



# Guidebook for Creating a Municipal Waste Recycling Strategy

Prepared by



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# 1 Introduction

## 1.1 Welcome to your Waste Recycling Strategy Guidebook

Municipal Waste Recycling Strategies are an essential tool in the achievement of Best Practices in the management of recycled materials. This guidebook and accompanying template provides a tool for all municipalities, but with an emphasis on the needs of smaller programs. Using this tool, municipalities can develop efficient and effective Waste Recycling Strategies consistent with the provincial expectations for waste recycling planning as identified in the Best Practice section of the Waste Diversion Organization (WDO) municipal datacall.

The Continuous Improvement Fund (CIF) has an expressed commitment to provide municipal waste managers with the tools they need to develop sustainable solutions for the future management of recyclable material. As a part of this commitment, the CIF has developed this guidebook for preparing a municipal Blue Box Waste Recycling Strategy. The guidebook outlines principles for decision-making for all waste managers and provides direction to guide the development of long-term municipal waste recycling plans. It also provides a tool for measuring and recording the information required for a Waste Recycling Strategy. The accompanying template provides the framework that, with the information collected using the guidebook, will become the municipality's Waste Recycling Strategy. This tool will help foster more consistent and timely waste recycling planning across the province and to make the decision-making process more transparent.

A Waste Recycling Strategy is used to plan effective and efficient recycling programs. Essentially, this involves:

- Recording decisions taken to recycle blue box waste through concept and design;
- Forecasting waste and recyclable material generation;
- Planning how to optimize recycling of identified materials;
- Implementing and monitoring the plan; and
- Reviewing the Waste Recycling Strategy and making continuous improvements.

The CIF Waste Recycling Strategy guidebook has been designed to help municipalities go beyond legislative compliance and demonstrate Good and Best Practices in municipal waste recycling programs. While applicable to all municipalities, this guidebook, with its worksheets and option sheets, is generally designed to assist small and medium size municipalities that do not have a complex recycling system. It also can be expanded for use by groups of such municipalities. The guidebook is presented in a series of stages covering the recycling program from policy to implementation, monitoring and improvement. The stages cover:

- Where are we now? (e.g., policy, administration details);



- Where do we want to go? (e.g., waste forecasts, diversion targets);
- How do we get there? (e.g., system design, infrastructure requirements);
- How do we track and measure our progress? (evaluation, reporting).

The worksheets included in this guidebook are also available separately in MS Word format and, for those worksheets involving calculations, in MS Excel.

Waste Recycling Strategies developed using the guidebook will:

- Maximize Best Practices funding;
- Enable users to identify and demonstrate continuous improvements toward Best Practices;
- Clarify long term Blue Box diversion goals for the municipal program;
- Identify cost effective solutions to maximize Blue Box diversion; and
- Identify areas where municipalities can improve their existing Waste Recycling Strategy.

### **Focus of this Document**

The focus of this guidebook is on **Blue Box Diversion**. A Blue Box Waste Recycling Strategy is just one component of a complete integrated waste management plan. While diversion of household organics, commercial waste, household hazardous waste and other types of waste are all important topics, they are not covered by this guidebook.

In developing a Blue Box Waste Recycling Strategy, there are a number of factors that waste management managers should consider. These factors are reviewed briefly below.

## **1.2 2009 Datacall Best Practices Questions**

To obtain the highest Best Practice score, Waste Recycling Strategies should focus on addressing the highest value Best Practices first. The 2009 datacall that determines the 2011 funding identified the following Best Practices representing 15% of the WDO funding<sup>1</sup>:

1. Development and implementation of a up-to-date plan for recycling as part of a Waste Diversion System or Integrated Waste Management System (12.5 %);
2. Establishing defined performance measures, including diversion targets, monitoring and a continuous improvement program (25.0%);
3. Multi-municipal planning approach to collection and processing of recyclables (8.3%);

<sup>1</sup> Detailed Questions and sub-categories are posted on-line at:  
[www.wdo.ca/files/domain4116/2009 Datacall BP Funding Questions - FINAL Nov 2009 for posting.pdf](http://www.wdo.ca/files/domain4116/2009%20Datacall%20BP%20Funding%20Questions%20-%20FINAL%20Nov%202009%20for%20posting.pdf)

4. Optimization of operations in collections and processing...following generally accepted principals (GAP) for effective procurement and contract management (12.5%);
5. Training of key program staff (8.3%);
6. Appropriately planned, designed, and funded Promotion and Education program (8.3%); and
7. Established and enforced policies that induce waste diversion (25.0%).

### **1.3 Waste Recycling Strategy Principles**

Waste Recycling Strategies need to present cost effective, environmentally sound and socially acceptable practices appropriate to the needs of the community and should consider the following principles:

- Maximized diversion of Blue Box materials;
- Innovation and Best Practices;
- Realistic long term planning;
- Flexibility and adaptability;
- Appropriate technological solutions;
- Maximized cost savings by contracting out services;
- Multi-municipal ventures where feasible; and
- Public consultation in an open and transparent planning process.

### **1.4 Key Components of the Waste Recycling Strategy**

#### *Overall Waste Diversion Plan and Blue Box Recycling Plans*

The Best Practices questions require a Blue Box recycling plan (i.e. the Waste Recycling Strategy document being produced) as part of an Overall Waste Diversion Plan or an Overall Integrated Waste Management System. The simplest of the two to develop is the Overall Waste Diversion Plan. This plan must be endorsed by Council to become a “municipal plan” and should briefly identify waste management initiatives including:

- Waste Reduction;
- Blue Box diversion<sup>2</sup>;
- Leaf and yard waste diversion;
- Waste Electrical and Electronic Equipment (WEEE);
- Scrap metals and white goods;
- Household Hazardous [or Special] Waste;
- Construction and demolition wastes;
- Source Separated Organics diversion or home composter programs; and

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<sup>2</sup> This is where your Blue Box Waste Recycling Strategy (the focus of this guidebook) fits in.

- Management of residual waste [i.e. garbage].

Blue Box best practices do not require a municipality to have any of these programs, just to discuss them and to have goals for each category. A simple one page table identifying the program heading and any provisions made for diversion of these materials and the process for disposal of the remaining residual wastes should satisfy this requirement.

Blue Box diversion plans require realistic diversion targets and need to identify performance goals for Blue Box diversion programs, identify Blue Box diversion goals and commit to monitor performance against these targets. Plans should identify:

- A realistic suite of materials selected for diversion, including;
  - i. Priority 1: Mandatory Materials List from O. Reg. 101/04 – i.e. basic materials + 2 supplementary materials.
  - ii. Priority 2: Materials suggested in draft WDO Consistent Collection Paper.
  - iii. Optional: Other easily collected materials with a sustainable market in O. Reg 101/94 Schedule 1 as supplementary materials.
- Program efficiency goals:
  - Diversion targets - i.e. percentage of identified materials recovered (WDO can provide the estimated generation of Blue Box materials by category identified for your program);
  - Program cost per tonne of material recovered;
- Program effectiveness goals:
  - Improvements in ease and convenience of use;
  - Improvements in the number of users bringing materials or setting out materials;
  - Improvements to promotion and education relating to diversion.

The Blue Box diversion targets should reflect the size and geographic location of the municipality, should indicate improvement over current performance, and should appear in both the Overall Waste Diversion table and in the Blue Box Recycling Plan. Based on 2008 datacall results, Table 1 below suggests reasonable goals for diversion and program net costs per tonne of Blue Box materials for various municipal groupings (assuming the target municipality doesn't already have better performance).

**Table 1: Reasonable Blue Box Diversion Goals**

<b>Municipal Grouping</b>	<b>Capture Rate Target for Blue Box Materials</b>	<b>Net Cost Target (\$ / tonne)</b>
Large Urban	85%	\$150
Urban Regional	75%	\$150
Medium Urban	85%	\$170
Rural Regional	75%	\$280
Small Urban	80%	\$210
Rural Collection – North	70%	\$540
Rural Collection – South	70%	\$410
Rural Depot – North	65%	\$720
Rural Depot – South	70%	\$390

The plan, and the council resolution, should include a statement that annual reporting on Blue Box diversion successes will be presented to council and made available to the public. It is a good idea to post these reports on the municipal website.

### **1.5 Continuous Improvement Plan**

The plan should include a Continuous Improvement timetable detailing milestones or steps along the way to achieving the goals identified in the targets and goals section. Progress steps can include:

- Identification of budget and establishment of reserve accounts for new diversion initiatives;
- Construction timetables for new diversion infrastructure;
- Contract improvements and bid dates for new contracts;
- Inclusion of new materials;
- Program audit dates;
- Identified key meetings to negotiate with other municipal partners; and
- Annual improvement targets for diversion and cost reduction.

### **1.6 Statement of Municipal Objectives**

Waste Recycling Strategies must start with a statement of objectives. These objectives build on the Strategy Principles stated above and optimize the Blue Box score by focusing on the key questions. Example objectives include:

- Conduct annual audits of waste and blue box material streams;
- Develop an annual program auditing plan to track:
  - Capture rates – how much Blue Box material you collect curbside or at depots;
  - Participation rates or “Set out rates” – what percentage of the population or households set out Blue Box materials or deliver them to depots;

- Residue rates – percentage of non-processable material in Blue Box material collected
- Based on the first year's results set a goal (e.g. exceeding the average recovery rate for your municipal group)
- Optimize capture of Blue Box material;
- Develop effective promotion and education programs to promote Blue Box diversion;
- Collaborate with neighbouring municipalities to maximize program effectiveness and efficiency; and/or
- Increase the longevity of available landfill capacity.

## **1.7 Integrated Solution**

Planning for future recycling program options should consider potential economic, social and environmental implications and how they integrate into the municipality's broader planning activities, such as its growth, economic or sustainability plans.

## **1.8 Joint or Multi-Municipal Cooperation**

Where possible, municipalities should take advantage of economies of scale through co-operation with neighbouring municipalities and to find mutually acceptable solutions to optimize program components (e.g. promotion, collection, transportation, processing and marketing). A co-operative arrangement could also expand recycling program options available to the municipality by combining material tonnage to be managed with tonnage from other municipalities.

## **1.9 Public Consultation**

Engaging the public to determine their preferences and gather feedback on long term solutions is an important part of the planning process. Without buy-in from the community, recycling programs may fail due to lack of participation. Public consultation to some degree should be completed throughout the planning process or at the very least to present the preferred strategy.

## **1.10 Diversion Level Required**

When contemplating a waste management system, diversion goals must be clearly defined. For maximum diversion, a wide range of targeted materials, correct participation and efficient collection and processing is required. Programs need to be flexible to accommodate potential future changes to the material mix. Programs designed to be the most convenient for the residents will experience the highest participation and are generally required to achieve high diversion levels.

### **1.11 Cost**

Costs can have a considerable influence on the design decision. As an example, providing a public drop-off depot program is less expensive than a curbside collection program but may recover less material. Municipalities must ensure that recycling programs will be economically sustainable and weigh the type and cost of potential programs against municipal objectives and community needs.

### **1.12 Markets**

The availability of stable markets for the material produced by waste diversion programs are a key element of making decisions on the best waste management system design. If stable end markets cannot be found for a material, it should not be included in the program. Again, this does not always happen, as a material may be mandated for collection by provincial regulations, or there may be a strong local push to provide recycling opportunities for a material, even though markets are weak.

### **1.13 Policies**

Policies such as bag limits, landfill bans and enforcement can have a significant impact on how a waste management system design will perform. The willingness of a community and its Councilors to support and enforce waste diversion policies will ultimately impact the program's performance.

### **1.14 Planning Horizon**

It is not expected that municipalities will be bound by their long-term recycling strategy for the entire planning period but rather strategies should be updated at regular intervals (e.g. 3-5 years) to reflect changes to waste management. A planning horizon for waste management strategies typically reflect a minimum period of 10 years and if possible can be extended out as far as 20 years. A 20 year horizon is recommended when additional infrastructure is required.

### **1.15 Relevant Legislation and Background Documents**

When designing and implementing waste recycling initiatives, waste management managers should be aware of and adhere to relevant practices, provincial laws and policies when undertaking waste management planning decisions. This includes, but is not limited to, the following:

- Part V, Environmental Protection Act, 1 and Ontario Regulation 101/94, Ontario Regulation 102/94 (Waste Audits and Waste Reduction Work Plans), Ontario

- Regulation 103/94 (Industrial, Commercial and Institutional Source Separation Program), Ontario, and Ontario Regulation 347 (General, Waste Management);
- Environmental Assessment Act; and Ontario Regulation 101/07, EAA (Waste Managements Projects Regulation);
- Provincial Policy Statement, 2005, under the Planning Act; and
- Waste Diversion Ontario’s KPMG Blue Box Best Practices report.

## 2 Alignment with Governing Requirements

### 2.1 Policy Statement on Waste Management Planning: Best Practices for Waste Managers

In June 2007, MOE released a draft document entitled a Policy Statement on Waste Management Planning: Best Practices for Waste Managers. The document outlines the guidelines for developing a Municipal Waste Management Plan. Two key components of the plan are the Waste Diversion Strategy and Public Consultation. With respect to the Waste Diversion Strategy, the document states:

“Provide a detailed analysis of municipal solid waste management options and a recommended strategy for maximum diversion of municipal solid waste. Include options considered (e.g., functionally different activities or solutions to deal with waste), criteria used to evaluate options and determine strategy, and an explanation of how the selected approach will meet established targets.

Describe diversion programs that will be implemented and show the individual contribution of waste reduction, reuse, recycling and recovery as components of the diversion plan.” (MOE, page 23, 2007)

The MOE document also points out that there are many waste management challenges that are being faced by Ontario municipalities, noting that “a failure to adequately plan for effective waste management infrastructure has led to many undesirable circumstances.” The following are key examples:

- Ontario cannot sufficiently manage all waste generated.
- Progress on waste diversion is slow.
- Existing public and private waste management infrastructure are under great pressure to handle increasing quantities of waste.
- Waste is being exported out of Ontario for management.

Recognizing challenges and opportunities from other municipalities is key to designing sustainable waste management systems. The MOE continues to be an important technical resource and is the regulatory authority on most waste management matters in the Province.

## **2.2 EPA Ontario Regulation 101/94**

Ontario Regulation 101/94 under the Environmental Protection Act requires that all Southern Ontario municipalities with a population of more than 5,000 and Northern Ontario municipalities with a population greater than 15,000 provide residential recycling. Basic Blue Box materials are defined as newsprint and food and beverage containers made from aluminum, steel, polyethylene terephthalate (PET), or glass. Supplemental Blue Box waste includes aluminum foil, fine paper, textiles and magazines. Municipal Blue Box systems are required to collect the basic materials, plus at least two supplemental wastes.

## **2.3 2009 MOE's From Waste to Worth: the Role of Diversion in the Green Economy**

In October 2009, Ontario's Minister of Environment released for consultation his strategy to improve waste diversion in Ontario. The report contains the findings of the government's review of the Waste Diversion Act, 2002 (WDA), and it proposes changes to Ontario's waste diversion framework that are intended to foster a green and sustainable economy. The primary initiatives of the report include the following:

- Making product manufacturers and importers responsible for the recycling of their products and packaging – and giving them the flexibility to do so in a way that best suits their business.
- Diverting more waste from landfill by giving Ontarians more opportunities to recycle a wider range of materials.
- Encouraging more diversion through incentives and banning specific materials from landfills.

## **2.4 WDO Datacall**

WDO has included a number of indicators to its annual data call related to waste recycling planning that will be used for purposes of best practice funding in 2011. Municipalities will be required to answer the following questions on future WDO submissions regarding the development and implementation of an up to date blue box recycling strategy as part of a Waste Diversion System or Integrated Waste Management System:

- Does the municipality have a blue box recycling plan that has been prepared or revised between the years of 2005 and 2009?
- Does the plan define and establish Blue Box Program goals and objectives that are in line with the overall waste diversion system plan or the overall integrated waste management system?
- Does the plan set Blue Box diversion targets?
- Does the plan require performance monitoring against Blue Box diversion targets?
- Does your program set defined objectives and targets for recycling programs that are implemented and evaluated within a defined time period, and are part of a defined recycling plan?



### 3 Guidance for a Waste Recycling Strategy

While this Waste Recycling Strategy guidebook deals solely with recycling, in the future your municipality may wish to expand it into, or integrate it with, a comprehensive sustainable waste management strategy. To help ensure compatibility, this Waste Recycling Strategy guidebook has been designed to produce a Blue Box Waste Recycling Strategy whose structure is compatible with that described in the Ministry of the Environment's *Best Practices for Waste Managers* policy statement. In that document, the Ministry of the Environment identifies what it considers to be the main components for a waste management plan. These components provide the main content for the Waste Recycling Strategy Workbook.

The sections and the worksheets that follow outline the content required for each section of your Waste Recycling Strategy. Once you have completed these worksheets<sup>3</sup>, you can then use them and the *Waste Recycling Strategy Template* to build your Blue Box Waste Recycling Strategy.

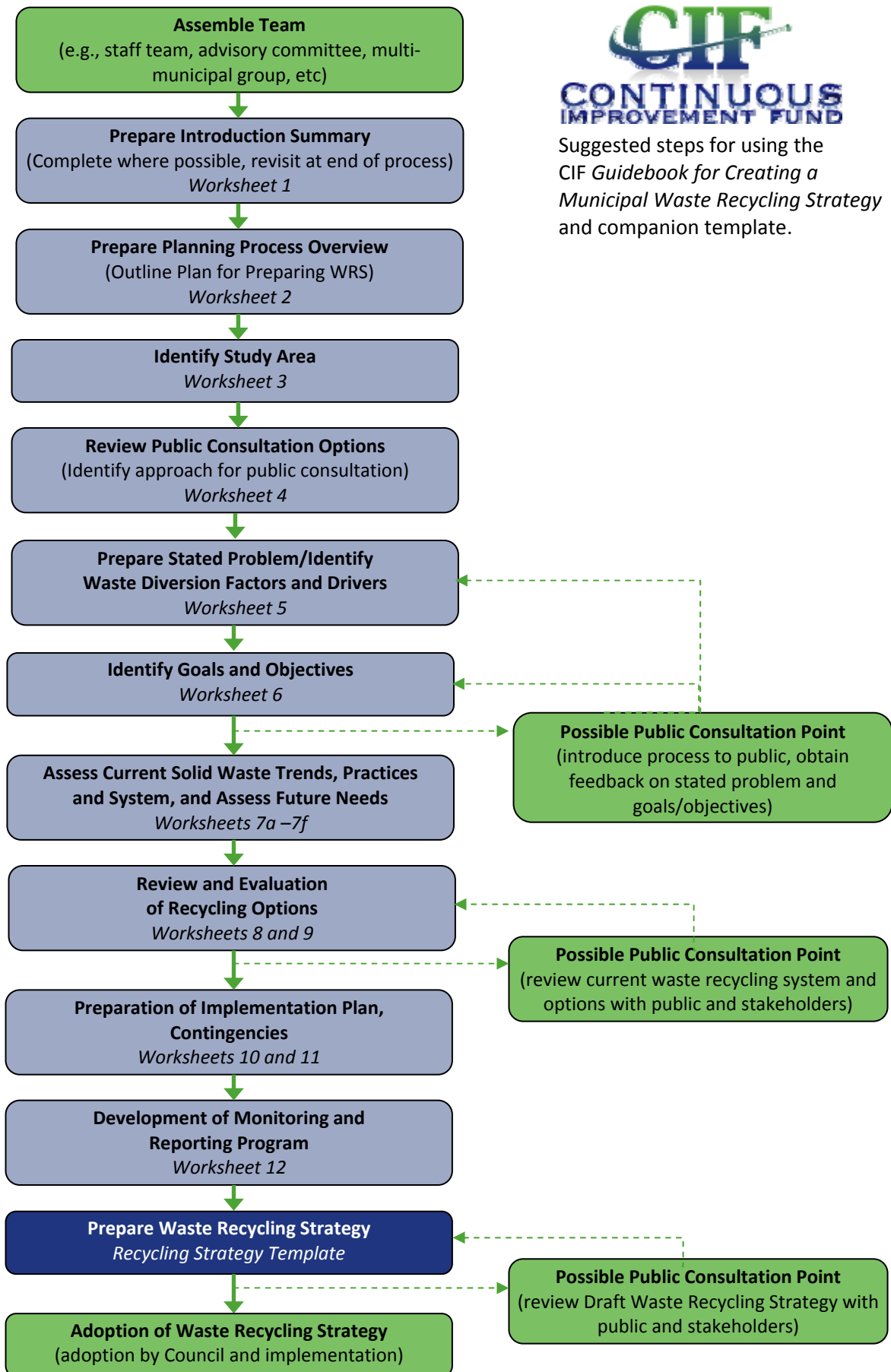
The diagram on the next page illustrates the suggested steps for progressing through the *Guidebook for Creating a Municipal Waste Recycling Strategy* and its companion template.

#### **Waste Recycling Strategy Table of Contents**

1. Introduction
2. Planning Process Overview
3. Study Area
4. Public Consultation Process
5. Stated Problem
6. Goals and Objectives
7. Current Solid Waste Trends, Practices and Systems and Future Needs
8. Planned Recycling System (including: Overview of Recycling Options; Implementation Steps; and Contingencies)
9. Monitoring and Reporting

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<sup>3</sup> Also available separate from this guidebook in MS Word and MS Excel formats.



Suggested steps for using the CIF Guidebook for Creating a Municipal Waste Recycling Strategy and companion template.

### 3.1 Introduction

Begin your Waste Recycling Strategy by introducing it to the reader, who could be a resident, a stakeholder, an NGO, staff, or someone else. Introduce the key ideas and objectives of the Waste Recycling Strategy and acknowledge the support provided in its development.

Information that may be considered includes (but is not limited to):


- The municipalities involved;
- High-level description of the municipal obligation for managing municipal waste;
- Purpose and objectives of the plan;
- Reasons for developing the plan (e.g., problem to solve, regulatory obligation, etc);
- Support received in preparing the plan (e.g., funding sources, in-kind contributions, advisory group participation, etc);
- Outline of the plan.

As this section will provide a high-level summary of your recycling plan, it is recommended that this section be one of the last completed.

#### Worksheet 1: Introduction Summary

A

Introduction Elements	
1	<b>Municipalities Involved</b>
2	<b>Description of municipal obligation for managing municipal waste</b>
3	<b>Purpose and goals of Waste Recycling Plan</b>
4	<b>Reasons for developing Waste Recycling Plan</b> (summarize from worksheet 5)
5	<b>Support received to prepare the plan</b>




### 3.2 Overview of the Planning Process

Describe the planning process used to develop the plan. Indicate:

- Who was involved in preparing the plan (such as municipalities, steering committees, community groups, etc);
- The steps involved, including those completed to date and next steps; and
- How the public was engaged in developing the plan.

While this section appears near the beginning of your Waste Recycling Strategy and provides context, it can be completed toward the end of your planning process.

#### Worksheet 2: Planning Process

		A
		Planning Process
1	<b>Plan Development Participants</b>	
2	<b>Completed Steps</b>	
3	<b>Next Steps</b>	
4	<b>Public Engagement</b> (may include information from worksheet 4)	

### 3.3 Study Area


Generally, the study area includes the geographic area addressed by the Waste Recycling Strategy. For most municipalities, this generally includes its outer municipal boundaries. For strategies that are able to take advantage of multi-municipal co-operation, then the study area would include the boundaries of those municipalities, regions and/or service boards.

The study area can also be used to identify the sectors targeted by the Waste Recycling Strategy. Generally, the Waste Recycling Strategy will target those sectors from which the municipality collects or accepts solid waste. Examples of possible sectors include:

- Residential single-family;
- Residential multi-family, such as apartment buildings or condominiums;
- Small businesses, such as in downtown areas; or
- Small institutions, for example schools or small community centres.

Some municipalities require organizations within the industrial, commercial and institutional sector (IC&I) to manage their own collection and disposal of solid waste, typically by using private haulers. While IC&I waste is not counted in the WDO's datacall, some municipalities include promotion and educational support for the IC&I sector to help them reduce their waste.

#### Worksheet 3: Study Area

A	
1	<div><b>Our study area includes the following municipalities/areas:</b></div> <div></div>
2	<div><b>Our Recycling Plan will address the following sectors:</b></div>

### 3.4 Public Consultation Process and Record

Public consultation is a critical component of developing your Waste Recycling Strategy. Public consultation is important because:

- It helps to encourage public buy-in and public participation once the programs are implemented;
- It helps to generate discussion in the community and get people thinking about recycling and waste;
- It helps to circumvent problems by identifying potential obstacles and their solutions early in the planning process;
- It identifies opportunities for community partnerships;
- It engages the public and local stakeholders in community planning, and gives them a stake in seeing the Waste Recycling Strategy succeed.

This section will outline your approach to public consultation for developing your Waste Recycling Strategy and how it addresses the public's issues and concerns. Your approach should be accessible to the public through a convenient means (e.g., on the municipal website or through public meetings).

The worksheet below lists a number of basic options for consulting with the public. Pick the ones that best suit your municipality and resources.

## Worksheet 4: Public Consultation Options


Applicable? Y/N	Public Consultation Options	Comments
	Stakeholder Interviews	Interview key local stakeholders (e.g., resident associations, community and environmental groups, small business associations or leaders, etc) to identify key issues, concerns, and opportunities.
	Open Houses	Open Houses (or public information centres) are excellent ways to update the public on your planning activities and to obtain their feedback. At least one should be held, but two or more are ideal. Topics for Open Houses may include: <ul style="list-style-type: none"> <li>• Introducing the project to the public</li> <li>• Your municipality's current waste management situation (e.g., stated problem, current generation rates, etc)</li> <li>• Possible options for the WRS</li> <li>• Presentation of proposed WRS</li> </ul>
	Website Feedback	In places where Internet access allows, the municipal website is an easy way to keep residents informed of the planning process and for soliciting their feedback. For example, materials prepared for Open Houses can be posted for the public's review, or specific questions can be asked to residents online.
	Workshops	Workshops provide a hands-on approach to engaging the public or stakeholders on what your WRS should look like. The workshops could be open to the general public or key stakeholders, such as community groups, staff, schools, small businesses, etc. Possible topics may include: <ul style="list-style-type: none"> <li>• A vision for waste diversion in your community</li> <li>• Identification of barriers and solutions to overcome them</li> <li>• Identifying and prioritizing Recycling Plan options</li> </ul>
	Newsletters and notices	A well designed newsletter can be an effective way to update residents about the Recycling Plan process and how the public can get involved and provide feedback.
	Social networking	Social internet networking applications such as facebook or twitter can be used to distribute information about programs or to obtain feedback.
	Surveys	Surveys can be a cost-effective way to obtain feedback on programs. Common approaches for conducting surveys include telephone, internet, mail, or door-to-door. Each have their own strengths and limitations, and application may vary depending on the survey's objectives.
	<i>Others...</i>	

### 3.5 Stated Problem

This section describes the current situation and factors driving the development of the Waste Recycling Strategy, for example, municipal characteristics, the current system, recycling issues or disposal constraints. It also states the problem or situation that the Waste Recycling Strategy is to address, which could include issues such as population growth, waste disposal capacity, maximizing recycling opportunities, etc.

Use Worksheet 5 to describe these factors or drivers and identify the problem or situation to be addressed by your Waste Recycling Strategy. Examples of common factors are provided in the worksheet. Include the ones that apply to your situation in your Stated Problem section and expand upon as necessary.

**Worksheet 5: Waste Diversion Factors and Drivers**

Relevant in our case? Yes/No	Factor/Driver	Comments
	WDO requirements	WDO requires municipalities to have a WRS in place.
	Shrinking disposal capacity	A successful WRS can help to expand the lifetime of existing landfills.
	Population growth	Population growth can lead to increases in waste generated
	Council direction	
	Public pressure	
	Improving cost/service efficiencies	Opportunities for cost savings and service improvements can be identified when preparing or updating your WRS
	Restricting factors (e.g., a lack of local markets or MRFs )	
	 Others...	



### 3.6 Goals and Objectives

Establishment of broad goals and objectives sets the perspective for the strategy. They also provide direction for municipal actions and targets against which progress can be measured. Your Waste Recycling Strategy can include broader community or sustainability goals, but it should be focused on recycling and waste diversion. To help ensure public buy-in of the recycling program, the goals and objectives should be discussed with the public through a public engagement/feedback process.

A key target to include is how much of your total municipal waste stream you wish to divert through your blue box program. [Table A1](#) in Appendix A presents the averages and ranges of diversion through municipal blue box programs as reported to WDO.


Worksheets 6a and 6b on the following pages provide samples of recycling and broader sustainable community goals and objectives. Use these worksheets to identify which sample goals are applicable to your municipality and to record your own.

**Goals** are broad spectrum, high level statements that outline what the municipality or the Waste Recycling Plan is trying to achieve.


**Objectives** are measureable, defined statements that describe specific, tangible outcomes.

Keep in mind that you may need to first better understand your current waste management system before you are able to set realistic goals and objectives. Once you complete Section 7 of this workbook (Current Trends and Future Needs), revisit your goals and objectives and adjust your targets as necessary.

## Worksheet 6a: Waste Recycling Goals and Objectives

Relevant in our case? Yes/No	Goals	Objectives	Comments
<b>Recycling Specific Goals and Objectives</b>			
	To maximize diversion of residential/municipal solid waste through the blue box/recycling program	<ul style="list-style-type: none"> <li>Divert 25% of municipal solid waste through the blue box program</li> </ul>	Select a target that is appropriate for your municipality and achievable.
	To maximize capture rates of blue box materials through existing and future programs	<ul style="list-style-type: none"> <li>Capture 30% of municipal solid waste through the blue box program</li> <li>Increase capture of blue box municipal solid waste by 20% within 3 years</li> </ul>	If feasible, conduct a waste audit to identify benchmarks for recyclables, or estimate tonnage of recyclables in the waste stream from audits in comparable communities (see Section 3.7).
	To improve the cost-effectiveness of recycling in our community	<ul style="list-style-type: none"> <li>Reduce recycling costs per tonne by 10%</li> </ul>	
	To increase participation in the recycling program	<ul style="list-style-type: none"> <li>Make recycling services available to 90% of residents</li> <li>Raise participation in blue box program to 75%</li> </ul>	
	To expand the lifetime of our landfill	<ul style="list-style-type: none"> <li>Add 5 years to the lifespan of the landfill by increasing blue box diversion</li> </ul>	
	To manage our waste in our community or as close to home as possible	<ul style="list-style-type: none"> <li>Dispose of all locally generated waste within municipal borders</li> </ul>	
	<i>Others...</i>		

## Worksheet 6b: Community Goals and Objectives

Relevant in our case? Yes/No	Goals	Objectives
<b>Broader Community Goals and Objectives</b>		
	To increase the sustainability of our community	
	To make our community a cleaner, greener place to live	<ul style="list-style-type: none"> <li>• Reduce air pollution levels by 10%</li> </ul>
	To increase employment	<ul style="list-style-type: none"> <li>• Reduce unemployment levels by 10%</li> </ul>
	To encourage a green economy	<ul style="list-style-type: none"> <li>• Develop promotional brochure on green purchasing</li> <li>• Increase the number of green jobs in area by 10</li> </ul>
	To reduce our emissions and carbon footprint	<ul style="list-style-type: none"> <li>• Reduce municipal greenhouse gas emissions by 10%</li> </ul>
	To enhance service/value for our taxpayers	
	Others...	

### 3.7 Current Solid Waste Trends, Practices and System and Future Needs

In developing your Waste Recycling Strategy, it is important to understand your current waste management system and how blue box materials are handled within it. The following worksheets have been prepared to help you organize your information with respect to recycling, which will allow you to identify your blue box diversion needs and opportunities. Use these worksheets to provide the content on:

- The characteristics of your community;
- A summary of existing recycling services and programs (e.g., recycling operations and associated infrastructure e.g. depots, curbside collection, private or municipal MRF, transfer, promotion and education, etc.);
- The current costs of your residential recycling program;
- The amount of residential waste generated and diverted, its composition, and current and potential diversion levels;
- Challenges or restrictions facing your municipality with respect to recycling; and
- Your municipality's anticipated future recycling needs.

The worksheets that follow can be used by either a municipality operating individually or by a group of municipalities preparing a joint Waste Recycling Strategy. Municipalities participating within a joint Waste Recycling Strategy can modify the worksheets as they best see fit to record both their individual municipal characteristics as well as the overall or aggregated characteristics.

## Worksheet 7a: Community Characteristics

	A	B
	Characteristic <sup>4</sup>	Notes
1	Current Population: _____ Data source: _____	<p>This information can be obtained from:</p> <ul style="list-style-type: none"> <li>• If applicable, your completed WDO datacall</li> <li>• Your planning department</li> <li>• Statistics Canada 2006 Community Census Data (visit <a href="http://www12.statcan.ca/census-recensement/index-eng.cfm">www12.statcan.ca/census-recensement/index-eng.cfm</a> and click on 2006 Community Profiles to search for your community)</li> </ul>
2	Total households or dwellings: _____ Data source: _____	
3	Single-Family Households: _____ Multi-Family Households: _____ Data source: _____	
4	Total Seasonal Dwellings: _____ Months when seasonal increase occurs: _____ Data source: _____	<p>This information can be obtained from:</p> <ul style="list-style-type: none"> <li>• If applicable, your completed WDO datacall</li> <li>• Your planning department</li> </ul> <p>Identifying when seasonal increases occur can help you determine when additional collection and diversion resources (e.g., staff, communications, depot bins, etc) may be required.</p>
5	Municipal Grouping: _____	<p>Identify which WDO municipal grouping best identifies your municipality from the list below:</p> <ul style="list-style-type: none"> <li>• Rural Depot – South:</li> <li>• Rural Depot – North</li> <li>• Rural Collection – South:</li> <li>• Rural Collection – North:</li> <li>• Small Urban:</li> <li>• Rural Regional</li> <li>• Medium Urban</li> <li>• Urban Regional</li> <li>• Large Urban</li> </ul>

<sup>4</sup> Groups of municipalities preparing a joint waste Recycling Strategy can record both their individual municipal characteristics as well as the overall or aggregated characteristics.

## Worksheet 7b: Waste Generated and Blue Box Materials Currently Diverted

	A	B		
	Residential Waste Stream/Blue Box Material	Tonnes Currently Diverted <sup>1</sup>	Percent of Total Waste	Notes
1	Total waste generated		-	As reported to Statistics Canada or Waste Diversion Ontario  If you do not know your total waste generated, calculate an estimate based on the kg/capita for your municipal grouping (See Appendix A):  Total waste generated (tonnes) = Average total waste generated (kg/capita) * your population ÷ 1000 kg/tonne
2	Papers (ONP, OMG, OCC, OBB and fine papers)			To calculate percent of total waste: B2 = A2 ÷ A1 * 100%
3	Metals (aluminum, steel, mixed metal)			To calculate percent of total waste: B3 = A3 ÷ A1 * 100%
4	Plastics (containers, film, tubs and lids)			To calculate percent of total waste: B4 = A4 ÷ A1 * 100%
5	Glass			To calculate percent of total waste: B5 = A5 ÷ A1 * 100%
6	Total Blue Box material diverted			Add together the values in A2 to A5.  If you do not know how much you have diverted for each recyclable, include the total amount of tonnes.  To calculate percent of total waste: B6 = A6 ÷ A1 * 100%

1. Enter the total amount of waste generated, in tonnes, for your municipality or group of municipalities in Cell A1. Enter the tonnes of blue box materials diverted by your programs in Cells A2 to A5. Use the WDO values for “tonnes marketed” as opposed to just “captured”.

## Calculating Material Available for Recycling

Many municipalities will conduct waste audits to estimate how much blue box material is available for capture. Another approach is to base your estimate on waste audits completed in other municipalities that have characteristics similar to your own. Worksheet 7c uses your waste audit data (worksheet 7c-1) or that from a similar municipality or provincial averages (worksheets 7c-2 to 7c-8) to estimate how much blue box material remains in your residential waste stream and calculate the total amount of blue box material available for diversion in your community.

[Figure 1](#) on pages 34 and 35 presents the proportion of blue box materials generally found in the garbage waste stream for various municipalities or for the provincial average. If your municipality has its own waste audit data, use Worksheet 7c-1. If no waste audit data exists for your municipality, identify which municipality listed in Figure 1 best matches your own and use the corresponding worksheet on the following pages that incorporates their data. If you feel none of the sample municipalities reflect your waste composition, then choose the appropriate provincial average (Small Urban and Rural, or Large Urban). More information on the community characteristics of these municipalities is provided in [Table A2](#) in Appendix A.

Once you complete worksheets 7c and 7e, use Table 2 below to compare your municipality against other municipal groupings.

**Table 2: Blue Box Diversion Rates and Costs**

	<i>A</i>	<i>B</i>	<i>C</i>	
	<b>Municipal Grouping</b>	<b>Average Blue Box Diversion Rate</b>	<b>Average Net Recycling Cost (\$ /tonne)</b>	<b>Average E&amp;E Factor (2010 Funding)<sup>5</sup></b>
1	Your Municipality	<i>worksheet 7b, cell B6</i>	<i>worksheet 7e, cell A2</i>	<i>From WDO</i>
2	Rural Depot – South	21.28%	\$597.56	2.21
3	Rural Depot – North	19.67%	\$982.43	2.08
4	Rural Collection – South	21.37%	\$419.64	4.05
5	Rural Collection – North	20.29%	\$508.83	5.32
6	Small Urban	21.99%	\$229.78	4.27
7	Rural Regional	22.58%	\$294.52	29.01
8	Medium Urban	20.38%	\$230.58	28.11
9	Urban Regional	22.27%	\$139.02	96.40
10	Large Urban	22.62%	\$158.94	13.05

<sup>5</sup> The E&E Factor compares the net Blue Box cost per tonne of a program to its Blue Box material recycling rate (scaled by 100 for simplicity). For more information on the E&E Factor, please see [Appendix C](#).

# Worksheet 7c-1: Using Local Waste Audit Data

	A	B	C	D	E	F	G	H	I
	Waste/Resource Material (if tonnages are not available for individual materials, enter total amounts in the "commingled" row)	Composition (%) [from local audit]	Total Residential Waste Generated (tonnes) [worksheet 7b, cell A1]	Total Blue Box Material in Waste Stream (tonnes) [Column B x Column C]	Target Blue Box Capture Rate (%) [Table 1, page 5]	Blue Box Material Available for Diversion (tonnes) [Column D x Column E]	Blue Box Material Currently Recovered (tonnes) [worksheet 7b, column A]	Blue Box Material Remaining in Waste Stream (tonnes) [Column F – Column G] (if negative, put 0 and assume most material is being captured)	Material Remaining in Waste Stream for Diversion (% of total waste stream) [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)								
2	Metals (aluminum, steel, mixed metal)								
3	Plastics (containers, film, tubs and lids)								
4	Glass								
5	Commingled (or total) Recyclables								
6	<b>Current Blue Box Diversion Rate</b>						Sum(G1:G4) or G5 ÷ C * 100% = _____%		
7	<b>Additional Blue Box Diversion</b>								I1+I2+I3+I4 = _____% or I5
8	<b>Potential Future Blue Box Diversion Rate</b>								G6+I7 = _____%



## Worksheet 7c-2: Representative Waste Audit Data – Blue Mountains (Rural Collection – South)

	A	B	C	D	E	F	G	H	I
	Waste/Resource Material (if tonnages are not available for individual materials, enter total amounts in the “commingled” row)	Composition (%) [from representative audit]	Total Residential Waste Generated (tonnes) [worksheet 7b, cell A1]	Total Blue Box Material in Waste Stream (tonnes) [Column B x Column C]	Target Blue Box Capture Rate (%) [Table 1, page 5]	Blue Box Material Available for Diversion (tonnes) [Column D x Column E]	Blue Box Material Currently Recovered (tonnes) [worksheet 7b, column A]	Blue Box Material Remaining in Waste Stream (tonnes) [Column F – Column G] (if negative, put 0 and assume most material is being captured)	Material Remaining in Waste Stream for Diversion (% of total waste stream) [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)	30%							
2	Metals (aluminum, steel, mixed metal)	3%							
3	Plastics (containers, film, tubs and lids)	8%							
4	Glass	12%							
5	Commingled (or total) Recyclables	53%							
6	Current Blue Box Diversion Rate						Sum(G1:G4) or G5 ÷ C * 100% = _____%		
7	Additional Blue Box Diversion								I1+I2+I3+I4 = _____% or I5
8	Potential Future Blue Box Diversion Rate								G6+I7 = _____%

### Worksheet 7c-3: Representative Waste Audit Data – Simcoe County (Urban Regional)

	A	B	C	D	E	F	G	H	I
	Waste/Resource Material (if tonnages are not available for individual materials, enter total amounts in the “commingled” row)	Composition (%) [from representative audit]	Total Residential Waste Generated (tonnes) [worksheet 7b, cell A1]	Total Blue Box Material in Waste Stream (tonnes) [Column B x Column C]	Target Blue Box Capture Rate (%) [Table 1, page 5]	Blue Box Material Available for Diversion (tonnes) [Column D x Column E]	Blue Box Material Currently Recovered (tonnes) [worksheet 7b, column A]	Blue Box Material Remaining in Waste Stream (tonnes) [Column F – Column G] (if negative, put 0 and assume most material is being captured)	Material Remaining in Waste Stream for Diversion (% of total waste stream) [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)	30%							
2	Metals (aluminum, steel, mixed metal)	3%							
3	Plastics (containers, film, tubs and lids)	7%							
4	Glass	8%							
5	Commingled (or total) Recyclables	48%							
6	Current Blue Box Diversion Rate							Sum(G1:G4) or G5 ÷ C * 100% = _____%	
7	Additional Blue Box Diversion								I1+I2+I3+I4 = _____% or I5
8	Potential Future Blue Box Diversion Rate								G6+I7 = _____%

### Worksheet 7c-4: Representative Waste Audit Data – West Nipissing (Rural Collection - North)

	A	B	C	D	E	F	G	H	I
	Waste/Resource Material (if tonnages are not available for individual materials, enter total amounts in the “commingled” row)	Composition (%) [from representative audit]	Total Residential Waste Generated (tonnes) [worksheet 7b, cell A1]	Total Blue Box Material in Waste Stream (tonnes) [Column B x Column C]	Target Blue Box Capture Rate (%) [Table 1, page 5]	Blue Box Material Available for Diversion (tonnes) [Column D x Column E]	Blue Box Material Currently Recovered (tonnes) [worksheet 7b, column A]	Blue Box Material Remaining in Waste Stream (tonnes) [Column F – Column G] (if negative, put 0 and assume most material is being captured)	Material Remaining in Waste Stream for Diversion (% of total waste stream) [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)	23%							
2	Metals (aluminum, steel, mixed metal)	3%							
3	Plastics (containers, film, tubs and lids)	8%							
4	Glass	4%							
5	Commingled (or total) Recyclables	38%							
6	Current Blue Box Diversion Rate						Sum(G1:G4) or G5 ÷ C * 100% = _____%		
7	Additional Blue Box Diversion								I1+I2+I3+I4 = _____% or I5
8	Potential Future Blue Box Diversion Rate								G6+I7 = _____%

### Worksheet 7c-5: Representative Waste Audit Data – Muskoka (Rural Regional)

	A	B	C	D	E	F	G	H	I
	<b>Waste/Resource Material</b> (if tonnages are not available for individual materials, enter total amounts in the “commingled” row)	<b>Composition (%)</b> [from representative audit]	<b>Total Residential Waste Generated (tonnes)</b> [worksheet 7b, cell A1]	<b>Total Blue Box Material in Waste Stream (tonnes)</b> [Column B x Column C]	<b>Target Blue Box Capture Rate (%)</b> [Table 1, page 5]	<b>Blue Box Material Available for Diversion (tonnes)</b> [Column D x Column E]	<b>Blue Box Material Currently Recovered (tonnes)</b> [worksheet 7b, column A]	<b>Blue Box Material Remaining in Waste Stream (tonnes)</b> [Column F – Column G] (if negative, put 0 and assume most material is being captured)	<b>Material Remaining in Waste Stream for Diversion (% of total waste stream)</b> [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)	28%							
2	Metals (aluminum, steel, mixed metal)	3%							
3	Plastics (containers, film, tubs and lids)	9%							
4	Glass	7%							
5	Commingled (or total) Recyclables	47%							
6	<b>Current Blue Box Diversion Rate</b>						Sum(G1:G4) or G5 ÷ C * 100% = _____%		
7	<b>Additional Blue Box Diversion</b>								I1+I2+I3+I4 = _____% or I5
8	<b>Potential Future Blue Box Diversion Rate</b>								G6+I7 = _____%

### Worksheet 7c-6: Representative Waste Audit Data – London (Large Urban)

	A	B	C	D	E	F	G	H	I
	Waste/Resource Material (if tonnages are not available for individual materials, enter total amounts in the "commingled" row)	Composition (%) [from representative audit]	Total Residential Waste Generated (tonnes) [worksheet 7b, cell A1]	Total Blue Box Material in Waste Stream (tonnes) [Column B x Column C]	Target Blue Box Capture Rate (%) [Table 1, page 5]	Blue Box Material Available for Diversion (tonnes) [Column D x Column E]	Blue Box Material Currently Recovered (tonnes) [worksheet 7b, column A]	Blue Box Material Remaining in Waste Stream (tonnes) [Column F – Column G] (if negative, put 0 and assume most material is being captured)	Material Remaining in Waste Stream for Diversion (% of total waste stream) [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)	32%							
2	Metals (aluminum, steel, mixed metal)	3%							
3	Plastics (containers, film, tubs and lids)	7%							
4	Glass	4%							
5	Commingled (or total) Recyclables	46%							
6	<b>Current Blue Box Diversion Rate</b>						Sum(G1:G4) or G5 ÷ C * 100% = _____%		
7	<b>Additional Blue Box Diversion</b>								I1+I2+I3+I4 = _____% or I5
8	<b>Potential Future Blue Box Diversion Rate</b>								G6+I7 = _____%

### Worksheet 7c-7: Representative Waste Audit Data – Essex Windsor (Urban Regional)

	A	B	C	D	E	F	G	H	I
	Waste/Resource Material (if tonnages are not available for individual materials, enter total amounts in the “commingled” row)	Composition (%) [from representative audit]	Total Residential Waste Generated (tonnes) [worksheet 7b, cell A1]	Total Blue Box Material in Waste Stream (tonnes) [Column B x Column C]	Target Blue Box Capture Rate (%) [Table 1, page 5]	Blue Box Material Available for Diversion (tonnes) [Column D x Column E]	Blue Box Material Currently Recovered (tonnes) [worksheet 7b, column A]	Blue Box Material Remaining in Waste Stream (tonnes) [Column F – Column G] (if negative, put 0 and assume most material is being captured)	Material Remaining in Waste Stream for Diversion (% of total waste stream) [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)	27%							
2	Metals (aluminum, steel, mixed metal)	3%							
3	Plastics (containers, film, tubs and lids)	7%							
4	Glass	4%							
5	Commingled (or total) Recyclables	41%							
6	Current Blue Box Diversion Rate						Sum(G1:G4) or G5 ÷ C * 100% = _____%		
7	Additional Blue Box Diversion								I1+I2+I3+I4 = _____% or I5
8	Potential Future Blue Box Diversion Rate								G6+I7 = _____%

### Worksheet 7c-7: Representative Waste Audit Data – Provincial Average (Small Urban and Rural)

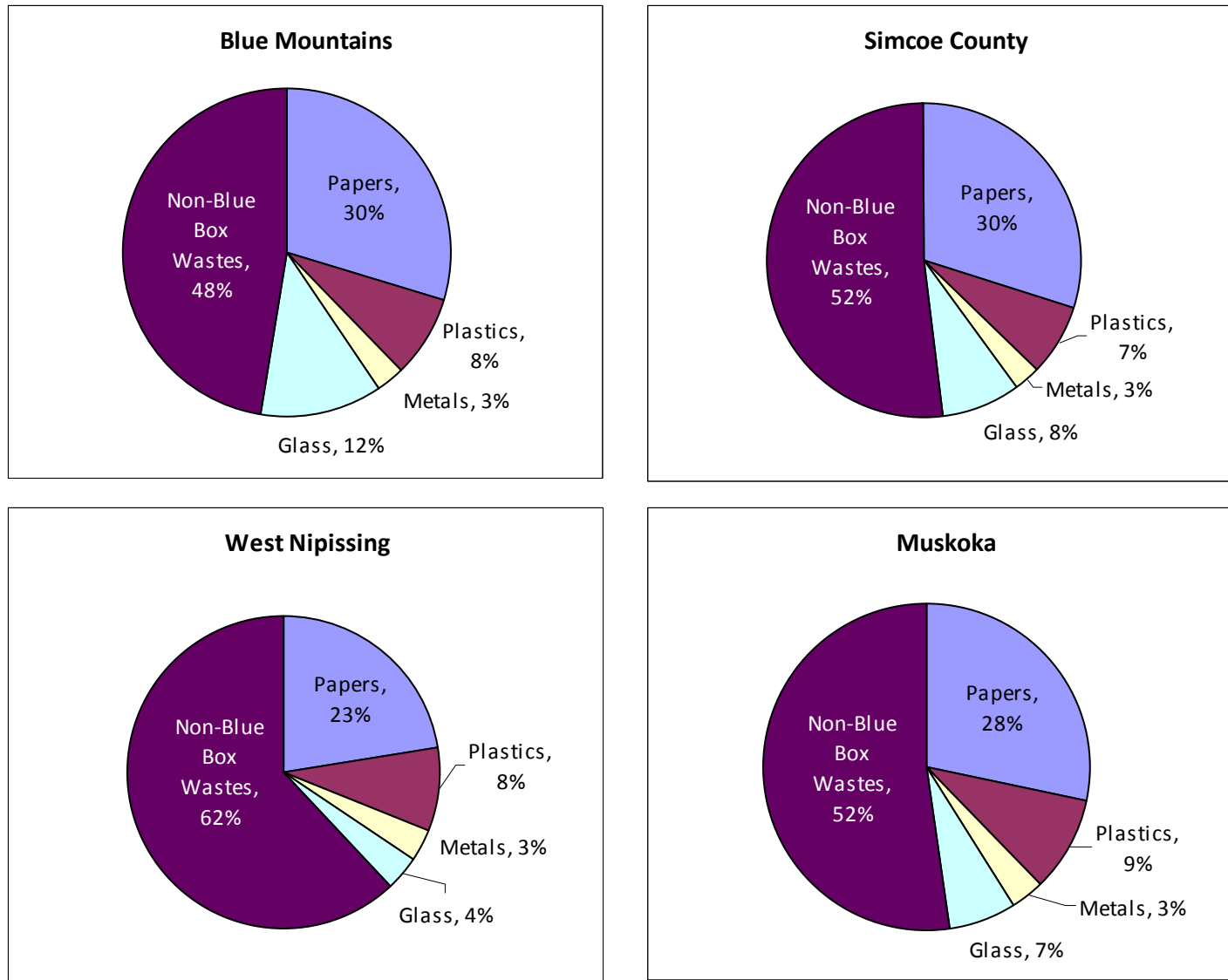
	A	B	C	D	E	F	G	H	I
	Waste/Resource Material (if tonnages are not available for individual materials, enter total amounts in the “commingled” row)	Composition (%) [from representative audit]	Total Residential Waste Generated (tonnes) [worksheet 7b, cell A1]	Total Blue Box Material in Waste Stream (tonnes) [Column B x Column C]	Target Blue Box Capture Rate (%) [Table 1, page 5]	Blue Box Material Available for Diversion (tonnes) [Column D x Column E]	Blue Box Material Currently Recovered (tonnes) [worksheet 7b, column A]	Blue Box Material Remaining in Waste Stream (tonnes) [Column F – Column G] (if negative, put 0 and assume most material is being captured)	Material Remaining in Waste Stream for Diversion (% of total waste stream) [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)	22%							
2	Metals (aluminum, steel, mixed metal)	2%							
3	Plastics (containers, film, tubs and lids)	6%							
4	Glass	4%							
5	Commingled (or total) Recyclables	34%							
6	Current Blue Box Diversion Rate						Sum(G1:G4) or G5 ÷ C * 100% = _____%		
7	Additional Blue Box Diversion								I1+I2+I3+I4 = _____% or I5
8	Potential Future Blue Box Diversion Rate								G6+I7 = _____%

### Worksheet 7c-8: Representative Waste Audit Data – Provincial Average (Large Urban)

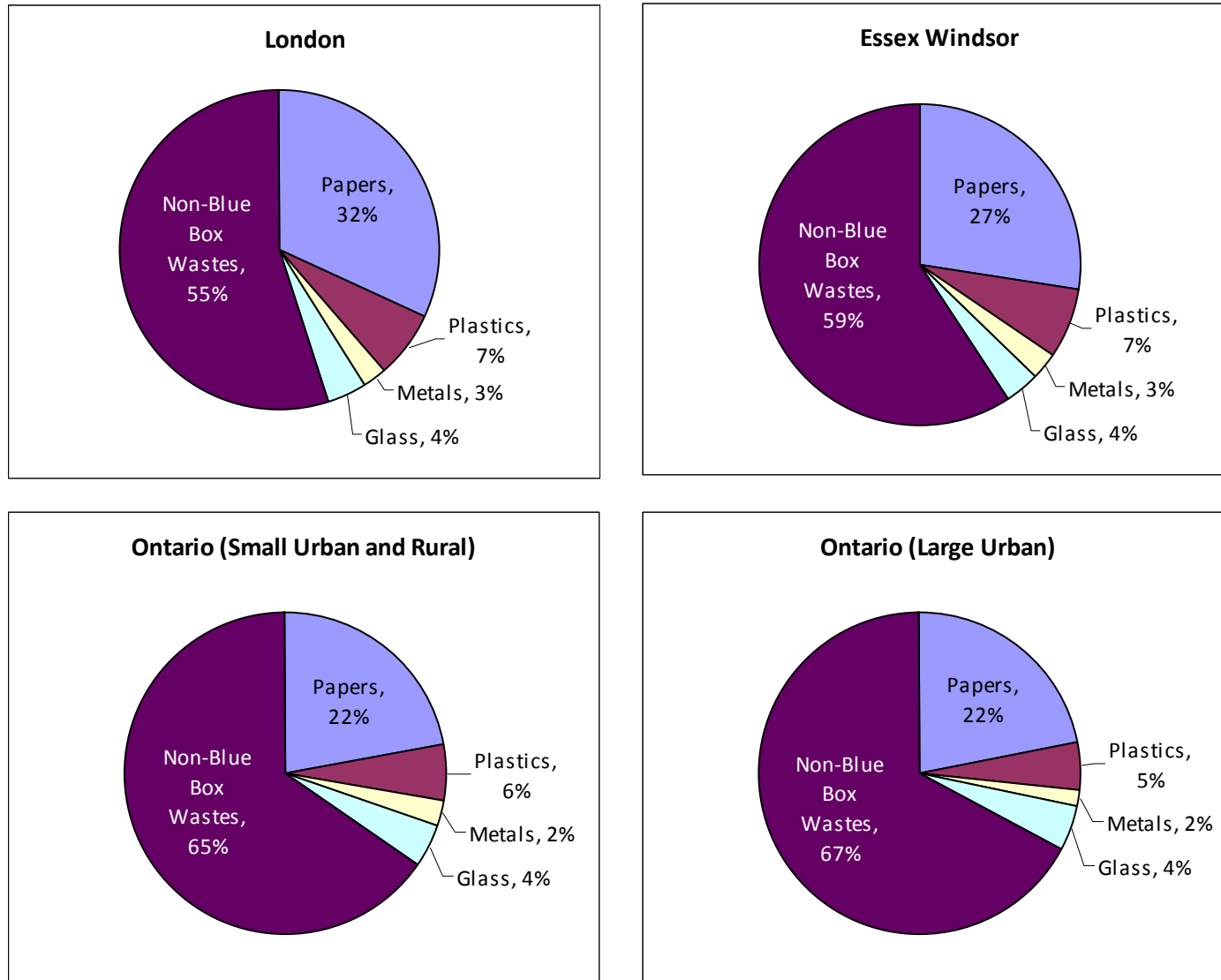
	A	B	C	D	E	F	G	H	I
	Waste/Resource Material (if tonnages are not available for individual materials, enter total amounts in the “commingled” row)	Composition (%) [from representative audit]	Total Residential Waste Generated (tonnes) [worksheet 7b, cell A1]	Total Blue Box Material in Waste Stream (tonnes) [Column B x Column C]	Target Blue Box Capture Rate (%) [Table 1, page 5]	Blue Box Material Available for Diversion (tonnes) [Column D x Column E]	Blue Box Material Currently Recovered (tonnes) [worksheet 7b, column A]	Blue Box Material Remaining in Waste Stream (tonnes) [Column F – Column G] (if negative, put 0 and assume most material is being captured)	Material Remaining in Waste Stream for Diversion (% of total waste stream) [(Column H ÷ Column C) x 100%]
1	Papers (ONP, OMG, OCC, OBB and fine papers)	22%							
2	Metals (aluminum, steel, mixed metal)	2%							
3	Plastics (containers, film, tubs and lids)	5%							
4	Glass	4%							
5	Commingled (or total) Recyclables	33%							
6	<b>Current Blue Box Diversion Rate</b>						Sum(G1:G4) or G5 ÷ C * 100% = _____%		
7	<b>Additional Blue Box Diversion</b>								I1+I2+I3+I4 = _____% or I5
8	<b>Potential Future Blue Box Diversion Rate</b>								G6+I7 = _____%



Figure 1: Composition of Waste (Single-Family Households) from Sample Municipalities



**Figure 1 (continued): Composition of Waste (Single-Family Households) from Sample Municipalities**



Note: The above charts for individual municipalities are based on single-family household waste audit data from Stewardship Ontario's Waste Audit program. They reflect the broadest spectrum of blue box materials accepted in Ontario and may differ from those blue box materials accepted locally. The Ontario Small Urban and Rural and the Large Urban charts are based on Stewardship Ontario 2005 and 2006 waste audit data and reflect the blue box materials accepted at that time.

## Worksheet 7d: Existing Programs and Services

1

**What policies or programs are currently in place at the local or regional level for managing residential solid waste in your area?**

☐ User Pay

☐ Tipping fees

☐ Bag limits \_\_\_\_ /week

☐ Other

☐ Mandatory recycling

☐ Solid Waste utility

☐ Take backs

2

**How are waste and recycling collection services provided to the residential sector?**

Collection Service	Waste Coverage (%)	Recycling Coverage (%)	Upcoming Milestones (e.g., contracts, etc)
Municipal collection			
Contracted service			
Private service			
Drop-off (at landfill or depot)			
Other: _____			

3

**How are waste and recycling services financed?**

	Waste	Recycling
Payment Type (fixed or variable user fees, tax base, a mix of above, etc)		

4

**Where are recyclable materials taken after collection?**

☐ Transfer Station (Location: \_\_\_\_\_)

☐ Directly to Materials Recycling Facility (Location: \_\_\_\_\_)

## Worksheet 7e: Program Costs

	A	B
1	<b>Total Net Residential Recycling Costs:</b>  \$ _____ per year	There are three methods that you can use to determine your program cost: <ol style="list-style-type: none"> <li>1. If you submit your program information to WDO, obtain the information from your last submission;</li> <li>2. Use last year's municipal operating budget to identify costs dedicated to collecting, transferring and processing recyclables; or</li> <li>3. Add the following expenditures: Annual recycling collection contract + annual recyclables processing contract + annualized capital costs – revenue from sale of recyclables</li> </ol>
2	\$ _____ per tonne	Divide the total residential recycling costs by cell A6 in worksheet 7b
3	<b>Total net recycling costs per capita:</b>  \$ _____ per person per year	Divide the total residential recycling costs by the total population of your municipality or study area.

## Worksheet 7f: Anticipated Future Waste Management Needs

The table below estimates your future waste generation volumes based on current and projected populations. For cells B3 and C3 below, if you do not know the population of your municipality in 5 or 10 years, use whichever population projections you have available.

	<i>A</i>	<i>B</i>	<i>C</i>
	<b>Current Population</b> <i>(Worksheet 7a, Cell A1)</i>	<b>Total Waste Generated/ Blue Box Material Available (tonnes)</b>	<b>Waste/Blue Box Material per Person (kg/person/year)</b> <i>(Column B ÷ Column A x 1000)</i>
1	<b>Solid Waste</b>	<i>(Worksheet 7b, Cell A1)</i>	
2	<b>Blue Box Material Available for Diversion (tonnes)</b>	<i>(Worksheet 7c, Cell F5)</i>	
	<b>Current Year</b>	<b>Current Year + 5</b>	<b>Current Year + 10</b>
3	<b>Population</b>	<i>(A1)</i> <i>estimated population</i>	<i>estimated population</i>
4	<b>Total Waste (tonnes)</b>	<i>(C1 x B3) ÷ 1000</i>	<i>(C1 x C3) ÷ 1000</i>
5	<b>Blue Box Material Available for Diversion (tonnes)</b>	<i>(C2 x B3) ÷ 1000</i>	<i>(C2 x C3) ÷ 1000</i>

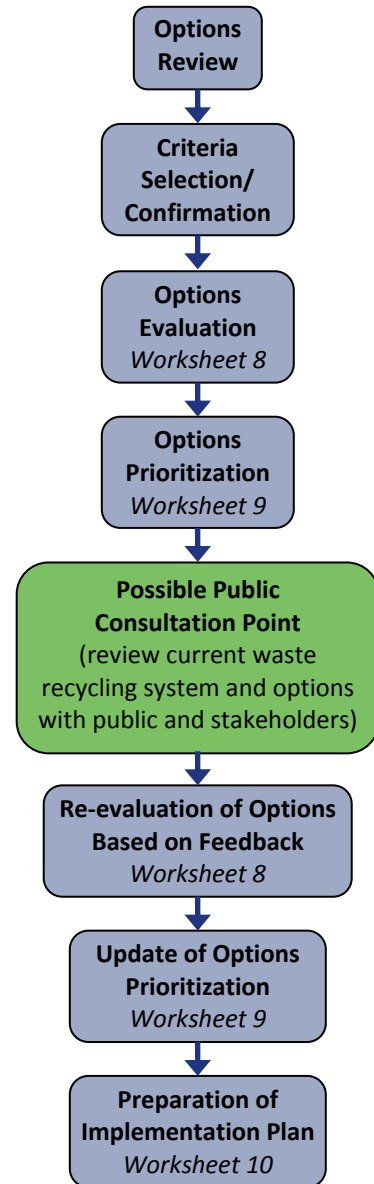
### 3.8 Overview of Recycling Options

This section of your Waste Recycling Strategy identifies the opportunities and initiatives to be evaluated for the future management of recyclable material. It will describe each initiative, including their anticipated performance and cost, as well as the evaluation criteria used and how the options rated.

While there are many combinations of options for managing recyclables, many of the individual options are common across Ontario or among smaller municipalities. The worksheets on the following pages list several of the most common and most applicable best practices for managing recyclables, including a description of the option and (where available) potential cost<sup>6</sup>. Use the worksheet to indicate which options you feel are most suitable for your municipality and rate them according to priority.

Often, this exercise is conducted in collaboration with a working group or a community advisory committee. These groups can provide input into the options to be considered or the criteria used in the evaluation. Once the options have been evaluated (Worksheet 8) and prioritized (Worksheet 9), the public can be consulted for their feedback. Once their feedback has been received, the evaluation and prioritization can be updated as necessary before moving on to the implementation plan (Worksheet 10).

#### Typical Options Review and Prioritization Process



<sup>6</sup> More detailed information about the options are provided in [Appendix B](#).

### About Evaluation Criteria

Evaluation criteria provide you with a way of comparing different options against each other to help identify which are best suited for your community. While we have included some common criteria in Worksheet 8, you may have others you wish to add or substitute that are more applicable to your current situation. Adding or changing criteria can be an exercise that involves staff, an advisory committee, or even the general public.

The criteria included in these worksheets include:

- **% Waste Diverted** – This refers to how much waste an option may potentially help to divert. Some options may divert more waste than others, while other options may not directly divert waste but instead support other programs or initiatives that do.
- **Proven Results** – Some options are considered tried and true, while others may be newer and less tested.
- **Reliable Market/End Use** – Markets should be available for materials collected by municipalities for recycling. This criterion considers if a market is available for the recyclable materials in question or if a suitable end use exists.
- **Economically Feasible** – This refers to whether an option is economically feasible for the municipality considering it. Municipalities will need to weigh the cost of the option against their ability to afford it and the resulting benefit.
- **Accessible to Public** – This considers if the option will be easy or difficult for the public to access or use. This will depend in large part on how the option interfaces with the target audience.
- **Ease of Implementation** – Some options are less costly and easier logistically and politically to implement than others. This criterion considers the level of cost and effort involved in implementing the option.

## Worksheet 8: Overview of Recycling Plan Options

A	B	C	D	E						F
Suitable? Y/N	Description of Options/Best Practices  (For more information on these options and other best practices, see <a href="#">Appendix B</a> or read to document <i>Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1</i> , available on the Stewardship Ontario website)	Approximate Cost per Household		Criteria (Score out of 5)						Total Criteria Score
		Implementation (including Infrastructure)	Operation	% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of implementation	
Promotion and Outreach										
1	<p><b>Public Education and Promotion Program</b></p> <p>Public education and promotion programs are crucial for ensuring the success of local recycling programs. Well-designed and implemented education and promotion programs can have impacts throughout the municipal recycling program, including participation, collection, processing, and marketing of materials. Furthermore, having a P&amp;E plan contributes toward the amount of WDO funding a municipality receives as identified in best practice section of the WDO municipal datacall. For example, benefits of public education and promotion programs include:</p> <ul style="list-style-type: none"><li>• Greater participation levels and community involvement</li><li>• Higher diversion rates</li><li>• Less contamination in recovered materials, potentially leading to higher revenues</li><li>• Lower residue rates at recycling facilities</li></ul> <p>Stewardship Ontario has prepared a Recycling Program Promotion and Education Workbook and other materials, which are available on Stewardship Ontario’s Recyclers’ Knowledge Network (<a href="http://vubiz.com/stewardship/Welcome.asp">http://vubiz.com/stewardship/Welcome.asp</a>).</p>	\$1	\$1							



A	B	C		D	E						F
Suitable? Y/N	Description of Options/Best Practices  (For more information on these options and other best practices, see <a href="#">Appendix B</a> or read to document <i>Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1</i> , available on the Stewardship Ontario website)	Approximate Cost per Household		Criteria (Score out of 5)						Total Criteria Score	
		Implementation (including Infrastructure)	Operation	% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of implementation		
2	<b>Training of Key Program Staff</b> A well-trained staff can lead to greater cost and time efficiencies and improved customer service. 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 ( <a href="http://www.wdo.ca/cif/orw.html">www.wdo.ca/cif/orw.html</a> ). 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.	n/a	> \$1								
Collection											
3	<b>Optimization of Collection Operations</b> The purpose of optimizing collection operations is to collect more recyclables using fewer financial, capital and human resources. This requires critically assessing both collection and processing operations (as the two are closely linked) and making changes that reduce costs while at the same time increases capture of blue box materials. The relevant options for optimization vary according to the size, composition and location of municipalities, as well as their available processing options.										


A		B		C		D		E						F	
Suitable? Y/N	Description of Options/Best Practices  (For more information on these options and other best practices, see <a href="#">Appendix B</a> or read to document <i>Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1</i> , available on the Stewardship Ontario website)	Approximate Cost per Household		Criteria (Score out of 5)						Total Criteria Score					
		Implementation (including Infrastructure)	Operation	% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of implementation						
4	<b>Bag Limits</b> Bag limits restrict the number of bags of garbage a resident can dispose of per collection. This encourages residents to divert more recyclable materials in order to not exceed the bag limit.  Bag limits can also be used in conjunction with bag tags (e.g., user fees). For example, some municipalities allow residents to dispose of a number of bags for free, with additional bags requiring a purchased bag tag.	n/a	Covered in cost of education program												
5	<b>Enhancement of Recycling Depots</b> Where curbside collection programs are not feasible, recycling depots provide an inexpensive means for municipalities to divert recyclable materials from disposal. Enhancements to recycling depots may include (but are not limited to): <ul style="list-style-type: none"><li>• Providing satellite depots to improve public access and convenience;</li><li>• Enhancing the conditions at the landfill depot (e.g., landscaping, general cleanliness, maintenance);</li><li>• Incorporating friendly, easy-to-read signage;</li><li>• Providing additional part-time staff to address seasonal fluctuations and visiting traffic.</li></ul>	\$1-\$3	\$1-\$2												

A	B	C	D	E						F
Suitable? Y/N	Description of Options/Best Practices  (For more information on these options and other best practices, see <a href="#">Appendix B</a> or read to document <i>Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1</i> , available on the Stewardship Ontario website)	Approximate Cost per Household		Criteria (Score out of 5)						Total Criteria Score
		Implementation (including Infrastructure)	Operation	% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of implementation	
6	<b>Provision of Free Blue Boxes</b> Providing free blue boxes helps to ensure that residents have sufficient storage capacity for recyclables. While this is initially done at the roll-out of the blue box program, many municipalities offer free boxes to new residents or residents moving into new homes. Some municipalities also offer one extra free box or bin for residents per year. However, in municipalities offering only basic recycling services, one blue box container may be sufficient.									
7	<b>Collection Frequency</b> The efficiency of curbside collection of recyclables is dependent on a number of factors, including the rural nature of the community, the types of recyclable materials included in the recycling program, the type of equipment used to collect the recyclables, among other things. In some circumstances, bi-weekly collection of recyclables can be more cost-effective than weekly collection, assuming that collected tonnages remain the same overall and residents have enough storage capacity to accommodate storing their blue box materials for two weeks.	variable	variable							

A	B	C	D	E						F
Suitable? Y/N	Description of Options/Best Practices  (For more information on these options and other best practices, see <a href="#">Appendix B</a> or read to document <i>Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1</i> , available on the Stewardship Ontario website)	Approximate Cost per Household		Criteria (Score out of 5)						Total Criteria Score
		Implementation (including Infrastructure)	Operation	% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of implementation	
Transfer and Processing										
8	<b>Optimization of Processing Operations</b> Similar to the optimization of collection operations, the purpose of optimizing processing operations is to process more blue box materials for less cost. Processing operations may be optimized either through upgrading or maximizing the use of existing processing equipment, or by partnering or contracting with processing facilities in other communities. Because processing and collection are directly linked, examination of one must be reviewed with the other.	variable	variable							
Partnerships										
9	<b>Multi-Municipal Collection and Processing of Recyclables</b> Small and medium-sized municipalities often face considerable cost and capital challenges when looking to collect and process recyclables from its residents. However, working collaboratively with other municipalities to provide these services can increase economies of scale and allow for the sharing of resources.	variable	variable							

A	B	C	D	E						F
Suitable? Y/N	Description of Options/Best Practices  (For more information on these options and other best practices, see <a href="#">Appendix B</a> or read to document <i>Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1</i> , available on the Stewardship Ontario website)	Approximate Cost per Household		Criteria (Score out of 5)						Total Criteria Score
		Implementation (including Infrastructure)	Operation	% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of implementation	
10	<b>Standardized Service Levels and Collaborative Haulage Contracting</b> Collaborative haulage contracts for blue box materials can take advantage of increased purchasing power through municipal partnerships and ensures that the partner municipalities provide common levels of services to its residents. Standardizing collection programs among municipal partners increases the amount of materials being diverted from disposal, allows for common education and promotion materials, increases collector efficiencies, and can potentially reduce overall costs.									
11	<b>Inter-Municipal Committee</b> A committee comprised of representatives from local municipalities can help municipalities work toward common regional goals. Committee members can identify opportunities for beneficial collaborations between municipalities and can provide support and feedback on each others waste diversion programs.									

A	B	C	D	E						F
Suitable? Y/N	Description of Options/Best Practices  (For more information on these options and other best practices, see <a href="#">Appendix B</a> or read to document <i>Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1</i> , available on the Stewardship Ontario website)	Approximate Cost per Household		Criteria (Score out of 5)						Total Criteria Score
		Implementation (including Infrastructure)	Operation	% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of implementation	
Additional Research										
12	<p><b>Assess Tools and Methods to Maximize Diversion</b></p> <p>Waste recycling programs fail or succeed based on their ability to overcome public barriers to participation. 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:</p> <ul style="list-style-type: none"><li>• The types of waste diversion behaviours currently undertaken in each household;</li><li>• Perceived barriers to participation in waste diversion programs;</li><li>• Willingness to participate in waste recycling programs;</li><li>• How residents receive information or learn about local waste recycling programs;</li><li>• The tools residents need to increase their participation in recycling programs.</li></ul> <p>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.</p>									

A	B	C	D	E						F	
Suitable? Y/N	Description of Options/Best Practices  (For more information on these options and other best practices, see <a href="#">Appendix B</a> or read to document <i>Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1</i> , available on the Stewardship Ontario website)	Approximate Cost per Household		Criteria (Score out of 5)						Total Criteria Score	
		Implementation (including Infrastructure)	Operation	% Waste Diverted	Proven Results	Reliable Market/ End Use	Economically Feasible	Accessible to Public	Ease of implementation		
Administration											
13	<b>Following Generally Accepted Principles for Effective Procurement and Contract Management</b> 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. Key aspects of GAP include planning the procurement well in advance, issuing clear RFPs, obtaining competitive bids, and including performance-based incentives.										
Other Options											
14											
15											
16											



### 3.9 Planned Recycling System

The previous section outlined a series of options to consider for improving your blue box program and for prioritizing them. In this section, you will list the priority initiatives of your future Blue Box program, as well as other initiatives to be implemented in the longer term.

Using the results of the Worksheet 8, record the top 5 to 10 waste diversion options in Worksheet 9 below. For options that scored high but are not considered to be feasible in the short or mid-term, include these in the “Future Initiatives” section. Once completed, the options listed in Worksheet 9 will form the central activities of your Waste Recycling Strategy.

**Worksheet 9: Summary of Priority and Future Initiatives**

	A	B	C	D
	Priority Initiatives	Score	Approximate Total Cost	
			Implementation [Worksheet 8, Column C x number of households]	Operation [Worksheet 8, Column D x number of households]
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11	<i>Estimated Total Cost (Priority Initiatives)</i>			
	<b>Future Initiatives</b>			
12				
13				
14				
15				
16	<i>Estimated Total Cost (Future Initiatives)</i>			



## About External Funding Sources

A number of funding options exist to assist the municipalities with the capital and operating costs associated with implementation of the WRS. The major government funding programs available to assist regions and municipalities to develop and implement waste diversion programs and infrastructure is listed below:

### **Continuous Improvement Fund (CIF)** [www.wdo.ca/cif/](http://www.wdo.ca/cif/):

The CIF is a funding program developed through the cooperation of the Association of Municipalities of Ontario, the City of Toronto, Stewardship Ontario and Waste Diversion Ontario. The Continuous Improvement Fund (CIF) provides grants and loans to municipalities to execute projects that will increase the efficiency of municipal Blue Box recycling and help boost system effectiveness. The CIF's mandate is to financially support projects that will:

- Identify and implement best practices;
- Examine and test emerging technologies;
- Employ innovative solutions to increase blue box materials marketed; and
- Promote gains in cost-effectiveness that can be implemented province-wide.

NOTE: The final date for CIF applications is December 31, 2010

### **Green Municipal Funds** [gmf.fcm.ca/GMF](http://gmf.fcm.ca/GMF):

FCM's Green Municipal Fund™ (GMF) supports municipal initiatives across Canada that benefit the environment, local economies and quality of life.

GMF grants and below-market loans directly support municipal initiatives, while GMF education and training resources help municipal governments share expertise and strengthen their ability to set and surpass their sustainable goals. Grants and loans cover initiatives such as:

- The development of sustainable community plans;
- Conducting feasibility studies and field tests; and
- Loans and grants to implement capital projects.

The Government of Canada endowed the Federation of Canadian Municipalities (FCM) with \$550 million to establish GMF.

### **Canada Strategic Infrastructure Fund** [www.infc.gc.ca/ip-pi/csis-fcis/csis-fcis-eng.html](http://www.infc.gc.ca/ip-pi/csis-fcis/csis-fcis-eng.html):

The Federal Government has allocated \$4 billion for regions and municipalities seeking to invest in infrastructure projects that promote effective urban development and use innovative technologies and practices to minimize green house gas emissions pollutants.

### 3.10 Implementation Plan


Once your priority initiatives have been identified, your plan needs to include the steps required for their implementation and your timeline for doing so. Worksheet 10 below provides a template for preparing your Implementation Plan. The Implementation Plan should list the initiative to be implemented, the steps required for its implementation, and your timeframe for implementing those steps.

The timeframe for your steps can be detailed or broad, depending on your program needs. For example, for high priority initiatives, you may wish to indicate in which month the steps are required. For other lower priority initiatives whose timeline is less certain, you can indicate the season or year.

For more information on suggested steps for your selected initiatives, please see [Appendix B](#).

**Worksheet 10: Implementation Steps**

Initiatives	Steps	Timeline







### 3.12 Monitoring and Reporting

Once implementation of the strategy begins, it is important to monitor the performance of its initiatives against the baseline established for the current system. Establishing defined performance measures is considered a Blue Box program fundamental best practice. This includes setting diversion targets, monitoring the program, and implementing a Continuous Improvement Program<sup>7</sup>.

This section of your strategy will describe how implementation of the strategy will be monitored for performance (e.g. diversion rates, cost, participation rates, number of complaints received, etc. and the frequency of monitoring). Examples of monitoring activities include:


- Surveying users at recycling depots and/or complete a telephone satisfaction survey;
- Waste audits to assess capture rates of recyclable materials;
- Surveying blue box/cart set out rates;
- Monitoring/recording tonnage shipped/processed;
- Monitor/record residue and market rejection rates.

Worksheet 12 suggests topics for monitoring and possible tools for collecting the information. You can modify or add to the monitoring program according to the needs of your municipality. The data collected can be used in reporting to municipal council, the WDO, and to the general public. **Be sure to compare the results against your planning targets and timelines.**

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<sup>7</sup> For more information on this best practice, see *Blue Box Program Enhancement and Best Practices Assessment Project: Final Report*, Vol. 1, Pg. 37.

## Worksheet 12: Monitoring and Reporting Program Outline

Topic	Tools	Frequency
Total waste generated (by type and by weight)	Measuring of wastes and recyclables at transfer station/disposal site i.(e.g., weigh scale records)	Each load
Diversion rates achieved (by type and by weight)	Formula: $(\text{Blue box materials} + \text{other diversion}) \div \text{Total waste generated} * 100\%$	Monthly
Waste disposed (by type and by weight)	Reconciliation of weigh scale tickets	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	Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office	On-going
Planning activities	Describe what initiatives have been fully or partially implemented, what will be done in the future	Annually
Review of Recycling Plan	A periodic review of the Recycling Plan to monitor and report on progress, to ensure that the selected initiatives are being implemented, and to move forward with continuous improvement	Every 3 to 5 years
 Others...		

## 4 Conclusion

Congratulations! You are now several steps closer to creating a Waste Recycling Strategy for your municipality.

Once you have completed these worksheets to your satisfaction, use the *Waste Recycling Strategy Template* to take the information contained in the worksheets and build it into a draft Waste Recycling Strategy.

## Appendix A: Sample Blue Box Diversion Municipal Characteristics

**Table A1: Municipal Groupings and Waste Characteristics (based on 2008 WDO data)**

Municipal Grouping (WDO)	Reported population	Maximum Calculated Seasonal Population Increase	Average Total Waste Generation (kg/capita)	Blue Box Material – Marketed Tonnes	Net Cost per Tonne Marketed	% Diverted through Blue Box Recycling (Average and Range)	Average Total Residential Waste Diversion Rate
Rural Depot – North	270 - 38,828 <sup>a</sup>	1,262	383.49	3 – 1,326 <sup>b</sup>	\$69 - \$9,423 <sup>c</sup>	Avg: 20% Range: 2 - 41%	21%
Rural Collection - North	228 - 44,507 <sup>d</sup>	823	315.99	4 - 2,863 <sup>e</sup>	\$49 - \$3,749	Avg: 20% Range: 0 - 38%	24%
Rural Collection - South	561 - 45,212	1,326	351.75	3 - 3,017	\$72 - \$5,524	Avg: 21% Range: 0- 34%	28%
Small Urban	875 - 45,965	0	393.10	57 - 3,191	\$28 - \$468	Avg: 22% Range: 8 - 40%	35%
Rural Depot – South	950 - 9,435	1,855	353.92	33 - 1,256	\$110 - \$1,128	Avg: 21% Range: 6 - 41%	25%
Rural Regional	53,966 - 157,857	8,863	364.77	3,748 - 14,549	\$128 - \$445	Avg: 23% Range: 10 - 32%	35%
Medium Urban	74,533 - 133,800	0	453.03	3,919 - 14,091	\$86 - \$729	Avg: 20% Range: 14 - 31%	34%
Urban Regional	319,901 - 898,150	4,383	394.85	24, 380 - 65,410	\$98 - \$213	Avg: 22% Range: 18 - 33%	42%
Large Urban	379,200 - 2,511,995	0	403.68	27,589 - 166,678	\$146 - \$180	Avg: 23% Range: 19 - 27%	47%
						<b>Total Average: 22%</b>	<b>Total Average: 42%</b>

<sup>a</sup> Only one municipality/board reports a population greater than 6,000 for this grouping.

<sup>b</sup> Only one board exceeded 400 tonnes for this grouping.

<sup>c</sup> Only one municipality/board exceeded \$2,800 per tonne for this grouping.

<sup>d</sup> Only one municipality had a population greater than 14,000 for this grouping

<sup>e</sup> Two municipalities in this grouping had tonnages exceeding 850 tonnes



**Table A2: Sample Municipal Characteristics**

	Population	Municipal Grouping	Single-Family Households	Multi-Family Households	Curbside Collection	Depot Collection
Blue Mountains	10,441	Rural Collection – South	6,631	0	5,900	0
Simcoe County	319,901	Urban Regional	117,912	7,626	120,007	5,531
West Nipissing	13,114	Rural Collection - North	7,045	30	5,010	2,037
Muskoka	135,606	Rural Regional	47, 081	804	32,101	15,784
London	379,200	Large Urban	112,972	47,350	154,776	5,094
Essex Windsor	393,115	Urban Regional	130,229	22,387	152,616	0

## Appendix B: Waste Recycling Strategy Options Information Sheets

Appendix B includes the following Waste Recycling Option Sheets, presented as information to assist municipalities with their research into the various waste recycling options available to them. Municipalities are encouraged to investigate other options and informational resources beyond those presented in this guidebook.

- Public Education and Communications (page 60)
- Training of Key Program Staff (page 68)
- Waste Diversion Policies (page 73)
- Collection Frequency (page 79)
- Optimizing Collection and Processing Operations (page 81)
- Multi-Municipal Planning (page 84)
- Contracting Generally Accepted Principles (page 88)
- IC&I Diversion (page 95)
- Monitoring and Continuous Improvement (page 97)

### Highlights

- Awareness on its own is ineffective
- Includes face-to-face engagement
- Addresses barriers to participation
- Forms a dialogue
- Plan for monitoring and evaluation

### Participating Municipalities

- City of Ottawa
- York Region
- Essex-Windsor (Solid Waste Authority)
- Toronto
- Peterborough County

### Examples of Tools

- Comprehensive website
- Collection calendar
- Online videos or slide shows
- Community and school contests
- Seminars and workshops
- Booklets and guides
- Fridge magnets and information sheets
- Kiosks at local events
- PSAs

## About Public Education and Communications

Any waste management system that hopes to be successful must include a communications strategy. Residents and businesses will not be able to fully participate in waste reduction and diversion programs if they do not know what options are available to them or how to use them.

But communication is not a one-way flow of information. Research has shown that simply building awareness is not sufficient to change behaviours. Daily life is filled with examples of people doing things they know they should not, or not doing things that they know they should.

An enhanced communication and outreach program goes beyond the static use of brochures and online information; rather, it establishes a dialogue between the municipality and the program user to assess barriers to participation and determine opportunities for improvement. An enhanced communication and outreach program might 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 teach others or to lead by example (e.g., backyard composting);
- Give-aways or discounts to help physical barriers to participation (e.g., biodegradable mini-bin bags, mulching lawnmower blades);
- Interactive on-line waste forums and feedback forms; and
- Community-based social marketing, among other things.

Including a monitoring and evaluation component allows program managers to adjust the C&E 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 monitoring and evaluation component should be designed and budgeted for in the planning phase.

Estimated Diversion	Estimated Cost
~ 2 to 5%	\$1 per household

### Suggested Implementation Steps

- Prepare communication strategy, including target audience, key messages, message mediums (e.g., brochure, website, workshops, etc), distribution plan
- Prepare budget
- Draft copy and prepare graphic design
- Roll-out communications

**56** Blue Box Program Enhancement and Best Practices Assessment Project  
*Final Report*

The following pages reprint the “Appropriately Planned, Designed, and Funded Promotion and Education Program” Fundamental Best Practice as identified in the KPMG Blue Box Program Enhancement and Best Practices Assessment Project Final Report.

The full report is available through

[www.stewardshipontario.ca/bluebox/eefund/best\\_practices.htm](http://www.stewardshipontario.ca/bluebox/eefund/best_practices.htm)

### Fundamental Best Practice

## Appropriately Planned, Designed, and Funded Promotion and Education Program

### Overview

To be effective, a municipal Blue Box program needs to be supported by a Promotion and Education (P&E) component that is appropriately designed and funded, and incorporates specific audiences, defined messages & media, planned frequency of communication, and monitoring of results. A well-designed and implemented P&E program can have effects on virtually all other elements of the Blue Box system, including planning, collection, processing, marketing, and policy development.

### Key Benefits and Outcomes

The impacts of effective P&E propagate throughout the recycling program. Most significant benefits include

- Potentially higher revenues for marketed materials due to the lower degree of contamination
- Higher waste diversion and recyclables recovery rates overall
- Establishment of new recycling behaviours and reinforcement of emerging or existing positive patterns among residents
- Increased community involvement in the program
- Set out of only those materials that are accepted by the program
- Proper set out of recyclables at the curb, leading to increased collection efficiencies and decreased operator safety issues
- Lower residue rates at processing facilities, resulting in higher recovery and lower costs

### Description and Implementation of Best Practice

Planning and implementing targeted P&E programs that support recycling and waste diversion are vital to municipal Blue Box programs. Experts in the field agree that P&E is one of the cornerstones of an effective program. Most recently, an OWMA report stated that a “unanimous conclusion (of a group of private sector companies) is that effective promotion and education programs are significant contributors to the success of the blue box program.” Another recent E&E Fund study, aimed at enhancing Blue Box recovery in the Golden Horseshoe area, determined that effective communication and education is required to “increase cost-effectively the number of recyclables recovered....” Furthermore, a study titled “Best Practice P&E Review” defines and articulates a number attributes that lead to a successful P&E program. Some content from the above studies is used throughout this document.

The key to effective P&E lies in the concept of “appropriateness” – considering what level of planning, research, deployment, and measurement is appropriate for different communities across the province. Each community’s ability to design and deploy P&E is affected by community size, geography, resources (financial, skills-based and time) and many other factors.

The description that follows attempts to provide useful direction to communities, as they consider what may determine the appropriate P&E for their programs, taking into account four key factors that include:

- Design
- Funding
- Deployment
- Monitoring and Evaluation

### ***Design***

P&E programs that contribute to best practices in recycling are based on a current (and regularly updated) communications plan, with identified goals and measurable objectives.

Ideally, recycling P&E programs and targeted campaigns will be rooted in a communications plan, based on targeted community research, or if resources are unavailable, on reliable existing research that highlights common factors that are broadly applicable.

Communications plans include a statement of goals and objectives, target audiences, key messages, tactics (including planned media and distribution), timing, and plans for monitoring and evaluation. While the majority of Ontario recycling programs do not have in place detailed or current communications, in the course of this study, project team members were told by various communities that they intend to develop these plans in the near future.

The Best Practice P&E Review report, previously mentioned, indicates that most of Ontario communities conduct some form of research to identify their audiences, themes, targeted messages, images and branding before rolling out new communications efforts. For communities that lack the resources to carry out targeted research, several research documents are currently available that may provide insights from which they may extrapolate. See Sources and Links section for more information on these and other resources.

### ***Funding***

As a rule of thumb, communities will determine the level of financial resources they have available, whether they are adequate to cover full program costs, and, if necessary, identify other sources of funding or modify tactics to achieve P&E program goals. The best plan cannot be implemented if adequate financing is not in place. Furthermore, having a sizable P&E budget will not be helpful without knowing how to effectively utilize these funds to achieve specified P&E program objectives.

A recent study of eight programs that are considered to be among the P&E leaders, as well as of other well-performing communities, revealed that their P&E costs, as reported in the 2005 WDO Datacall, range from approximately \$0.83 to \$1.18 per household, with recovery rate at or exceeding 60%. Statistical analysis showed a positive, albeit weak, correlation between increased P&E spending and increased recovery in Ontario recycling programs.

Supporting this conclusion is that the US Curbside Value Partnership used \$1/per household as a general spending guide for existing recycling programs, but recommends spending levels of up to \$3 or \$4 per household when implementing new programs or major program changes. Also in the U.S., research by Skumatz Economic Research Associates (SERA) in 2002 found that urban communities generally spend about \$1.00 per household per year on P&E, suburban communities spend about \$1.30 per household per year, and rural communities spend about \$0.90 per household per year (in U.S. dollars). All programs with diversion rates greater than 30 percent spent more than \$1.00 per household per year. The same study also found that increasing the P&E expenditure by \$1.00 per household per year could yield an increase of 1 percent in the recycling rate for communities with already high P&E expenditures, while it could yield up to 3 percent additional diversion in communities with relatively low current P&E expenditures (Skumatz & Green, "Evaluation the Impacts of Recycling/Diversion Education Programs – Effective Methods and Optimizing Expenditures," for Iowa DNR, 2002).

In applying the above conclusions, one needs to take into consideration that P&E funding may and should vary significantly from one year to the next, based on the introduction of new services, new materials, additional programming and several other factors.

More details on the cost analysis are provided in the Key Observations section of this report. Promotion and education funding considerations, as they relate to the Net System Cost under Best Practices, are outlined in Volume II of this report.

### **Deployment**

P&E initiatives that contribute the success of a recycling program employ a mix of media (e.g., calendars, brochures, radio spots and others) over a sustained period of time. These vary according to the audience, available budget, and resources.

#### *Mix of Media*

The use of media reported by P&E leaders may be grouped in five broad categories:

- Print (paid ads, brochures, calendars, newsletters)
- Broadcast (TV, radio ads, Public Service Announcements)
- Electronic (websites, emails)
- Outreach (special events, in-school education, community education centres, door to door campaigns, landfill/depot contact, etc.)



- Icons & incentives (Blue Boxes or other collection containers, magnets and other 'gifts', community mascots etc).

The strongest and most effective P&E campaigns strategically combine media and tactics. The Blue Box Program P&E Review report suggests that wherever possible, communities should try to implement a multi-tiered approach, with appropriate tactics selected from each of three tiers:

- Tier 1 - Radio components or, if possible, TV (vs. print ads)
- Tier 2 - householder drop of calendars or user-friendly tools showcasing website offerings; complemented by
- Tier 3 - public relations or word-of-mouth strategies to animate communities – highly visible events and activities, community and corporate partnerships, role model identification, personal testimonials

Communities that use this approach benefit from the mass media impact that helps build awareness and shift attitudes, combined with outreach that helps engage residents and contributes to skill-building. Where limited budgets and media outlets constrain P&E program choices, the Best Practice P&E Review suggests focusing on a limited range of Tier 2 activities, deployed with greater frequency to achieve greater impact.

**Sustained & sustainable deployment:** Campaigns that include a program for ongoing and sustained contact with targeted audiences generally have greater impact than a one-time "blitz." Year-round exposure is the target.

Communities that look for and implement innovative and cost effective strategies to deploy their messaging expand the reach of their messaging and get a better 'bang for their buck.' There are many ways to maximize deployment or delivery mechanisms including:

- Partnering with other communities with similar messaging to design/deliver tactics
- Sharing with community partners to deliver messaging (e.g., sending print materials with utility bills, inserting messaging into politicians' newsletters, working with community groups)
- Enlisting a known community spokesperson to 'carry the message'
- Combining public relations (earned media coverage) with other 'cost-based' tactics (calendars, newsletters etc.)
- Working with appropriate community partners to design and or deliver P&E messaging

**Messaging:** Recycling P&E campaigns that target those who are receptive to recycling and skew toward the female head of the household show greater success.

Most community residents are aware of recycling and what to recycle, particularly with materials that have been recycled for several years now. They continue to need

information to support the addition of new materials to recycling collection programs. They also need to be motivated to take action.

Recent focus group findings in several Greater Toronto Area municipalities indicate that despite efforts to provide information about recycling, many multi-family residents remain unaware. Efforts to reach out to multi-family residents require continued persistence and creativity, with rewards (e.g., with indications that their efforts pay off, and by providing clean, safe recycling sites for their use) and attention to ethnic/cultural issues that are often pervasive in multi-family buildings.

In many communities, the need for traditional informational messaging is becoming secondary to inspirational approaches. Most residents are aware of at least the 'first generation' materials that may be recycled.

The most compelling messages also speak to the emotions (again, rather than simply providing information).

Linguistic issues are a vital component: to be successful and engaging, P&E must be produced in the languages spoken in the community.

The foundation for the messaging lies in targeted community research or, where resources are unavailable, consideration of the wealth of information that exists in available reference documents.

**Allocation of financial resources:** For most, if not all Ontario communities, P&E for recycling programs is constrained by limited financial (and staff) resources. The majority of respondents in the P&E Review survey reported that they thought they would need to double their budgets to be able to accomplish the full range of tasks to ensure "successful P&E."

Despite that, communities across the province are developing and sustaining P&E programs that are contributing to program effectiveness with, in some cases, very limited resources. To achieve Best Practices, communities should consider planning their P&E strategies to include some of the low cost/high impact components (and others) identified above.

**Opportunity to increase efficiency:** For some elements of their programs, communities are already sharing resources either with other communities or with other programs within their communities or existing P&E vehicles.

Other shared resources for P&E that exist or are in development include:

- the [WDO Ad bank](#)
- a new web-based resource about all Ontario recycling programs ([www.blueboxmore.ca](http://www.blueboxmore.ca))
- P&E module coming to "[Recyclers' Knowledge Network](#)" (expected in May 2007)
- Project reports from all E&E Fund [Communication and Education](#) studies

Communities that seek out new opportunities to share resources (information, graphics, activities and others) will increase the cost-effective impact of their P&E



programs and in some cases, be able to employ tactics that would otherwise be cost-prohibitive.

### **Monitoring and Evaluation**

P&E programs that contribute to best practices contain a monitoring and evaluation component that is budgeted and mapped out in the planning phase.

For many communities, the ability to implement formal qualitative and quantitative research will be constrained by budgetary limitations.

In a more informal way, evaluation may also be monitored by changes in amounts/quality of materials marketed over a year. Because there are so many factors that influence program performance, this is a less precise means of evaluating a P&E campaign or program, but it does provide an indicator. In the Blue Box Program P&E Program Survey, London, Durham and Toronto indicated that they look to 'spikes' in recovery or overall annual tonnages in their consideration of P&E effectiveness.

Communities that use these measures as indicators of P&E effectiveness may link their findings with existing (and growing) research about the impact of specific tools and campaigns in Ontario and beyond.

### **Source and Links**

#### **Reports**

AMRC, County of Oxford et al; [\*Research Report: Identifying Best Practices in Municipal Blue Box Promotion and Education\*](#), 2005

City of Hamilton: [\*Blue Box Recycling Public Opinion Survey \(March 2006\)\*](#)

City of Barrie & CSR: [\*Master Recycler Program Report\*](#), 2000 & [\*Phase II Report\*](#), 2001

Coffman: [\*Public Communication Campaign Evaluation\*](#), 2002

Informa Research for McConnell Weaver Communication Management:  
[\*Communication & Benchmark Survey, Enhanced Blue Box Recovery Program, Focus Group Report\*](#); 2006

McConnell Weaver Communication Management: Enhanced Blue Box Recovery  
[\*Benchmark Survey & Focus Groups\*](#); 2006

McConnell Weaver Communication Management: [\*Enhanced Blue Box Recovery Strategic Communication Plan\*](#), 2006

[\*Blue Box Residential Recycling Best practices – A Private Sector Perspective\*](#), A Joint Project of Stewardship Ontario and the Waste Management Association, Guilford and Associates, February 2007

Praxis PR: [\*Best Practice P&E Review Final Report\*](#), 2007

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Skumatz: "[Policy and Program Options that Increase Recycling](#)", 2004

Skumatz & Green, "Evaluation the Impacts of Recycling/Diversion Education Programs – Effective Methods and Optimizing Expenditures," for Iowa DNR, 2002

#### ***Presentations***

AMRC: "[2005 Promotion & Education Awards](#)", 2006AMRC Policy & Programs Committee: "[2006 Municipal P&E Awards](#)", February 2007

"[Industry Experts Speak about Advertising: Research Perspectives](#)": A presentation at AMRC's Spring Workshop by Informa Research, Praxis PR and McConnell Weaver Communications Research; February, 2007

#### ***Resources***

Stewardship Ontario's Efficiency and Effectiveness Fund [Communication & Education projects](#)

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The following pages reprint the “Training of Key Program Staff in Core Competencies” Fundamental Best Practice as identified in the KPMG Blue Box Program Enhancement and Best Practices Assessment Project Final Report.

The full report is available through  
[www.stewardshipontario.ca/bluebox/ee fund/best\\_practices.htm](http://www.stewardshipontario.ca/bluebox/ee fund/best_practices.htm)

### Fundamental Best Practice

## Training of Key Program Staff in Core Competencies

### Overview

Municipalities need to ensure that management program personnel are adequately trained on position-related competencies and responsibilities. Training provides the skills needed to develop, manage, monitor, document and promote the numerous and complex components of a successful recycling program. Regardless of the size or type of municipal program, training acts as an enabler of performance, facilitating the achievement of objectives in a cost-effective manner. Equally important to training is ensuring that structure, authority and responsibility are well established and understood.

### Key Benefits and Outcomes

Proper staffing and training leads to improved performance in all key program components, including both effectiveness and efficiency in the following areas:

- Resident participation and satisfaction
- Optimized program funding
- Staff time/costs
- Supplier/contractor relations
- Reduced need for management supervision
- Reduced need for council time and attention
- Job satisfaction, motivation and morale among employees
- Process efficiencies
- Capacity to adopt new technologies and methods
- Knowledge of material markets and pricing, yielding higher revenues
- Innovation in business strategies and products
- Reduced employee turnover
- Enhanced municipal image
- Risk management
- Increased ability to attract/promote staff

### Description of Best Practice

Municipalities that take on the responsibility of providing recycling services also assume the duty to provide adequate amounts of time from knowledgeable management and operations staff to deliver those services. It is assumed that all

municipalities and private contractors train operations staff to levels that ensure the safety and efficiency of the program.

Additionally, municipalities need to recognize the importance of having appropriately trained management staff to effectively perform the assigned responsibilities. Providing adequate staff time may be a challenge to smaller municipalities, however, all effective and efficient recycling programs depend on the availability of enough time from knowledgeable people. Therefore, all municipalities are encouraged to strive for the appropriate staffing and management training levels.

Knowledgeable staff routinely achieve higher levels of success within their local recycling program, as measured by greater resident participation and satisfaction, along with increased diversion and optimized program funding. Business research shows that productivity increases while training takes place (see end of this section for references). Staff who receive formal training can be significantly more productive than untrained colleagues who are working in the same role. As a result, most businesses provide on-the-job training, which generally yields a positive return on investment.

While rationale and objectives for training vary across organizations, municipalities seeking to improve program performance should consider focusing on the following goals:

### ***Improved Quality and Productivity***

Training that meets both staff and employer needs can increase the quality and flexibility of municipal recycling services by encouraging:

- accuracy and efficiency
- strong work safety practices
- better customer service

### ***Enhanced Transferability***

The benefits of training in one area can flow through to all levels of an organization. Over time, training will reduce costs by decreasing:

- wasted time and materials
- redundant work
- workplace accidents
- recruitment costs through the internal promotion of skilled staff
- absenteeism

### ***Increased Competitiveness***

Municipalities must continually change their work practices and infrastructure to improve diversion and contain recycling costs. Training staff to manage the implementation of new technology, work practices and business strategies can also act as a benchmark for future recruitment and quality assurance practices.

In addition to impacting municipal costs, training can improve:

- staff morale and satisfaction
- inter-staff/department communication and leadership
- time management
- customer satisfaction

### ***Effective Recruiting***

Training aids the recruiting process. If a municipality is committed to training, it may be more willing to hire a desirable candidate who lacks a specific skill. Training also makes a municipality more attractive in the eyes of potential employees because it shows them that they have room to grow and accept new challenges. Additionally, training existing employees often reduces the need to hire new staff.

Training rewards long-time employees. Municipalities are more willing to promote existing employees who have learned new skills and are ready to take on new challenges.

Training reduces the need for supervision. Not only does skill-based training teach employees how to do their jobs better, but it also helps them work more independently and develop a can-do attitude.

Perhaps the most important benefit of a healthy training culture is that the skills of your staff are formally recognized and their contribution to the municipality and the recycling program is openly valued.

### ***Staff Retention***

Training increases staff retention, resulting in significant cost savings. The loss of one competent person can equal the equivalent of one year's pay and benefits. In some companies, training programs have reduced staff turnover by 70 per cent and led to substantial returns on investment.

### ***Implementation***

Ontario recycling program coordinators and senior staff need the skills and expertise to effectively employ all of the fundamental best practices described in this report. Such skills include:

- Recycling program planning, development, evaluation, and continuous improvement
- Recycling services procurement and contract administration
- Use of policy mechanisms to promote waste diversion and recycling, and promotion and education
- Operations planning and management (where the municipality provides that function)



It is important to ensure this training is ongoing – i.e., refresher training to ensure staff are kept current and cross-training of departmental staff that rotate positions. The competency of staff should be monitored via annual performance reviews.

Numerous organizations offer opportunities to acquire training, information and networking.

- The Association of Municipal Recycling Coordinators (AMRC) offers several recycling conferences and workshops each year:
- Waste Diversion Ontario (WDO) offers many guides and informational packages to assist with municipal Datacall completion, funding and CAN/OCNA in kind advertising.
- Association of Municipalities of Ontario (AMO) is a non-profit organization representing the municipal order of government and provides a variety of services and products to members and non-members.
- Stewardship Ontario, WDO, and AMO regularly host "Ontario Recycler Workshops" (ORWs) for Ontario municipal waste management staff and private sector service providers, as well as for municipal councillors and interested stewards of Blue Box recyclables. These workshops and web casts provide information about how to optimize WDO funding to support municipal residential Blue Box recycling programs. Project studies and reports commissioned under the Effectiveness and Efficiency Fund are available, along with tendering tools and information from the Recyclers' Knowledge Network.
- The Solid Waste Association of North America (SWANA) has been a leading source of information and training programs for solid waste professionals for over 40 years. SWANA offers training and certification as a Recycling Systems Professional.

Although all of the above organizations offer some training and information services, there is no coordinated recycling management training system currently available in Ontario.

Broader and more comprehensive training resources and tools may be implemented in the near future to equip municipal recycling staff with adequate skills to effectively manage and operate Blue Box programs.

For example, in the United Kingdom, WRAP (the Waste & Resources Action Programme) has announced phase four of its free training courses for recycling managers. The training program, developed to support recycling managers in improving existing recycling schemes and introducing new collection initiatives, has proved very popular. In the first year of operation, 25 courses have been run and 400 delegates from across the UK have received training.

The three-day residential courses are aimed at people from local authorities, the community and private sectors who manage or develop and promote collections of recyclable or compostable materials. The content focuses on equipping delegates with the knowledge, skills and tools to develop cost-effective systems with high

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participation and recovery rates for the collection and sorting of materials that meet end market requirements.

Based on this and other examples, the Team estimated that annual costs for recycling program management training would amount to approximately \$412,000. This assumes that two staff members from the largest 40 programs and one staff member from the remaining 150 programs need to be trained. Training-related expenses range from \$1,600 to \$2,150 per delegate.

#### Source and Links

There are numerous sources of online information about training and development. Below are some identified source documentation/links for additional information:

Association of Municipalities of Ontario <http://www.amo.on.ca>

Association of Municipal Recycling Coordinators <http://www.amrc.ca>

Waste Diversion Ontario <http://www.wdo.ca>

Stewardship Ontario <http://www.stewardshipontario.ca>

Recyclers' Knowledge Network <http://www.vubiz.com/stewardship/Welcome.asp>

Ontario Recycler Workshops  
[http://www.stewardshipontario.ca/ee fund/orw/orw\\_main.htm](http://www.stewardshipontario.ca/ee fund/orw/orw_main.htm)

Solid Waste Association of North America <http://www.swana.org>

Research on training in the workplace: Smith A., 2001, Return on Investment in Training: Research Readings <http://www.ncver.edu.au/research/proj/nr1002.pdf>  
2001, Australian National Training Authority.

WRAP launches phase 4 of its recycling manager training programs  
[http://www.wrap.org.uk/wrap\\_corporate/news/wrap\\_launches\\_6.html](http://www.wrap.org.uk/wrap_corporate/news/wrap_launches_6.html)

The following pages reprint the “Established and Enforced Policies that Induce Waste Diversion” Fundamental Best Practice as identified in the KPMG Blue Box Program Enhancement and Best Practices Assessment Project Final Report.

The full report is available through  
[www.stewardshipontario.ca/bluebox/ee fund/best\\_practices.htm](http://www.stewardshipontario.ca/bluebox/ee fund/best_practices.htm)

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Final Report

### Fundamental Best Practice

## Established and Enforced Policies that Induce Waste Diversion

### Overview

Municipalities need to utilize a combination of policy mechanisms and incentives to stimulate recycling and discourage excessive generation of garbage. Most of these policies are aimed toward causing a permanent shift in residents’ behaviour through the use of economic and non-monetary levers. Economic incentives work by assigning a tangible value to the recyclable portion of the refuse stream. Non-monetary incentives, on the other hand, force residents to limit undesired behaviours and stimulate desired ones, using punitive and rewarding policy tools, respectively. Each type of incentive is described in further detail in this section, with pragmatic application guidance.

### Key Benefits and Outcomes

By using a mix of economic and non-monetary incentives, municipalities can change residents’ behaviours and generate program revenues. Specific effectiveness benefits include:

- Higher participation rates
- Increase in materials diverted to recycling
- Reduction in recyclable materials loss
- Improved quality of materials
- Realized synergies between policies and Promotion and Education

Efficiency benefits include:

- Decrease in garbage collection costs
- Increase in program revenues
- High return on investment
- Low capital requirements

### Description of Best Practice

#### *Economic incentives*

Economic incentives are as diverse and varied as the municipalities and waste authorities that employ them. The basic objective of incentives, as relates to recycling programs, is to place a cost on disposing of waste at the curbside, which will cause system users to divert appropriate material to diversion programs. The intended result is a decrease in waste disposed and an increase in recycling volumes.

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There are a number of approaches employed, the names for which are often used interchangeably: Pay-as-you-throw (PAYT), unit pricing, and variable rate structures are often cited. Generically, these are often referred to as “user pay” systems. Incentive programs can employ variable fee structures, and simple but effective forms use bags or stickers. Other approaches require subscription by container volume, or may be weight-based. Bag tags and sticker programs are consistent with approaches used in many Ontario communities, in which system users pay for bags or tags that qualify for curb side garbage collection. In some cases, partial systems are used in conjunction with bag limits (see discussion on non-monetary policies), allowing users a maximum number of bags at the curb (often 2 or 3), after which user paid bags or tags are required to qualify for garbage collection.

In general, the “user pay” concept has the potential to recover part or all of waste management costs from system users. Utility-based or self-financing systems recover all of their costs, while the user pay systems recover part or all costs. Potential increases in net recycling costs may result in lower unit costs, while other aspects of the waste management system may benefit from reduced garbage collection costs, reduced disposal costs and increased landfill life expectancy. Well-conceived incentive programs may also improve material quality, resulting in increased program revenues and reduced sorting costs. However, some programs may experience an increase in total per-household program costs depending on how the program is administered, and as a result of changes in customer waste generation behaviour as a result of the economic incentive.

### ***Non-monetary Incentives***

**Bag limits** are a common practice of limiting how much waste, and specifically the number of garbage bags full of waste, will be accepted for collection. They are often employed with “user pay” systems, which will assign a cost per bag for collection for bags over the limit. Bag limits are a relatively simple means of encouraging residents to become more conscious of the amount and type of waste they generate to initiate a change in attitude and behaviour about their waste generation habits.

Typical bag limit designs include:

- Strict bag limit is imposed with no other options provided for placing additional waste at the curb. Once the bag limit set out is reached, any additional units of garbage are left at the curb by the collection crew
- Partial Bag Limit allows residents to purchase special tags or bags for excess garbage (also referred as a partial user pay system). Because residents are given an alternative approach to deal with excess garbage, it is not as critical to provide convenient waste diversion alternatives. However, residents will expect some level of waste diversion services to enable them to divert their waste and reduce the financial burden of paying for excess garbage. This approach is much more common among communities imposing bag limits of three bags or less

- **Hybrid System** combines features of the strict bag limit and with features of the partial bag limit. Typically, in a hybrid system, a community will impose a strict bag limit but will distribute a set of “free” tags for use by residents to augment the bag limit

Bag limit programs send a clear message to residents that it is no longer acceptable to produce unlimited amounts of garbage. However, they are usually coupled with significant convenient opportunities to divert waste.

Communities that impose bag limits of less than three per week, in general, experience a noticeable reduction in the amount of waste sent for disposal and an increase in recycling rates. There tends to be an inverse relationship between the number of bags permitted at the curb and the diversion and recycling rates achieved. The lower the bag limit the higher the diversion rate of waste from landfill and the recycling rate, as long as residents have access to convenient and comprehensive waste diversion opportunities. Curb side recycling is generally considered essential if a bag limit of three or less is to be contemplated. Introduction of additional diversion opportunities, such as curb side collection of kitchen organics, further enhances bag limit impacts.

Bag limits can generally be administered without capital expense to the waste authority, and thus are generally regarded as a low-cost initiative.

**Provision of blue boxes** entails the provision to households of free blue boxes in order to ensure ample household recycling capacity. This is usually done when programs are initiated and when materials are added and/or the program is re-promoted. Additional blue boxes require an initial capital outlay, however, the added capacity may not only increase capture and potentially lower unit operating costs, but the minimization of home-made curb side containers may yield longer-term ergonomic benefits to collection crews.

**Disposal bans** can be implemented by the disposal authority, which determines what materials it will accept for disposal. This forces the collection authority to redirect banned materials from the waste stream to appropriate receivers. This policy is often applied to broader material types and industrial wastes, and not specifically a blue box strategy.

**Curb side material bans** entails banning of material from garbage collection, forcing the household to dispose of the material through the proper program channels, such as recycling, source separated organics, household special waste depot, or any other appropriate collection or depot system. This is enforced at the curb, and disposal service can be withdrawn if users refuse to divert banned materials to the proper streams.

**Mandatory recycling** is institution of a by-law that directs households to use the recycling program for recyclable material. This can be enforced at the curb, and disposal service can be withdrawn when users continually place recyclables in the garbage. This approach is also commonly used to direct managers and property owners of multi-family residences to promote recycling, and is enforced by making

public garbage collection programs available on condition that the complex provides a recycling program.

**Reduction in garbage collection frequency** is a strategy made possible when diversion programs are able to divert large amounts of material, such as recycling and source separated organics programs. With significant diversion, a minor portion of material left for the garbage stream makes weekly collection obsolete, and the conversion to less frequent garbage collection, in turn, makes diversion programs more attractive even to program hold-outs. Reduction in garbage collection frequency has the added benefit of reducing garbage collection costs.

**Drop-off depots** for overflow materials make recycling available at locations and facilities where public traffic is present. Recycling receptacles are an opportunity to collect material without curb side collection costs, adding material to the revenue stream without the same level of cost for collection.

Careful program planning is essential to the success of economic and non-monetary policies. A number of critical considerations are cited within the body of literature, studies and experience associated with these practices.

### Implementation of Best Practice

#### ***Economic Incentives***

Implementation of economic incentives requires thorough analysis and planning. User pay incentives work best:

- In conjunction with clear, well-considered goals
- When there is a strong sense of what barriers to recycling are being targeted through the incentives
- Where there is adequate infrastructure to obtain the desired results, including strong program elements, such as accessible recycling programs, a commitment to educational/promotional support, active enforcement (it should be noted that in some literature, fines are considered to be a form of economic incentive), and provision of adequate recycling capacity
- Where there is careful determination as to what type of program is suitable for the community (bag tag, variable pricing, weight or volume based)
- As part of a waste management strategy

Through proper planning, minor concerns can be anticipated and mitigated. With respect to litter and illegal dumping, experience shows that implementation issues may arise. Diminished quality of recyclables, for example, may result from placement of over-the-limit garbage in recycling bins by residents in order to avoid garbage cost. Roadside garbage dumping may take place in isolated cases. However, these issues can be addressed by stepping up enforcement in the early post-implementation stages and developing targeted educational campaigns.



Administration and capital requirements will depend on the type of program selected. Weight-based systems require a capital outlay with increased operational expenditures, and, therefore, may be more expensive to operate. Bag-tag systems are considered to be less expensive to operate, with some programs looking to retail outlets to manage distribution of bags, tags or stickers.

Some programs offer variable rate plans based on either weight or volume, allowing subscribers to select containers or bins that match their waste production needs and encourage a “downsizing” of household waste generation. This provides additional incentive to reduce waste and increase recycling by placing a value on the behaviour through additional savings. Consideration of such approaches are systemic in nature, accompanied by assessment of weight or volume-based subscription plans, automated collection systems for carts or bins, and impacts on system cost.

### ***Non-monetary Incentives***

As previously noted, benefits attributed to any of these strategies are dependent on the amount of associated public education, promotion, and enforcement support.

In the case of those strategies that “direct” waste to the recycling stream, care must be taken to avoid negative impacts to the quality of the collected material. When instituting bans, bag limits, or garbage collection frequency reduction, recycling collectors need to be diligent with respect to quality control. It is possible that non-recyclables will be placed in the blue box as a reaction to reduced garbage service or capacity.

Reduction in garbage collection frequency is one of the final implementation steps in a successful integrated waste management diversion program, and is a companion strategy to the effective diversion of household organics and blue box recycling. The need for weekly garbage collection is effectively eliminated. This particular strategy requires a revision of collection logistics that may result in co-collection scenarios for waste, recycling and organics, in a manner that can lead to efficient use of collection vehicles.

The implementation of a bag limit program (featuring three bags or less) requires a planned phase-in to address communication with residents (citizens need to know why the municipality is doing this) and the infrastructure required to support it. The following is suggested as effective bag limit levels for various Blue Box recycling programs:

<b>Recycling System</b>	<b>Collection Frequency</b>	<b>Garbage</b>	<b>Suggested Bag Limit</b>	<b>Add Kitchen Organics</b>	<b>Suggested Bag Limit</b>
Multi sort	weekly	weekly	3	weekly	2
	bi-weekly	weekly	4	weekly	3
Two stream	weekly	weekly	3	weekly	2
	bi-weekly	weekly	4	weekly	2
	alternating weeks	weekly	3	weekly	2

Single stream	weekly	weekly	3	weekly	2
	bi-weekly	weekly	4	weekly	2

In most communities, where a recycling curbside program is in place, the average householder sets out three bags or less of garbage per week and only has excess garbage a few times a year, typically after the holiday season and spring clean up. These special times can be effectively accommodated with amnesty days.

## Sources and Links

AMRC "User Pay Implementation Guide" E&E Fund Project 126 (2005)" <http://www.stewardshipontario.ca/eefund/projects/innovative.htm#126>

AMRC "Analysis of User Pay System Costs" E&E Fund Project 191 (2006) <http://www.stewardshipontario.ca/eefund/projects/innovative.htm#191>

User Pay learning modules on the Knowledge Network – accessible via [www.vubiz.com/stewardship](http://www.vubiz.com/stewardship)

Implementation of a Waste Management Utility in Ontario Municipalities (PN 160) - Six Draft Discussion Papers are available on the Knowledge Network

AMRC Best Practice Consultation Sessions: "User Pay and combined user pay systems (bag tags)" [www.amrc.ca](http://www.amrc.ca)

"The Waste Diversion Impacts of Bag Limits and PAYT Systems in North America" April 2001, ENVIROS RIS for the City of Toronto [www.ris.ltd.com](http://www.ris.ltd.com)

US EPA PAYT: <http://www.epa.gov/epaoswer/non-hw/payt/index.htm>.

"Nationwide Diversion Rate Study: Quantitative Effects of Program Choices on Recycling and Green Waste Diversion, Beyond Case Studies." Skumatz & Associates (SERA), Seattle, USA, 1996.

US EPA, MSW Management journal article "The Rise and...the rise of Pay-As-You-Throw" citing more than 6,000 communities in US.

"Measuring Source Reduction: Pay as you Throw/Variable Rates as an Example." Skumatz Economic Research Associates (SERA), Seattle, WA USA, 2000.

UK Defra (Dept for Environment, Food and Rural Affairs) "Evaluation of the Household Waste Incentives Pilot Scheme" [www.defra.gov.uk](http://www.defra.gov.uk)

### Highlights

- Collection should be convenient, integrated with the overall waste system, and adaptable.
- Co-collection suited to rural areas, can reduce overhead costs.

### Recyclables

- Weekly collection can be more expensive, but can result in greater diversion
- Bi-weekly collection can be more cost-efficient if householder storage containers are big enough.

### Garbage

- Bi-weekly collection can reduce collection costs, encourage diversion to recycling and organics.

## About Collection Frequency

Adjusting collection frequency is all about optimization – finding the best way to collect the most amount of material using the least amount of time and resources. Unfortunately, there is no ‘catch-all’ solution, as ideal collection systems depends on the size of the municipality, the types of waste material being collected, and how that material is being processed. However, a collection system should have the following characteristics:

- Convenience for the operator and for residents;
- Consideration and integration with a municipality’s existing waste management system (for example, evaluating opposite or co-collection opportunities with different waste streams);
- Adaptability to changes in the existing waste system, such as the inclusion of new materials in the recycling stream; and
- Supported by a communication and outreach program.

Collection frequency is a key component of any waste collection system. It can play a large role in affecting the cost of the collection system and diversion rates. Options for collection for materials are described below.

### Recyclables

An assessment of Blue Box Program Enhancements by KPMG and RW Beck (2007) concluded that programs in Ontario with weekly collection of recyclables and household organics and bi-weekly collection of garbage are the most efficient in terms of the amount of waste diverted. However, programs with bi-weekly collection of recyclable materials where residents had sufficient containers to store materials for two weeks were more-cost effective.

Another option noted by the KPMG/RW Beck report is the collection of fiber and container recyclables on alternate weeks, typically when co-collected with other wastes. Co-collection can be more suitable for areas with low population density. There are a number of advantages to co-collection, such as reducing capital costs by not needing two trucks to cover the same route, and lowering operating costs by avoiding the duplication of non-productive time. To ensure that the MRF is operating optimally in an alternate-week system, while fibers are being collected in one half of the municipality, the other half would be receiving collection of containers.

### Garbage

Municipalities with both organics and recycling programs may choose to reduce collection of garbage from weekly to bi-weekly. Advantages include reducing operating costs and encouraging additional diversion of recyclables and organics. Disadvantages include concerns over odour and space issues relating to storing garbage for two weeks, particularly among families with infants.

### Collection Options and Estimated Costs

An examination of blue box collection costs with respect to collection frequency showed that the average cost per tonne of collecting blue box materials bi-weekly was approximately 7% less than the cost for collecting them every week on an alternating blue box/grey box schedule.

Average Blue Box Collection Costs per Tonne (weekly vs bi-weekly)*	
Collection Frequency	Average Collection Cost (\$ per tonne)
Bi-weekly	\$208.21
Weekly	\$259.73
<b><i>Weekly (with alternating weeks)</i></b>	<b><i>\$224.09</i></b>
<i>Weekly (without alternating weeks)</i>	\$280.70
Difference:	\$15.88 (~7%)
*For WDO defined Rural Collection – South municipalities Source: Waste Diversion Organization 2007	

### Suggested Implementation Steps

- Assess current collection scheme and costs.
- Examine applicable collection options and costs.
- Make recommendation to Council.
- Obtain necessary equipment/contracts.
- Advise customers of any changes to collection services.

The following pages reprint the “Optimization of Operations in Collections and Processing” Fundamental Best Practice as identified in the KPMG Blue Box Program Enhancement and Best Practices Assessment Project Final Report.

The full report is available through  
[www.stewardshipontario.ca/bluebox/eefund/best\\_practices.htm](http://www.stewardshipontario.ca/bluebox/eefund/best_practices.htm)

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### Fundamental Best Practice

## Optimization of Operations in Collections and Processing

### Overview

Optimization of operations is a process of critically assessing collection and processing functions and making changes that have a net positive effect on recovery rates and/or cost. A combination of data-driven, expertise-driven, and heuristic approaches can be used to optimize operations. Where collection and/or processing are outsourced, close collaboration with the contractor, sufficient flexibility in the use of contractor labour and assets, and thorough understanding of cost drivers contribute to optimization of the system.

### Key Benefits and Outcomes

- Collection efficiency means getting more for less—picking up more recyclables using fewer trucks, fewer staff and/or less time. Optimized curbside collection operations maximize the quantity of target materials set out at each stop on collection day and minimize the amount of time required to collect that material, thereby minimizing the unit costs involved.
- Optimized processing operations make full use of the available processing capacity, minimize the amount of manual and mechanical sorting required to produce recyclable products that meet target market specifications, and maximize the quantities of these materials from the incoming feed, while minimizing the amount of out throws, residue and prohibitives associated with the captured material.

### Description and Implementation of Best Practice

Optimization entails evaluation and implementation steps aimed at improving the performance and efficiency of those operations being evaluated. There are basic principles associated with optimization that apply to both collection and processing. Key principles are as follows:

- Have an integrated approach to design and management of operations so as to take advantage of opportunities to share facilities and other resources, such as those associated with P&E program design and implementation, and reduce the costs of the system as a whole
- Pursue the “low hanging fruit” first: options that provide the greatest return on investment with respect to meeting operational performance and efficiency targets set by the jurisdiction (see Best Practice on Monitoring and Evaluation)
- Use existing infrastructure as appropriate prior to establishing additional infrastructure that may duplicate or compete with that already in existence
- Provide for a reasonable degree of redundancy to minimize down time, while avoiding unnecessary duplication of infrastructure. An example of this is to have

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spare collection vehicles or arrange for a neighbouring processing facility to accept material in the event of processing facility down time

- Match the scale and nature of operational infrastructure to the task at hand and use appropriate technology – the right tool for the job
- Balance the use of mechanization with use of labour
- Avoid double handling of materials (e.g., moving materials from place to place within a MRF when conveyors could do the job more cost-effectively)
- Provide incentives to workers and contractors for spawning innovation and continuous improvement. One means of doing this is to offer spot bonuses for ideas that generate significant cost savings
- Use ergonomic, worker friendly equipment and systems, such as sorting conveyors of proper height and width, comfortable safety equipment, and good lighting and air conditioning
- Maintain a flexible design and operational approach to respond to changing needs and circumstances
- Make an appropriate level of capital investment to maximize benefits over the long term at a reasonable payback level
- Utilize a preventative maintenance program by servicing equipment prior to breakdowns instead of fixing it upon breakage, thus reducing downtime
- Address operational issues when they arise by understanding the underlying causes, developing potential solutions, and minimizing adverse impact. An example is to introduce compaction-enabled collection trucks when low material density has been identified as an issue
- Provide appropriate levels of management and supervisory personnel who are trained on optimization techniques and use of Best Practices
- Plan and provide for emergencies, contingencies, and growth

In working to optimize operations, it is important to recognize that other objectives beyond optimization merit focus and attention, such as providing for worker safety and acceptable working conditions, and protecting public health and welfare. Consequently, optimization must be performed in a manner consistent with meeting other such important community objectives.

Additional optimization best practices and considerations specific to curbside collection and processing are provided in separate sections on these topics. Best practices for depot and multi-family recycling programs are also discussed in separate sections so titled.

#### Sources and Links

E&E Fund Project Number 207. York Collection and Processing Optimization Study, 2006

<http://www.stewardshipontario.ca/eefund/projects/benchmark.htm#207>

Efficient Recycling Collection Routing in Pictou County, 2001

<http://www.cogs.ns.ca/planning/projects/plt20014/images/research.pdf>

US Environmental Protection Agency. Getting More for Less: Improving Collection Efficiency, 1999

[www.epa.gov/garbage/coll-eff/r99038.pdf](http://www.epa.gov/garbage/coll-eff/r99038.pdf)

Single Stream Best Practices Manual and Implementation Guide, Susan Kinsella, Conservatree, 2007

<http://conservatree.com/learn/SolidWaste/bestpractices.shtml>

The following pages reprint the “Multi-Municipal Planning Approach to Collection and Processing Recyclables” Fundamental Best Practice as identified in the KPMG Blue Box Program Enhancement and Best Practices Assessment Project Final Report.

The full report is available through  
[www.stewardshipontario.ca/bluebox/eefund/best\\_practices.htm](http://www.stewardshipontario.ca/bluebox/eefund/best_practices.htm)

### Fundamental Best Practice

## Multi-Municipal Planning Approach to Collection and Processing Recyclables

### Overview

A widely-recognized principle of business is that significant efficiencies and economies can be obtained from larger scale activities. The same principle applies to recycling programs. Therefore, it is considered a fundamental Best Practice for municipalities to explore a multi-municipal approach to planning recycling activities. Considerable amount of industry research and data analysis indicates that nearly all municipalities can benefit from a co-operative approach to planning and/or providing recycling services.

### Key Benefits and Outcomes

Many communities have found it advantageous to work co-operatively in providing solid waste management services. Working jointly, municipalities can increase bargaining power with private service providers for collection and processing of recyclables. Pooling resources, such as processing equipment, collection equipment, or facilities, can result in increasing equipment, labour, and/or facility utilization, thereby realizing financial and operational efficiencies.

Co-operation between two or more municipalities is becoming more common as municipalities face increasing budgetary constraints. Co-operative planning can lead to improved performance across virtually all recycling program components, enhancing effectiveness and efficiency in the following areas:

- Economies of scale
- Increased resident participation/satisfaction
- Optimized program funding
- Shared staff/time/costs/skills/equipment
- Improved supplier/contractor relations
- Reduced need for management supervision
- Reduced need for council time and attention
- Increased capacity to adopt new technologies and methods
- Material markets and pricing advantages, yielding higher revenues
- Increased innovation in strategies, services and products
- Shared risk management
- Shared capital requirements

### Description of Best Practice

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While multi-municipal cooperation can yield positive results in all circumstances, its applicability is highest when:

- Municipalities within the region are in need of the same set of services
- Jurisdictions have worked together successfully in the past
- Responsibilities and roles are clearly defined
- There are clear advantages to working cooperatively
- Entry and exit protocols for contractual relationships are clearly defined

A successful multi-municipal planning approach will focus on supporting municipal objectives, including;

#### ***Cost Containment***

Economies of scale can result in dramatic savings for municipalities due to volume discounts; standardized equipment size, features, and specifications; standardized service levels; and promotion and education synergies. For example, a 2006, cooperative collection contract among six municipalities in York Region reportedly resulted in annual Blue Box and waste cost savings of over \$900,000.

#### ***Improved Quality and Productivity***

Municipalities that share some of the workload across a multitude of components of a recycling program can lower their unit cost and develop staff expertise through common resources. This often results in improved quality and consistency of the services delivered and increased staff productivity. A desirable bonus obtained from interaction with knowledgeable staff is an increase in resident satisfaction with the program, which, in turn, results in increased participation and diversion.

#### ***Transferability***

Multi-municipal cooperation can result in greater resident participation and smoother operation of the recycling program. As residents commute and relocate from one community to another, common messages through co-operative promotion and education and common service levels/procedures make it easy for residents to maintain their participation and diversion levels.

Over time, cost reductions will be realized through staff time and promotional savings obtained from less re-education and reduced collection rejections. Contamination levels often decrease and diversion is maintained or increased as a result of the diminished need to educate residents.

#### ***Competitiveness***

Many municipalities struggle to attract bidders for recycling RFP's or tenders. One obvious benefit of multi-municipal planning is to take advantage of the larger tonnage offered under co-operative contracts to attract more bidders, as well as non-local bidders. WDO Datacall statistics confirm that recycling costs are steeply reduced when greater quantities of materials are collected and processed above a 10,000

tonnes per year threshold level. Clearly, the more tonnage that can be combined under a single contract, the more contractors are willing to participate and to pass on savings to municipalities.

The inverse also holds true. A contract that requires half a truck per week to collect is much less likely to attract multiple bidders than a contract that requires five trucks per week.

### **Market Revenue**

Revenues for larger amounts of recyclables often increase because of shipping, storage and handling economies.

Recyclable markets are usually willing to pay better prices for a larger, continuous supply of good quality material. A multi-municipal approach to planning/marketing material may provide some of these benefits.

### **Implementation**

In order to implement this Best Practice, municipalities are advised to follow a seven-step approach outlined below:

- 1 Identify service needs of each potential co-operating jurisdiction
- 2 Identify and communicate advantages to working co-operatively
- 3 Identify and implement communication and working protocols among potential cooperating municipalities (a steering committee or a task group may be required)
- 4 Determine and document clearly how the multi-municipal program will be funded, using financial projections and a business plan
- 5 Identify the governance strategies for providing for accountability, monitoring, and decision-making authority to participating jurisdictions. These may include a utility-type board, a sub-committee of municipal representatives, a municipal corporation, or a combination of the above.
- 6 Identify costs (and cost savings) associated with the co-operative program, using financial projections and business plan from Step 4.
- 7 Test multi-municipal strategies in low-risk circumstances, such as a joint advertising, container purchasing, promotion & education, etc., and build on successes of such efforts

Co-operative recycling activities, more often than not, simply entail establishing good contracts that align with activities and services municipal neighbours are already providing. Communication is the key to engaging in the co-operative planning process.

For example, it is possible to begin a co-operative planning process by synchronizing the expiry date of neighbouring municipal contracts, so that when the next tender is issued, contractors may bid on multiple contracts simultaneously. Municipalities may



or may not have different service levels and features under each contract. Such minimal multi-municipal planning may result in considerable economies of scale for a supplier who is often willing to share a portion of savings with the municipalities in order to win the bid.

Another example is the co-operative purchasing of blue boxes. Since suppliers will almost always offer volume discounts, savings can be obtained simply by coordinating annual blue box (or any other program consumable) purchase requirements.

No cross governance structures, utility boards or joint ventures are required to participate in these or many other types of recycling activities.

### **Potential Challenges and Suggested Solutions**

Municipalities often have reservations about planning activities and services with communities outside their own boundaries. Concerns frequently center on loss of autonomy. Staff and council may be concerned that they do not want to lose control of their program. Suggested solutions to overcome these issues are:

- Explore opportunities for shared decision-making and management authority; and
- Clearly document roles and responsibilities, such that control is not lost, but economies are gained.

Another frequent concern is that services provided are often different in surrounding jurisdictions. Suggested solutions to overcome these issues are:

- Consider some programs that you could work together on. Share educational items, for example, or share model contracts or communication literature that can be adjusted to suit individual programs;
- Consider why programs are different, and if it might be mutually beneficial to join forces, even if it means altering a program; and
- Design contracts and RFP's to provide for different services in different locations.

### **Sources and Links**

There are numerous sources of online information that will offer help with multi-municipal planning activities. Below are some identified source documentation/links for additional information:

Blue Box Assistance Team (A-Team)

<http://www.vubiz.com/V5/Stewardship/bluebox.htm>

Association of Municipal Recycling Coordinators <http://www.amrc.ca>

Stewardship Ontario <http://www.stewardshipontario.ca>

Recyclers' Knowledge Network <http://www.vubiz.com/stewardship/Welcome.asp>

The following pages reprint the “Following Generally Accepted Principles for Effective Procurement and Contract Management” Fundamental Best Practice as identified in the KPMG Blue Box Program Enhancement and Best Practices Assessment Project Final Report.

The full report is available through  
[www.stewardshipontario.ca/bluebox/eefund/best\\_practices.htm](http://www.stewardshipontario.ca/bluebox/eefund/best_practices.htm)

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### Fundamental Best Practice

## Following Generally Accepted Principles for Effective Procurement and Contract Management

### Overview

A vast majority of Ontario Blue Box municipal programs involve the use of contractors for collection and/or processing of recyclables. Since contractor selection and performance in these municipalities has a substantial impact on program design, service delivery, cost, and sustainability, effective practices in procurement and contract management need to be employed.

### Key Benefits and Outcomes

Well designed and executed procurement and contract management processes can yield a number of effectiveness benefits. Specifically, it

- Ensures high quality service to specified requirements
- Offers flexibility to address changing needs
- Provides incentives to maximize participation, tonnage and material revenues
- Provides a proper system (or system component) design that increases diversion at a lower cost
- Opens the door to innovation

Efficiencies that can be gained include:

- Cost savings due to increased competition
- Cost savings due to economies of scale
- Cost savings due to properly structured contract terms

### Description and Implementation of Best Practice

The majority of Ontario Blue Box programs involve some element of contracting of services. It is, therefore, essential to employ effective procurement and contract management processes within these programs to yield positive province-wide diversion and fiscal results.

The goals of good procurement and contract management are to:

- Secure the desired level of services from competent contractors at the lowest possible cost, and
- Create an effective working partnership between contracting parties that continues through the duration of the contract.

Accepted leading practices for effective procurement and contract management to extract the best value for municipal Blue Box contract needs include:

- Planning procurements well in advance of service requirements. Useful life of existing equipment, lead times for replacing this equipment, and lead times for the execution of the procurement process itself all require careful consideration. Failure to plan properly may mean costly maintenance and breakdowns and sub-optimal contracting.
- Investigating and understanding suppliers' markets to understand the players, dynamics, cost drivers, and innovators in order to maximize value when setting procurement strategy. This results in municipal staff becoming informed buyers.
- Involving suppliers (in pre-procurement consultations) to help refine requirements, where own experience is limited, and to leverage innovation and capabilities of experienced suppliers. This results in municipal staff becoming smart buyers.
- Developing a clear definition of services and performance requirements
- Using the appropriate procurement instrument, such as a Tender or an RFP
- Using a competitive procurement process and working to encourage multiple proponents/bidders
- Using a two-envelope bid process (when a Request for Proposal process is appropriate)
- Using a pre-defined (transparent & fair) bid evaluation process
- Using knowledgeable evaluators. This may include a cross-functional team, supplemented with independent experts, as required.
- A partnership-oriented approach to monitoring and managing the contract and contractor to achieve objectives and take mutual advantage of opportunities for improvement

Implementation of an effective procurement and contract management involves a series of sequential steps. These steps are presented below:

### ***Step 1: Precisely define services to be contracted***

This involves developing answers to questions such as:

- Who is the service recipient? Is it one or more municipalities?
- What services are to be provided? What is the nature and type of service (e.g., collection, processing, transportation, marketing of materials, communication and education, program administration and operation)?
- What is the length of contract? For contracts involving the supply of equipment, the best contracts match the lifecycle of the equipment being supplied. If the contract is too short, the contractor must capitalize the equipment over the period of the contract, resulting in less than optimal unit pricing and overall cost. If the contract exceeds the equipment life by a year or more, the contractor will incur new equipment or expensive maintenance costs that must be built in to the price. Current lifecycle expectations for new collection trucks are about 7 years; new materials recovery facility (MRF) equipment 10 -15 years.



Municipalities should also evaluate options prior to proposal/bid process through informal dialogue with potential service providers and other stakeholders. Municipalities should clearly and specifically:

- Examine weaknesses in past agreements and any issues with service
- Review agreements from other communities
- Identify both short- and long-term needs
- Identify where flexibility can be incorporated without leaving too much open to interpretation

Program managers and procurement personnel should provide adequate data and technical specifications for accurate pricing of services. A typical collection contract may include: services to be provided, collection frequency, stream separation and number of streams, volume tonnage and types of material (from recent audited mix), future materials contemplated, number of households/stops per kilometre for collection; areas to be collected/route maps. A processing contract may include: tonnes per hour, product mix, quality measures (e.g., baled material composition thresholds), uptime as a percentage of operating hours, and acceptable residue rate, among other factors.

Staff should also prepare a cost estimate of services requested to inform the procurement process – benchmark to other recent municipal procurement processes for similar services, whenever possible.

### ***Step 2: Determine contractor pool and your market position***

Good results are more likely to come from a minimum of 3 bidders. In rural areas, bargaining power may be improved by bundling services or partnering with other communities to increase attractiveness of potential business. On the other hand, if the service area is too large, as may be the case in urban areas, this can also limit contractors. In this event, it may be desirable to de-bundle services or break-up the contract to allow more, smaller bidders the opportunity to bid on selection or entire system.

The level of financial investment expected may determine the market of suppliers. A high capital investment typically requires a longer contract and implies more risk. Fewer contractors may be capable of bidding.

With respect to recycling collection and processing, the leading practice is to structure the procurement process to allow for separate contracting for collection and processing when feasible. This stimulates competition by encouraging collection contractors, who may not be able to bid on a MRF, to provide good service at competitive prices on the collection process. With this approach, it is most desirable to handle the procurement process for processing in advance of collection, or to specify a MRF location, so that collection service providers will know where the MRF will be located and can structure their proposals/bids accordingly. Quality control concerns when two contractors are involved can be managed contractually with appropriate monitoring, penalties and incentives.

## Example: Components of a good RFP and Contract

- Clearly defined terms
- Detailed description of service(s) to be provided
- Adequate background information and data
- Expectations regarding qualifications and experience
- Detailed performance specifications that address the following:
  - Location of service
  - Regulatory compliance
  - Recyclables (initial & provisions for future)
  - Markets for processed materials
  - Capacity/throughput
  - Vehicle access, operating hours, weighing
  - Residue management and limits
  - Start up schedule
  - Handling of complaints
  - Record keeping and reporting
  - Equipment requirements
  - Public education requirements
- Payment terms
- Incentives/penalties to support increasing performance
- Opportunities for amending scope to address changing circumstances
- Avenues for resolving disagreements - mandatory 3rd party mediation clause
- Clear financial/cost proposal instructions
- Proposal submission instructions
- Description of selection process and evaluation criteria

Municipalities need to develop contract payment terms that align with incentives and desired performance levels. It should be clear and unambiguous how adherence to contract terms and achievement of performance thresholds will be tied to payments for services.

Additionally, it is desirable to obtain separate prices for collection and processing even if under one contract, and to request pricing for the handling of any materials that might be added at some point during the term of the contract.

Finally, a self-assessment process is needed to determine whether your municipal organization is fair and equitable when dealing with contractors. Investing in and protecting your reputation for open, transparent and fair procurement practices will positively influence the pool of available bidders on future contracts.

### **Step 3: Prepare a detailed, unambiguous RFP or Tender**

Programs staff should select the appropriate procurement mechanism. A tender works best when:

- Services can be definitively specified
- All bidders are qualified
- Price is sole deciding factor

A Request for Proposals (RFP) – Works best when:

- Local government is receptive to different approaches to delivering service. This may often yield additional value opportunity
- Price is not sole determining factor in contractor selection

### **Step 4: Employ a fair and transparent contractor selection process**

A healthy competitive market is critical to availability of service choice and better value in procurement. Local service markets become diminished if fair and transparent processes are not used. Service choice, therefore, becomes more limited in the future. Municipalities can influence and encourage competition and more robust supplier markets by employing the following activities:

- Use supplier mailing lists and widespread advertising to solicit interest in your service needs
- Co-operate with nearby municipalities to create joint opportunities that could increase the number of suppliers
- Learn about capabilities/interests of potential contractors in advance by meeting with them
- Consider pre-qualifying bidders
- Hold pre-proposal/bid meeting
- Provide adequate opportunities for questions/answers during proposal/bid development

- Determine detailed evaluation criteria and scoring system to be used
- Clearly describe evaluation criteria in bid documents
- Require and verify references

Potential contractor selection and evaluation criteria include:

- Responsiveness to RFP or Tender
- Qualifications & experience (organization, management), including facility/operational capacity, financial stability, and references
- Technical soundness of response
- Cost
- Innovation

Each criterion must be clearly defined and explained in the documentation. Mandatory and preferred requirements should also be specified.

Evaluate proposals with a qualified team, which may include business unit & technical personnel (or qualified and independent consultants, if necessary), purchasing, and legal representatives. First, evaluate compliance with mandatory requirements on a pass/fail basis. Then, evaluate compliant technical responses on a point scale or on a pass/fail basis. Finally, open the price envelope to evaluate price and value according to the pre-specified evaluation criteria. Document evaluations and final rationale for selection.

Through a well-executed procurement process, the contract will be awarded to the best overall scored proposal (according to the predetermined bid criteria and scoring process). However, if actions or circumstances did not result in proper procurement (such as improper sequence of response component evaluations, failure to come to terms with the winning bidder, failed due diligence processes), the process may need to be redone.

Communicate results to all bidders, including strengths and weaknesses of their proposals. For the winners, this sets the stage for any final negotiations on services. For the losers, it helps them to improve their bids for the next competition, which benefits all parties.

### ***Step 5: Negotiate a partnership-oriented contract***

The final contract negotiation process with the winner (and if not successful, the runner-up) should go smoothly if the procurement was well-managed. Well-prepared RFPs include a comprehensive draft contract and require the supplier to comment on the draft contract in their proposal. The focus should now turn to setting the stage for building a successful business relationship, positioning both parties for success. Specifically, the municipality should:

- Build upon RFP terms and conditions
- Finalize the structure of incentives for improving performance

- Allow flexibility for amending scope to address changing circumstances, including technical or process innovation, means of addressing extraordinary circumstances, such as changes in law, index-based monthly fuel adjustments, index-based annual payment adjustment for inflation (e.g., CPI or PPI with fuel component removed), adjustments for growth, etc.
- Provide avenues for resolving disagreements
- Build in ongoing communication and feedback

***Step 6: Maintain partnership approach in contract administration and monitoring through entire contract term***

Successful relationships require attention and effort in regular maintenance and communication by trained/skilled contract management personnel. To maintain and build on the partnership, municipal staff should:

- Become knowledgeable about factors affecting recovered materials movement and value
- Monitor recycling market prices and trends
- Monitor markets used and revenues received
- Continuously monitor contractor compliance with performance specifications and contract terms. Apply pre-agreed incentives and penalties for performance
- Live up to your side of the relationship, including the flexibility arrangements, to help your contractor be successful in providing your service
- Communicate regularly on pre-agreed schedule and frequency
- Address problems as soon as they arise
- Have a back up plan if the relationship deteriorates or services are jeopardized

**Common pitfalls to avoid**

By avoiding pitfalls, municipalities increase the likelihood of selecting a qualified supplier at a low price and building a lasting relationship with them. The following list includes some of the most common pitfalls in recycling related procurement:

- Not using a competitive process
- Over- or under-specification
- Prescribing the “How of operations” versus focusing on the business, legal & performance requirements
- Micromanaging the contractors operations beyond ensuring business, legal and performance requirements are being met
- Not managing the contractor due to infrequent communication and performance discussions
- Not providing for operational flexibility or for innovation



- Poorly matching equipment life-cycle and maintenance provision to contract length
- Poor procurement planning, including insufficient lead time for procurements and insufficient knowledge of the marketplace
- Poorly defined service requirements and performance standards
- Prohibitive bonds and letters of credit, which unnecessarily reduce competition and add directly to cost
- No service exit strategy or contract language
- Lack of transparency and fair competition
- Allowing a poor procurement to proceed

### Sources and Links

*Recycling Contracting Tips and Tools* training materials developed for State of Pennsylvania, R.W. Beck, February 2006

*Best Practices Review – Contracting and Procurement in the Public Sector*, Minnesota Deputy State Auditor, November 2005

Model collection contracts available under “Tools for Recycling Coordinators.”  
<http://www.mass.gov/dep/recycle/reduce/assistan1.htm>

*Blue Box Residential Recycling Best Practices – A Private Sector Perspective*, A Joint Project of Stewardship Ontario and the Waste Management Association, Guilford and Associates, February 2007

Stewardship Ontario Model Tender Tool

### Highlights

- Municipalities face limitations for regulating ICI waste
- Cost-prohibitive for many municipalities to collect and manage ICI waste on a comprehensive scale
- Various options to foster diversion among business operators include: collection for small ICI generators; education and outreach; and construction and demolition (C&D) recycling.

#### Essex-Windsor Waste Reduction Guide for Business

The EWSWA provides online a guidebook to help support waste reduction and diversion programs in Windsor and Essex County workplaces. Designed for both small and large businesses, the guide provides information on how to assess your waste streams, research recycling markets, develop a recycling program, and more. It also includes a series of fact sheets on materials from aluminum and paper to batteries and electronics. Local case studies are also included.

## About IC&I Diversion

Diverting waste from the Industrial, Commercial and Institutional (IC&I) sector has long been a challenge for Ontario municipalities. While municipalities are responsible for the collection, transfer, diversion and disposal of residential waste, this responsibility does not extend to IC&I waste. Additionally, the amended Ontario Municipal Act, 2001 gives municipalities jurisdiction over users of their municipal waste systems, but not over private, non-municipal waste systems.

### Selected Options for Enhancing IC&I Diversion

- **Extending collection to small IC&I waste generators –** Consideration should be given to extending a user-pay collection service to small IC&I waste generators, for example those in the downtown core. The Cities of Toronto and Ottawa each operate a “Yellow Bag” program, where small businesses pay about \$3 per bag of garbage and receive a base level of recyclables collection (and organics in Toronto). The Ottawa programs sets limits as to the number of bags of garbage and recyclables businesses can set out.

#### Ottawa’s Diversion 2015 IC&I Waste 3R Strategy

The City of Ottawa has prepared a draft strategy for dealing with the City’s IC&I waste, which accounts for approximately 60% to 70% of all waste generated within the City’s borders. It builds upon the City’s recent activities such as material restrictions and differential tipping fees. The strategy proposes establishing a Waste Service Providers Advisory Group, promotion and education activities, the use of financial incentives, requiring mandatory source separation, landfill bans. It emphasizes maintaining a level playing field for IC&I facilities using the City’s services. The goal of the strategy is to increase diversion of ICI waste from 17% to 60% by 2015.

- **Promotion, Education and Outreach –** Municipalities can work with their IC&I communities to ensure they have the information they need to increase diversion and to collaboratively identify home-grown solutions. This may include:
  - Information on what can be recycled and how, and markets
  - Providing assistance with workplace audits, waste reduction plans (as required by O.Reg. 102/94 and O.Reg. 103.94 for some businesses) and training
  - Engaging the ICI community to identify barriers to waste diversion and developing a plan to address them
  - Pilot testing solutions at participating businesses

## Participating Municipalities

### Ontario

- Ottawa
- Toronto
- Halton
- Essex Windsor (Solid Waste Authority)

### Canada

- Halifax Regional Municipality

### C&D Recycling in Halifax, Nova Scotia

The Halifax Regional Municipality has banned C&D waste from its municipal landfill, and has instead licensed two sites to receive C&D waste. The license requires the site operators to meet diversion targets of 75%. The sites use differential tipping fees, with mixed loads costing the most.

## Options for Enhancing ICI Diversion (continued)

- **Construction and Demolition (C&D) Recycling** –Ontario Regulation 103/94 (Industrial, Commercial and Institutional Source Separation Programs) requires that the waste from large construction and demolition projects of one or more buildings with a total floor area of at least 2,000 m<sup>2</sup> be source separated by brick and cement concrete, steel, untreated wood, corrugated cardboard\* and unpainted drywall\*. Municipalities can work with C&D operators and waste haulers to make sure they are aware of the C&D requirements, as well as requiring source separated loads at municipal landfill sites and transfer stations.

Municipalities can also work with the local business community to help find markets for C&D waste. For example, clean wood can be reused or chipped, and brick and concrete can be re-used as aggregate or fill.

*\* Not required in demolition projects.*

Estimated Composition (of ICI waste generated) <sup>†</sup>	Percent (of ICI waste)
Mixed Paper	30%
OCC	15%
Food	11%
Plastics	10%
Ferrous/Non F Metals	12%
Glass	4%

<sup>†</sup> Based on Ontario IC&I composition data (RIS 2005).

## Suggested Implementation Steps

- Consult with IC&I community on their recycling needs.
- Identify largest opportunities for recycling diversion.
- Identify IC&I Diversion program components.
- Design IC&I Diversion program components, including communications plan.
- Consult with stakeholders on programs.
- Launch programs.

The following pages reprint the “Establishing Defined Performance Measures, Including Diversion Targets, Monitoring, and a Continuous Improvement Program” Fundamental Best Practice as identified in the KPMG Blue Box Program Enhancement and Best Practices Assessment Project Final Report.

The full report is available through  
[www.stewardshipontario.ca/bluebox/ee fund/best\\_practices.htm](http://www.stewardshipontario.ca/bluebox/ee fund/best_practices.htm)

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### Fundamental Best Practice

## Establishing Defined Performance Measures, Including Diversion Targets, Monitoring, and a Continuous Improvement Program

### Overview

Proper management of a recycling program includes the monitoring and measurement of the program goals through the establishment of diversion targets and performance objectives. Targets and objectives must be realistic, measurable and relevant. Furthermore, targets and objectives are needed for the individual program components to be evaluated (e.g., curbside collection, depots, processing, promotion and education, etc.) Evaluation facilitates continuous improvement within the recycling program.

### Key Benefits and Outcomes

Effective monitoring and evaluation allows program managers to continuously improve their municipal recycling programs and track progress through the use of targets and performance measures. Specifically, program staff are able to:

- Set objectives and targets for recycling programs that are implemented and evaluated within a defined time period
- Collect specific program data to evaluate the effectiveness of recycling programs before and after implementation
- Make decisions on recycling programs based on a detailed analysis of diversion rates and associated costs
- Evaluate program objectives against the pre-defined targets
- Tailor data collected to match the specific goal, avoiding the collection of data that are not pertinent

### Description and Implementation of Best Practice

The monitoring and evaluation program should be developed with appropriate resources to gather and evaluate the required information. The collected data must be relevant to the recycling program and the target set must be measurable. The effectiveness of the recycling program should be evaluated and goals should be set for continuous improvement. Specific steps for implementation are detailed below.

#### Step 1: Establishing Program Objectives

Objectives and targets must be reasonably established by the municipality to meet the requirements of the specific program to which they will apply. The desired outcomes and the associated benefits to the program should be defined. The targets must be measurable and achievable, but challenging, and lead to increased benefits. An example of setting program objectives and targets would be the setting



of a diversion target, establishing steps to meet the target, and then monitoring the diversion rate to evaluate if the target is being met. Ongoing assessments of the targets and objectives must be made to ensure that the recycling program goals are being met.

### **Step 2: Baseline Measurements and Waste Audits**

In evaluating program performance, it is often desirable to first establish a baseline. This baseline will be specific to the program under consideration and can be used to compare the future performance of the program. Data collected as part of the baseline must be appropriately suited to accomplish the objectives. Understanding the specific waste stream that the program is targeting is a critical first step. This is generally accomplished through the completion of waste audits. Waste audits determine the composition of waste being generated, can measure the effectiveness of existing programs and can identify opportunities for improvements in the waste management program. Please refer to the [Step by Step: Waste Audits](#) link in the source documentation reference section for this fundamental leading practice.

### **Step 3: Defining Data Requirements**

Best practices associated with program evaluation are aimed at tracking program effectiveness (how successful has the program been in achieving its target goals and objectives) as well as efficiency (the extent to which the program accomplished its objectives with minimal use of resources).

In defining data requirements, the following questions should be answered:

- Will the measure track program outcomes as opposed to just outputs and inputs?
- Is the measure for absolute impacts or relative impacts?
- Can information pertaining to the measure be gathered systematically, consistently, and objectively?
- Is there sufficient time and resources to gather, organize and interpret that information in order to tell a meaningful story to the evaluation audience?
- Will the intended audiences perceive the measure as credible?
- Will the knowledge gained through use of the measure be useful (e.g., for program improvement, adjustment in funding)?

Types of data collected can consist of set-out rate, capture rate, participation rate, residue rate, material tonnages, cost allocation, recyclable market statistics, MRF residue audits, MRF productivity statistics, staff requirements, facility requirements, supplies (i.e., blue boxes), and equipment. Selected definitions are provided in the last section of this Best Practice narrative.

### **Step 4: Data Collection and Management**

Next determine how the data will be gathered and stored. Different data collection methods include mechanical (scales), surveys, focus groups, visually, etc. If

appropriate develop a database to store the data in a secure location. Throughout the monitoring phase evaluate the data being collected to ensure that they are relevant to measuring the desired outcome, and accurate. Monitor the steps as part of the target and if required, adjust the steps and target as data is evaluated.

### **Step 5: Assessment and Reporting**

Compile the data and analyze it by comparing to the baseline information. Assess the monitoring and evaluation program against the desired and measurable outcome. Report on the outcome of the objectives and targets. Identify and analyze the factors that influence your program's ability to meet established goals. Overall, use the findings to identify barriers to recycling, assess program performance relative to the objectives, assess MRF performance, and improve the effectiveness of the recycling program. Once a goal is met, continuously build and improve on future goals for the program.

### **Step 6: Reviewing Goals and Objectives**

Evaluation for continuous improvement is an ongoing activity. Program performance must be monitored at appropriate intervals, often determined by the needs of individual program components. The effectiveness of prior evaluation methods should also be evaluated, so that this program component, too, can be improved upon.

### **Select Definitions**

**Capture Rate** – The capture rate is the amount of recyclables set out for recycling divided by the total amount of recyclables set out for recycling plus recyclables left in the garbage. Capture rates can also be compared for each material type.

**Participation Rate** – The participation rate is typically defined as the percentage of households on a curbside collection route who set out recyclables at least once in a consecutive four week period. It is different from Set-Out Rate (see below), as it measures the percentage of residents participating in the program in general, not necessarily on every given collection day (some households may not generate enough recyclables to set-out the Blue Box on every collection day).

**Residue Rate** – The percent of material in a recycling stream that is rejected during processing.

**Set-Out Rate** – Percentage of households on a curbside collection route setting out recyclables on the day of collection. As a percent the set-out rate is the # of households setting out recycling on collection day divided by the total number of households available to set out material.

**Waste Audit** – A formal, structured process used to quantify the amount and type of waste including recyclables being generated.

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#### Source and Links

Stewardship Ontario's Plan Your Own Waste Audit webpage:

[http://www.stewardshipontario.ca/eefund/projects/audits/waste\\_audit\\_own.htm](http://www.stewardshipontario.ca/eefund/projects/audits/waste_audit_own.htm)

E&E Project #105 – Protocol for MRF Residual Sampling April, 2006:

[http://www.stewardshipontario.ca/pdf/eefund/reports/105/105\\_tech\\_memo\\_2.pdf](http://www.stewardshipontario.ca/pdf/eefund/reports/105/105_tech_memo_2.pdf)

E&E Project #164 – Markets Help Desk (see Appendix C: Protocols and Procedures for Conducting Audits at the PIWMF)

[http://www.stewardshipontario.ca/pdf/eefund/reports/164/164\\_final\\_report.pdf](http://www.stewardshipontario.ca/pdf/eefund/reports/164/164_final_report.pdf)

California Division of Recycling Project Evaluation Tips:

[http://www.consrv.ca.gov/DOR/grants/grant\\_seekers/ProEval.htm](http://www.consrv.ca.gov/DOR/grants/grant_seekers/ProEval.htm)

Evaluation of Recycling Programs, East Central Iowa Council of Governments:

<http://www.iowadnr.com/waste/pubs/files/ecicogfinal.pdf>

EPA Measuring Recycling A Guide for State and Local Governments:

<http://www.epa.gov/recyclable.measure/download.htm>

Step by Step: Waste Audits

[http://www.wme.com.au/magazine/downloads/WasteAudit\\_dec2002.pdf](http://www.wme.com.au/magazine/downloads/WasteAudit_dec2002.pdf)

## Appendix C: About E&E (Efficiency & Effectiveness) Factors

The Waste Diversion Ontario (WDO) Efficiency and Effectiveness (E&E) Factors for each municipality play a key role in determining how much funding a municipality will receive from WDO. For instance, the 2011 Funding Distribution Methodology distributes cash payments to municipalities as follows:

- 15% based on responses to 2009 Datacall Best Practice Questions;
- 40% based on program performance measured by E&E factors; and
- 45% based on net cost.

The E&E Factor for a municipality is calculated based on net program cost, the amount of Blue Box materials marketed, and the proportion of Blue Box material that is recovered in the municipality. Specifically:

- The **efficiency** of an individual recycling program is measured by dividing the net program cost (gross cost minus gross revenue) by the tonnes of Blue Box material marketed (in effect, the net cost per tonne of the Blue Box program); and
- **Effectiveness** is measured by dividing the quantity of Blue Box material marketed by the quantity of Blue Box material available in the total waste stream (i.e., the proportion of available Blue Box material recovered from the waste stream).

The net program cost and the tonnes of Blue Box material marketed for a given municipality are based on the information provided by the municipality in its completed WDO datacall. Estimates of available Blue Box material in communities' waste streams are based on a series of waste audits conducted between 2005 and 2007 by the Stewardship Ontario E&E Fund Audit Program in municipalities across Ontario. To date, 52 single-family and 27 multi-family waste audits have been completed in 16 partner municipalities across Ontario. Together, these audits have analyzed garbage, Blue Box material and organics from over 1,400 single-family households and 70 multi-family buildings during four different times of the year. For more information on Stewardship Ontario's E&E Fund Audit Program, visit

[www.stewardshipontario.ca/bluebox/cefund/projects/audits/waste\\_audit.htm](http://www.stewardshipontario.ca/bluebox/cefund/projects/audits/waste_audit.htm).

The E&E Factor is then calculated expressed by dividing its efficiency (net cost per tonne) with its effectiveness (percent of materials recovered), as shown below:

$$\text{E\&E Factor} = \text{Net Cost per Tonne} \div \text{Percent Recovery}$$

Programs with lower E&E Factors are viewed to be performing more efficient and effectively. For more information on E&E Factors, visit the WDO's Blue Box Waste Municipal Funding webpage ([www.wdo.ca/content/?path=page80+item35760](http://www.wdo.ca/content/?path=page80+item35760)), which lists the municipal E&E Factors and shows how they were calculated.