SM4RT LIVING

YORK REGION'S INTEGRATED WASTE MANAGEMENT MASTER PLAN

November 2013

Blue Box Materials and Monitoring Strategy

York Region

Blue Box **Materials Management and Monitoring** Strategy

PREPARED FOR:

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Objectives:

- Monitor changing Blue Box material composition and quantities;
- Continue engagement in current advocacy processes;
- Plan for future changes in how the Blue Box system in Ontario is operated.

Targets:

- 2% annual increase in amount of Blue Box material diverted
- Overall savings of $719,505 on processing and collection costs by 2031.
- Development of York Blue Box Projection Model.
- Increased involvement with industry organizations.
- Complete annual Blue Box Report.

Benefits:

- The Blue Box is a very important core element of the waste diversion system in the Region, contributing 23% diversion to the Regional diversion performance.
- This strategy has focused on preparing the Region for a future with multiple possible Blue Box scenarios.
- Region will be flexible and resilient and have the facts to support their positions documented in a comprehensive Annual Blue Box Report.
- Blue Box Report will be an invaluable tool in case of potential regulatory amendments, and also for longer term planning of the Blue Box system if the Region and local municipalities retain full control of the system.

1.0 Introduction

The *Blue Box Materials Management and Monitoring* strategy is one component of York Region's first Integrated Waste Management Master Plan (IWMMP), also known as the SM4RT LIVING Plan, which establishes the planning framework and strategic direction for waste management in York Region for the next 40 years. SM4RT Living Plan builds on the Region's position as a waste management leader, by focusing on driving waste reduction and reuse, while maximizing recycling and energy recovery from the materials that remain.

The primary objectives of this strategy are to:

- To obtain annual forecasts of all elements affecting blue box quantities and materials
- To obtain accurate information regarding blue box funding in Ontario
- To be aware of changes to material composition to better plan for and manage the Regional Material Recovery Facility (MRF)

2.0 Background and Trends

After years of operation and resident education, the Blue Box Program is well understood by York Region residents and diverts about 23 per cent of the residential waste stream. With the advent of the *Waste Diversion Act, 2002* (WDA, 2002), an agreement was made that net blue box costs would be shared 50:50 between stewards of printed paper and packaging and municipalities. These stewards are defined as companies or organizations which introduce printed paper and packaging into the Ontario market. The 50:50 net cost sharing arrangement has been in place since 2004 administered through Stewardship Ontario. The Region shares revenues it receives from Stewardship Ontario equally with the local municipalities. The Regional portion of blue box funds from Waste Diversion Ontario (WDO), as well as marketing revenues above $55 per tonne are placed into the Waste Management Reserve Fund.

WDO funding amounts sent to the Waste Management Reserve Fund have averaged about $3.63 million/year for the last 3 years (2011 to 2013) as follows:

- $3.73 million in 2013
- $3.65 million in 2012
- $3.50 million in 2011

In addition, revenues from the sale of blue box material above a $55 per tonne (average "basket of goods") value are also put into the Waste Management Reserve Fund. Amounts contributed to the Waste Management Reserve Fund from this source vary depending on market conditions by year and varied significantly over the last three years because of poor

market conditions following the 2009 economic slowdown followed by record high prices in 2011. Revenues for 2012 are down again due to softening of various material markets. Contributions to the Waste Management Reserve Fund from material revenues were as follows for the three years 2010-2012:

- $5.06 million in 2010
- $7.06 million in 2011
- $4.80 million in 2012

Significant consultation was undertaken on ways to modify the WDA, 2002 in 2009, but changes were shelved with the political challenges experienced with the Phase 2 roll-out of the Municipal Hazardous or Special Waste (MHSW) program in July, 2010. Movement with respect to legislative changes remained stagnant until the release of the proposed Waste Reduction Act in June 2013. The proposed Waste Reduction Act is enabling legislation and provides details around new programs and funding of these programs which will be determined through subsequent Regulations.

The proposed Waste Reduction Act was still in Second Reading before the Ontario Legislature as of December 2013, and changes to the content of the proposed Act are possible. Highlights of the proposed Waste Reduction Act include:

- Eliminates Stewardship Ontario, Ontario Electronic Stewardship, and Ontario Tire Stewardship in favor of Individual Producer Responsibility (IPR) programs which allows producers to decide how best to meet diversion targets
- Eliminates "eco fees" by requiring all fees to be embedded in the on-shelf price
- Waste Diversion Ontario's name and mandate will be changed to the Waste Reduction Authority which will be responsible for setting and enforcing diversion targets
- Municipalities continued role in waste diversion is recognized, producers must reimburse municipal collection costs for designated materials and processing costs for those materials where municipalities are required to do so by legislation (i.e. blue box, Reg 101); rates are to yet be determined
- Recycling will be required in the Industrial Commercial and Institutional sector beginning with paper and packaging
- Industry's 50 per cent blue box funding cap will be removed allowing for higher municipal cost recovery; the specific rate will be determined at a later date through further consultation and outlined in regulation

For the Blue Box Program in particular, changes proposed could have profound implications for York Region. The changes proposed include moving funding of the Ontario blue box system toward 100 per cent steward funding. The current trend in Canadian provinces is moving towards full steward funding of the blue box system over time and this is likely to impact Ontario within the planning horizon for the IWMMP.

The long-term blue box strategy for the Region needs to consider three elements:

- Long-term collection system changes that may result from changing material composition (i.e. less weight, more volume) and changing demographics (e.g. smaller households and more multi-residential households)
- Plan for a "business as usual" scenario where municipalities in Ontario continue to have a role in blue box system operation; for York Region, this would involve continuing to own and operate a Material Recovery Facility (MRF) within the municipal boundaries
- Planning for a future blue box system run by industry stewards, where municipalities in Ontario will likely have the option to continue to have a role in service delivery

The strategy includes research recommendations which will provide the Region with baseline information and monitoring points necessary to respond to any potential changes in the operation and financing of the Ontario blue box.

2.1 Background and Trends

The York Region Blue Box system involves two major operational components:

- Collection of blue box materials at Regional drop-off facilities[1] and at curbside by local municipal partners
- Processing of collected blue box materials at the York Region Waste Management Centre, which is owned by the Region and operated under contract

The total cost of the Blue Box Program is about $14 million per year as shown in Table 1.

Table 1: Annual Costs For York Region Blue Box Program, 2011

Item	Cost (2011)
Collection Costs	
Including: Collection Contract, Foreman/Supervisors, Blue Box Purchases, Fleet Management Costs, Annual Depreciation	
Total Collection Costs	**$9,213,101**
Processing Costs	
Including: Processing Contract, Residue Disposal, 5% Revenue Share, MRF Fees, Annual Depreciation, Residential Tip Fees, and Miscellaneous Costs	
Total Processing Costs	**$11,160,531**

[1] Refer to the York Region Integrated Waste Management Master Plan "Community Environmental Centre Strategy" for additional detail.

Item	Cost (2011)
Depot Costs	
Including: Depot Transfer, Depot Staffing, Building Costs, Roll-off Bin Removal and Transfer, Annual Depreciation and Miscellaneous Costs	
Total Depot Cost	**$2,923,163**
Promotion & Advertising Costs	
Including: Administration Staff Costs, Blue Box Promotion and Education Costs	
Total Promotion & Advertising Costs	**$449,354**
Interest on Capital	**$783,966**
Administration Costs	**$831,225**
Total Costs	**$25,361,339**
Revenue	
Including: Marketed Blue Box Material, Sale of Blue Boxes, Fees and Charges	
Total Revenue	**-$11,160,160**
Net Blue Box System Operating Costs	**$14,201,179**

Stewardship Ontario funds about 50 per cent of the net system costs of the Ontario municipal Blue Box Program through negotiation. Blue box funding of approximately $7.1 million was received from Stewardship Ontario in 2011, resulting in a net system expense of $7.1 million to the Region and the local municipalities.

A blue box monitoring process is already in place in the Region to track Blue Box Program performance. This monitoring and the annual WDO Datacall process provides data on which performance can be assessed and improved.

In addition, there are a number of policy and other processes underway in Ontario at this time which may significantly impact future Blue Box planning within the SM4RT Living Plan.

2.2 Description of York Region MRF

York Region's Material Recycling Facility (MRF), known as the York Region Waste Management Centre, is located in East Gwillimbury. Blue box material collected by the local municipalities is processed at the MRF. Blue box materials collected at some parks, public spaces, special events,

municipal facilities and at Markham's Drop-off Depots are managed privately outside of the York Region system.

The MRF commenced operations in 2005. It is owned by the Region and currently operated by Miller Waste under contract. The current operating agreement extends from July, 2010 to July, 2020. The operating agreement service fee was updated in November, 2012 (to reflect the MRF's expanded capacity, system efficiencies and staff needs at various hurdle rates) to the values presented in Table 1.

Table 2: Processing Fee Structure at York Region MRF (November, 2012)

Tonnage Range	Blue Box Processing Fee ($/tonne)
80,001 to 85,000	$67.37
85,001 to 90,000	$65.35
90,001 to 95,001	$64.80
95,001 to 100,000	$64.88
100,001 to 105,000	$64.70
105,001 to 110,000	$66.35
110,001 to 115,000	$66.89
115,000 to 120,000	$66.62

Miller Waste markets the recycled materials and receives five per cent of the marketed value. Miller jointly markets York Region material with materials processed by Miller at other MRFs to consolidate processed recyclables into larger loads, which is preferred by end markets. An internal audit conducted in 2008 concluded that "the third party vendor (Miller Waste) currently obtains average prices more favourable than other Ontario regions".[2]

Materials processed and marketed at the MRF since 2005, along with the amount marketed and the calculated residue rates are presented in Table 3

Table 3: Residue Rates At York MRF, 2005 to 2011

Year	Processed	Marketed	Residue	% Residue
2005	65058	61568	3490	5.4%
2006	77730	71732	5998	7.7%
2007	81278	74865	6413	7.9%
2008	89434	81826	7608	8.5%
2009	86043	77317	8726	10.1%

[2] Report No. 6 of the Environmental Services Committee Regional Council Meeting of June 24, 2010

Year	Processed	Marketed	Residue	% Residue
2010	88395	78881	9514	10.8%
2011	90947	81564	9383[3]	10.3%

The material processed at the MRF is predominantly paper (printed paper and paper packaging) as shown in Tables 4 and 5. Paper fibre makes up about 70 per cent of the material sold, with old corrugated cardboard (OCC) accounting for an additional eight per cent, and polycoat accounting for 0.4 per cent. Glass (container and broken) accounts for an additional 13 per cent of the material processed, with the remaining nine per cent consisting of metal and plastic.

[3] Note that this value is calculated by York Region and differs from the published WDO residue value

Table 4: Tonnes of Recyclable Materials Marketed By York Region MRF 2005 to 2011

2005 to 2011 Annual Market Material Distribution (Tonnes)													
	Aluminum	Fibre Stream A	Fibre Stream B	Total Fibre	Ferrous Cans	Clear & Colour Glass	PET	HDPE Mixed	OCC	Mixed Broken Glass	Mixed Plastic	Polycoat	Total
2005	541	23,141	14,783	37,924	1,520	3,117	1,495	801	3,846	4,792	37	57	**54,130**
2006	570	28,832	20,424	49,256	1,792	610	1,962	1,037	6,775	11,010	432	211	**73,656**
2007	658	30,207	21,433	51,640	1,916	5,540	1,932	1,068	7,429	2,895	669	270	**74,018**
2008	705	33,138	23,375	56,513	2,144	8,362	2,112	1,228	6,480	835	1,066	481	**79,927**
2009	752	32,709	21,963	54,672	2,182	10,066	1,834	1,214	5,161	8	724	480	**77,093**
2010	765	44,622	10,194	54,817	2,029	10,645	1,690	1,226	6,406	61	611	397	**78,647**
2011	657	48,383	3,433	51,816	2,000	731	1,915	1,248	6,714	9,958	674	359	**76,073**

Table 5: Breakdown of Recyclable Materials Marketed By York Region MRF, 2005 to 2011

2005 to 2011 Annual Market Material Distribution (Percentage)													
	Aluminum	Fibre Stream A	Fibre Stream B	Total Fibre	Ferrous Cans	Clear & Colour Glass	PET	HDPE Mixed	OCC	Mixed Broken Glass	Mixed Plastic	Polycoat	Total
2005	1.0%	42.8%	27.3%	70.1%	2.8%	5.8%	2.8%	1.5%	7.1%	8.9%	0.1%	0.1%	**100%**
2006	0.8%	39.1%	27.7%	66.9%	2.4%	0.8%	2.7%	1.4%	9.2%	14.9%	0.6%	0.3%	**100%**
2007	0.9%	40.8%	29.0%	69.8%	2.6%	7.5%	2.6%	1.4%	10.0 %	3.9%	0.9%	0.4%	**100%**
2008	0.9%	41.5%	29.2%	70.7%	2.7%	10.5%	2.6%	1.5%	8.1%	1.0%	1.3%	0.6%	**100%**
2009	1.0%	42.4%	28.5%	70.9%	2.8%	13.1%	2.4%	1.6%	6.7%	0.0%	0.9%	0.6%	**100%**
2010	1.0%	56.7%	13.0%	69.7%	2.6%	13.5%	2.1%	1.6%	8.1%	0.1%	0.8%	0.5%	**100%**
2011	0.9%	63.6%	4.5%	68.1%	2.6%	1.0%	2.5%	1.6%	8.8%	13.1%	0.9%	0.5%	**100%**
Avg	**0.9%**	**46.7%**	**22.7%**	**69.4%**	**2.7%**	**7.4%**	**2.5%**	**1.5%**	**8.3%**	**6.0%**	**0.8%**	**0.4%**	**100%**

Significant equipment replacements and upgrades were completed at the MRF in 2011 at a cost of $7.6 million which increased the rated processing capacity to 140,000 tonnes per year of recyclables. The upgrades included:

- Adding two optical sorting systems in series (single eject for PET and HDPE)
- New paper screens, conveyors and return conveyors to optimize material flow
- New mixed paper line
- New magnetic separator and eddy current separator (doubling the previous capacity)
- New old newsprint (ONP) bypass conveyor
- New perforator/fine screen combination for the container line
- New container room and enclosing the residue sort line to include HVAC
- Replacement of old balers to add more flexibility
- Some improvements to glass processing

During 2014, York Region and its 9 municipal partners plan to develop and evaluate the business case for including a bag-breaker as part of the tip floor expansion. The MRF is able to operate for the time with the current tipping floor space.

Table 6 compares performance of the York Region Blue Box Program with other large Ontario municipalities. Some of these programs are two streams systems (Ottawa, London and Niagara) whereas York and most other large Ontario Blue Box Programs now operate single stream systems. The table shows the York Region program achieves good overall recovery, averaging 233 kg per household per year and an efficient net system cost at $187 per tonne. The net annual system cost varies from one year to another because of material revenues which fluctuate with commodity markets.

Table 6: York Region and Other Ontario Municipal Blue Box Collection and Processing Data (WDO 2011 Datacall)

Program Name	Calculated Blue Box Tonnes Marketed	Gross Costs ($/tonne)	Gross Revenue ($/tonne)	Reported Net Cost ($/tonne)	kg/household/yr
York Region	76,073	$333	$147	$187	233
Peel Region	92,934	$400	$168	$233	226
Halton Region	43,776	$211	$41	$170	245
Durham Region	45,743	$345	$197	$149	216
Toronto, City of	154,511	$392	$157	$235	175
Ottawa, City of	62,961	$290	$181	$110	164
Niagara Region	40,429	$305	$156	$149	218

Program Name	Calculated Blue Box Tonnes Marketed	Gross Costs ($/tonne)	Gross Revenue ($/tonne)	Reported Net Cost ($/tonne)	kg/household/yr
Hamilton, City of	39,841	$310	$161	$149	189
Waterloo, Region	35,582	$324	$165	$158	181
London, City of	26,247	$394	$172	$222	157
Simcoe, County of	24,060	$280	$32	$248	192

The York Region MRF residue rate is relatively low at 10.1 per cent in 2010 and 10.3 per cent in 2011, when compared to other single-stream Material Recovery Facilities operated in large communities in Ontario which report residue rates of up to 20 per cent or higher. This low residue rate can be attributed to a combination of factors including: resident awareness; collection contractor performance, an aggressive promotion and education campaign and processing effectiveness of the Region's Material Recycling Facility.

Based on MRF residue composition audit data, paper makes up almost 40 per cent of the residue, plastic is almost 20 per cent and total recyclable material is 68 per cent of the residue. The residue from the Materials Recovery Facility is shipped to contracted energy from waste facilities. While the residue rate of about 10 per cent at the York MRF is among the lowest measured for a single stream MRF in Ontario, options to reduce MRF residue (either by running through the MRF for a second time or sending to a secondary processor) should be explored as part of the longer term blue box strategy for future consideration.

2.3 Current MRF and Blue Box System Monitoring Programs

Performance at the York MRF is measured by a number of audits which are managed by a Waste Audit Officer who is a full time Regional employee:

- **MRF Processing Efficiency Audit** is conducted twice per year (June and December) at the MRF as a requirement of the processing contract; MRF performance is measured, mostly through measurement of recyclables in the MRF residue (e.g. paper, plastic, metal and glass not captured by the MRF equipment) and residue as a percentage of in-bound tonnes.
- **In-bound Contamination Audits** are carried out to measure contamination rates from in-bound collection trucks over four seasons; the 2011/2012 audit program was being wrapped up at the time of writing (January, 2013). The next series of contamination audits are planned for 2014. Generally these are carried out every two years.

- **Bale Audits** are carried out periodically to measure the composition of different material bales and contamination levels. Ideally bale audits should be carried out each season. One series of bale audits was carried out in 2012; two seasonal bale audits are scheduled for 2013 with a plan to capture all materials by sampling outgoing bales of different materials.
- **Curbside Waste Composition and Setout Audits of Single Family Homes** were carried out on blue box, garbage and green bin materials in all nine local municipalities in 2011-2012 as part of SM4RT Living Plan. These audits measure quantities of materials in blue bins, as well as blue bin material discarded in residual waste stream, so that generation rates and capture rates can be calculated by material.
- **Compaction Audits** are carried out to monitor compaction levels on collection trucks on a periodic basis. A compaction study was carried out in 2011 and a new study is being implemented in 2013. High compaction rates for recyclables being delivered to the MRF was a problem in the past with highly compacted loads leading to high residue rates at the MRF. Financial penalties, etc. were implemented to reduce the overall compaction of the blue box material being received at the MRF, and resulted in increasing the amount of material recovered. Periodic compaction studies are carried out with the cooperation of all collection contractors to ensure that compaction rates used by trucks delivering materials to the MRF are within the acceptable performance standard. Trucks are weighed when they arrive at the Earl Turcott Waste Management Centre. The maximum allowable compaction ratio is 2.5 to 1 before processing efficiency is affected. Where trucks weigh higher than the allowable limit for the truck volume, the MRF can reject the load (although this has not happened to date). Local municipalities are informed if infractions are identified for any of their trucks.
- **Process or Material Specific Audits** are carried out on a sporadic basis to address particular issues. For instance, an audit has been carried out on the mixed paper line to measure mixed paper composition; a mixed glass audit was carried out in the past, etc.

The information from each of these audits provides valuable data on how different parts of the blue box system are operating, from what is set out at the curb to the level of compaction in trucks (both of these parameters affect MRF performance) to MRF operation itself and the quality of materials sold to end markets. A systematic approach to integrating all of the audit data into an annual blue box report with other data is recommended as part of the Blue Box Materials and Monitoring Strategy.

3.0 Environmental and Social Implications of the Blue Box Strategy

The Region and the local municipal partners run a cost-efficient, well-performing recycling program. Recycling of paper, plastic, metals, glass, etc. results in significant environmental benefits because the collected materials are used in manufacturing and reduce the need to extract and refine raw resources. The energy savings from using recycled compared to virgin

feedstock is significant for some materials. For instance, using recycled aluminum to produce new aluminum uses 96 per cent less energy than producing aluminum from raw bauxite. The energy savings, which translate into greenhouse gas (GHG) savings, are less dramatic for other materials but are still substantial (varying from a 14 per cent reduction for steel to a 27 per cent reduction for glass and a 44 per cent reduction for some paper materials).

Recycling has a number of environmental benefits, particularly when compared with the extraction of virgin resources. The most significant benefits of recycling are the "upstream" benefits, which refer to the energy saved when products are made from recycled rather than virgin feedstock. For example, every tonne of paper made from recycled paper conserves about 26,000 L of water, 2.5 cubic metres of landfill space, and reduces greenhouse gas emissions by one-tonne of CO2 equivalent[4] .

. The additional transportation emissions which are produced to collect and process recyclables at the Material Recovery Facility are insignificant compared to the energy saved by using recycling feedstock for some manufacturing operations, particularly for producing materials such as aluminum and some paper based materials.

Table 7 presents the relative energy requirements for producing materials from virgin rather than recycled stock. Pure source reduction of any material eliminates the need for manufacturing with either virgin or recycled stock and saves considerable energy impacts. However, the table clearly illustrates the significant GHG benefits of recycling materials that are currently part of the Region's Blue Box Program.

The table shows the amount of different materials recycled in the Region's Blue Box Program. Together, these materials saved 59,000 tonnes of greenhouse gases from being generated, based on an Ontario energy mix. This is equivalent to taking 11,675 cars off the road or the energy required to power 29,000 Ontario homes.

[4] http://www.epa.gov/osw/conserve/materials/paper/basics/index.htm

Table 7: Energy Savings from Using Recycled Feedstock over Virgin Feedstock in Manufacturing

Material	Process Energy per Tonne Made from Virgin Inputs (Million BTU)	Process Energy per Tonne Made from Recycled Inputs (Million BTU)	Net BTU Savings from Recycling one tonne[6]	Convert BTU to KWH savings from recycling one tonne (1 BTU = .000293 KWH)	Greenhouse Gas Conversion to CO_2E/tonne (In Ontario 1 KWH = 170 CO_2E)	Recyclables collected in York Region (tonnes)	Greenhouse Gas $MTCO_2E$* savings from recyclables collected in York Region
Newspaper	36.21	19.94	16.27	0.005	0.811	44,536	36.103
Old Corrugated Containers	22.80	10.64	12.16	0.004	0.606	11,895	7.203
Aluminum	193.53	15.05	178.48	0.052	8.890	763	6.786
Glass	5.89	3.92	12.16	0.004	0.606	10,685	6.470
Steel	28.65	10.69	12.16	0.004	0.606	2,025	1.226
HDPE	26.03	3.78	12.16	0.004	0.606	1,223	0.741
PET	29.77	3.78	12.16	0.004	0.606	1,687	1.021
						Total	**59.550**

There are many social benefits to an enhanced and optimized Blue Box Program. The blue box is a constant reminder to residents about their consumption patterns and the packaging

[5] *$MTCO_2E$ = metric tonnes of carbon dioxide equivalent

[6] Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM), 2010. In 2008 Ontario's Greenhouse Gas Intensity (g GHG/kWh electricity generated) was 170 according to Environment Canada at http://www.ec.gc.ca/ges-ghg

created through the products they purchase. As a visible and well understood/well-used component of York Region's waste management system, the blue box provides an ideal educational opportunity. The program is also a good mechanism to convey the significant benefits in reduced demand for landfill and reduced social and environmental impacts of landfilling operations.

4.0 Blue Box Strategy Components

The overall Blue Box Monitoring Strategy involves a number of broad components:

- Monitoring changing blue box material composition and quantities and summarizing the implications of these changes in a recommended annual blue box report
- Continuing engagement in current advocacy processes
- Planning for future changes to the *Waste Diversion Act, 2002* which could have significant impacts on how the Blue Box Program in Ontario is operated, including current proposed Waste Reduction Act
- Development of a bylaw to ban recyclables from the residual waste stream

Planning for any future changes to the Blue Box Program as a result of new processing contracts in 2019 is identified as an item to be addressed in the 2017 and 2018 work plans. Given the possibility that the Blue Box Program may have moved to a 100 per cent EPR solution by that time, the work plan for collection is not scoped out in any detail.

The broad Blue Box Strategy objectives are addressed in a number of separate strategy tasks below, with required resources and timing described in Section 5.

4.1 Step 1 - Monitor Changing Blue Box Materials and System Impacts

The composition of the material in the blue box is changing rapidly due to lifestyle and demographic changes. A two-prong approach is required to monitor changes in Blue Box materials and assess implications for collection, processing and Blue Box system costs. The inputs to the annual updates include:

1. Annual population and housing projection updates, obtained from the Regional and local municipality planning departments.
2. Data from annual curbside audits of blue box materials collected at single family (urban, sub-urban and rural), multi-residential units in apartments as well as condominium complexes throughout the Region.
3. Data from MRF audits (processing, compaction, bales, etc).
4. Specific issues raised by local municipalities and agreed on through the integrared partnership decision-making framework.

4.1.1 Annual Population and Housing Projection Updates

Planned changes to housing stock, or increases in particular types of housing stock (for instance, more small condos for young singles, or more seniors housing for one-person households, etc.) will impact on the type of material in the blue box. Smaller household sizes typically mean more convenience packaging and an increase in the plastic content of the blue box.

Regular communication meetings should be held with planning staff at the Region on an annual or semi-annual basis to review:

- Types of new developments being planned or considered
- Number of new households and buildings expected
- Types of new households being built
- Expected occupancy levels (numbers of people per household)

The information collected during these meetings and updated following the meetings will be used as input to the *York Region Blue Box Projection Model* recommended later in this document.

4.1.2 Tracking and Modeling Impacts

The amount and composition of blue box material is expected to change over time for the following reasons:

- **More Multi-Residential Housing:** Population growth in York Region will mean growth in the amount of blue box material to be managed. Some of this growth will occur in multi-residential households that traditionally present recovery challenges and have lower material recovery rates. Overall, the Municipal Industry Program Committee (MIPC) Blue Box MRF Optimization Study completed in 2012 projected a province-wide increase in blue box material tonnage of 15 per cent over current generation by 2025.
- **Lower Density Blue Box Material:** The MIPC Blue Box MRF Optimization Study projected a significant drop in the density of blue box materials over time–i.e. 30 per cent less dense than the current mix. That is primarily the result of less heavy material generation (e.g. less newspapers available for recycling because of changing readership patterns) and material substitution (e.g. more plastic and less glass, steel and heavy paper packaging). At the MRF level, this means less weight but more "picks" (and thus higher processing costs). It also means the MRF capacity rating needs to be updated annually to assess the suitability and capability of existing equipment to handle the rapidly evolving blue box material stream.
- **More Plastic and Less Printed Paper:** The blue box is anticipated to contain less newspaper as newspapers get lighter because communication is moving to electronic formats. This will be partly offset by higher Old Corrogated Cardboard generation (related to Internet shopping) and revenue. Larger amounts of plastics will lead to lower total blue box revenues in the future. Therefore, net system costs can be expected to increase.

In terms of methods to accurately monitor blue box material specific changes, there are two main sources of information in Ontario:

- **Steward Reports** - Stewards are required to submit blue box material generation data to Stewardship Ontario each year as part of their annual fee setting process. While these "reports" provide interesting information on overall material trends, the data is very high level and at least two years out of date at the time of publication.
- **Blue box material audits by municipalities throughout Ontario** - Municipalities throughout Ontario track blue box performance through:
    - Curbside collection audits at single family homes in urban, sub-urban and rural settings that also capture waste set out so that there is a measure of blue box materials still being discarded
    - MRF in-bound audits to determine what materials are being collected and how the collected material composition is changing
    - MRF out-bound audits to measure both capture and residue rates in the MRF and to determine what new material markets need to be developed

Mainly through Stewardship Ontario's leadership over the past several years, Ontario has a positive record of preparing statistically reliable and current audit data in each of these areas. Continuous Improvement Fund (CIF) is also an important resource to York Region (and other Ontario municipal-level governments) to ensure that regular audits are used to monitor blue box waste composition changes on a go-forward basis.

The changing composition of blue box materials has implications for collection and processing costs, but more importantly, for revenues, as more plastic and less paper is collected over time. This in turn will impact on the blue box pay out formula and the amount paid to the Region (and shared with the municipalities), as well as to the net blue box annual budget.

There are four main sources of data which should be used by York Region staff to track the implications of changing blue box waste composition:

- Information collected by other municipalities in Ontario through on-going audits
- Information collected through audits carried out or supported by York Region and local municipalities
- Information collected by Stewardship Ontario
- Processes and meetings where the Ontario Funding Formula for Blue Box materials is discussed

Waste Audit and Blue Box Material Information Collected By Ontario Municipalities

In addition to waste audits supported by Stewardship Ontario and the CIF discussed below, municipalities throughout Ontario periodically conduct waste audits of their own as a method of monitoring participation and capture in their Blue Box and Green Bin Programs, as well as changing material composition. Stewardship Ontario is only interested in and supportive of audits which focus on blue box issues, rather than the broader residential waste issue. As an

example, Peel Region has embarked on a comprehensive audit process to collect data on single family households (urban, sub-urban and rural) and multi-residential households as input to their MRF expansion project. The information from these audits was used as input to the Blue Box Projection Model. Municipalities are generally very open to sharing audit data with other municipalities. Networking with staff at other municipalities facing the same or different blue box challenges is a key strategy to get to know staff in municipalities throughout the province to share information on best practices and other information being collected (e.g. waste audits, etc) which may be of value to York Region.

Blue Box and Other Audits by Stewardship Ontario

Stewardship Ontario, the industry funding organization for blue box materials, has embarked on a comprehensive waste audit program to try and better track the changing composition of the residential blue box stream they are tasked with funding through steward fees.

The results of the audits and a detailed activity based costing (ABC) project carried out in the summer of 2012 have already had profound impacts on how the costs of the Blue Box Program are allocated among stewards. This aspect of the research does not directly affect municipalities, but it is an aspect that York Region should keep track of as one of many future Blue Box Program elements. Associations through which York Region can remain informed on blue box issues are discussed later in this document. York Region staff is already heavily involved in most of these processes.

The current round of SO/CIF audits is being carried out at six Ontario municipalities – three urban and three rural (names confidential). York Region should remain engaged in all work and research carried out by Stewardship Ontario, possibly through a WDO stakeholder process and through its on-going involvement in MIPC (at the senior level).

York Region carried out an all-season set of curbside audits in all nine local municipalities in 2011/2012 as part of the SM4RT Living Plan. . York Region has obtained funding from CIF and SO in the past to partially offset the costs of curbside audits. On a go-forward basis, York Region should offer to be a host for any audits being funded by SO/CIF in the future, as it is an excellent way to collect detailed data at a discounted price. York Region should also be actively involved in committees and working groups where waste audit data (curbside, multi-residential, MRF and MRF residue) is shared and discussed.

Development of Blue Box Projection Model to Predict Composition and Amount of Blue Box Material over Time

Peel Region has developed a Blue Box Prediction Model which takes all factors into account to estimate the types and amounts of blue box material which will arrive at the MRF over time. The model is updated as residue rates by material and other input data become available. A similar predictive tool is recommended for York Region.

A York Region Blue Box Prediction Model should be designed to take all of the factors discussed in this document into consideration and be structured to provide annual forecasts of blue box quantity and composition to the Region for program and infrastructure planning, as well as for

financial planning, particularly as material revenues begin to decrease because of reduced fibre quantities in the blue box. Participation and capture estimates should be updated on an annual basis, using measured data from other programs, the Region's own monitoring program and any audits undertaken by the local municipalities. The model should be structured to include the following elements:

- Single family projections by local municipality (urban, sub-urban, rural)
- Multi-residential households by local municipality
- Other stops by municipality that will deliver to the MRF (e.g. schools, municipal buildings, etc)
- Audit data for each category of generator
- Current capture by material (kg per household per year)
- Anticipated future capture by material by year (kg per household per year)
- Changing generation of material by year (kg per household per year)

When the model has been in place and in use for two years, the extent to which the model is useful in predicting the amounts of different materials received at the MRF can be assessed and the value of continuing this approach can be quantified and evaluated.

Output from the Model will be incorporated into the Annual Blue Box Report described in Task 5.

4.2 Step 2 - Involvement with Blue Box Related Organizations

There are three types of organizations that York Region should support and work with to understand and influence future broader waste diversion program and system changes in Ontario. York Region and local municipal staff are already involved in some or all of these organizations and should continue to remain involved.

Selected opportunities are described below:

1. *Multi-stakeholder organizations* - e.g. Ministry of the Environment, Waste Diversion Ontario and PACNext
2. *Municipally-led organizations* - e.g. Association of Municipalities of Ontario; Regional Public Works Commissioners of Ontario (RPWCO); Federation of Canadian Municipalities
3. *Interest based organizations* – Industry Funding Organizations (Stewardship Ontario); Ontario Waste Management Association; Canadian Plastics Industry Association; Paper and Paperboard Packaging Association

4.2.1 Multi-Stakeholder Organizations

Ministry of the Environment (MOE)

The Ministry of the Environment is the provincial regulator responsible for the 3Rs Regulations (which require blue box recycling) and the *Waste Diversion Act, 2002* (which requires steward funding of the Blue Box Program). The MOE hears from industry stakeholders on any aspect of the *Waste Diversion Act, 2002* which is problematic for their constituents, as well as the

proposed Waste Reduction Act. York Region and other municipalities need to make sure the municipal voice is clearly heard by MOE staff, as well as the Minister of the Environment, so that municipal concerns are considered fully in any future plans to change regulations.

The Region communicates regularly with the MOE through its involvement as a member of the Regional Public Works Commissioners of Ontario (RWPCO). However, senior staff more directly related to waste management day-to-day should also ensure that operational concerns are understood by the MOE as policy and regulatory changes are being considered. Quarterly meetings should be scheduled with MOE policy staff to get an update (with York Region and York Region local municipal representatives only) on any policy directions under consideration. While AMO represents the interests of municipalities across Ontario and RPWCO represents the interests of larger regions across Ontario, the Region needs to advocate with respect to its own local interests in these meetings and, to a degree, already does with ongoing involvement in these organizations.

Waste Diversion Ontario (WDO)

Waste Diversion Ontario (WDO) is the non-crown corporation created under the *Waste Diversion Act, 2002* on June 27, 2002 and was established to develop, implement and operate programs to divert materials from the Ontario waste stream. WDO acts as the oversight agency for the industry funding organizations (IFOs) that have been established for blue box materials, used tires, waste electronic and electrical equipment and municipal hazardous or special waste.

Given its mandate, the influence of WDO on future waste diversion program and system changes in Ontario is considerable. While significant political discussions are underway at this time with the proposed Waste Reduction Act, the future role of the WDO is uncertain. Even if the role is to change, it is anticipated that WDO will continue to be an important point of contact for York Region.

There are three main mechanisms through which York Region can engage directly with WDO. The first two of these are historic engagements that York Region has participated in for some time. The third represents a more recent opportunity.

1. ***Through the Region's support and engagement with the Municipal-Industry Program Committee (MIPC).*** This committee plays a central role in waste diversion program funding, best practice implementation and key waste system design issues. Its leadership and support for the MRF Optimization Study[7] (completed in 2012) is one example. The results of this study potentially have significant impacts on waste diversion program changes across Ontario and in York Region as discussed below. A

[7]MIPC Blue Box MRF Optimization Study: Early in 2012, the Municipal Industry Program Committee (MIPC) commissioned a study of the optimization of Blue Box Materials Processing System in Ontario. Consultants for the study were StewardEdge Inc. and Resource Recycling Systems.

senior member of York Region staff is currently serving as a municipal member of the MIPC committee.

2. ***Through the Region's engagement in WDO's Continuous Improvement Fund (CIF).*** CIF is an important Ontario municipal blue box diversion project funding body but is also a powerful voice for innovative program design, development and potential changes. More is stated below regarding the importance of CIF for helping to support monitoring blue box material specific changes in the future. A portion of the IWMMP is being funded by CIF.
3. ***Through WDOs recently launched renewed "stakeholder engagement process."*** With direction from MOE and the Minister, WDO is undertaking a new process to more effectively and actively reach out to its key stakeholder groups. The stated goal of this process is to "explore options on how we can collaborate, share views, and debate issues with an eye on building a better waste diversion system that works for all of us." This represents a key opportunity for the Ontario municipal sector to ensure their waste diversion system interests are heard and addressed.

Packaging Association of Canada (**PAC) NEXT**

PAC NEXT is a major initiative of the Packaging Association of Canada (PAC), which has been the voice of the Canadian packaging industry since 1950. The PAC NEXT vision is "a world without packaging waste" Its mission is to "unite leading organizations (across the packaging value chain to collaboratively explore, evaluate and mobilize innovative packaging end of life solutions".

One of the unique aspects of PAC NEXT is the commitment to engage senior representatives from packaging/consumer goods businesses along with senior representatives of waste industry service providers and interested municipal governments to work together on packaging waste solutions. York Region became a member in PAC NEXT in 2012.

Involvement in one or more PAC NEXT committees ensures that the municipal voice is heard before new packaging formats are introduced into the Ontario marketplace and that York Region is aware of new packaging formats which will be collected and arrive at the MRF for processing. This will allow York Region some lead time to assess the implications for MRF-related capacity, as well as to identify new processing equipment which may be required.

4.2.2 Municipally-led Organizations

York Region and the local municipalities are already involved with municipally led organizations and should continue to be involved. It is important to underscore the importance of Regions like York Region continuing to engage with organizations like AMO, FCM and RPWCO – to ensure that the municipal voice on broader waste diversion system and program changes is well coordinated and clearly heard.

Association of Municipalities of Ontario (AMO)

AMO is clearly the most important of these organizations because of its Ontario-wide presence, its experience and its standing as an influencial voice for waste diversion program and system changes. At the local level, networking and collaborative project development and involvement among Public Works directors is also an important activity for York Region, particularly collaborating on potential partnership projects which are favoured by CIF.

Regional Public Works Commissioners of Ontario **(RPWCO)**

Members of the RPWCO group are generally comprised of former upper tier municipalities (e.g. York, Peel, Durham and Halton Regions, Cities of Toronto, Hamilton and Ottawa), and those cities and single tier municipalities with a population of greater than 100,000 (e.g. London, Windsor, Thunder Bay, Muskoka, Haldimand, Norfolk, etc). While RPWCO is made up of a relatively small number of municipalities, they provide the full spectrum of public works infrastructure and services to more than 80 per cent of the population of Ontario. The members of the Regional Public Works Commissioners of Ontario (RPWCO) plan, design, build, operate and maintain the public infrastructure (Transportation, Water, Wastewater, Solid Waste, Park and Public Buildings) that serve the vast majority of citizens and visitors to the Province of Ontario.

RPWCO's three Sub-Committees identify priority issues, develop common positions and communicate these to key decision-makers. RPWCO also works to enhance awareness of infrastructure and service delivery issues to key decision-makers.

The Commissioner of Environmental Services for York Region was appointed Chair of RPWCO in January, 2012.

Federation of Canadian Municipalities (**FCM)**

Municipal/Regional waste diversion interests are being considered and addressed at the national level as well through the Federation of Canadian Municipalities (FCM). FCMs role in waste management was more prominent when the $500 million Green Fund program was actively investing in waste diversion projects in Ontario and across the country. Nonetheless, FCM continues to be the national voice for municipalities on waste and on other environmental issues of importance to the municipal sector.

While FCM is not directly engaged on blue box issues which are fully provincial jurisdiction, York Region should keep track of FCM activities generally.

4.2.3 Interest Based Organizations

Interest-based organizations can be divided into two groups. The first group is comprised of the three Industry Funding Organizations (IFOs) created through the *Waste Diversion Act, 2002* that manage and direct diversion programs for blue box, waste electronics, tires and municipal special and hazardous wastes. The Ontario Waste Management Association (OWMA) is also considered to be an important interest based organization for York Region to engage with.

Material specific interests such as the Canadian Plastics Industry Association and the Paper and Paperboard Environment Council are also valuable networking opportunities.

Industry Funding Organizations (IFOs) – Stewardship Ontario for Blue Box

Stewardship Ontario (SO) is the IFO for Blue Box materials in Ontario. Stewardship Ontario collects fees from stewards and pays York Region approximately $7.2 million in blue box funding on an annual basis.

Industry Funding Organizations are important to municipalities as they influence material-specific waste diversion policy and program decisions and many municipalities are service providers (at least at the local level) to these organizations. York Region needs to engage with these organizations with a vested interest as a service provider. From a blue box perspective, Stewardship Ontario is the most relevant of the Ontario IFOs for York Region to continue to engage with.

The Ontario Blue Box Funding Formula sets out how the 50 per cent funding from stewards is allocated back to municipalities in the province. York Region has a staff member on MIPC, therefore there is a deep understanding of how the funding formula was originally developed and how it has changed over time. On a go-forward basis, additional staff members should become familiar with the workings of the funding formula to ensure that York Region and the local municipalities are getting their fair share of the funding available (about $93 million, excluding the in-kind newspaper contribution in 2012).

A cost allocation study completed in 2012 will significantly change the split of funding between printed paper and packaging. Elements of the funding formula are under review on an annual basis. The funding formula has become increasingly complex and hard to follow and most Ontario municipalities accept the funding received without seriously questioning the calculations involved. For York Region, where many millions ($7.2 million in last fiscal year) are obtained each year from the funding formula, subtle changes can have a negative effect on the amount of funding received. York Region should analyze the impacts of different funding formulas to ensure they are fair and accurately compensate municipalities for the resources expended to provide blue box collection and processing services.

Ontario Waste Management Association (OWMA)

Ontario Waste Management Association (OWMA) is a significant influencer on provincial waste policies and programs. Founded in 1977, OWMA speaks for nearly 300 mainly independent companies in the private sector. Its mandate is to "protect the environment through the proper management of waste and recyclable materials." In the past two years, OWMA has opened its membership (and board) to include municipal representation (the Regions of Peel and Waterloo currently sit on the OWMA board).

It is important for York Region to be kept informed of OWMA's policy and program activities and recommendations, if only through informal contacts among senior waste staff in York

Region and the two Regional government representatives at the OWMA table. Ontario Waste Management Association is a very successful advocate with MOE and the Province in general. York Region should continue to be an active member and push for their interests to be included in OWMA policy positions and negotiations. One approach to increase York Region involvement is to become a member of the waste diversion committee which already includes municipal representatives from Niagara and Durham.

Canadian Plastics Industry Association (CPIA) and Paper and Paperboard Packaging Environmental Council (PPEC)

CPIA and PPEC are long-standing blue box material specific interest groups - CPIA for plastics and PPEC for paper and paper packaging. Both organizations commonly develop and promote policies and program ideas that, if adopted, would have significant impacts on future waste diversion programs and systems.

CPIA represents plastics recycling interests. Plastics will become an increasingly significant component of the Blue Box Program over the next number of years. The implications of plastics are important for the MRF operation as the design and equipment may need to change over time to accommodate the rapidly increasing range of plastic packaging being introduced to the Ontario market. Various forms of plastic packaging are replacing heavier glass wherever practical. All of these changes affect the related MRF capacity.

York Region staff should communicate regularly with both of these organizations to get an update on developments across Canada, results of pilot projects and material specific audits and any particular positions the organizations are advocating and should attend workshops presented by these organizations when possible.

4.3 Step 3 - Planning For Future Changes in the Blue Box System

Unlike other issues addressed as part of the SM4RT Living Plan, the blue box issue is uncertain and will remain in this state until the *Waste Diversion Act, 2002* (WDA, 2002) is revised. At the time of the development of this strategy, the proposed Waste Reduction Act was placed on the Environmental Bill of Rights for comments in June 2013. When the WDA, 2002 is re-written, the Region and the local municipal partners will need to develop a new blue box strategy reflecting the policy direction identified by the Province at that time. The strategy presented in this section lays the groundwork for the Region and the local municipalities to carry out some advance planning for a few different future blue box scenarios

There are three general scenarios that could characterize potential blue box system changes for York Region's blue box diversion infrastructure in future years:

- A status quo scenario
- A scenario that sees some level of province-wide efforts towards system optimization
- A scenario that would represent dramatic changes in the way in which the overall blue box diversion system might operate

Each of these possible scenarios is briefly described below.

Future Blue Box Scenario 1 – "Status Quo"

A "status quo" scenario would see minimal blue box program and infrastructure changes in York Region over the coming years. While a continued status quo scenario is possible, it is considered more likely that continued, province-wide cost increases for blue box recycling will create pressure (i.e. through Stewardship Ontario and steward companies) for at least some system optimization improvements. For this reason, Scenario 2 is considered a more likely future medium term scenario, with Scenario 3 the most likely long-term scenario for the Blue Box Program in Ontario.

Future Blue Box Scenario 2 – "System Optimization"

System Optimization is seen to be the more likely mid to long-term scenario. It is difficult to predict the extent of possible Blue Box Program optimization changes. Significant progress has been made in optimizing the blue box collection system at the local municipal level, particularly through the amalgamation of the six northern municipalities into one collection contract. There may be pressure in the future to optimize the province-wide collection system by establishing a common set of materials to be collected in all Blue Box Programs across the province. Since the list of materials already collected throughout York Region is quite broad, it is unlikely that future province-wide changes would have a significant impact in York Region.

The system optimization change that would have the greatest impact on York Region would be related to processing and the York Region MRF. Waste Diversion Ontario's MIPC committee completed a province-wide "Blue Box MRF Optimization Study" in 2012. One of the considerations from that study (other findings will also be discussed below) was the notion of reducing the number of MRFs in the Central Region of Ontario from 15 MRFs to three. The project modeled three MRFs to be located in the City of Toronto and Peel Region and referred to this scenario as the "lowest cost option." The expanded option from this scenario added a 4th MRF in Durham Region and a 5th in the City of Barrie. In the MRF Study optimized system, existing facilities that did not remain on the list of 15 would effectively become transfer stations. None of the optimization models identified a MRF in York Region, therefore a MRF in York Region may not be part of a future optimized Ontario Blue Box Program based on the MIPC study. There are no plans at this time to implement the findings of the MIPC study in the short to medium term; however, it is likely the findings will continue to influence processing decisions in the future.. It should be noted however that this MIPC-sponsored study was essentially a modeled projection of future processing needs and there has been some concern about the representation of the affected municipalities in terms of their own mid to long term material processing plans.

Future Blue Box Scenario 3 – 100 per cent Blue Box EPR – Quebec, BC or Hybrid Models

The Ontario government is likely to move towards 100 per cent EPR over time. British Columbia and Quebec each have different approaches to 100 per cent EPR, and Ontario may take elements from these other provincial programs, as well as from Manitoba and Saskatchewan

where industry funding is less than 100 per cent, or where municipal roles are prescribed. For instance, Quebec mandates municipalities operate and control the Blue Box Program and stewards support 100 per cent of the program costs. The split of obligation for stewards is enshrined in provincial legislation rather than measured by cost allocation studies like in Ontario. In the case of Saskatchewan, the recently announced regulation requires that stewards pay funding of up to 75 per cent of the program cost to municipal programs.

Under such a 100 per cent EPR scenario, Stewardship Ontario would presumably undertake to optimize the overall blue box system, including not only the collection and processing infrastructure but also a province-wide common materials list, centralized consumer education and direct steward responsibility for recycled materials marketing. Should Ontario move to 100 per cent steward funding of the Blue Box Program, the role of the Region and the local municipalities is not known at this time.

One-hundred per cent industry stewardship for Packaging and Printed Paper is expected to be in place in BC by May 2014. York Region and other municipalities in Ontario need to closely monitor developments in BC as some elements of the BC approach may be implemented in Ontario over time.

4.4 Step 5 - Annual Blue Box Report

Given the number of changes likely in the Blue Box Program in the short to medium term, an Annual Blue Box Report should be prepared by York Region. This report would be distinct from the Annual Waste Diversion Report currently produced, and should be prepared covering the following topics:

- Results of audits in the Region
- Results of audits from other municipalities (as available)
- Changing composition of blue box materials and implications for collection costs
- Implications of changing composition for processing costs and equipment
- Results of decisions managed using the decision-making framework (e.g. request for bag breakers)
- Other equipment needs
- Annual operating and capital budgets for Blue Box Program
- MRF processing and market revenues
- Provincial discussions on blue box policy changes and implications for York Region and the local municipalities
- Blue Box funding formula – implications of changes to York Region
- Advocacy update
- Issues to be addressed in the future with timelines and budgets

4.5 Blue Box Pilot Projects

Two pilot projects are suggested as part of the blue box monitoring strategy:

- **MRF Residue Pilot** – assess options for increasing recovery of recyclables from MRF residue through either re-processing at the MRF or sending to an outside service provider
- **LCBO Glass Pilot** – measure the amount of LCBO glass in the glass received at the MRF; LCBO containers are already on a deposit system so a good education program to keep these out of the Blue Box could reduce handing costs.

A budget of $100,000 should be set aside for these pilots, which could be scheduled for 2014 at the earliest.

4.6 Banning Recyclables

To assist with increasing diversion, many municipalities have engaged in the concept of banning recyclables from the residual waste stream. Bans send a clear and reasonable signal to households - if it can be recycled it does not belong in a landfill or EFW facility. Municipalities sometimes introduce curbside bans in their waste bylaws to ensure that the banned materials which can be diverted do not enter the residual waste stream. Some materials commonly banned at the curb include: grass clippings, hazardous waste, end-of-life electronics, recyclables etc. It is important to provide alternative diversion opportunities at the home or landfill/disposal site for the banned materials. Curbside bans often involve the harmonizing of bylaws designating materials banned from being collected with residual waste at the curbside. An additional benefit of recycling bans is that it assists with increasing capture rates of recyclables. Increased capture rates help to reduce impacts associated with new material production and assist with increased resource efficiency. For example better capture rates mean that energy consumption, resource consumption and other negative environmental effects such as pollution can be reduced.

Additional benefits of imposing curbside bans include:

- To reduce the amount of material going to landfills, thereby reducing the transportation of waste and extending the life of the landfill
- To reduce the need for new landfills / disposal facilities
- To reduce the quantity of material to be handled by municipalities and thus the associated costs
- To increase participation in initiatives to reduce waste and reach goals such as increasing waste diversion rates

A growing number of local governments are adopting bylaws and ordinances prohibiting disposal of recyclable products in the garbage. Several municipalities in North America have already engaged in these bans, including: Owen Sound, Toronto, Niagara Region, Markham and Richmond Hill locally.

The *Ontario Municipal Act 2001* gives each municipality broad powers to govern within its jurisdiction the power to pass bylaws respecting the environmental well-being of the municipality. Therefore under the *Municipal Act*, York Region has the ability to regulate waste management and recycling activities through their bylaws. These bylaws generally impact residential waste and can for example:

- Set limits for the amount of garbage that can be generated by residents
- Require the recycling of materials
- Determine fees for waste collection service (e.g. bag tags)
- Set disposal bans (restrict what materials can be disposed)

To effectively push for increased diversion in the long-term future, York Region should consider developing a policy that would ban recyclable items from the curbside residual waste stream. To appropriately develop and implement a ban on recyclables, York Region would need the support and coordination of all of the local municipalities. For instance, if York Region were to develop a policy regarding the banning of recyclables at the curbside, the local municipal partners would need to work closely with the collection crew as they would have the authority to refuse to collect the residual waste containing banned materials. The collection crew becomes the key partner in implementing successful curbside material bans and therefore needs to have the authority and the support to leave residual waste behind if the curbside bans are not adhered to. The Region and its local municipal partners would need to work with collection contractors to ensure that collection crews have incentive to implement the ban (not penalized for slower pick-ups due to inspecting bags, etc). To assist with this process, York Region and its local municipal partners may want to consider a banning pilot where they choose one item, say PET#1 for example. By choosing only one item, the Region and its local municipal partners can take the appropriate time to co-ordinate and ensure the collection and operations are on board. The pilot could run for one year and the Region could determine feasibility of additonal steps moving forward. Lessons learned would also be helpful if additional items were to be added to the banned item list.

4.7 Consideration of Alternative Blue Box Collection Methods

Municipalities such as York Region must work to ensure waste can be collected effectively and efficiently so that it is removed from the curb and arrives at its appropriate destination. Part of an effective and efficient system is the ability to capture, store and collect recyclables easily and without issue. These features are usually dependent, in part, on the type of collection container a municipality deploys to its residents. The most popular methods for collecting recyclables includes; large totes or carts, clear bags and small boxes. To ensure York Region residents are provided with the most effective and beneficial system, York Region should work with its local municipal partners to review alternative blue box collection methods including an analysis of bags, carts and blue boxes. This review should include an assessment of container types, trucks and loading mechanisms, environmental and cost considerations, as well as processing and

material quality implications. Assessment of alternative blue box collection methods should be done using the decision-making framework developed as part of the SM4RT Living Plan.

5.0 Implementation

The following provides an overview of the approach to implementation of this strategy.

5.1 Partnerships

The Blue Box Monitoring and Implementation Strategy is somewhat different to other strategies in that it continues to operate, monitor and improve a system which is already in place and working efficiently, but considers the fact that outside factors, such as changing legislation, may change the way the system is operated and owned.

Partnerships for the Blue Box Monitoring and Implementation Strategy include well established relationships with municipally focused entities such as AMO, and with industry groups such as PACNEXT.

5.2 Resources and Timelines

The following provides on outline of the resources (staff and financial) required, as well as a preliminary timeline for implementation, performance targets and monitoring.

Roles and Responsibilities

The proposed arrangement for the implementation of this strategy is as follows:

York Region:	Lead
Local Municipalities:	Support
Community Partners:	N/a

Resources and Timelines

Potential staff, financial resources and timelines are discussed together in this section, as these issues are interrelated for the blue box issue in particular. Staff time for various tasks is presented in Table 8 along with specific timelines anticipated for these tasks.

Table 8: Staff and Financial Resources and Timelines for Blue Box Monitoring and Management

Task #	Activity	Annual Staff Time Allocation (Days)	Outside Resourcing (Consultant Fees)	Schedule
Task 1	Implications of changing composition on collection system and processing system	50 days/year	$25,000 (2013) To develop structure	Annual activity
Task 2	Development of York Region Blue Box Projection Model	50 days in first year; 20 days/year to update with new information	$25,000 (2013) $25,000 (2014)	Q3/Q4 2013 or Q1/Q2 2014 for development
Task 3	Comprehensive audit program at single family households (urban, sub urban and rural), multi-family households and possibly other system users (e.g. schools)	40 days annually	$100,000 to $150,000 annually	2013 program already developed Annual program 2014 and future years
Task 4	Involvement with stakeholder organizations	50 – 75 days/year		Annual Activity
Task 5	Study on Implications of future 100 per cent industry funded Blue Box Program in Ontario for York Region and the local municipalities.	20-40 days for year when study carried out	$150,000 to $300,000 depending on scope	Q3/Q4 2013 or Q1/Q2 2014 for development
Task 6	Negotiating future blue box	40 days/year	$50,000 2013 $50,000 2014	2013-2017

Task #	Activity	Annual Staff Time Allocation (Days)	Outside Resourcing (Consultant Fees)	Schedule
			$50,000 2015	
Task 7	Annual blue box report	40 days first year to create format and compile first year of data; 30 days per year each year after first year	Allow $50,000 per year	Annual activity
	TOTAL	**280 days per year in peak years – allow one FTE (240 days/year)**		

Performance Measurement

For each new initiative there are specific performance measurements identified however, there are several overarching metrics to measure the performance of the *Blue Box Materials Management and Monitoring* Strategy as a whole, including:

- Completion of annual funding formula and calculation review
- Increase or maintain share of annual Ontario blue box funding
- Cost savings/additional revenue opportunities
- Completion of periodic MRF in-bound and out-bound audits

6.0 Benefits of Blue Box Monitoring Strategy

The Blue Box is a very important core element of the waste diversion system in the Region, contributing 23 per cent diversion to the Regional diversion performance. The Blue Box system is in a perceived state of flux currently in Ontario as the future of the Blue Box Program and funding of the blue box costs by stewards continues to be discussed and negotiated. However, if the Region and its local municipal partners strive for a target of a two per cent increase in diversion from 2013 to 2031, there could be a cost savings upwards of $700,000 from both collection and processing of reduced recyclable material.

This strategy has focused on preparing the Region for a future with multiple possible blue box scenarios. The key is for the Region to be flexible and resilient and have the facts to support their position documented in a comprehensive annual blue box report which will be an invaluable tool as negotiations progress, and also for longer term planning of the Blue Box Program should the Region and local municipalities retain full control of the system.