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Township of Billings Waste Recycling Strategy

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Township of Billings Waste Recycling Strategy

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1. Introduction

This Waste Recycling Strategy was initiated by The Township of Billings (the Township) to develop a plan to increase the efficiency and effectiveness of its recycling programs and maximize the amount of materials diverted from disposal. Specifically, the purpose of this recycling strategy is to guide the Township in municipal waste management services for the foreseeable future using cost effective measures and environmentally friendly practices. Current practices will be addressed along with potential diversion options for the future.

The Township is currently responsible for managing its residential solid waste and provides depot collection services for recycling and garbage.

2. Overview of the Planning Process

This Waste Recycling Strategy was developed following the process outlined in the Continuous Investment Fund's *Guidebook for Creating a Municipal Waste Recycling Strategy*.

The process consisted of the following steps:

- Conducting a review of relevant background information;
- Conducting an assessment of the Township's current waste generation and diversion trends, practices and systems and future needs;
- Reviewing and evaluating a suite of options and recommendations for improving the Township's recycling programs; and
- Preparing the Waste Recycling Strategy.

3. Study Area

The study area for this Waste Recycling Strategy includes the Township of Billings, which is comprised of Billings Township and the eastern half of Allan Township. The Township is located in the north central region of Manitoulin Island and has a population of 539[1]. The Township is comprised of approximately 240 households, of which 98% are single detached homes[1]. This Waste Recycling Strategy will address the residential waste stream.

4. Public Consultation Process

TBA

5. 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 endeavours can vary greatly and depends on a municipality's size, geographic location and population.

[1] Statistics Canada, 2006 Census.

The issues facing the Township are common among many northern Ontario communities and have led to the development of this strategy. These issues include:

- Considerable distance from recyclable processors and markets;
- A low economy of scale for handling recyclables, due to small population and therefore small tonnages of material collected;
- A smaller staff compared to larger municipalities, whereby those in charge of solid waste are also responsible for other public works activities; and
- Low diversion rates compared to southern Ontario municipalities.

In addition, levels of funding received for blue box recycling in Ontario is based in part on the adoption of a waste recycling strategy, the incorporation of other WDO-approved recycling best practices, and the amount of recyclable material marketed. This Waste Recycling Strategy will help to improve efficiencies through the adoption of recycling best practices and maximize the amount of eligible funding available.

6. Goals and Objectives

This Waste Recycling Strategy has identified a number of goals and objectives for the Township. These are presented below.

Table 1: Waste Recycling Goals and Objectives

Goals	Objectives
Increase the amount of recyclables diverted from disposal.	Increase participation in the recycling program to 70% Reach the WDO reported blue box diversion average for northern municipal rural depot recycling programs of 18%.
Reduce operation costs through system efficiencies.	Reduce the net cost per tonne for blue box recyclables by 10%.

7. Current Solid Waste Trends, Practices and System and Future Needs

7.1 Residential

Under Ontario Regulation 101/94, municipalities with permanent populations of less than 5,000 are required to set up diversion programs that are reasonably convenient to the generators of waste in the municipality. The Township has elected to provide a depot style system for their recycling programs rather than curbside collection. The Township has the following programs in place to manage residential solid waste:

- Drop off garbage disposal at the Billing Waste Management Site (the Landfill);
- Depot drop-off for the diversion of recyclables from disposal;
- Drop off tire collection through a Waste Diversion Ontario (WDO) initiative;
- Drop off household special waste (HSW) collection; and
- Drop off scrap metal collection.

7.1.1 The Landfill Site

The Landfill, located at 9490 Highway 540, currently accepts all residential waste from the Township and charges tipping fees for construction waste, but not for individual residential bags. The site is open Saturdays 10:00am to 6:00pm, Sundays 1:00pm to 6:00pm, and Tuesdays and Thursdays 4:00pm to 8:00pm. In order to reduce the volume of garbage at the Landfill, waste is compacted prior to disposal. The Township is permitted by the Ministry of the Environment (MOE) to burn clean wood and brush in an open pit at the Landfill.

7.1.2 Drop-off Recycling Collection

The Township provides four drop off bins at the landfill site for the collection of recycling. Two bins are used to collect cardboard, one for office paper and the other is for commingled plastics. Currently, the Township's commingled plastics recycling program collects and diverts PET (#1) and HDPE (#2) plastics. Municipal Waste and Recycling Consultants are responsible for collecting the recyclables on a call-in basis, once the bins are filled. The cardboard and paper bin collection costs $250 per pick up and the commingled plastic bin collection costs $350 per pick up.

7.1.3 Tire recycling

Residents are permitted to drop off four tires per year free of charge at the Landfill site, as permitted by Ontario Tire Stewardship (OTS). Tires are kept in a designated area at the Landfill until they are collected and recycling by the OTS. The Township accepts the following types of tires as part of the OTS program:

- Passenger and light truck tires;
- Medium truck tires;
- Agricultural drive and logger skidder tires;
- Small and large industrial tires; and
- Small, medium, large and giant OTR ("Off-The-Road") tires.

7.1.4 Household Special Waste

The Township of Central Manitoulin provides a "Household Hazardous Waste Collection Event" once a year for communities in the surrounding area, including the Township of Billings. Residents can drop off the following household special waste:

- Adhesives, glues, resins;
- Hobby supplies;
- Latex and oil based paints;
- Stains, thinners, strippers and solvents;
- Car and dry cell batteries;
- Degreasers;
- Engine oil and transmission fluid;
- Antifreeze;
- Fluorescent light tubes;
- Insecticides, pesticides, herbicides;
- Propane tanks;
- Swimming pool chemicals;
- Wood preservatives;
- BBQ lighter fluid;
- Aerosol cans;
- Oven and drain cleaner;
- Pharmaceuticals; and
- Rat and mouse poisons.

Collection and diversion of these materials are contracted to Drain-All Ltd. The Township of Central Manitoulin invoices the Township of Billings according to the number of participating households from Billings that use the HSW collection event. In 2010, the Township of Central Manitoulin charged the Township a rate of approximately $107 per participating household, for a total of $1,314.12.

7.1.5 Scrap Metal

Scrap metal is collected in a designated spot at the Landfill site in a 40-yard roll off bin. Residents can drop off materials such as aluminum, steel and iron. Collection is provided by Island Salvage on a call-in basis as the bin reaches capacity. Revenue is collected by the Township based on the quality and weight of metals per load. Therefore, no specific revenue amount can be categorized per load.

7.2 Industrial, Commercial and Institutional

Currently, the Township does not have any industrial or commercial establishments and therefore does not accept any waste from those sectors. The Township does however have one institutional establishment, the secondary school, and all of its waste is sent to the Landfill for disposal or recycling.

8. Current Solid Waste Trends, Practices and Future Needs

According to the landfill attendant, the Township does not weigh or record volumes of waste disposed at the landfill. The landfill attendant did, however, estimate that approximately 2,400 cubic yards of waste are disposed in the landfill per year. This calculation is based on the volume of the garbage truck used to compact waste and the amount of times the truck is filled per year. Using volume to weight conversion guidelines[2], approximately 550 tonnes of waste are disposed at the landfill per year.

In order to determine the Township's waste composition and potential diversion, WDO waste audit data from West Nipissing was used as a representative sample. The municipality of West Nipissing has similar characteristics in terms of demographics, recycling programs, and is also located in Northeastern Ontario.

Figure 1 below illustrates the estimated composition of waste in the Township's residential waste stream for 2010. As seen in the diagram, approximately 38% of the Township's waste stream is comprised of blue box materials. Of this, the greatest proportion is recyclable papers (23% of the total waste stream), followed by recyclable plastics (8%), recyclable glass (4%) and recyclable metals (3%). Table 2 presents the tonnage of materials.

[2] Standard Volume to Weight Conversion Factors, U.S Environmental Protection Agency (EPA). http://yosemite.epa.gov/r10/owcm.nsf/Recycle/Conversion+table, 2011

Figure 1. Residential Waste Stream Composition

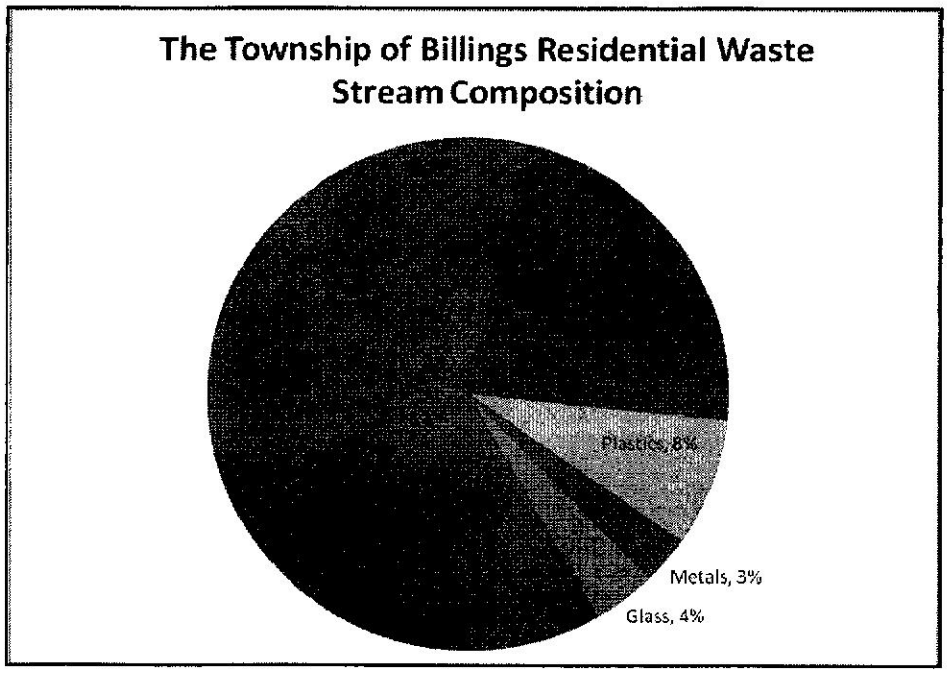


Table 2: Residential Solid Waste Generated		
Residential Waste Stream	**Estimated Tonnes Generated**	**Percent of Total Waste**
Blue Box Papers (ONP, OMG, OCC, OBB, fine papers)	126.5	23%
Blue Box Metals (aluminum, steel, mixed metal)	16.5	3%
Blue Box Plastics (containers, film, tubs & lids)	44	8%
Blue Box Glass	22	4%
Other Waste (Refuse, other divertables)	341	62%
Blue Box Material Available For Diversion	**209**	**38%**
Total Waste Generated	**550**	**100%**

8.1 Residential Blue Box Recycling Program

In 2010, the Township diverted approximately 61.6 tonnes[3], or 11.2% of the total waste stream, through its blue box depot recycling program. Currently, the most common material recycled is fibrous materials (i.e, paper and cardboard), while no blue box glass or metals are recycled.

Table 3 below summarizes the amount of waste being diverted through the Township's current Blue Box program.

[3] Based on estimated tonnages provided by the Township's hauler for recyclables.

Table 3: Blue Box Recyclables Currently Diverted		
Residential Waste Stream	**Tonnes Diverted**	**Percent of Materials Diverted**
Papers (ONP, OMG, OCC, OBB, fine papers)	54.14	87.8%
Metals (aluminum, steel, mixed metal)*	0.00	0.00%
Plastics (containers, film, tubs & lids)	7.49	12.2%
Glass	0.00	0.00%
Total Diversion	**61.63**	**11.2%**

*Does not include scrap metal, which is not a Blue Box diversion item.

8.2 Costs

According to the 2010 budget and service contracts, the Township's waste management system had an annual net cost of $75,637. This includes revenues and expenditures from garbage disposal at the landfill, recycling bin pickups and household special waste drop off costs. Table 4 summarizes the net cost of waste management services for the Township.

The recycling program cost approximately $13,400 in 2010, or about 18% of the Township's net annual waste management costs. The Township provides recycling at a relatively low cost when compared to other municipalities in its municipal WDO grouping. On average, municipalities within the Rural Depot North category spend $982.43 per tonne for recycling, while the Township spends approximately $217.46 per tonne.

Table 4: Net Waste Management Costs	
Waste Disposal Expenditure[4]	$ 68,626
Waste Disposal Revenues[5]	($7,703)
Recycling Bin Pickups (includes processing)	$13,400
Portion of HSW Collection Event[6]	$1,314
Net Waste Management Costs	**$ 75,637**

8.3 Potential Waste Diversion

8.3.1 Gap Analysis

A gap analysis was conducted to assess the performance of the Township's current Blue Box diversion program and determine where improvements could be made to maximize the diversion. Table 5 below presents the current and potential future diversion increases.

The CIF's *Guidebook for Creating a Municipal Waste Recycling Strategy* provides recommended target capture rates for municipalities based on their municipal grouping. Based on its population, location and depot collection method of recycling, the Township falls under the WDO municipal grouping of Rural Depot North. Based on comparable waste composition audit data from West Nipissing, the city is currently capturing 29.4% of recyclable material in their programs. This falls short of the WDO goal of

[4] Includes landfill salaries, student wages, WSIB, benefits, CPP EI, supplies and maintenance, hydro, insurance, capital, regulation compliance expenditures.
[5] Includes landfill tipping fees and other landfill revenue.
[6] The Township of Central Manitoulin invoices the Township based on how many residents/cars from the Township show up to the event at a rate of $106.49 per participating household.

65% for a municipality of its designation. Of the materials diverted, the Township achieves the highest capture rate with paper materials, at 65.8%. The lowest capture rates are for glass and metal recyclable materials, both of which are 0%, as there is no program in place to divert these materials[7].

Table 5. Estimate of Diverted and Available Recoverable Waste Materials

Material	Estimated Composition (%)	Total Amount of Divertible Material in Waste Stream (tonnes)	65% Capture Rate of Divertible Material (tonnes)	Material currently diverted through existing program in 2010 (tonnes)	Additional material required to achieve 65% Capture Rate (tonnes)	Additional Diversion (% of total waste stream)
Paper/Cardboard	23	126.5	82.2	54.1	28.1	5.1%
Metals	3	16.5	10.7	nil	10.7	2.0%
Plastics	8	44	28.6	7.5	21.1	3.8%
Glass	4	22	14.3	nil	14.3	2.6%
Total Divertible Materials	**38**	**209**	**135.8**	**61.6**	**74.2**	**13.5%**

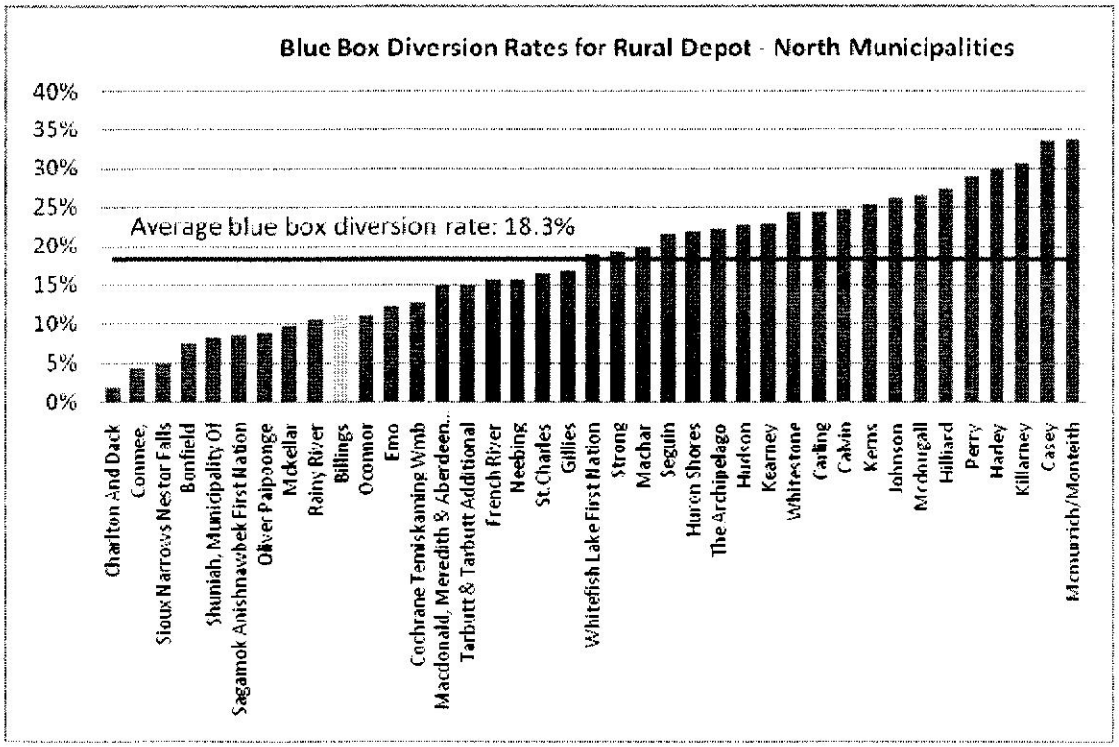
When compared to other municipalities in its WDO municipal grouping, the Township's current Blue Box diversion rate of 11.2% is below the average of 18.3%. Blue Box diversion rates of municipalities in the same WDO grouping as the Township are illustrated in Figure 2.

Based on the gap analysis, the Township could raise its Blue Box diversion rate by 9 percentage points by increasing participation and capturing more materials in current programs (i.e., 5.1% through paper/cardboard and 3.8% through plastics). If the Township added Blue Box metals and glass to its program, the Blue Box diversion rate would increase by another 4.6 percentage points. Capturing 65% of the blue box materials in the Townships waste stream could raise its existing Blue Box diversion rate by 13.5 percentage points to 24.7%.

If glass were not included in the recycling program, the Township's potential diversion rate increase would instead be 10.9 percentage points, up to 22.1%.

[7] Capture rate is a measurement of how much of the available material is being collected, while diversion rate is a measurement of the total amount of material being diverted away from landfill.

Figure 2. Blue Box Diversion rates for Rural Depot North municipalities.



8.4 Anticipated Future Waste Management Needs

According to a population and housing needs and supply study performed by the Manitoulin-Sudbury District Services Board (MSDSB) in 2009, the Township's population is projected to grow by 7% by 2031, to 578[8]. Housing projections indicate a growth of 7% by 2031 as well. In total, the number of households is estimated to increase from 235 in 2010 to 252 in 2031. As a result of population and housing growth, solid waste generated rates in the Township are expected to increase slightly over that time span. Table 6 below depicts the expected growth rates for solid waste generation and blue box material, based on projected population and housing growth rates.

Table 6: Anticipated Future Growth

	2010	2016	2021	2026	2031
Population	539	564	569	574	578
Total Waste Generated (tonnes)	550	576	581	586	590
Blue Box Material Available (tonnes)	209	219	221	223	224

[8] Manitoulin-Sudbury Housing Needs, Supply, and Affordability Study. September 2009. http://www.msdsb.net/ADMIN/docs/ProgramIssues/Manitoulin-Sudbury-DSSAB-Phase-One-Report---Revised-Sept-23-2009.pdf

9. Planned Recycling System

9.1 Overview of Planned Initiatives

A number of options were reviewed for consideration in this Waste Recycling Strategy. The options were then scored based on a number of criteria, which included:

- Percent of waste diverted;
- Proven results;
- Economic feasibility;
- Social acceptability; and
- Ease of implementation.

A summary of the options reviewed and their scoring are provided in Appendix A.

Once scored, the top ranking Waste Recycling Strategy options were organized into Priority Initiatives and Future Initiatives.

The following priority initiatives are recommended to improve Blue Box material diversion in the Township over the next 3 years:

- **Promotion and Education:** Enhance the Township's existing solid waste communications program.
- **Expansion of Acceptable Recycling Materials:** Adding other recyclable materials to the current list of acceptable materials.
- **Multi-municipality Recycling Collection and Processing Contract:** investigate the possibility and potential cost savings of a collaborative hauling and processing contract for recyclables with other neighbouring municipalities.

The following options were identified as future initiatives:

- **Depot Enhancements:** Improving participation and operations at the depot through increased signage, increased hours of operation and/or providing satellite bins.
- **Training of Key Staff:** Increasing waste management knowledge among staff to increase efficiency of programs.
- **Bag Limits:** If feasible, lower the number of bags or weight a resident can dispose at the Landfill.
- **Following Generally Accepted Principles for Effective Procurement and Contract Management:** Apply the Generally Accepted Principles (GAP) for effective solid waste contracting and procurement (as outlined in the KPMG *Blue Box Program Enhancement and Best Practices Assessment Project Final Report*) to the existing municipal contracting and tendering process and possible future multi-municipality contracts.
- **Assess Tools and Methods to Maximize Diversion:** Additional research on the appropriate tools and methods to maximize opportunities to divert Blue Box materials.

The priority and future initiatives are described in more detail below.

9.2 Priority Initiatives

9.2.1 Promotion and Education

A successful waste management system requires a sound communications strategy that supports all of the system's waste management components (i.e., the drop off recycling bins, tire collection at the landfill, the HSW collection event at Central Manitoulin and the scrap metal collection at the landfill). A good

communications program will allow residents and businesses to fully participate in waste reduction and diversion programs by raising awareness about the Townships recycling programs and overcoming barriers to participation.

An enhanced promotion and education program would go beyond the static use of brochures and online information by establishing a dialogue with residents to assess those barriers to participation and determine opportunities for improvement. Such a program may include:

- Face-to-face contact to promote specific programs, possibly at community events or by going door-to-door;
- Using neighbourhood champions or community leaders to teach others or to lead by example (e.g., recycling properly and using current programs);
- Interactive on-line waste forums and feedback forms; and
- Community-based social marketing approaches, among other things.

The strategy should also examine additional cost-effective means of delivering outreach to the community, including (but not limited to):

- The use of community volunteers and neighbourhood champions;
- Participation in existing events (e.g., display booths at expos or fairs);
- Cost-sharing opportunities with other municipal departments or engaging community partners that have similar or complimentary mandates (e.g., beautification or anti-litter programs, newsletters from other departments or community partners, etc);
- Hiring of a student or intern (specifically for waste projects or shared between departments); or
- Presentations to community groups on available programs.

The Township could set up educational and display booths at the following community events in order to increase awareness of current recycling programs such as:

- A Taste of Manitoulin;
- Ride Manitoulin;
- Annual Haweater Weekend;
- Manitoulin Country Fest;
- Wikwemikong Cultural Festival & Pow Wow;

The communication activities should have specific strategic targets, which may include (but are not limited to):

- Promotion of recycling at key points of the year (e.g. holidays);
- Reminders about specific recyclable materials or topics of concern to achieve identified problem areas (e.g., to reduce contamination levels); or

- Encouraging the adoption of waste reduction/prevention behaviours (e.g., encouraging wasteless gifts by purchasing 'experiences', such as concert tickets or a spa visit, or consciously avoiding the purchase of products with excessive packaging).

The waste recycling communication strategy should include a monitoring and evaluation component, which would allow program managers to adjust programming in response to program performance or other identified needs, such as changes in materials collected, common contamination issues, feedback from residents, or new priority issues.

The estimated annual cost for the waste system's education program (not including ICI) is approximately $5,000.

9.2.2 Expansion of Acceptable Recyclable Materials

The collection of recyclables forms a key component of the Township's current diversion program, and will continue to be so. To expand on the Township's current program the feasibility and cost-effectiveness of adding the expanded blue box materials to the currently recycling stream (when the availability of markets allows) should be assessed.

Currently, there are a number of materials that the Township could add to its existing Blue Box depot program that are considered expanded blue box materials. Diverting these materials would contribute to the added diversion potential discussed in Section 8. These materials include:

- Composite cans;
- Gable top cartons;
- Aseptic containers;
- Polystyrene packaging;
- Wide mouth tubs and lids;
- Polyethylene plastic bags and film;
- Steel aerosol cans;
- Steel paint cans;
- Metals such as aluminum cans and steel food and beverage cans.

At this point, including glass in the Township's recycling program is not recommended. Glass can cause issues in recycling programs. For example, in commingled systems, glass can break and contribute to contamination of waste recycling streams, resulting in a lower value for the recyclables marketed. The market value for glass is also low or negative, which would result in the Township either receiving minimal payback for the material or having to pay to have it processed. Also, glass is an inert material and would not causes problems if placed in the landfill, other than to occupy landfill space.

There are several examples of expanded depot collection programs in municipalities on Manitoulin Island that the Township could use as a basis for adding new materials to current programs. For example, the Township of Assiginack has an expanded depot recycling program and sends all materials to Sudbury for processing. The Township of Central Manitoulin also provides an expanded blue box program to its residents and sends all recyclable material to Municipal Waste & Recycling Consultants' material recovery facility (MRF) in Blind River, Ontario.

Another alternative is to enter into a multi-municipality shipping and processing contract in order to take advantage of economies of scale. An Island Wide Waste Management Plan is already in effect to address garbage disposal, but recycling is still the responsibility of individual municipalities. The Township should access the feasibility of a joint recycling shipping and processing contract with neighbouring municipalities.

Prior to future program changes, further consideration and assessment should be completed to examine the timing of municipal contracts and end markets for new materials. The estimated cost for collecting and processing an expanded list of recyclable material is $15,000 to $20,000.

9.3 Future Initiatives

9.3.1 Depot Enhancement

The City's current capture rates range from a low of 26% for plastics to a high of 66% for papers. Optimization of how the Township collects and processes its recyclables may help to increase the Townships overall capture towards 65% while improving cost efficiencies.

In conjunction with increased promotion and education, the increased participation could be achieved by enhancing the recycling depot through better signage by creating satellite depots.

Satellite depots would shorten distances residents need to commute in order to recycle materials. In addition, the extra bins would increase the presence of a recycling program and make it more visible for residents. They should be placed in high traffic areas, such as the main street of the Township or near grocery stores.

Additional signage would serve as a reminder for residents of the depot's location, acceptable materials and hours of operation. New signage could be placed at high traffic areas of the Township, such as grocery stores, gas stations, post office and schools. Increased or better signage at the depot could make the recycling bins more prominent and help ensure residents participate correctly through reduced Blue Box contamination.

The cost of depot signage could be incorporated into the promotion and education budget. The cost of establishing and operating satellite depots would be approximately $1,000 per satellite.

9.3.2 Training of Key Staff

A well-trained staff can lead to greater cost and time efficiencies and improved customer service. It could help with organization of and compliance with permits, contracts, and increase efficiency between management and workers. Knowledgeable staff (including both front line staff and policy makers) have a greater understanding of their municipal programs and can perform their responsibilities more effectively. There are a number of low-cost training options available. The CIF holds periodic Ontario Recycler Workshops that discuss recycling program updates (www.wdo.ca/cif/orw.html). The MWA, Waste Diversion Ontario (WDO), the association of Municipalities of Ontario (AMO), Stewardship Ontario and the Solid Waste Association of Ontario (SWANA) can also be sources of information guides, workshops, or training on recycling or solid waste management. In order to determine which training is best suited for staff, the Township should asses individuals based on their knowledge and experience with:

- Recycling planning and continuous improvement;
- Service procurement and contract administration;
- Waste diversion policy mechanisms; and
- Operations planning and management.

9.3.3 Bag Limits

Bag limits restrict the number of bags of garbage a resident can dispose at the landfill. This encourages residents to divert more recyclable materials in order to not exceed the bag limit. Limiting the amount of garbage disposal should be used in conjunction with an expanded recycling program to make it easier for residents to stay within the limit.

The Landfill attendant could also limit the amount of visits a resident makes to the Landfill for garbage disposal through tracking of vehicles or residents. The bag limit could be based on an amount per week, month or year. How the bag limit would be enforced would require further assessment.

9.3.4 Following Generally Accepted Principles for Effective Procurement and Contract Management

A considerable number of municipalities in Ontario contract out the collection and processing of recyclables. To ensure that municipalities obtain good value for money, Municipalities should follow generally accepted principles (GAP) for effective procurement and contract management as outlined in the KPMG *Blue Box Program Enhancement and Best Practices Assessment Project Final Report*, prepared for Stewardship Ontario. The contracting GAP outlined in the report deal specifically with waste collection and processing and includes topics such as planning the procurement well in advance, issuing clear RFPs, obtaining competitive bids, and including performance-based incentives. This option could be most effective in reducing costs for the Township if a multi-municipality recycling collection and processing contract is in place.

While individual municipalities within Manitoulin Island generally have their own internal contracting procedures, incorporating the contracting GAP for waste collection and processing can help to strengthen these procedures and improve the value-for-money received from waste management contracts.

9.3.5 Assess Tools and Methods to Maximize Diversion

Waste recycling programs fail or succeed based on their ability to overcome public barriers to participation e.g. how information is provided to the public; supply of appropriate receptacles to the public for managing recyclable material; etc. Additional research on the appropriate tools and methods can help how best to maximize opportunities to divert Blue Box materials from the waste stream and reduce waste going to disposal. Possible topics may include:

- The types of waste diversion behaviours currently undertaken in each household;
- Perceived barriers to participation in waste diversion programs;
- Willingness to participate in waste recycling programs;
- How residents receive information or learn about local waste recycling programs;
- The tools residents need to increase their participation in recycling programs.

This information can be collected through telephone surveys and focus groups. Methods and tools identified through the survey can be tested for performance using focus groups or through a pilot project.

10. Contingencies

Even the best planning can be delayed by a variety of foreseen and unforeseen circumstances. Predicting and including contingencies can help to ensure that these risks are managed for minimum impact. Table 7 below identifies contingencies to overcome potential planning issues.

Table 7: Waste Recycling Strategy Contingencies	
Risk	**Contingency**
Insufficient funding	Implement/Raise user fees
	Explore and apply for other funding sources
	Delay lower-priority initiatives
	Increase proportion of municipal budget to solid waste management
Public opposition to planned recycling initiatives	Improve public communications
	Engage community/stakeholders to discuss initiatives/recycling plan
Lack of available staff	Prioritize department/municipal goals and initiatives
	Hire summer student to help with planning (may be available funding)
	Provide volunteer opportunities for students and members of the community
Permit requirements	Identify permit requirements early on in process
	Establish a "permit requirements" checklist

11. Monitoring and Reporting

The monitoring and reporting of the Township's recycling programs 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 System 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.

The approach for monitoring the waste recycling program is outlined in table 8 below.

Table 8: Recycling System Monitoring		
Monitoring Topic	**Monitoring Tool**	**Frequency**
Total waste generated (by type and by weight)	Measuring of wastes and recyclables at disposal site	Each load
Diversion rates achieved (by type and by weight)	Formula: (Blue box materials + other diversion) ÷ Total waste generated * 100%	Monthly
Program participation	Customer survey (e.g., telephone); monitoring set-out rates	Every 1 to 3 years

Customer satisfaction	Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office	Every 1 to 3 years
Opportunities for improvement	Tracking calls/complaints received to the municipal office	On-going
Report on implemented activities	Describe what initiatives have been fully or partially implemented, what will be done in the future	Annually
Review of Waste Recycling Strategy	A periodic review of the Waste Recycling Strategy to monitor and report on progress, to ensure that the selected initiatives are being implemented, and to move forward with continuous improvement	Every 3 years

12. Conclusion

This Waste Recycling Strategy provides a path forward for improving the recycling programs of the Township of Billings and establishing a system that could help improve program participation and cost-efficiencies. The review of the Township's current programs show that, while recycling costs are generally lower than other similarly-sized municipalities in Ontario, diversion levels are generally lower. Increasing acceptable recyclable materials in current programs gives the Township an opportunity to increase diversion and should be used in conjunction with a strong communication and educational program. By working together and capitalizing on regional economies of scale and regionally-consistent waste management communications, the Township can achieve more effective waste diversion while maintaining efficient operating costs.

Appendix 1 – Waste Recycling Option Scores

Description of Options/Best Practices	Criteria (Score out of 5)					Total Criteria Score
	% Waste Diverted	Proven Results	Economically Feasible	Accessible to Public	Ease of implementation	
Promotion and Education	5	5	5	5	5	25
Compaction and Baling	3	5	4	5	5	22
Expansion of Acceptable Blue Box Materials	5	5	3	5	3	21
Multi-municipality Collection and Processing Contract	3	5	5	5	3	21
Depot enhancement	4	4	3	5	4	20
Training of key staff	3	4	4	5	4	20
Bag limits	4	5	5	5	3	20
GAP	3	4	5	5	3	20
Assess Tools and Methods to Maximize Diversion	4	4	5	4	3	20