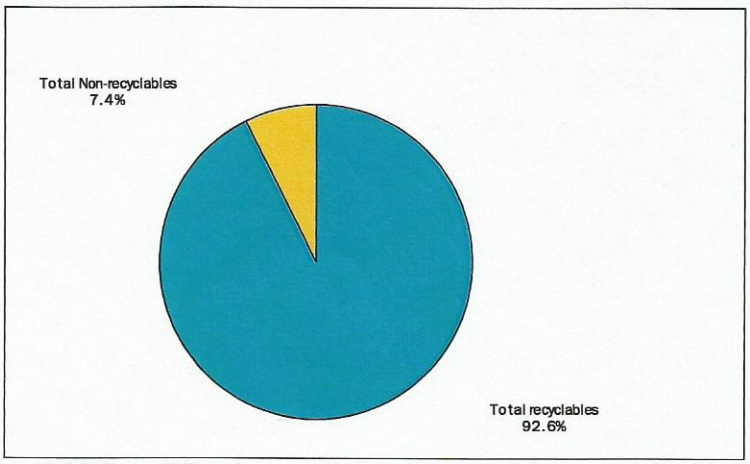


Figure 7.16 Overall Breakdown of Recyclable and Non-recyclable Material

Figure 7.17 presents a breakdown of key recyclable material found in the inbound residential material collected from all of the municipal sampling.

Paper fibres, inclusive of newspapers, cardboard, boxboard and magazines represent 74.9% of the recyclable material in this sampling.

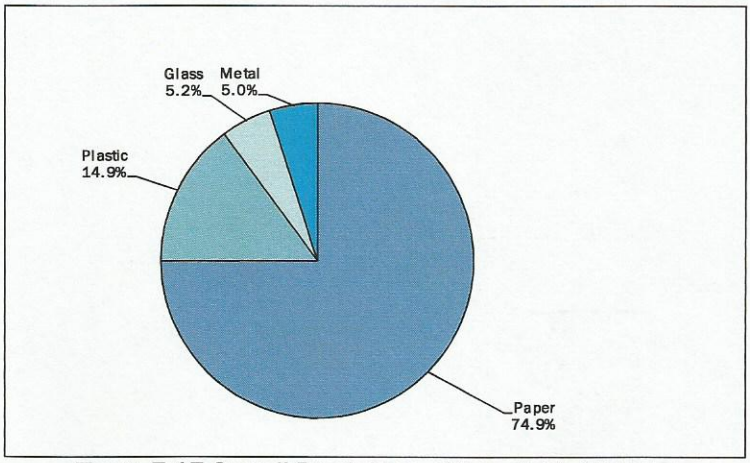


Figure 7.17 Overall Breakdown of Recyclable Material

Figure 7.18 presents the overall composition of non-recyclable material found in the inbound residential material collected from all municipal samplings.

Loose film represented the greatest residual waste for the County (35.8%) followed closely by composite material (28.7%) and contaminated recyclables (20.4%).

It appears that residents are not aware of the requirement to bag film plastic into a separate bag. Further, there may be a lack of understanding of the term: film, to represent more than grocery bags. Composite material was in the form of chip bags, cookie bags with plastic inserts, cigarette packages with foil inserts. Similar to other areas, there were a number of residents who discarded unopened newspapers/ magazines that were in the original plastic wrapping.

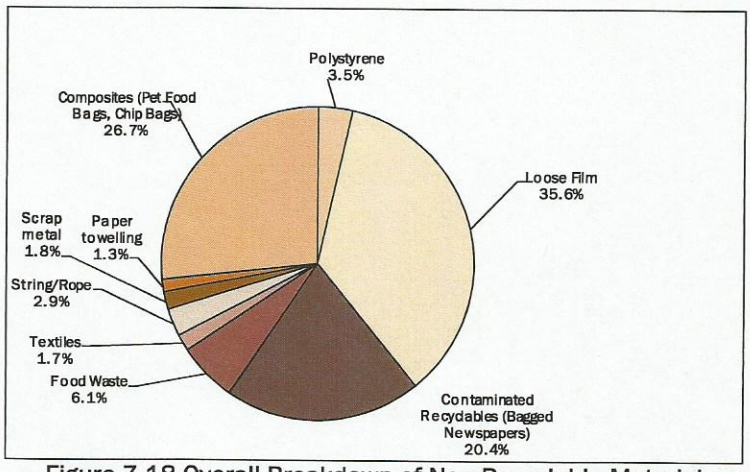


Figure 7.18 Overall Breakdown of Non-Recyclable Material

7.1.7 Audit Summary

It is evident that the County needs to continue its efforts to reduce the residual entering the MRF. A Promotion and Education campaign with specific emphasis on sorting requirements for plastic film, composite material and unopened delivered newspapers is **recommended**. The education campaign should be supported with curbside enforcement by the collection contractor and the County. A phased in approach to the campaign is suggested prior to curbside enforcement to allow residents sufficient time to understand the sorting requirements.

It is important to note that the overall inbound residue rate of 7% is lower than the current outbound residue rate of 16%. It may be that there are some issues with sorting recyclables at the MRF such as the impact of loose film has on sorting efficiencies and older equipment on the container sort line. This may also in part be a function of higher residual rates from the MRF's other clients (i.e. municipal, IC&I). It is **recommended** that this be investigated. The County may wish to audit the residual waste leaving the MRF.

8.0 Planning a Recycling System

The following section outlines some possible strategies that are suitable for the County to consider reducing costs, and increasing blue box diversion and capture rates in the upcoming years.

Based on recent contract award, a phased-in approach is proposed to the existing system with focus on promotion and education and capture from public spaces. This will ensure that results can be closely monitored by existing Municipal staff with support from part-time seasonal staff (summer students, volunteers, committee members, etc).

It should be possible to gradually increase the capture rate of the Blue Box program within the context and costs of the current program particularly with the County collection contract structure on a cost per household basis. As tonnages increase, the collection costs per tonne reduce.

The gradual increase in tonnes can be done by encouraging residents to recycle more of their wastes using the existing program infrastructures and by enhancing the program through greater awareness in areas beyond the home including public parks, community centres, cottages, special community events (e.g.: the Cobourg Waterfront Festival, the Colborne Apple Blossom Festival, the Brighton Apple Fest, the Campbellford Waterfront Festival, etc.) and local schools. The enhanced community awareness can be supported with a `Council 3 R's' training session supported with handouts for distribution at events, training landfill attendants and supplying literature to share with public, conducting a curbside audit to determine where educations is lacking, and using more public space receptacles and signage.

It is important to note that the challenge for the County is the increasing volume of collected material, in particular plastic containers, and the distance travelled between collection stops. If the County improves on capture of additional plastic material, existing curbside Blue Boxes and truck capacity decreases and becomes problematic with handling and transportation costs.

8.1 Possible Strategy to Increase Recycling

The County presently diverts approximately **23%** of its wastes through its Blue Box program. The average for municipalities of its type is approximately **22.58%.** Interestingly, of the 9 available municipal groupings, Rural Regional has the second highest average Blue Box diversion rate. **Large Urban** (populations 379,000-2,511,995) is ranked with the highest Blue Box diversion rate of **22.62%.**

Given that the County is on par with the average Blue Box diversion rate for municipalities of its grouping but has a 48% Blue Box capture rate (based on marketed Blue Box tonnes) and higher than average costs for the Blue Box program, a phased approach is proposed. This will ensure that program costs and results can be closely monitored by County staff in the upcoming years.

It is anticipated that it should be possible to also increase the capture rate of the Blue Box program within the context and costs of the current program. This would be done by encouraging residents to recycle more of their wastes using the existing program infrastructures but enhancing the program by supporting and enforcing existing recycling by-laws.

A reasonable preliminary goal (2011-2012) would be to increase tonnages to exceed

A second and aspirational future goal would be to achieve a 35% diversion rate as a result of the Blue Box program and strive toward a 75% Blue Box capture rate from the waste stream. The minimum future goal would be to at least reach a midpoint of **25%** Blue Box diversion rate (only a few points more than what you are doing).

The following table highlights the estimated number of tonnes that would need to be captured to attain 25% and 35% diversion rates of Blue Box material from the waste stream. It includes consideration of the impact of population growth in the County

Table 8.1 Forecasting Diversion Rates

Capture Rates to Meet Waste Diversion Goals			
	% Waste Diversion		
	Current (22)	25	35
	tonnes captured/year		
2010	5,670	6,210	8,694
2012	6,018	6,592	9,228
2015	6,388	6,997	9,795

It is anticipated that it should be possible to capture additional Blue Box materials within the existing County's contract structure (Status Quo).

Table 8.2 highlights attaining a 25% diversion rate as a result of the current Blue Box program.

Table 8.2 Forecasting Diversion Rates

Meeting 25% Blue Box Diversion Rate		
Current Capture (22.8%)	tonnes/year	5,670
25% Capture	tonnes/year	6,210
25% Capture (additional tonnes)	tonnes/year	540
Per household	kg/year	15
Per household	kg/week	0.3
Collection routes	#	4
Per route	tonnes/year	135
Per route	tonnes/week	3
Current program costs	$/year	2,512,744
Current program costs	$/tonne	443

On average this could amount to each household recycling an additional 15 kg/year or 0.3kg/week.

This has potential to drive the average cost per tonne for recycling even lower than the current costs. It is understood that the current program contract is structured on a cost per household. Based on this structure, it is feasible to gradually increase tonnes collected without impacting the overall contract costs.

The new collection contract will contribute greatly to the overall reduction of the County's Blue Box program costs, supported by a reduction in MRF residual rate.

8.2 Overview of Planned Initiatives

The best approach for increasing the capture rate and decreasing costs was to stage possible changes to the current Blue Box program by reducing residual rate and to reduce collection costs in the upcoming contract.

With that in mind, a number of options were reviewed and scored based on a series of criteria, which included:

- Estimate of waste diverted (%);
- Proven results;
- Reliable processing facilities/end use;
- Accessible to public; and
- Ease of implementation.

A summary of the options reviewed with County staff and their scoring are provided in Appendix 1. Using the evaluation criteria table pulled from the CIF guidebook that lists possible ranking of options surrounding promotion, collection, processing and Best Practices, staff provided feedback on areas requiring consideration. This exercise does not commit to a final decision but acts as a guide to assist with making future decisions.

From there a refined list of options have been summarized into two tables:

- Possible Priority Initiatives (2011-2012); and
- Possible Future Initiatives (2012-2015).

These tables are tools to be considered by County staff to reference as part of this Strategy.

Based on general comments from staff a list of priority and possible future initiatives was developed (see below).

It was recognized that the actual implementation of immediate cost saving initiatives would be a function of the new collection contract (December 2010).

Table 8.3 Forecasting Diversion Rates

Possible Priority Initiatives (Immediate Future 2011-2012)				
Initiative	Estimated Implementation Cost	Estimated Annual Operating Cost	Implementation Time Line	Comments
Enhance Existing Promotion and Education (P&E) Program (CIF Promotion and Education Tool available) https://blueboxpe.wdo.ca/	$15,000 CIF priority area=50% funding in 2011	$3,000 to maintain enhancement (flyers, website maintain)	2011	Intent to better publicize program and reduce residual to support recent MRF Audit Results.
Capital Upgrades to Container Line at MRF	$ 1-2 Million CIF priority area=50% capital funding.		2011-2012	Intent to reduce labour costs and residual rates and increase processing capacity.

Possible Priority Initiatives (Immediate Future 2011-2012)				
Initiative	**Estimated Implementation Cost**	**Estimated Annual Operating Cost**	**Implementation Time Line**	**Comments**
Secure short-term processing contract with City of Kawartha Lakes	Staff time	Reduction in processing costs.	2011	Intent to support the upgrade of the container line and to reduce overall processing costs.
Public Space Recycling	$5,000-$10,000 CIF funding available with supporting P&E material.	$1,000 to maintain system	2011	Work with volunteer groups and use summer students to launch program.
Training of Key Program Staff	Staff time	Free training is available from CIF (CIF Blue Box Recycler Training Courses). MWA Spring workshop mwa@municipalwaste.ca Estimate $1,000/year in travel costs.	2011	Better educated staff will be able to develop waste and blue box collection tender and better manage overall program

The following table outlines possible **future initiatives** to take into consideration to improve Blue Box diversion and capture rates.

Table 8.4 Future Initiatives (2012-2015)

Possible Future Initiatives				
Initiative	**Estimated Implementation Cost**	**Estimated Annual Operating Cost**	**Implementation**	**Comments**
Multi-residential Campaign	$5,000-$15,000 Dependent on number of units to supply carts and boxes. CIF funding available.	Minimal, if any	2012	Work with collection contractor and CIF to maximize program.
Seasonal Cottager Campaign	$2,000	$1,000	2012	Use summer students-share cost of students between departments.

Additional details of some key priority and future initiatives are described below.

CIF Promotion and Education Tool

It is **recommended** that the County continue to increase its level of public Promotion and Education with financial and other assistance from the CIF to reduce overall residual rate at the MRF. Successful promotion will require additional staff time and should be considered when launching a P&E campaign (summer students, part time staffing).

CIF provides a free online tool that provides the County with all the elements needed to run a successful Blue Box P&E program. After completing a questionnaire a customized marketing plan and customized marketing materials will be prepared. The marketing plan is a 3-year plan that is organized in seven sections including:

- Program Guiding Principles;
- Goals;
- Key Messages;
- Target Audiences;
- Resources;
- Tactics; and
- Tracking.

The costs noted in Table 8.3 reflect possible flyer preparations, mail outs, and advertising to promote the participation of the rural Blue Box program.

The CIF guide book lists the use of media reported by P&E leaders in five broad categories:

- Print (ads, brochures, calendars, newsletters);
- Broadcast (local TV, radio, Public Service Announcements);
- Electronic (website, emails, electronic newsletters to groups); and
- Outreach (special events, in-school education, landfill contractor hand outs).

The following lists sources and links to effective P&E:

- MWA website outlining a report entitled: Research Report: Identifying Best Practices in Municipal Blue Box Promotion and Education, (2005) County of Oxford –AMRC;
- City of Hamilton website and CIF : Blue Box Recycling Public Opinion Survey (March 2006); and
- CIF website: McConnell Weaver Communication Management: Enhanced Blue Box Recovery: Benchmark Survey and Focus Groups (2006).

MRF Equipment Upgrade (Container Line)
The Northumberland MRF experienced significant processing cost reduction with the recent upgrade of the fibre sorting line. The container line is over 15 years old and the capacity to process the larger plastic containers is low. CIF offers up to 50% funding for capital upgrades to MRF's to increase plastic processing capacity and reduce costs. When considering the long term planning of the MRF operations, consideration to upgrade the older processing components **is recommended** in an effort to reduce residual rates, processing costs and improve facility performance. The upgrade of the container line would complement the upgrades made to the fibre line in 2009.

New Collection Contract
The previous collection contract with National Waste was $6.25 per household per month. The new collection contract, also with National Waste, is $4.32 per household per month over an 8 year term with 2 one year renewal options. The County will begin to see collection cost savings in 2011-2012.

Secure Processing Contract with City of Kawartha Lakes
Currently, the County and the City are not operating with a formal agreement allowing the City of remove their Blue Box tonnages from the County at any time. To offer greater security for the County when planning for capital upgrades, **it is recommended** to negotiate a short-term contract with the City to process their Blue Box material (2-3 years), to improve the payback period of the capital investment.

Training of Key Program Staff in Core Competencies.
This is outlined as a fundamental Best Practice and identified in the KPMG Blue Box Program Enhancement and Best Practices Assessment Final Report. The full report is available through www.stewardshipontario.ca/bluebox/eefund/bestpractices.htm. Further, CIF and Stewardship Ontario offer low cost workshops and training sessions throughout the year: Ontario Recycler Workshops listed on the Waste Diversion Ontario website (WDO) www.wdo.ca.

Public Space Recycling
Public space recycling gives residents and visitors the opportunity to recycle while in public places. It can also be used to reinforce the County's Blue Box program.

The County can work with Council/Committee members and volunteers to organize a public space recycling initiative with support from the collection contractor and possible summer students/co-op placement students.

There is CIF financial support available.

8.3 Contingencies

The priority initiatives can be impacted if there is no municipal funding available.

If no future initiatives are implemented then the County will revert to priority initiatives.

9.0 Monitoring and Reporting

The monitoring and reporting of the County's recycling program is considered a Blue Box program fundamental best practice and will be a key component of this Waste Recycling Strategy.

Once implementation of the Strategy begins, the performance of the Waste Recycling Strategy will be monitored and measured against the baseline established for the current system. Once the results are measured, they will be reported to Council and the public.

Table 9.1 Blue Box Monitoring Strategy

Recycling System Monitoring		
Monitoring Topic	**Monitoring Tool**	**Frequency**
Meet regularly with collection contractor	Meet with collection contractor to identify any problems with Blue Box collection (e.g. contamination).	Quarterly
Measurement of Blue Box materials captured.	Documented total weight data as outlined in this Strategy and compare it to target capture rates (75%).	Annual summary
Diversion rate (Blue Box)	Document BB Diversion Rate Formula: (Blue box materials diversion) ÷ Total waste generated * 100%	Annual summary
Residual Rate	Aim to reduce residual to 10% by 2015 to better reflect program capture rates. Document residual for Council and advertise in media for public to monitor (supports reduction in contamination). Conduct an audit of inbound material to determine contamination.	Annual inbound audit and summary tables.
Program participation	Documented Curbside Set-out Studies or Curbside Participation Studies to determine frequency of curbside set out, number of boxes, fullness of boxes, and type of boxes used. Consider curbside waste audit to verify program composition.	Once every 1-2 years.
Program Accuracy	Reduce residual to better reflect Blue Box capture rates.	
Program Cost	Document Blue Box Program Costs to reflect each cost area to determine overall cost composition. Incorporate a	Once every 1 year.

Recycling System Monitoring		
Monitoring Topic	**Monitoring Tool**	**Frequency**
	revenue column to depict annual revenues from Blue Box program.	
Customer satisfaction	Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office.	Every 3 years
Opportunities for improvement	Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office.	On-going
Planning activities	Describe what initiatives have been fully or partially implemented, what will be done in the future.	Annually
Review of Recycling Strategy	A periodic review of the Recycling Plan to monitor and report on progress, to ensure that the selected initiatives are being implemented, and to move forward with continuous improvement.	Annual for current initiatives- 5 yrs to re-evaluate & refine lists.

10.0 Conclusion

The County currently has a good Blue Box waste diversion rate with higher than average residual rates which impact costs per marketed tonne. The emphasis is on the need to reduce the residual rate of the MRF with focus on a P&E program that offers specifics to sorting requirements (bagged film and composites).

A staged process to reduce residual rate to a maximum of 10% in the next 3 years and supported with the new collection contract to reduce the cost per tonne is recommended.

There are some fairly low cost priority initiatives that can be implemented to help boost the capture rate within the context of the current program. There is a high cost recommendation to upgrade the container line of the MRF to improve performance and reduce residual rates. Prior to making this investment, it was recommended to secure a processing agreement with the City of Kawartha Lakes and to apply to CIF for capital funding to determine the level of commitment from CIF.

It is recommended that the initiatives be reviewed annually and implemented as budget allows.

It is recommended that this Strategy be fully updated in 2015.

Appendix 1
Waste Recycling Option Scores

Suitable ? Y/N	Description of Options/Best Practices (For more information: *More information: Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1)*	Criteria (Score out of 5)						Total Criteria Score	Score x/100
		% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of Implementation		
Promotion and Outreach									
Yes	Public Education and Promotion Program (Conduct Inbound MRF audit to examine residual component and effectiveness of P&E program)	1-3%	5	5	4	5	5	24	96%
Yes	Training of Key Program Staff	1-3%	5	5	4	4	4	22	88%
Administration									
Yes	Following Generally Accepted Principles for Effective Procurement and Contract Management (Contract with Kawartha Lakes)	0%	5	5	4	5	4	23	92%
Yes	Optimization of Collection Operations (new collection contract)	0%	5	5	5	5	5	25	100%

Appendix 2
Inbound MRF Audit Results
Inbound MRF Audit Photos

Summary Sheet

Northumberland MRF Inbound Residual Audit (April 19-20th, 2011)

Audit Summary		Campbellford & Brighton		Rural Collection East		Rural Collection Central		Town of Cobourg		Town of Port Hope		Total	
Material Category	Accepted in Blue Box (X)	Weight per Category (kg)	%	Weight per Category (kg)	%	Weight per Category (kg)	%	Weight per Category (kg)	%	Weight per Category (kg)	%	Weight per Category (kg)	%
1. Paper fibre (ONP, OCC, OBB)	X	**181.2**	**56.5**	226.9	73.0	201.9	64.5	394.2	73.1	403.7	74.0	1407.9	69.4
2. Plastic													
Bagged film	X	7.5	0.0	4.1	0.0	8.6	0.0	15.2	0.0	8.0	0.0	43.4	2.1
Other plastic	X	50.3	0.0	20.0	0.0	36.6	0.0	67.7	0.0	61.7	0.0	236.4	11.6
		57.8	**18.0**	**24.1**	**7.8**	**45.2**	**14.4**	**82.9**	**15.4**	**69.7**	**12.8**	**279.8**	**13.8**
3. Glass	X	**22.3**	**6.9**	14.8	4.8	16.1	5.1	20.3	3.8	24.2	4.4	97.7	4.8
4. Metal	X	**15.8**	**4.9**	16.6	5.4	23.4	7.5	12.7	2.4	25.2	4.6	93.7	4.6
			0.0										
Total recyclables		**277.1**	**86.3**	**282.5**	**90.8**	**286.5**	**91.6**	**510.1**	**94.6**	**522.9**	**95.8**	**1,879.0**	**92.6**
5. Non-recyclables													
Polystyrene		0.6	0.2	1.0	0.3	2.0	0.6	1.2	0.2	0.5	0.1	5.3	0.3
Loose Film		17.5	5.5	9.7	3.1	5.9	1.9	10.2	1.9	10.3	1.9	53.6	2.6
Contaminated Recyclables		6.4	2.0	3.5	1.1	9.4	3.0	8.3	1.5	3.0	0.6	30.7	1.5
Food Waste		6.3	2.0	0.5	0.2	2.4	0.8	0.0	0.0	0.0	0.0	9.2	0.5
Textiles		1.2	0.4	0.9	0.3	0.0	0.0	0.0	0.0	0.6	0.1	2.6	0.1
HHW		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
String/Rope		3.5	1.1	0.6	0.2	0.0	0.0	0.0	0.0	0.2	0.0	4.3	0.2
Animal Wastes		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scrap metal		2.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.1
Paper towelling		0.6	0.2	0.9	0.3	0.0	0.0	0.4	0.1	0.0	0.0	2.0	0.1
Composites(Lined Pet Food Bags, Chip Bags, Photos)		5.0	1.6	11.6	3.7	6.5	2.1	9.2	1.7	8.0	1.5	40.2	2.0
Total Non-recyclables		**43.9**	**13.7**	**28.5**	**9.2**	**26.3**	**8.4**	**29.3**	**5.4**	**22.6**	**4.2**	**150.6**	**7.4**
Total		**321.0**	**100.0**	**311.0**	**100.0**	**312.8**	**100.0**	**539.4**	**100.0**	**545.5**	**100.0**	**2,029.6**	**100.0**

Photos of Inbound Residual Waste

The following photos depict some of the more common examples of recyclable contamination at the Northumberland MRF.

Photo 4 Beverage Cases with Outer Plastic Wrap

Photo 5 Unopened Mailings/Newspapers

Photo 6 Composites (Chip Bags/Packaging)

Photo 7 Loose Film around Recyclables

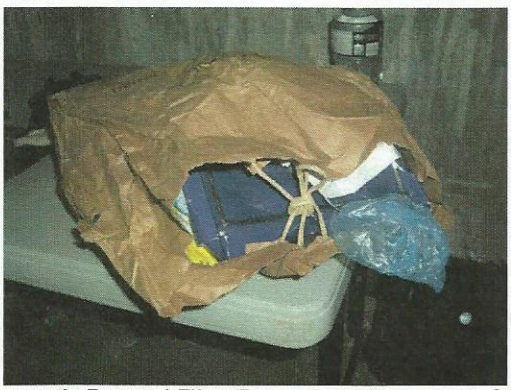


Photo 8 Improperly Bagged Film (Paper Bag) with other Contaminates