



City of Owen Sound

Planning for Sustainability: Long Term Waste
Management Plan
2007-2031

August 2007



This report was prepared by Lura Consulting in association with Trow Consulting Engineers Limited, Golder Associates and 2cg Inc. For more information, please contact:

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About Owen Sound's Sustainable Waste Management Plan

2007

Owen Sound's new Sustainable Waste Management Plan charts a course for the next 25 years. It has been developed by our Consulting Team and informed by the guidance and advice of the City's Environmental and Waste Advisory Committee (Chaired by Councillor Bill Twaddle), staff member Chris Hughes, Environmental Superintendent, and representatives of the Owen Sound community who attended two workshops.

The Plan incorporates the principles of a sustainable community, and is designed to "meet the needs of the present without compromising the ability of the future to meet its own needs". This plan reflects the balance and integration between the environmental, economic and social values of the Owen Sound community.

The Plan combines technical work with community input. It is accompanied by a number of background documents, including:

- Project Charter – October 2006 – Lura Consulting
- City of Owen Sound – Facility and Service Review – December 2006, Lura Consulting
- City of Owen Sound – Waste Characterization – December 2006, Lura Consulting
- City of Owen Sound – Residential Waste Management Baseline Survey – November 2006, Lura Consulting
- City of Owen Sound – SSO Composting Options – February 2007, 2cg and Golder Associates
- City of Owen Sound – Disposal Options – February 2007, Trow Consulting Engineers Limited
- City of Owen Sound – Report on the Public Participation Program - Lura Consulting, March 2007.

The Plan is an iterative document, and can be monitored annually and formally updated every five years.

EXECUTIVE SUMMARY

In 2006, the City of Owen Sound won the Recycling Council of Ontario's prestigious Platinum Award for achieving 55% diversion of recyclable materials and organic wastes from landfill.

To build on this remarkable accomplishment, the City of Owen Sound wishes to move towards sustainability by achieving maximum waste diversion and providing a long-term disposal solution for the residual wastes.

As a first course of action, in September 2006, the City embarked upon the development of **"Planning for Sustainability: Owen Sound's Long Term Waste Management Plan"**. The Plan provides a comprehensive waste minimization program – with the potential to achieve up to 70% waste diversion by 2015, and identifies reliable alternatives for residual waste disposal. It also sets out an implementation and continual improvement framework for the future. The Plan was developed by Lura Consulting, along with a team of technical consultants comprising 2cg Inc., Golder Associates and Trow Consulting Engineers Limited. Input and advice was received from the City's Environmental and Waste Advisory Committee, Staff, and members of the public who participated both through a survey and at two public workshops.

1.0 Current Situation

The City of Owen Sound is responsible for providing waste management services to its residents. The City currently provides a diverse range of residential, commercial, industrial and institutional waste diversion and management programs.

Residential waste minimization programs. These include comprehensive waste reduction and re-use, recycling, backyard home composting, a leaf and yard waste composting facility, and household special waste recovery. Recycling programs for electronic equipment, polystyrene, Styrofoam™, metal and tires are also provided. Curbside collection is offered for recyclables and garbage. The system is cost effective, performs well, and residents have a high level of satisfaction with the program.

Residential waste disposal, user pay and bag limits. Through a user pay program and bag limits, the quantity of residual waste has declined since 1999. Residual waste is taken to a privately owned Transfer Station in Owen Sound and exported to the USA.

Industrial, Commercial and Institutional Programs. The City has implemented a by-law restricting recyclables going to landfill. Along with waste audit, signage and communications advice, the City encourages this sector to minimize wastes.

Waste Characterization and Future Waste Generation

Planning for sustainable, long-term waste management program relies on sound waste characterization and population data. Since Owen Sound has not conducted a waste audit, the Study utilized other similar communities in Canada to estimate the characteristics of the domestic and IC&I waste streams. Population is expected to increase from 22,000 residents in 2005, to over

27,000 residents in 2030. Waste generation is expected to remain constant, at 1.1 tonnes/household/year¹.

Performance of Existing System

Owen Sound's current waste management system is one of the most comprehensive in Canada. The public indicated a high level of satisfaction with the City's diverse programs. In comparison to other Ontario and Canadian programs, the programs offered are highly cost effective, convenient, effective and have a great deal of community support.

2.0 Vision and Goals for Future Waste Management in Owen Sound

The following **Vision and Goals** were developed by the community and have been used to establish the basis for Owen Sound's future waste management system.

VISION FOR SUSTAINABLE WASTE MANAGEMENT IN OWEN SOUND
<p>By the year 2031, Owen Sound's waste management program will be affordable, self-reliant and environmentally sound. Through active pursuit of waste elimination, the community's highly successful and innovative programs have resulted in an educated population resulting in reduced consumption and waste generation from production through to disposal.</p> <p>Partnerships will be created with all levels of government, community organizations and businesses ensuring shared responsibility and stewardship over post-consumer resources.</p> <p>The program will be accessible and supported by all who live and work within the community.</p>

The following goals have been established to provide the basis for a set of measurable targets, that, if achieved, should enable the community's vision to be realized.

¹ Numbers include domestic and IC&I waste.

GOALS	
General Goals	
<ul style="list-style-type: none"> ❑ The City will work with all levels of government to promote producer-responsibility in the reduction of waste in industrial processes. ❑ The waste management system will achieve and exceed the provincial waste diversion target of 60%. ❑ Homes, businesses and institutions will be guided by waste reduction principles in their purchasing decisions. ❑ The system will have the least possible negative impact on the natural environment. ❑ The system will be affordable and fiscally responsible. ❑ The system will be user-friendly, providing the most effective method of collecting, recovering, and reusing the material resources produced and consumed by our community (recycling, composting). ❑ The community will be aware of the impact of hazardous waste on our health and environment. ❑ The City will work with neighbouring municipalities and other government agencies, businesses and organizations to maximize the benefits of waste management system components. ❑ The city will promote green industry. ❑ The Long Term Waste Management Plan will be compatible with, and contribute to the achievement a Sustainable Community Plan. ❑ The program’s performance will be monitored annually. ❑ The City will encourage innovation and continual improvement of its waste management system. 	
Community Goals	
<ul style="list-style-type: none"> ❑ Waste reduction and re-use behaviours will become part of our way of life. ❑ Residents will actively participate in curbside organic and recycling programs. ❑ In program delivery, the City will promote collaboration with other levels of government, businesses, and institutions where appropriate. ❑ Community participation will be encouraged in developing supporting policies and programs. ❑ 	
Economic Prosperity Goals	
<ul style="list-style-type: none"> ❑ The City’s waste management system will be affordable and cost-effective. ❑ Economic incentives will be utilized to encourage maximum participation. ❑ Economic development will be stimulated through attracting green industry and businesses to the City. 	
Natural Environment Protection Goals	
<ul style="list-style-type: none"> ❑ The City’s waste management system will minimize the environmental impact and contribute to the overall reduction of the City’s ecological footprint. 	

In summary, Owen Sound has demonstrated a strong commitment to waste elimination through its existing practices and expressed a future desire to continue to work towards this goal.

3.0 Recommended Waste Management System

Identification and Evaluation of System Options

A number of options were considered for Owen Sound's future waste management system. They included various approaches to:

- ❑ Waste Reduction, Re-Use and Recycling through community leadership, policy development and program implementation;
- ❑ Source separated organics, through curbside collection and processing; and,
- ❑ Waste disposal options including pre-processing and stabilization, thermal processes and landfill disposal.

The consulting team developed an evaluation approach and consulted with the City and the community when conducting the evaluation. The evaluation included the following general criteria groups:

- ❑ Cost and affordability;
- ❑ Environmental effects; and
- ❑ Social impact and acceptability.

Evaluation Results

The recommended waste management system for Owen Sound consists of two-phases: 1) Achieving 60% waste diversion by 2010, and 2) Achieving 70%+ by 2015. The approach will provide the opportunity to:

- ❑ Obtain certainty over waste composition and quantities;
- ❑ Implement and determine the success of waste reduction measures;
- ❑ Obtain funding for innovative programs and determine appropriate staffing;
- ❑ Explore partnerships with the County and neighbouring municipalities for various reliable disposal opportunities;
- ❑ Attract green businesses;
- ❑ Explore alternative business models for managing and financing waste management programs; and,
- ❑ Measure performance.

The 60%+ Waste Diversion Program (2008-2010) includes:

- ❑ Continue with political leadership on the international, national and provincial stage to encourage packaging reductions, organic bans and other policy tools;
- ❑ Incorporate waste management policies in the City's Strategic Plan, enhance waste minimization and environmental policy at City facilities;
- ❑ Incorporate the long term waste management plan into any future Sustainable Community Plan;
- ❑ Conduct a waste audit to more accurately determine the quantities and characteristics of the waste to be managed (including domestic and IC&I generators);

- ❑ Consider reducing the garbage bag limit from 3 to 2 once enhanced waste diversion programs are in place;
- ❑ Continue and enhance the City's Household Hazardous and Special Wastes program;
- ❑ Enhance waste reduction through:
 - Encouraging residents to increase backyard home composting;
 - Partnering with local organizations for re-use and reduction programs; identify ambassadors to promote waste reduction and monitor achievements;
 - Continue with Goods Exchange programs; develop re-use facilities, develop partnerships to promote electronic goods exchanges, such as "Freecycle™" and www.iWasteNot.com;
- ❑ Enhance waste recycling through:
 - Promoting recovery of plastics, paper, aluminum containers, foil and drinking boxes;
 - Promoting recovery of discarded electronics, polystyrene, tires and metals at the depot;
- ❑ Consider expansion of the current Leaf and Yard waste composting program, to include:
 - Evaluating the feasibility of collecting and processing leaf, yard and food wastes (SSO);
 - Determine partnership potential with County and neighbouring municipalities;
- ❑ If feasible, move forward with siting and regulatory approvals for a SSO facility;
- ❑ Develop a professional, comprehensive education and communications program including community-based social marketing techniques to encourage community participation in the enhanced programs;
- ❑ Residual waste management plans should provide certainty that Owen Sound will have an environmentally sound location for disposal of its wastes. The Plan outlines an approach to ensure these certainties through:
 - Exploring, with both the private and the public sector, the business case for both thermal and land disposal of residuals;
 - Exploring collaboration potential with local/regional partners for the identification of a local/regional landfill site; and
 - Implementing a contingency plan for disposal should the US border close and the current contractor be unable to handle Owen Sound's residual wastes.

The net operating cost for this system, including capitalizing of the SSO facility but exclusive of planning, approvals and waste auditing costs, is \$96.85/tonne. This compares favourably with the existing net operating cost of \$90.58 per tonne.

The 70%+ Waste Diversion Program

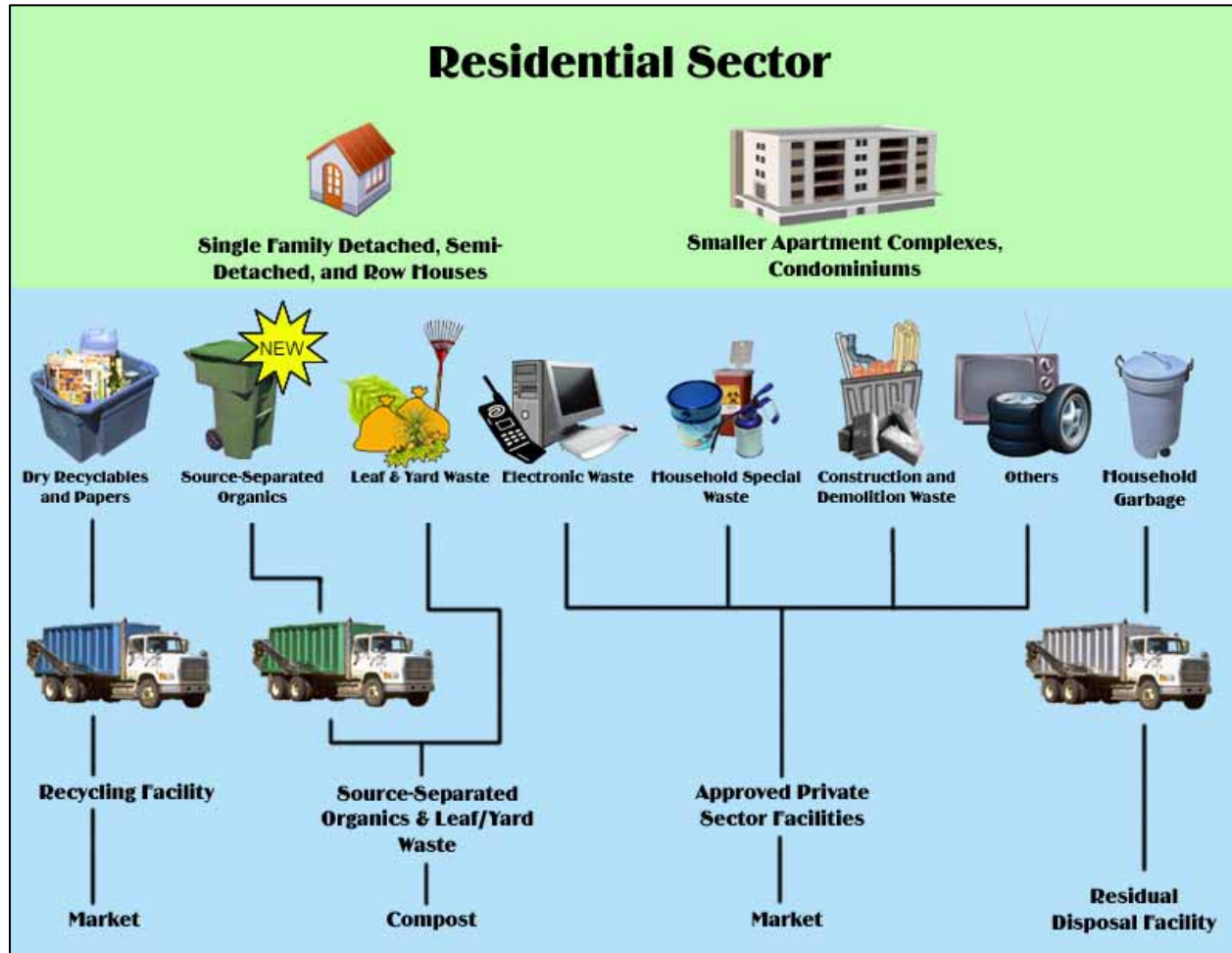
Subject to performance of the 60% program that will be measured over the next 3 years, the 70%+ system relies on the addition of the diversion of construction and demolition waste to a private sector facility. To encourage this, a construction and demolition materials ban should be put in place to enable planning and development time. Additional funds will be required to promote this ban.

It is anticipated that additional materials, such as plastic bags, will be added to the recyclable materials stream and that improvements will be realized in both backyard home composting and the SSO program, enabling the City to achieve maximum diversion.

The operational costs for this system shows a reduction to \$93.67 per tonne.

Over time, the community of Owen Sound can continue to shift towards implementing a “conservation culture”. This culture will contribute to other City initiatives such as energy conservation, transit and transportation, recreation and land use, water and waste water, and air quality.

The residential maximum waste diversion system is illustrated below.



4.0 Plan Implementation

Successful plan implementation will require an analysis of management options and alternative systems delivery to ensure the best value approach is taken. It involves expanding program delivery capacity through potential partnering with area municipalities and the County, as well as diverse groups such as Georgian College, non-government organizations such as Green Owen Sound, Salvation Army, and the private sector.

A number of funding opportunities are available, and Owen Sound should take advantage of Waste Diversion Ontario E & E Funding, and the Federation of Canadian Municipalities’ Sustainable

Community Funding for a number of these initiatives. Consideration could be given to combining funding applications with other sustainable development initiatives promoted by the City.

Community Engagement is a crucial part of the success of the waste reduction, re-use, recycling and composting components of this plan. The Plan sets out a framework for developing a multi-stakeholder committee to assist the City with this Plan's implementation.

Green economic development is a foundation stone of Owen Sound's Vision and Goals. As such, every opportunity should be identified and promoted to encourage local green businesses to benefit from this Plan's implementation.

Monitoring and continual improvement should be performed, with the City reporting progress on an annual basis.

An implementation and funding plan should be prepared upon approval of "Planning for Sustainability: Long Term Waste Management Plan", but the City of Owen Sound Council.

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1.0 INTRODUCING THE SUSTAINABLE WASTE MANAGEMENT PLAN

1.1 Background and Purpose

The City of Owen Sound is located on the southwestern shore of Georgian Bay, on the Niagara Escarpment. With a population of 22,000, the City was named one of five Cultural Capitals of Canada in 2004. A picturesque harbour city, Owen Sound is the hub of Grey County and the Bruce Peninsula, with deep cultural and historical roots.

Over the past decade, the City and neighbouring municipalities in Grey County have attempted to develop a collaborative waste disposal system to manage wastes locally, but this did not lead to success.

Under the *Municipal Act, 2001*, the City of Owen Sound has the responsibility to plan for and manage municipally-generated solid waste within its boundaries. With the lack of access to neighbouring disposal sites, Owen Sound is currently exporting its residual wastes to a landfill site in Michigan, under a 10-year contract with Miller Waste Systems (2005-2015). Relying on exporting Owen Sound's waste as a disposal solution has its challenges, as the existence of viable disposal options is subject to external political and regulatory factors outside of the City's control. Establishing local landfill disposal facilities can be contentious and can take five or more years to achieve approvals.

City Council has decided that much more emphasis needs to be put on reducing and diverting wastes from disposal. Based on best practices in other communities in Canada and elsewhere, upwards of 60% of the total municipal waste generated within City boundaries can be diverted from disposal, through waste reduction at source and improving the capture rate of both recyclable and compostable materials.

In August 2005, the City of Owen Sound committed to "give high priority to adopting a comprehensive Waste Management Strategy". In 2006, Council directed that a comprehensive waste management planning process, involving community participation and technical studies, be undertaken to assess the potential feasibility of this approach.

"Planning for Sustainability: Long Term Waste Management Plan" is the result of this work. The Plan focuses on the minimization and management of household solid wastes.

1.2 What is Sustainability? How Does Waste Management Fit Within a "Sustainable Owen Sound"?

Over the past two decades, the notion of "sustainable development", first introduced by The World Commission on the Environment, has evolved into the desire of many of Canada's municipalities to become "sustainable" communities. These cities are taking steps to enhance their economic, social and environmental viability. They implement decisions that balance these factors within the cultural and political context of their communities. These cities take into account the impact that their

policy, planning and development decisions make on their community's "ecological footprint"². The City of Owen Sound is one such community.

The City's commitment to community sustainability is documented in a number of initiatives within its "Strategic Plan for the Corporation of the City of Owen Sound"³:

Mission Statement

The City of Owen Sound governs and advocates on behalf of all citizens by providing infrastructure and services **which respect the environment and allow individuals and businesses to prosper.**

Themes

The City should commit itself to the principles of **effective environmental management** in all aspects of service delivery.

Initiatives

The City should be governed by the **principles of sustainable development** and planned growth in retaining long-term lifestyle and economic opportunities.

The management and disposal of wastes that each one of us generates affects the sustainability of our environment in a number of ways, including:

- ❑ One-time use of valuable renewable and non-renewable resources;
- ❑ Consumption of non-renewable energy sources;
- ❑ Impacts on the transportation network – through long-distance haulage, traffic, congestion and air emissions;
- ❑ Potential environmental, economic and social effects of waste disposal including possible water contamination, gas emissions (contributing to global climate change), and potential lost revenue from recyclables;
- ❑ The cost to the taxpayer of collection, processing and disposal of wastes; and,
- ❑ Lost green-economic opportunities.

The more waste that is generated, the more that these issues can affect the economic, social and environmental prosperity of the City. The City has taken on the challenge of viewing its current waste management system through the "sustainability" lens.

² An ecological footprint is the calculation of the amount of productive land and water a community needs to support what it needs and what it discards.

³ August 8, 2005

1.3 Why do we need a Sustainable Waste Management Plan?

Waste generation in the City of Owen Sound is approximately 1.0 metric tonne per household, slightly above the national average of 0.971 kg (Statistics Canada, 2002). Residents and apartment dwellers can separate their waste into two general streams: the recyclable stream (destined for processing into “new” materials) and the garbage stream (destined for disposal). In 2005, a total of 9,935 metric tonnes of residential recyclable materials, yard wastes and garbage was managed by the City of Owen Sound.

Owen Sound has one of the most comprehensive recycling programs in the country. In 2006, the City received the prestigious Recycling Council of Ontario’s “Platinum” award for achieving 55% diversion of its residential solid waste from landfill.

Notwithstanding this impressive performance, almost half of Owen Sound’s waste is being transported long distances to Michigan, USA. Managing large quantities of wastes in this fashion is unsustainable in the long-term for two reasons:

- ❑ Lack of certainty through reliance on external, export disposal solutions - the border to Michigan State from Ontario will be closed to waste shipments in 2010; and,
- ❑ The City is losing opportunities to maximize the environmental and economic benefits of post-consumer wastes through improved waste diversion programs such as beneficial re-use of source separated organics, achieving waste reduction through behaviour change programs, and re-use of materials.

1.4 How the Plan was Developed

The City’s Environmental and Waste Advisory Committee, together with a Study Team led by Lura Consulting (in association with Trow, Golder and 2cg Inc.) followed five steps in completing this plan:

- ❑ Understanding and Assessing the Current Waste Management System;
- ❑ Developing a Vision and Goals for Future Waste Management In Owen Sound;
- ❑ Understanding and Assessing the Options ;
- ❑ Selecting Waste Management System Components; and
- ❑ Preparing the Plan.

The community participated in the process through a public survey and two interactive workshops. A report from the Public Consultation Program is attached in Appendix A. Input from the public has been incorporated throughout this report.

2.0 UNDERSTANDING AND ASSESSING THE CURRENT WASTE MANAGEMENT SYSTEM

Before embarking on the planning process for Owen Sound's long-term future waste management plan it was necessary to understand and assess the performance of the current waste management system and its competencies. To achieve this objective, the Study Team conducted a "Facility and Service Review" at the outset of the study to determine the effectiveness and performance of Owen Sound's existing waste management system. The methodology for conducting this review included:

- ❑ Data collection and public survey;
- ❑ Analysis of results; and,
- ❑ Consideration of Opportunities for Improvement.

Each component of the current waste management system was assessed from the following perspectives:

- ❑ Performance and Capture rates;
- ❑ Participation by residents;
- ❑ Tonnages diverted or disposed;
- ❑ Cost;
- ❑ Opportunities for improvement; and
- ❑ Benchmarking Owen Sound's program against other similar programs.

The results are summarized below. For the full report, please see Appendix B – Facility and Service Review Lura Consulting, December 2006, and Appendix C – Residential Waste Management Baseline Survey –Lura Consulting, November 2006.

2.1 Description of Owen Sound's Existing System

The current system comprises a comprehensive set of residential and industrial, commercial and institutional (IC&I) programs.

Domestic Programs

The domestic programs currently operating within Owen Sound's existing waste management system include:

- ❑ **Waste reduction** (including backyard home composting and grasscycling);
- ❑ **Recycling and garbage collection** at the curb;
- ❑ **Transfer Station** (for recycling, electronics, Household special wastes (HSW), white goods, tires, scrap metal and garbage);
- ❑ **Leaf, yard and brush composting facility;**
- ❑ **Recycling processing and marketing;** and,
- ❑ **Waste transfer** to processing and landfill facilities.

The program is supported by a communications and education program that encourages waste reduction and recycling. The program also promotes consumer use of the City's leaf and yard waste facilities.

Industrial, Commercial and Institutional Sector Programs

The City is not legally responsible for providing waste management services to this sector. The City collects recyclables and waste from a portion of the commercial sector, and the balance is privately contracted through individual arrangements between businesses and Miller Waste Services. Recyclables are processed at Miller's Material Recycling Facility in Owen Sound and waste is taken to the Transfer Station and hauled to Michigan for disposal.

2.1.1 Domestic Waste Programs

The following discussion describes the waste management programs available in the City today followed by an assessment of their performance.

Waste Reduction and Re-Use

The City employs a number of financial and regulatory instruments in order to reduce waste. These include a user pay system and material and waste disposal bans that encourage and mandate waste diversion. Other waste reduction initiatives include:

- Consumer awareness programs to encourage residents to reduce their consumption of waste (e.g. using re-usable bags and containers, purchasing goods in bulk, buying less packaging);
- Two Goods Exchange Days per year, where residents set out their re-usable items at the curb for scavenging; and,
- There are a number of programs operated within the City by other organizations, such as Salvation Army, Freecycle™ (a free computerized waste exchange program), and a community re-use center.

When the user pay system was implemented in July of 1999, the quantity of waste collected at the curb dropped significantly. The waste collected curbside in 2000, the first full year of the bag tag program, was 25% less than in 1998, the last full year without any user pay component to garbage collection.

There is no reliable data on the performance of the waste reduction and re-use program at the current time.

Recycling

The City's domestic recycling program collects over 30 types of material, making it one of the most comprehensive programs in Ontario. Bottles and cans are sorted in a blue box, paper sorted in a plastic bag, and cartons, paperboard and kraft paper are sorted in a third stream. The material is collected bi-weekly and processed by Miller Waste Systems.

Residents in apartment buildings have access to an extensive recycling program operated by the City, with material sorted into wheeled containers. Miller Waste Systems collects the materials on behalf of the City.

In addition, all residents can take recyclable materials to the Transfer Station, where they can also take polystyrene, end-of-life electronics, white goods, scrap metal, tires and other materials for recycling. The table below lists the types of materials that are collected at the curb through the City's recycling program.

**Table 1
Recyclable Materials Collected**

Metal	
<ul style="list-style-type: none"> • Food tins and pop cans • Steel paint cans • Aerosol cans • Aluminum pie plates & foil • Metal Pots & Pans, cutlery and kitchen utensils 	
Plastic	
<ul style="list-style-type: none"> • #1 PETE plastic containers & trays • #2 HDPE screw-top plastic bottles (except motor oil and 5-gallon pails) • # 3 V or PVC plastic bottles • # 4 LDPE plastic bottles • # 5 PP plastic bottles, tubs, lids and bottle caps • # 7 OTHER plastic bottles • Tupperware 	
Glass bottles & jars	
Paper	
<ul style="list-style-type: none"> • Newspapers and inserts • Magazines • Catalogues • Office paper • Construction paper • Envelopes (with the plastic windows removed) • Paperback books • Telephone books 	<ul style="list-style-type: none"> • Drinking boxes • Milk and juice cartons • Frozen food cartons • Wax & plastic coated paper cups • Paper bags • Cereal, detergent, tissue boxes, etc • Paper egg cartons • Greeting cards • Gift wrap

Program Assessment

- The program is successful with 94% of residents reporting participation and recycling paper, cans, bottles, and cardboard;
- The City diverts 20% of its waste through its recycling program;
- The program captures approximately 60% of available materials;
- Recycling tonnages have risen 55% between 2000 and 2005;

- The program has tremendous support from its users. Over half of surveyed residents reported that it is a “great program”;
- The capture rates of some materials are quite low, such as aluminum foil, and drinking boxes; and,
- Net cost of the program, after revenue from sale of material but before provincial grants are factored in, is \$88.45 per tonne. This compares favourably with the provincial average, where net costs range from \$88.00 to \$108.00 per tonne. These costs are expected to rise to reflect recent changes to the proportion of recyclables and other contractual arrangements.

Backyard Composting

The City provides educational guidance and sells kitchen collectors and subsidized backyard composters to encourage backyard composting.

Program Assessment

- The rate of capture for food and vegetable waste as managed at home is unknown, but using Waste Diversion Ontario (WDO) criteria, the City estimated backyard composting diversion to be 459 tonnes in 2005;
- 47% of residents reported using a backyard home composter. This number is higher than average, possibly due to the bag tag program and the subsidy;
- Since 1998, over 1,400 composters have been sold (representing approximately 15% of households); and,
- The City provides a \$15.00 subsidy per unit, and sells kitchen collectors at \$5.00 each.

Leaf and Yard Waste

The City operates a central leaf and yard waste composting facility that is open daily and accepts grass, leaves, branches, weeds and many other yard waste materials. The facility is not staffed and is open 7 days per week dawn until dusk for the convenience of residents. Residents take compostable material to the facility, as there is no curbside collection. The commercial sector also uses the facility, particularly for brush and stumps.

Program Assessment

- 55% of residents reported using the composting site; 37% do not use it; and 8% report that they do not have any yard waste;
- In 2005, approximately 2,774 tonnes of material was dropped off at the composting site. Of this, an estimated 1,700 tonnes came from the residential sector;
- The facility composts significant amounts of shrubs and brush from commercial grubbing operations;
- Users are very satisfied with the program and most believe that it is convenient;
- Cost per tonne is \$43.21 (for the residential portion only), comparing favorably with costs in other municipalities between \$48 and \$106; and,

- There are no scales at the facility and quantities are calculated using a visual estimate of the volume and a weighed sample of a portion of the material. A more accurate assessment would be beneficial to determining the feasibility of future composting programs.

Household Hazardous or Special Wastes (HHSW)

The City of Owen Sound holds seven Household Special Waste (HHSW) days per year, where residents can take Hazardous and other Special Wastes to the Public Works Facility (depot) for safe disposal. The program is also open to residents from neighbouring municipalities on a fee for service basis. The table below lists the accepted materials.

Table 2
Household Special Wastes Collected at Depot

Household Special Wastes
<ul style="list-style-type: none">• Pharmaceuticals• Paint• Aerosols• Pesticides• Oxidizers• Acidic materials• Caustic materials• Automotive/Recreational Vehicle Fluids• Miscellaneous Organic• Batteries

The program is well used and popular with residents.

Program Assessment

- More than 50% of residents reported using the HSW Program;
- Over 60% of residents reported that it is a great program (more than those reported as using the program);
- A small number (3%) would like to see more frequent availability for the program;
- The equivalent of 71 tonnes of HSW were diverted from disposal in 2005; and,
- The cost of the program is \$593/tonne, comparing favourably to reported program costs in other areas of between \$1,000 and \$2,000 per tonne.

Transfer Station

Miller Waste Systems owns and operates a Transfer Station in Owen Sound. The Transfer Station has facilities for garbage and recyclables including Blue Box and other curbside collected materials, polystyrene, electronic waste, white goods, tires and scrap metal. The City pays Miller for bins and transport of material for certain programs (specifically, Blue Box material recycling, polystyrene recycling and electronic waste). The others do not require a financial contribution from the City.

Electronic Waste, Polystyrene and Styrofoam™ Recycling: Electronic wastes comprise high levels of heavy metals and lead (in CRT monitors), constituting a toxic waste stream that should be diverted from disposal. Residents can take their discarded electronic appliances and computers to the Transfer Station for recycling. In 2005, 41 tonnes of electronic waste was recycled. The assessment of the electronics recycling program showed that:

- 30% of residents reported using the program;
- Users are satisfied with the program; and,
- The cost of the program is \$613/tonne – well below the best practice estimate of \$980/tonne.

The City accepts polystyrene and Styrofoam™ at the Transfer Station for recycling, collecting 11 tonnes in 2005. Although polystyrene and Styrofoam™ is light and does not constitute much tonnage, it takes up a great deal of volume in landfills and in trucks transporting waste. Besides the environmental benefits of recycling the material rather than disposing of it, there is significant cost avoidance in not having to transport it to far away disposal facilities.

There is no charge to residents to take polystyrene and Styrofoam™ to the Miller Waste Systems Transfer Station. The City pays the cost of recycling the material and bin rentals, which was approximately \$1,500 per tonne in 2005.

Metal and Tire Recycling: Tires and scrap metal, including large appliances, are accepted at the Transfer Station for recycling. In 2006, 41 tonnes of metal and 20 tonnes of tires were recycled.

Program Assessment

- Over 60% of residents use the Transfer Station, with over 30% using it at least monthly for recycling non-Blue Box materials and additional refuse disposal;
- Users expressed satisfaction with the facility;
- There is no cost to residents for recycling polystyrene, and all electronics are accepted free of charge. Businesses are charged \$10 for monitors, but other electronics are accepted free of charge; and,
- Scrap metal and tire recycling does not cost the City anything.

Waste Disposal, User Pay and Bag Limits

Curbside garbage collection is provided weekly by City crews and trucks. The City implemented a user pay program in July 1999 for the collection of garbage. At that time, all residential units were given 52 “courtesy” tags a year. Residents purchased more as needed. Free bag tags were reduced to 35 per household in 2005, and eliminated altogether in 2006.

Residents can set out up to 3 bags of garbage for collection and they must affix a \$2.00 bag tag to each bag or container to be collected. Garbage is taken to the central Transfer Station and exported. Almost 5,000 tonnes of residential waste are disposed in the landfill each year.

The intent of the user pay program is to minimize waste, encourage waste diversion and to cover the cost of the waste management program.

- The bag tag program has been successful in reducing the amount of waste going to landfill;
- Patrons pay Miller Waste Systems directly for refuse disposal, and tonnage figures are estimated. In 2006, the public took approximately 2,040 tonnes of residential waste to the Transfer Station. This impacts on the City’s revenues;
- The City’s collection costs are \$83.63/tonne and Miller Waste charges \$93 (in 2006/7) per tonne of waste for haulage and tipping at the landfill in Michigan. This collection includes the cost of providing extra collection to the downtown core and curbside collection of old corrugated cardboard. The total cost for waste collection and garbage transfer and tipping is \$177/tonne; and,
- Revenue from the bag tags in 2006 fell below the forecast amount. However, it was the first year of the new bag tag system, so there was no history upon which to base the budget. In the future, the budget of expected bag tag revenue should be reduced. In 2006, that revenue was supplemented from the landfill reserve fund to cover the full cost of disposal.

Communications and Education Programs

Communications and Education(C&E) is an important component of Owen Sound’s waste management programs. Current initiatives include web-based information, a waste management calendar delivered free-of-charge to households annually, and a series of informative print materials. C&E is a component of a number of programs, each of which has its own C&E component in its budget. The table below lists the 2005 C&E costs for each of the City’s waste management programs.

**Table 3
Communication and Education Costs (2005)**

Program	C&E Cost
Recycling	\$5,626.68
Garbage Collection	\$148.00
Goods Exchange	\$668.48
HSW	\$3,795.81
Leaf and Yard	\$1,036.00
BYC	\$1,622.71
Bag Tags	\$1,793.69
Total	\$14,691.37

Program Assessment

- Residents report that they are satisfied with the current C&E effort;
- There appears to be a need to increase promotion and instill a consistent, professional approach about what can be recycled, as many people do not recycle all of the material.

Program Costs

The following table summarizes the current cost of each component of the current system. It is based on 2005 and 2006 data, using the best available information.

Table 4
Current Diversion System – Based on 2005 and 2006 Data

Program	Diversion/ disposal (tonnes)	Residential Diversion %	Satisfaction	Capital Cost	Net Operating Cost (NOC)	NOC/ hhld	NOC/ capita	Operating Cost per tonne
Blue Box	2,030	20%	High	\$0	\$190,481	\$19.98	\$8.88	\$93.83
BYC & Grasscycling	1,014	10%	High	\$0	\$6,000	\$0.63	\$0.28	\$5.92
Leaf and Yard Organics	1,774	18%	High	\$0	\$76,654 ⁴	\$8.04	\$3.58	\$43.21
HSW & C&D	79	1%	High	\$0	\$36,000	\$3.78	\$1.68	\$454.74
Electronics	52	1%	High	\$0	\$24,631	\$2.58	\$1.15	\$473.67
Polystyrene	11	0%	High	\$0	\$16,066	\$1.69	\$0.75	\$1,530.10
Scrap Metal & Tires	61	0%	High	\$0	\$0	\$0	\$0	\$0
Garbage Collection	2,904	0%	Good	\$0	\$242,864	\$25.48	\$11.32	\$83.63
Garbage Disposal	2,904	0%	Good	\$0	\$269,700	\$28.29	\$12.58	\$93.00
Garbage at Transfer Station	2,040	0%	High	\$0	\$0	\$0	\$0	\$0
P & E	0	0%	High	\$0	\$16,000	\$1.68	\$0.75	\$2.02
Totals	9965	50.00%		\$0.00	\$878,396	\$94.70	\$42.09	\$88.15

For some programs, costs are not separated out or costed. The scrap metal and tires program is operated by Miller Waste Services, as is the garbage that is brought to the Transfer Station.

2.1.2 Industrial, Commercial and Institutional Programs

While the focus of the waste management planning process is on Owen Sound's jurisdictional responsibility for domestic waste management, it is prudent to consider opportunities to integrate the IC&I sector into the waste management planning process where appropriate. Industry, businesses and institutions are required, by by-law 2006-001, to recycle in Owen Sound. Because the residential sector is diverting a significant portion of its waste already, it is the IC&I sector which holds the most opportunity for significant increases in overall diversion.

Miller Waste Systems collects wastes and recyclables from businesses which pay directly for this service.

In order to assist the IC&I sector, the City provides waste audit materials, signage and advice.

⁴ The Net Operating Cost of the Leaf and Yard Waste Program was higher in the study period due to a severe winter storm which took down a significant number of trees in Owen Sound and surrounding area. As a result, more material was taken to the facility and a contractor had to be paid more in order to chip a large number of trees, branches and stumps. The cost used in the table is for 2005, before the storm took place.

2.2 Waste Characterization

Understanding a City's waste stream and composition is important information for planning a waste management system. By analyzing the components of the stream and comparing this with other similar municipalities, the Study Team can estimate the amount of materials and wastes that could be available for improving the City's diversion programs.

The Study Team conducted a waste characterization study of the entire waste stream at the outset of this project to provide a basis for planning the new system. The report "Waste Characterization" is attached in Appendix D.

Like many municipalities, the City of Owen Sound has never audited its waste stream in order to develop a characterization of its waste. Such a study would normally entail taking samples of the entire waste stream, over four seasons, sorting them into fractions (such as glass, metal, food, and so on) and weighing them. While this is an accurate method of determining the content of a municipality's waste stream at a given time, it is outside of the scope of this project.

Instead, the City's waste stream has been calculated as a part of this project based on weighed data and characterizations that have been conducted in other parts of Ontario and Canada.

Certain assumptions have been made in determining the characterization of Owen Sound's waste stream. These include:

1. The weighed data is accurate and has not been changed;
2. The calculated data is based on best estimates and can be adjusted if a significant anomaly is found;
3. The resulting estimates are considered a reasonable basis for planning;
4. The Owen Sound waste stream is not significantly different than published amounts for Ontario;
5. Because the waste from Georgian Bluffs and the Town of Meaford are processed through the Transfer Station in Owen Sound it is considered to be handled by the City and has, for the purposes of this study, been grouped with the Industrial, Commercial and Institutional Sector data, since this sector is not within the municipal jurisdiction;
6. The refuse collected from the Industrial, Commercial and Institutional Sector is mixed with the residential refuse from apartments and other multi-unit dwellings when collected by a collection contractor; and,
7. Yard waste, stumps, wood waste, electronics and Household Special Wastes all included a mix from residential and non-residential sources.

Table 5 presents the domestic waste characterization data for Owen Sound.

Table 5
Residential Waste Characterization Data for Owen Sound
with a Sample of Representative Data from other Canadian Jurisdictions

Based on 2005 Owen Sound Data

	Ontario (%)	Canada (%)	Calgary, Alberta (%)	Cochrane, Alberta (%)	Markham (%)	London (%)	Owen Sound (tonnes)	Owen Sound (%)	Owen Sound Calculated (tonnes)	Owen Sound Calculated (%)	Owen Sound Estimated (tonnes)	Owen Sound Estimated (%)
Paper	24%	26%	22%	21%	38%	33%	1393	14%	2384	24%	2384	24%
Organic		40%		23%		29%						
- Food & HHLD, if broken out	25%		21%		37%				2484	25%	2484	25%
- Yard, if broken out	13%		31%		1%		2774	28%	1292	13%	1500	15%
Glass	5%	3%	2%	2%	6%	7%	371	4%	497	5%	497	5%
Ferrous	2%	4%	3%	4%	2%	3%	228	2%	199	2%	228	2%
- Aluminum, if broken out	1%								99	1%		
Plastic	4%	9%	8%	8%	2%	10%	81	1%	397	4%	397	4%
Other	26%	18%	11%	9%	15%	16%			2583	26%		
- HHW, if broken out			2%			1%	71	1%			71	1%
- Electronics, if broken out							53	1%			53	1%
- Tires, if broken out							20	0%			20	0%
- Wood and Soil, if broken out				19%								
- C&D, if broken out				14%								
- Refuse, if broken out							4944	50%			2301	23%
Total	100%	100%	100%	100%	101%	99%	9935	100%	9935	100%	9935	100%

Notes:

1. Ontario data is from *Ontario's 60% Waste Diversion Goal – A Discussion Paper*, Ontario Ministry of the Environment, June 10, 2004
2. Canada data is from *Human Activity and the Environment Annual Statistics 2005 Feature Article Solid Waste in Canada*, Statistics Canada, 2004
3. Calgary and Cochrane, Alberta data is from *Provincial Waste Characterization Framework*, Alberta Environment, Government of Canada, Action Plan 2000 on Climate Change(Enhanced Recycling Program) and the Recycling Council of Alberta, 2005
4. Markham data is from *Markham's Mission Green Program Waste Audit Results Fall 2004*, RIS International, 2004
5. London data is from a 2006 study conducted by the City and available on the *Stewardship Ontario* website.
6. Owen Sound data is from the WDO Datacall 2005, landfill annual reports and other data as provided by the City of Owen Sound
7. Some residential data includes material from IC&I sources, particularly in the case of drop-off materials
8. Data from Markham and London does not include Leaf and Yard Waste
9. Some totals do not add up to 100% because of rounding errors

Industrial, Commercial and Institutional and other Municipalities

There is no data available on the amount of waste diverted from disposal by the IC&I sector in Owen Sound. Nor is there any data on the characterization of the IC&I waste in Owen Sound.

The values for the IC&I sector have been calculated based on the published Ontario IC&I characterization data. Because the Meaford and Georgian Bluffs residential and IC&I waste is also routed through the Transfer Station in Owen Sound, that data has been included in the following Table.

**Table 6
Owen Sound IC&I Waste Characterization Data**

Items	Ontario	Owen Sound (tonnes)	Owen Sound %	Meaford (tonnes)	Meaford %	Georgian Bluffs (tonnes)	Georgian Bluffs %	Total Meaford and Georgian Bluffs (tonnes)
Paper	23%	2015	23%	322	23%	224	23%	546
Glass	5%	438	5%	70	5%	49	5%	119
Metal	11%	964	11%	154	11%	107	11%	261
Plastic	3%	263	3%	42	3%	29	3%	71
Wood	21%	1840	21%	294	21%	204	21%	499
Organic	11%	964	11%	154	11%	107	11%	261
Other	26%	2278	26%	365	26%	253	26%	618
Total	100%	8760	100%	1402	100%	973	100%	2375

Notes:

1. Ontario data is from *Ontario's 60% Waste Diversion Goal – A Discussion Paper*, Ontario Ministry of the Environment, June 10, 2004
2. Owen Sound, Meaford and Georgian Bluffs data provided by the City of Owen Sound
3. Because of the rural nature of the area, there may be more compostable organic material than the provincial average, due to the presence of a local agricultural industry

Implications of the Characterization Data

The following observations have been made about the calculated waste stream for Owen Sound, which is represented by the two right-most columns in Table 5.

- It appears that the City could capture significantly more paper waste than the 58% it is currently achieving through the Blue Box collection program.
- Although in the weighed data the portion of the paper collected is only 14% of the total waste stream, it is expected that the actual proportion is higher. That is because the estimate of the yard waste material appears to be higher than it should be, partially because of a large presence of stumps and material from grubbing operations, which is not a normal part of the residential waste stream.
- Glass recovery in the Blue Box program appears to be significant, in the order of 74%.
- Only 20% of available plastic is being recovered.

As the estimated data is largely based on observations in Owen Sound and extrapolations from other jurisdictions, it likely does not reflect any anomalies that might be present in Owen Sound. Conducting a waste audit would provide more accurate data and is a recommendation of this Plan.

2.3 Waste Quantity Projections

The generation of waste for the next 25 years has been forecast using data from two reports: City of Owen Sound Official Plan Background Study – Biglieri Group, 2003, and Development Charges Background Study – County of Grey – Hensom Consulting Limited, 2005.

According to Biglieri, an optimistic average annual population growth rate for Owen Sound, based on economic renewal, is just under 1% per year. The growth rate could be lower if the economic growth does not materialize, but this Plan is based on this potential for growth. According to the Hensom report, Georgian Bluffs grew 11% and the Town of Meaford grew 2% from 2001 to 2004. This average annual growth was calculated and applied to the overall generation of waste from each of the municipalities. Table 7 below forecasts the waste generation for the next 25 years based on the planning forecast. It is important to note that the waste generation forecast assumes no changes in the content of the waste stream and no changes to per household generation rates.

As the Table shows, the growth of waste generation over the next 25 years is modest. Given that, if a greater amount of waste is required to ensure there is sufficient material to make a facility or program viable (such as in-vessel composting), more material may be needed from outside of the City. If the facility is to be located in Owen Sound, there may have to be a partnership on a regional level, or material may have to be exported to another jurisdiction.

**Table 7
Waste Generated and Number of Households**

Year	Waste Generated (tonnes)				Permanent Households				Household Generation Rate (tonnes/yr)
	Owen Sound	Georgian Bluffs	Meaford	Total	Owen Sound	Georgian Bluffs	Meaford	Total	
<i>Growth</i>	0.95%	2.75%	0.50%		0.95%	2.75%	0.50%		
2005	18695	973	1402	21070	9532	3970	5000	18502	1.1
2006	18873	1000	1409	21281	9736	4027	5193	18956	1.1
2007	19052	1027	1416	21495	9828	4138	5219	19185	1.1
2008	19233	1056	1423	21712	9922	4252	5245	19418	1.1
2009	19416	1085	1430	21930	10016	4368	5271	19656	1.1
2010	19600	1114	1437	22152	10111	4489	5298	19897	1.1
2011	19786	1145	1445	22376	10207	4612	5324	20143	1.1
2012	19974	1176	1452	22603	10304	4739	5351	20394	1.1
2013	20164	1209	1459	22832	10402	4869	5378	20649	1.1
2014	20356	1242	1466	23064	10501	5003	5404	20908	1.1
2015	20549	1276	1474	23299	10601	5141	5431	21173	1.1
2016	20744	1311	1481	23537	10701	5282	5459	21442	1.1
2017	20941	1347	1488	23777	10803	5427	5486	21716	1.1

Year	Waste Generated (tonnes)				Permanent Households				Household Generation Rate (tonnes/yr)
	Owen Sound	Georgian Bluffs	Meaford	Total	Owen Sound	Georgian Bluffs	Meaford	Total	
<i>Growth</i>	0.95%	2.75%	0.50%		0.95%	2.75%	0.50%		
2018	21140	1384	1496	24020	10906	5577	5513	21996	1.1
2019	21341	1423	1503	24267	11009	5730	5541	22280	1.1
2020	21544	1462	1511	24516	11114	5887	5569	22570	1.1
2021	21748	1502	1518	24769	11220	6049	5596	22865	1.1
2022	21955	1543	1526	25024	11326	6216	5624	23166	1.1
2023	22164	1586	1534	25283	11434	6387	5653	23473	1.1
2024	22374	1629	1541	25545	11542	6562	5681	23785	1.1
2025	22587	1674	1549	25810	11652	6743	5709	24104	1.1
2026	22801	1720	1557	26078	11763	6928	5738	24429	1.1
2027	23018	1767	1565	26350	11874	7119	5766	24760	1.1
2028	23237	1816	1572	26625	11987	7314	5795	25097	1.1
2029	23457	1866	1580	26903	12101	7516	5824	25441	1.1
2030	23680	1917	1588	27185	12216	7722	5853	25792	1.1

Notes:

1. Number of households is from Statistics Canada, 2006, extrapolated based on planning data from *City of Owen Sound Official Plan Background Study – Biglieri Group, 2003*, and *Development Charges Background Study – County of Grey – Hensom Consulting Limited, 2005*.
2. Waste tonnage is total of residential and IC&I from Table 5 and 6.

2.4 Summary

The City's waste management system has been built upon the notion of diverting waste from landfill through supplementing the garbage collection with collection of source separated recyclables, the promotion of waste reduction (through the provision of backyard home composters), and the provision of recycling and yard waste facilities and HSW depot at various City facilities.

This approach has been tremendously successful for the City. Community support for the program as it exists today is widespread and participation is enthusiastic.

Overall, the total waste diversion is comparatively high, and the costs of the total program comparatively low. Customer satisfaction with the system is also relatively high. The system works well today and provides a solid foundation for moving forward with enhancements.

3.0 OWEN SOUND'S SUSTAINABLE WASTE MANAGEMENT PLAN

Developing the waste management plan involved the following steps:

- ❑ Developing the Vision and Goals for the future Waste Management Plan with the community;
- ❑ Identifying Waste Management System Options; and,
- ❑ Evaluating and Selecting the Recommended Waste Management System.

3.1 Vision and Goals for Future Waste Management in Owen Sound

Through review of provincial and City objectives and goals, and discussions with stakeholders and members of the public, a Vision and Goals for the future has been developed. This vision and goals have been used to develop the waste management plan. They will provide a basis for the development of performance measures once the Plan is adopted by the City.

Provincial and Local Context

Owen Sound's Sustainable Waste Management Plan is developed within the context of Provincial and local policy.

Provincial Directives

The Provincial Waste Diversion Act (WDA), June 2002, sets a waste diversion goal of 60% by 2008. The Province has established Waste Diversion Ontario to develop, implement and operate waste diversion programs for a wide range of materials. Recently however, the government has recognized that this target will not likely be met and that much more needs to be done to achieve it.

To date, the Minister of the Environment has designated recyclable materials to include used tires, used oils, waste electronic and electrical equipment and household hazardous or special waste. Potential future designations include fast food and convenience food packaging, food waste, pharmaceuticals and fluorescent tubes. Once the Minister designates a material through a regulation under the WDA, the Minister requests WDO to work cooperatively with industries that produce and distribute products that result in designated materials, and to establish diversion programs for these materials.

In June 2007, the Ministry of the Environment released a draft Policy Statement on Waste Management Planning, for consultation. This policy statement, released after the completion of this draft plan, sets out guidance for municipalities on how to develop and implement long term waste management plans. Owen Sound's Long-Term Plan meets and exceeds the guidance contained in this document.

The Study Team has reviewed the provincial directives, and considered current and future potential directives in developing Owen Sound's Sustainable Waste Management Plan.

City Objectives

The City of Owen Sound wishes to meet or exceed the 60% diversion target, reducing its dependence on waste haulage and disposal and processing more of its waste within its own boundaries. The City wishes to extract as much value out of the waste stream as it can, in an economically viable and socially acceptable manner.

Public Perspectives

Through payment of city taxes, the public is entitled to an efficient waste collection system, one that achieves maximum diversion and is economically achievable. The public has demonstrated willingness to reduce and recycle waste materials and to make use of the compost site and Transfer Station to recycle special wastes and electronics.

At two workshops held by the City during the preparation of this Plan, participants were asked to first, identify elements of their vision for waste management in Owen Sound, and second, review a draft vision and goals prepared by the Study Team.

The vision was subsequently used in developing the Plan. The vision and goals are presented below.

VISION FOR SUSTAINABLE WASTE MANAGEMENT IN OWEN SOUND
<p>By the year 2031, Owen Sound's waste management program will be affordable, self-reliant and environmentally sound. Through active pursuit of waste elimination, the community's highly successful and innovative programs have resulted in an educated population resulting in reduced consumption and waste generation from production through to disposal. Partnerships will be created with all levels of government, community organizations and businesses ensuring shared responsibility and stewardship over post-consumer resources. The program will be accessible and supported by all who live and work within the community.</p>

GOALS	
General Goals	
<ul style="list-style-type: none"> ❑ The City will work with all levels of government to promote producer-responsibility in the reduction of waste in industrial processes. ❑ The waste management system will achieve and exceed the provincial waste diversion targets. ❑ Homes, businesses and institutions will be guided by waste reduction principles in their purchasing decisions. ❑ The system will have the least possible negative impact on the natural environment. ❑ The system will be affordable and fiscally responsible. ❑ The system will be user-friendly, providing the most effective method of collecting, recovering, and reusing the material resources produced and consumed by our community (recycling, composting). ❑ The community will be aware of the impact of hazardous waste on our health and environment. ❑ The City will work with neighbouring municipalities and other government agencies, businesses and organizations to maximize the benefits of waste management system components. ❑ The city will promote green industry. ❑ The Long Term Waste Management Plan will be compatible with, and contribute to the achievement a Sustainable Community Plan. ❑ The program’s performance will be monitored annually. ❑ The City will encourage innovation and continual improvement of its waste management system. 	
Community Goals	
<ul style="list-style-type: none"> ❑ Waste reduction and re-use behaviours will become part of our way of life. ❑ Residents will actively participate in curbside organic and recycling programs. ❑ In program delivery, the City will promote collaboration with other levels of government, businesses, and institutions where appropriate. ❑ Community participation will be encouraged in developing supporting policies and programs. 	
Economic Prosperity Goals	
<ul style="list-style-type: none"> ❑ The City’s waste management system will be affordable and cost-effective. ❑ Economic incentives will be utilized to encourage maximum participation. ❑ Economic development will be stimulated through attracting green industry and businesses to the City. 	
Natural Environment Protection Goals	
<ul style="list-style-type: none"> ❑ The City’s waste management system will minimize the environmental impact and contribute to the overall reduction of the City’s ecological footprint. 	

The City’s new waste management plan sets out a path to achieve these goals and objectives, identifies targets, and outlines a method for monitoring success.

3.2 Options to Enhance Owen Sound's Waste Management System

Over the past 20 years, opportunities to achieve waste minimization and maximize waste diversion have been tested and implemented across Ontario, Canada and internationally. There are a number of keys to success that have been identified:

- ❑ Build an awareness in the community about the importance of a “conservation culture”, leading to waste reduction and changes in consumption habits;
- ❑ Approach waste management from a “materials” perspective, by generating a solid understanding of the quantities of potentially recoverable materials available for diversion from different fractions of the waste stream;
- ❑ Develop systems that separate “wet” waste (principally organic food wastes) from “dry” recyclables, thus minimizing contamination, reducing leachate generation, and maximizing recovery rates;
- ❑ Remove toxic wastes from the domestic waste stream to ensure protection of the environment at disposal sites; and,
- ❑ Developing a financially sound system that is affordable and focused on revenue generation and full cost recovery.

Building on Owen Sound's current success, the Study Team investigated options that would enhance the system and provide long term stability for the community over the next 25 years.

The following categories of options were investigated:

- ❑ Policy options at other levels of government, including federal, provincial and regional to encourage the minimization of waste and identify cost-effective waste management alternatives through partnerships;
- ❑ Waste reduction programs at source, including maximizing the use of backyard home composting;
- ❑ Identify mechanisms to improve recycling capture rates and increase the amount and type of materials collected at the curbside;
- ❑ Increase composting through curbside collection of separated compostables (source-separated organics);
- ❑ Consider maximizing the diversion of leaf and yard wastes from disposal;
- ❑ Remove HSW from the waste stream; and,
- ❑ Considering environmentally sound waste disposal options to achieve long term self-reliance and security for waste disposal.

3.2.1 Options for Increasing Waste Reduction and Reuse

A number of options for increasing waste reduction and re-use have been identified. Since waste reduction and re-use require behavioural change and a focus on conservation, a principal method for increasing education and knowledge in the community is through establishing local policy and conducting a comprehensive education and communications program, supported by community-based social marketing.

Public Policy

Owen Sound can continue to take a leadership role in waste management at the federal, provincial and local level. This can be achieved through influencing government policy at all levels, including internationally through participation in national and provincial advisory committees, passing municipal resolutions and other leadership activities. Regulatory instruments, such as bans (like the HSW ban) can play a huge role in encouraging local behavioural change. Implementing green business practices within municipal operations is another way to demonstrate political commitment (e.g. encouraging waste free events)

Community-Based Social Marketing (CBSM)

CBSM is an innovative approach to facilitate behaviour change and an attractive supplement to traditional information-based outreach campaigns. It involves identifying the barriers to an activity, designing a strategy to overcome these barriers using knowledge from the social sciences, testing the strategy to ensure that it is successful, and implementing it on a broader scale.

In reality, behavioural change involves a fundamental shift in personal philosophies towards resource use, in this case waste management. With domestic and industrial, commercial and institutional waste production at approximately 1 tonne per person per year in Owen Sound, there is a critical need for behavioural change programs that promote resource conservation at all levels, domestic, institutional and IC&I.

CBSM strategies have been shown to have a substantial impact upon responsible environmental behaviours. For example, when these approaches were used to target waste reduction in Halton Region in 2000 with their pilot “WasteLess” campaign, up to 14% waste reduction was experienced over a 9 month period. Sustained achievement, however, was not monitored.

It is important for Owen Sound to develop a sustainable waste reduction program, such that facilities to manage recycling, source separated organics and disposal can be appropriately planned and sized.

Additional Tools and Techniques

To effectively support a successful waste reduction campaign, the following mechanisms are available:

- ❑ Increased promotion of backyard composting;
- ❑ Establishment of a re-use depot in a convenient location, possibly at the Transfer Station or depot;
- ❑ Partnering with Salvation Army or other clothing re-use organizations;
- ❑ Partnering with “FreecycleTM” and www.iWasteNot.com to promote year-round, “virtual” goods exchange programs; and,
- ❑ Monitoring program performance.

Although the amount of waste reduction currently taking place in Owen Sound is not known, it is believed that a target of 5% more waste reduction could be achieved through the implementation of

these programs within 5 years. Reliable methods to measure waste reduction will need to be in place in order to measure performance. 2007 Baseline data can be utilized on targeted materials/products (e.g. plastics, organics, use of re-use depots, use of Freecycle™ and www.iWasteNot.com) such that the performance of a waste reduction campaign can be measured.

3.2.2 Enhancing Recycling

There are a number of options for increasing recycling rates:

- ❑ Increase promotion for capturing paper, aluminum foil/containers; drinking boxes, and plastics;
- ❑ Weekly collection (at additional cost);
- ❑ Addition of textiles (can include clothing, curtains, towels, blankets, sheets, table cloths, and other fabric items); using bags and/or alternative collection containers;
- ❑ Bag limit reductions; and,
- ❑ Addition of more materials as markets come available.

In an effort to push forward on achieving the provincial goal, in February 2007, the Ontario Ministry of the Environment implemented a deposit-return system for bottles purchased at the LCBO outlets. This is anticipated by the Province to result in an increase in capture rates of approximately 5 % for beverage containers.

While weekly collection can increase recycling in some municipalities, generally at a higher collection cost, this could largely be due to the limited size of the containers or that the boxes become full too soon within a two-week collection period. In Owen Sound, materials are separated into three recyclable streams and the system is considered to be highly acceptable to participants.

A target of 28% diversion could be achieved through implementing these programs, representing an increase of 8%.

3.2.3 Source Separated Organics

A principal focus of this waste management plan is to explore the potential to reduce waste going to landfill by separating food and yard wastes, offering curbside collection of these materials, and composting them either at the City facility or a new regional facility, or by exporting materials to remote composting sites.

Residents and businesses currently take their leaf and yard wastes to the City's composting facility. Based on the public survey, 55% of the residents participate in this program. The quantity of leaf and yard waste managed at the facility is unusually high for a City of this size, which is due at least in part to the large amount of stumps and brush from land-grubbing operations being taken to the site. Total available quantities of leaf and yard waste are not known at this time, but it can be estimated that an additional 1,000 to 1,200 tonnes may be diverted from disposal annually.

There is an estimated 1,750 tonnes per year of food waste going to landfill from the residential and IC&I sectors. If composted with the leaf and yard waste, a facility in the order of 5,000 tonnes per year could be developed. The high nitrogen content of the food waste mixes well with the high

carbon content of the leaf and yard waste, providing the essential ingredients for effective composting.

An additional opportunity for organic feedstock is from the sludge generated at the sewage treatment facility. A recent study has assessed the costs of dewatering the sewage sludge and composting the resulting solids. Approximately 1,500 tonnes may be available annually, depending upon the quality of the feedstock.

A number of options are explored in “Report on SSO Composting Options. City of Owen Sound” prepared by Study Team members 2cG Inc. and Golder. This report is attached in Appendix E.

Underscoring the Team’s consideration of the following options is the need for a domestic waste audit. This is based upon the unusually high quantities of leaf and yard waste currently being managed at the composting facility.

The table below presents a summary of the SSO options that were considered.

Table 8
Options for Source Separated Organics

Composting Option	Considerations	Costs
Leaf & Yard waste at City facility (Status quo)	<ul style="list-style-type: none"> <input type="checkbox"/> Cost effective <input type="checkbox"/> Could be expanded through promotion 	Minimal
Food waste collection	<ul style="list-style-type: none"> <input type="checkbox"/> Determine collection containers (carts/bags) 	\$25-\$80/unit. Capital cost \$190K-\$520K
Yard waste Collection	<ul style="list-style-type: none"> <input type="checkbox"/> Determine quantities of material available 	Waste Audit: \$15-75K
	<ul style="list-style-type: none"> <input type="checkbox"/> Consider collection vehicle type for both food and yard waste 	\$460K-\$580K (municipal forces)
Compost Processing Facilities <ul style="list-style-type: none"> <input type="checkbox"/> City owned <input type="checkbox"/> Private contractor 	<ul style="list-style-type: none"> <input type="checkbox"/> Pre-processing <input type="checkbox"/> Windrow <input type="checkbox"/> Aerated static pile <input type="checkbox"/> Enclosed channel <input type="checkbox"/> container/tunnel 	Included as applicable \$40-\$60/tonne \$45-\$65/tonne \$80-\$100/tonne \$110-\$130/tonne
Export to Distant Private Composting Facility	Facilities potentially available further than 150kms from Owen Sound	\$85-\$155/tonne \$170K-\$310K/year (excluding collection)

An effective source separated organics program could achieve between 15-18% additional waste diversion from landfill.

3.2.4 Waste Disposal Options

To provide certainty and to minimize risk due to the US border closing scheduled for 2008-2010, the study team reviewed available residual waste disposal options. Emerging technologies were also

reviewed. Trow Consulting prepared the report “Residual Waste Management Options”, contained in Appendix G to this report. A summary is provided below.

Pre-Processing and Stabilization

Reductions in waste requiring disposal can be achieved by pre-processing wastes to remove compostables and recyclables. Public support for these processes is high, since the stabilized materials are generally inert and non-putrescible, and thus no leachate is generated. With this system in place, communities can develop “dry” landfills, which are considered to be more socially acceptable. Compost generated from such processes cannot be sold as a compost product, but can be used as landfill cover, or landfilled directly. The quantity of available waste in Owen Sound is not considered to be sufficient for a stand-alone operation, which requires a minimum of 20,000 tonnes per year to achieve economic viability. As such the municipality would need to partner with other municipalities.

Thermal Processes

There are a number of thermal processes, such as incineration with energy recovery, gasification, pyrolysis, thermal cracking and pelletization to produce a refuse-derived fuel. Thermal processes could reduce the amount of residual wastes going to landfill by 75% or more. The costs of these processes range from \$150/tonne to \$450/tonne. There are a number of private sector initiatives that are interested in Owen Sound’s waste stream. Public concerns center around emissions and the safe disposal of fly and bottomash. Studies have been undertaken at the Peel Incineration facility to extract metals from the ash, thereby potentially reducing the toxicity of the fly ash such that it can be disposed in regular landfills. Given the quantity of Owen Sound’s residual wastes, thermal processes could be considered in collaboration with other municipalities.

Waste Disposal at Landfill

Without a local landfill, Owen Sound must rely on exporting its waste to facilities owned and operated by others. While its priority may be on self-reliance, there are a number of constraints associated with developing and operating a City-owned landfill. The Study Team looked at a variety of options for Owen Sound’s waste, focusing on available landfill capacity in private sector sites. Three sites were identified. For the full report, please consult “Residual Waste Management Options” in Appendix G.

Owen Sound could also consider developing and operating a local or regional landfill site. Efforts to achieve a local disposal solution in the past did not reach fruition for a number of reasons. However, based on the survey and the input received through the public consultation, there appears to be community support for Owen Sound to discuss this option with neighbouring municipalities both within and outside of Grey County.

Landfill Mining, Reclamation and Re-Use

Landfill mining has been used successfully to gain landfill capacity in both North America and Europe. The mining operation generally entails excavating the site, screening to separate cover material from waste material, and some limited recovery of recyclable material like metal. New

landfill capacity can be gained within the same footprint by more efficient placement and compaction of remaining waste and more effective and controlled use of landfill cover.

Consideration could be given to reclaiming the former Genoe Landfill for reclamation and re-use. This option was neither raised nor discussed during the consultations, and although reclamation may have environmental benefits, re-using the site as a landfill may lack community support.

Options Summary

The following tables 9 and 10 summarize a selection of options and describe the potential for diversion and disposal together with approximate costs. These were discussed with the public at two waste management workshops held in October 2006, and January 2007.

**Table 9
Waste Diversion Options**

Diversion Option	Description
<p>1. Policy Options</p> <p>Political leadership to influence the reduction of packaging and household hazardous wastes</p>	<p>Description: Owen Sound could increase its efforts to work with all levels of government to encourage the implementation of packaging reduction targets and the minimization of household special waste products available in the market place. Some options include:</p> <ul style="list-style-type: none"> ❑ Implement waste reduction policies at municipal facilities; ❑ Work with the Federation of Canadian Municipalities, the Federal Department of the Environment, and the Ontario Government to promote the reduction of packaging. ❑ Promote and enforce the City's pesticides and pharmaceuticals disposal ban.
<p>2. Waste Reduction and Re-Use</p>	<p>Description: Reduce the amount of waste at the source through initiatives such as backyard composting, waste reduction and re-use centres, and implementing a communications and education program to instill a culture of conservation and encourage environmentally friendly purchasing behaviours.</p> <p>Waste Diversion Potential: Approximately 5-10%</p> <p>Cost: \$1-\$2/household – Re-use center/partnerships cost not included here.</p>
<p>3. Optimized Blue Box</p>	<p>Description: Weekly collection; addition of new materials (such as textiles)</p> <p>Waste Diversion: +8%</p> <p>Cost: \$100-\$200/tonne for weekly collection</p>

Diversion Option	Description
<p>4. Electronics Recycling</p>	<p>Description: Examples of electronic goods include computers, monitors, VCRs, clock radios, and cellular telephones. Improved use of the facility by residents could be achieved through communications and education. Consideration of curbside collection of electronic wastes.</p> <p>Waste Diversion: 1%</p> <p>Cost: A curbside collection program could cost as much as \$300/tonne as a stand-alone program but could be considerably less when included as part of a comprehensive diversion system. Funding from Waste Diversion Ontario may be available to offset costs in the future.</p>
<p>5. Bi-weekly yard waste collection</p>	<p>Description: Typical municipal yard waste programs collect grass, leaf and brush materials.</p> <p>Diversion: Collection of leaf and yard waste every other week from April to November could divert approximately 10 to 15% of the waste stream.</p> <p>Cost: Collection costs can range from \$70-\$100 per tonne. Processing costs range from \$40 to \$60 per tonne.</p>
<p>6. Source Separated Organics Collection</p>	<p>Description: Source separated organics include household compostable material such as food waste, pet waste, diapers and soiled paper products. Like recyclables, household organics would be source separated from regular garbage and put into a special bag or container. The organics are then collected at the curb to be composted at a central composting facility. Composting can be conducted in open or covered windrows (aerobic), or in-vessel (anaerobic). The resulting product can be given-away or sold for use as a soil amendment product.</p> <p>Waste Diversion: Approximately 16-20%</p> <p>Cost: \$85-\$95/tonne for collection; \$30-\$60/tonne operating; \$500K-\$1.5M for capital cost</p>

Diversion Option	Description
<p>7. Residential Construction & Demolition Waste</p>	<p>Description: Construction and demolition (C&D) materials can include materials such as drywall, lumber, metals, brick, concrete, carpet, plastic, piping and earth. The City would need infrastructure available to recycle and reuse the material.</p> <p>The City could implement a formal “ban” to prevent residents from disposing of this material in the garbage.</p> <p>Waste Diversion: Approximately 7%</p> <p>Cost: Promotional materials and enforcement</p>
<p>8. Bag Limits</p>	<p>Description: Bag limits restrict the number of bags of garbage a resident is allowed to set out for collection. Owen Sound currently has a 3 bag limit in place. Reducing bag limits to 2 bags or less could significantly increase waste diversion. This option could be implemented in tandem with other waste reduction initiatives, such as a food and yard waste program.</p> <p>Diversion: Bag limits of 2 or less can decrease waste generation by as much as 5%.</p> <p>Cost: Negligible - promotional materials and enforcement.</p>
<p>9. Comprehensive promotion and education/social marketing campaign</p>	<p>Description: The use of multi-media and public engagement techniques to create awareness and change public behaviour toward environmentally sustainable practices.</p> <p>Waste Diversion: While hard to quantify, a comprehensive awareness and social marketing campaign is proven to increase awareness and change behaviour.</p> <p>Cost: Dependent on campaign components. Approx. \$2-\$5/household.</p>
<p>10. Household Special Waste collection (Toxic Taxi)</p>	<p>Description: This program would include the curbside collection of household special waste items such as paint, motor oil, antifreeze and household cleaners. Owen Sound has banned the disposal of HSW in household garbage in 2005.</p> <p>Diversion: Ontario municipal waste audits indicate that household hazardous waste makes up approximately 1% of the waste stream.</p> <p>Cost: Approximately \$110,000 per annum</p>

Waste Disposal Options

The Study Team considered the types of waste disposal options that could be available to handle Owen Sound's residual wastes. Residual wastes are wastes left over from waste diversion programs and destined for disposal. The feasibility of the following disposal options must be considered based on the quantities of wastes remaining after diversion.

Table 10
Waste Disposal Options

Residual Waste Disposal	Description
<p>1. Incineration and ash disposal (Energy from Waste)</p>	<p>Description: Energy from Waste processes include gasification, pyrolysis, and pelletization that incinerate waste to produce energy. Residual waste is a by-product of EFW and would include bottom ash and fly ash which must be disposed. Fly ash typically requires management and disposal as a hazardous waste.</p> <p>Management Potential: Energy from Waste could reduce landfill requirements by 75% or more. There are a number of initiatives being considered in Ontario for implementation of energy-from-waste projects, using different technologies. Only one plant is operating in Peel Region. Capacity may become available in 2014.</p> <p>Cost: \$150-\$400+/tonne</p>
<p>2. Residue Waste Composting (including Mechanical Pre-Processing)</p>	<p>Description: Municipally collected garbage can be further processed by mechanical separation prior to final disposal. Composting (aerobic or anaerobic) residual waste could reduce waste disposal requirements by up to 40%. Composting has the benefit of producing a stabilized, non-biodegradable waste suitable for disposal.</p> <p>Mechanical separation of waste prior to disposal could recover 5-10% additional recyclable materials within the residual waste stream. Mechanical separation of waste typically includes magnetic separation of metals and screening. Most recovered products from pre-processing are considered "B" grade, with fewer markets and lower resultant revenue.</p> <p>Management Potential: Processing equipment would need to be available either at the Transfer Station or at the final disposal site.</p> <p>Cost: \$100+/tonne</p>

Residual Waste Disposal	Description
<p>3. Landfill (export)</p>	<p>Description: Regardless of the chosen waste diversion or residual waste processing options, there will always be some quantity of waste requiring landfilling. Without a landfill, Owen Sound is required to export their waste for final disposal. The options for export currently include exporting to the U.S.A. and could include exporting to other available landfills in Ontario.</p> <p>Cost: \$85+/tonne</p>
<p>4. Landfill (local)</p>	<p>Description: Develop a municipal or partner operated landfill within the area for disposal of Owen Sound’s/Grey County residual waste.</p> <p>Management Potential: This option would require an individual Environmental Assessment process that could take up to 5 years to obtain approval. The site would need to be properly engineered and create no net impact on the environment. Utilizing pre-processed, stable material, or implementing a program that removed organics from the waste stream, would ensure that a “dry” environmentally sustainable site could be developed. This would be the first of such sites in Ontario. As such, funding programs may be available.</p> <p>Cost: \$100-\$250/tonne</p>

3.3 Community Evaluation of Waste Management System Options

3.3.1 Evaluation Methodology

The Study Team and members of the public generated a number of options for Owen Sound’s long term waste management system. The evaluation of these options was conducted as follows:

- ❑ Describing the options and their potential for achieving sustainable waste management;
- ❑ Developing a number of criteria against which to assess the options. These criteria included:
 - Cost/Affordability
 - Positive environmental effects
 - Positive social impact and acceptability
 - Proven technology
 - Ease of implementation
 - Extent of local control
 - Scalability – can be expanded over time.

- Development of three broader categories for discussion with the public:
 - Positive environmental effects
 - Social acceptability
 - Cost effectiveness

The description of the options was presented to the public and discussed using the broad criteria categories as a guide. Some members of the public indicated that they wished values or levels of importance to be assigned to the criteria groups. However, for the purposes of developing this Plan, the values were considered equal amongst the three categories.

The results of the public assessment of the options are presented below. Subsequently, the Study Team met to consider the input from the public and develop a preferred set of options for implementation. The Study Team supported the options selected by the public, and their ideas for implementation.

3.3.2 Evaluation of Waste Management System Options

Workshop participants and the survey participants were asked to consider the waste management options. Workshop participants used three basic criteria to assess the system options: cost/affordability; environmental effects and social impact/acceptability. The following Table provides the results of this evaluation, which is supported by the Study Team’s internal evaluation. The overall impression of the mechanism from both the survey participants and the public is summarized on the right hand column of the chart.

**Table 11
Evaluation of System Options**

System Component	Cost/ Affordability	Environmental Effects	Social Impact/ Acceptability	Overall Impression/mechanism
Policy Options	√	√	√	Simple and cost effective
Waste Reduction	√	√	√	Improve education and promotion towards a “conservation culture” (Survey: 76%)
Waste Reuse	√	√	√	Promote “Freecycle™” and www.iWasteNot.com and increase goods exchange events, existing re-use centers and add re-use centre at Depot.
Optimize Blue Box – bi-weekly program	√	√	√	Continue to add materials. Promote lesser known materials. (Survey – 89%)
Electronics	√	√	√	Must be cost effective. Enhance use of depot program to start.
SSO (Food wastes)	√	√	√	Must be cost effective (Survey: 59% favoured collection, 65% favoured building a facility)

System Component	Cost/ Affordability	Environmental Effects	Social Impact/ Acceptability	Overall Impression/mechanism
Yard Waste	√	√	√	Must be cost effective – Enhance use of depot to start. (Survey: 67% favoured yard waste collection)
Construction and Demolition	?	√	?	Needs more consideration Consider later.
Bag Limits	√	√	?	Not considered a key tool. Consider implementation with SSO program. (Survey: 36% supported)
Education	√	√	√	Implement ASAP (Survey: 64% support)
HHW Collection	X	√	√	Improve use of depot; Implement local ban from disposal Consider curbside collection later in the planning period.
Incineration	?	?	?	Survey participants are in favour of this option to be built within the City (75%). Workshop participants uncertain. Option needs further exploration. Concerns about toxicity, cost, and quantities. Could pursue with regional partner over the longer term.
Pre-Disposal Processing	?	√	√	Needs further research. Partially dependent upon landfill solution
Landfill - Export	X	X	X	Need to minimize disposal to utmost extent.
Landfill - Local	√	?	?	Pursue with local Partners; Properly engineered, dry site. Organics ban and/or pre-processing; Minimize local traffic effects; Minimize disposal quantities to utmost effect.
	√	?	X	Consider reclaiming the former Genoe Landfill site. Likely unacceptable to neighbours and local municipality and, Not discussed with the public

Notes:

√ = Meets criteria

X = Does not meet criteria

? = No agreement on whether criteria are met

Notably, there is widespread support for the following program enhancements:

- ❑ Maximize waste reduction;
- ❑ Maximize waste re-use;
- ❑ Maximize recycling;
- ❑ Maximize diversion of yard wastes; and
- ❑ Implement collection and processing of food wastes.

Opinions begin to divide over the social, environmental and economic viability of energy-from-waste and incineration. Survey participants supported the development of a facility within the boundaries of Owen Sound. Workshop participants encouraged the City to conduct further research into the cost, environmental and social acceptability of such an option, both with Owen Sound alone, and as a partnership option with other municipalities in the area.

Regarding the disposal options, local/regional disposal is preferred over exporting wastes. Participants at the workshops indicated that this is a matter for regional and county action. The Study Team anticipates that any consideration of reclaiming and re-using the former Genoe Landfill site as an alternative would be unacceptable to the area's neighbours and local municipality.

4.0 RECOMMENDED WASTE MANAGEMENT SYSTEM FOR OWEN SOUND

There is a clear consensus on the overall net benefits of reducing the generation of wastes and of minimizing the amount of waste generated for disposal. A clear target for waste minimization is the industrial, commercial and institutional sectors who are large generators of recoverable wastes. The residential sector is already achieving the best diversion rates in the Province. To achieve more, a paradigm behavioural shift will be needed to further entrench the existing conservation ethic in Owen Sound's residents.

Implementing a system that focuses on eliminating waste could, at the outset, achieve a 60% diversion target by enhancing existing programs and adding the collection and composting of source separated organics. With the implementation of an SSO program, the bag limit could further be reduced to 2 from 3 to further encourage conservation, along with the implementation of a ban on disposal of organics as an environmental improvement measure. However, these measures need to be carefully considered based on reduction achievements and the potential impact on the financial viability of the system.

Adding additional components to the system, such as construction and demolition waste facilities, could increase the diversion rate to upwards of 70%. The City could attract businesses to recycle and process these materials, in combination with the implementation of a construction and demolition waste ban.

Achieving total self-reliance would involve the development of local or regional disposal facilities. This could include an energy-from-waste facility and/or a local landfill. Further investigations and discussions between City Council and neighbouring municipalities is key to achieving a local solution and a path forward. Environmental Assessment Act approvals would be required and the approvals could take as long as 5 years.

Thus, the Study Team believes there is merit in implementing a staged approach to Owen Sound's Waste Management System – with a short term target of 60%+, a mid-term target of 70%, with further reductions taking place through behavioural change and new materials, methods, or opportunities coming on stream over time.

Staging implementation would give the City and its residents the opportunity to:

- Develop certainty over waste composition and quantities of waste from discreet sources (e.g. IC & I, multi-residential) through both municipal and IC&I waste audits, to identify available tonnages for future SSO, incineration and landfill;
- Implement waste reduction measures, including a behavioural change program and partnerships with local organizations;
- Obtain funding for Owen Sound's innovative programs;
- Explore partnership opportunities with the County and neighbouring municipalities for disposal options;
- Attract Green Businesses interested in establishing a construction and demolition facility;

- Explore various business models for managing and financing the waste management program based on various partnership opportunities;
- Measure results through performance indicators and modeling; and,
- Explore local energy-from-waste and local/regional landfill opportunities.

Two strategies have been identified for staged implementation, taking the City to 2031. The first step is to achieve 60% diversion by 2010, and the second step, based on results from the first, is to achieve 70% diversion by 2015.

Beyond 2015 Owen Sound should continue to evaluate best available practices, and continually improve its system.

4.1 Achieving 60% Waste Diversion by 2010

The following describes the recommended program to achieve 60% waste diversion. By implementing the system as described, it is estimated that 60% diversion would be achieved in the 2008-2010 timeframe, depending on when the initiatives were undertaken.

4.1.1 Waste Reduction and Minimization Programs

While it is not possible to determine the amount of waste that is currently being minimized in Owen Sound, we have assumed that City residents are “avid” recyclers and conservationists. This is demonstrated by the following:

- There is a large population of senior citizens in Owen Sound. This demographic is well known for its interest in recycling and conservation.
- The survey indicated that:
 - 63% of residents participate in the City’s Goods Exchange Program;
 - Almost half of the residents take leaf and yard waste to the city yard waste composting site and 67% supported curbside collection of leaf and yard wastes;
 - More than half of the residents use the City’s HSW program;
 - Participation in the curbside recycling program is high and support for adding materials to the program was 89%;
 - Participation in the City’s backyard home composting program is almost 50%;
 - Support for the implementation of a waste reduction campaign was 76% with 64% indicating support for increased promotion and education initiatives; and,
 - The survey indicated that over 70% of the informants support the waste plan focusing on recycling, composting, waste minimization and reuse, and support a local disposal solution.

Based on these indicators, it can be assumed that residents in the City are well aware of the impact their consumption activities have on the environment, and thus practice excellence in waste management. Input from the public obtained at the two public workshops underscored this support.

Thus, the focus of the first step in Owen Sound's new waste management system is placed on improving waste reduction, re-use, recycling and composting – the four key components of an effective waste minimization plan.

4.1.1.1 Waste Reduction

The following steps could be taken to improve waste reduction, re-use and recycling activities within the community.

Influencing the Reduction of Packaging at the Provincial, Federal and International Levels

- ❑ Continue to promote packaging reduction, standards, etc., with the provincial and federal governments. Owen Sound should, through the Federation of Canadian Municipalities and the Association of Municipalities of Ontario, lobby for packaging reductions at the federal level, and for changes in international packaging standards.

Incorporating waste reduction into the City's Strategic Plan and Policy Initiatives

The City's Strategic Plan outlines a comprehensive set of strategies describing Owen Sound's goals and objectives. Demonstrating to residents and businesses that Owen Sound is moving towards a sustainable City will mean that the goal of sustainable waste management needs to be incorporated in detail in Owen Sound's policy documents. Leading by example is an appropriate way to demonstrate to residents and businesses that waste reduction will play an important role in how the City does business. Now that the Waste Management Plan has been developed, the City can update its Strategic Plan and policy initiatives as follows:

- ❑ Incorporate the Waste Management Plan objectives within the City's Strategic Plan;
- ❑ Conduct a waste audit in City Departments, and implement waste minimization program enhancements where possible;
- ❑ Continue to minimize the use of cosmetic pesticides and hazardous wastes in managing City properties and parks;
- ❑ Continue to encourage waste-free public events;
- ❑ Incorporate the use of recycled materials within the City's own operations; and,
- ❑ Provide an annual report that sets out the City's achievements.

Cost: Minimal.

Enhancing the Waste Reduction Program

Through increased effort in promotion and education, the City can continue to encourage residents to compost more material in their backyards, leave cut grass on lawns, and buy less packaging. Along with saving energy, reducing pollution and saving landfill space, waste reduction also reduces costs for the municipality. Currently, collection and disposal of wastes costs approximately \$177 per tonne. Reducing waste at source by as little as 5% (or 500 tonnes/year), the municipality could reduce the City's curbside collection and disposal costs significantly. This can be achieved through:

- ❑ Designing and implementing an aggressive waste reduction campaign to achieve behavioural change, including:
 - Improved seasonal promotion of backyard home composters;
 - Providing educational materials on the benefits of waste reduction;
 - Providing waste reduction materials on the City web site;
 - Partnering with a community organization(s) e.g. Boy Scouts/Guides/Green Owen Sound/EarthDay Canada/Recycling Council of Ontario, to identify ambassadors to promote waste reduction; and,
 - Developing mechanisms to measure success.

Cost: Combined with educational program.

4.1.1.2 *Re-Use*

Enhancing Material Re-Use Opportunities

Material re-use opportunities can be enhanced through:

- ❑ Continuing with Goods Exchange Days;
- ❑ Partnering, through co-promotion, with the local Salvation Army and Habitat for Humanity re-use facilities and co-promoting clothing drop-off boxes in shopping centers/malls, etc.;
- ❑ Providing a re-use facility at the Transfer Station or other appropriate facility;
- ❑ Partnering, through co-promotion of the “Freecycle™” and www.iWasteNot.com internet goods exchange; and,
- ❑ Developing mechanisms to measure success.

Costs: The costs of implementing a Re-Use Depot at the Transfer Station would need to be discussed with Miller Waste. Funding opportunities have been identified for partnering opportunities with other organizations. These opportunities are discussed in Section 5.6.

4.1.1.3 *Recycling*

Enhancing the City’s Household Hazardous or Special Waste Program

The City should continue to promote proper handling of HHSW through:

- ❑ Implementing an education program, in collaboration with partners such as Green Owen Sound, local hardware stores, nurseries, on the benefits of using alternatives to cosmetic pesticides;
- ❑ Enforcing, through communications, the City’s Household Hazardous Waste ban, implemented in 1995; and,
- ❑ Developing means to measure success.

Stewardship Ontario (a provincial government organization promoting recycling) is developing a funding program to enhance HHSW recovery. Owen Sound should apply for this funding as soon as it becomes available.

Citizens participating in the planning workshops noted that it is important that HHSW programs are accessible to all residents. The drop-off depot program, while successful and cost-effective, may preclude participation by people with disabilities, or without vehicles. Consideration could be given to obtaining funding from Stewardship Ontario for a special pilot program to accommodate these needs.

Cost: Combined with educational program.

Improving Capture Rates and Materials for Recycling

Many communities in Ontario are beginning to provide residents with larger curbside containers, such as wheeled bins, to accommodate the increased quantities of materials being collected, . The residential survey conducted for this study indicated some support for weekly collection, but this was not widespread. Additionally, residents appeared to be generally satisfied with the collection system as it is today. As such, we are not suggesting any changes to the collection system at the current time. It is also expected that additional vehicle capacity will be available, due to the initiative by the LCBO/WDO (February 2007) to remove beverage containers purchased at the LCBO from the recycling stream.

Should the City move forward with additional curbside collection programs (e.g. source separated organics, leaf and yard waste, toxic taxi, clothing), it should work with City crews and its waste collection contractor to make any necessary adjustments. These could include:

- ❑ Co-collection of recyclables and garbage; or collection on alternate weeks;
- ❑ Co-collection of organics with recyclables and garbage on alternate weeks; and,
- ❑ Provision of larger containers, requiring alternate vehicles or the retrofitting of existing vehicles and accommodations by the recycler.

A waste audit to determine anticipated quantities of recyclables, organics and garbage, and a selection of appropriate containers for SSO, recycling, yard waste, etc., should be conducted prior to investment decisions being made.

Enhancements to the Existing Curbside Recycling System

The following improvements could be made to increase the capture rates:

- ❑ Increase promotion for the following materials:
 - Plastics;
 - Paper
 - Aluminum containers and foil
 - Drinking boxes
- ❑ Co-promotion with LCBO/Beer Store regarding the deposit/return system for beverage containers, with the goal of minimizing these in the curbside collection system.
- ❑ Add additional materials as markets come on line.

Cost: Included in the Communications and education program. Co-promotion opportunities through the LCBO and the Association of Municipalities of Ontario should be explored to minimize costs.

Enhance Use of Depot System for Electronics, etc.

Currently, residents and businesses can use the electronics recycling program free of charge, except for a nominal charge to businesses of \$10 per monitor, which reflects the cost of recycling that particular piece of equipment.

There is an opportunity to increase the material that is recycled through the program by adding televisions to the already lengthy list of acceptable materials, by more aggressive promotion of the program, and by banning the material from disposal.

Currently, the cost of electronics recycling is approximately \$613 per tonne, so adding to current diversion will increase overall waste management costs (each tonne of electronic waste costs approximately \$190 more to divert than to collect and dispose in the landfill). Additional communications and education costs are minimal.

Although electronic waste is expensive to divert, the environmental and human health costs of improper disposal of the material is very substantial, as it comprises lead and heavy metals, which are very toxic. Stewardship Ontario is providing funding for used electronics recycling programs. The City should take advantage of this support.

Cost: Combined with education program. Apply for provincial funding when it becomes available to minimize costs.

Industrial, Commercial and Institutional Sector Waste Minimization

Owen Sound has implemented a by-law that bans recyclable materials from entering the waste streams generated by the IC & I sector. This ban provides a sound basis for encouraging IC&I sector leadership in achieving waste minimization. Owen Sound also provides the sector with waste audit guidance, model recycling policies and other useful materials to assist their programs.

Many large industries, schools and health facilities have recycling programs in place – either as a result of an Environmental Management Plan process (Such as ISO 14001), or due to an initiative started by staff.

While the focus of this waste management plan is not on the IC&I sector, considerable opportunity exists for increasing the diversion rates from this sector.

It is recommended that Owen Sound develop a comprehensive waste diversion program for this sector, and obtain funding from available sources, such as Stewardship Ontario.

4.1.2 Source Separated Organics Program

Composting both food and yard waste has the considerable potential to add between 16 and 18% to a community's waste diversion rates.

Community support for the capture and composting of source separated organics (food, leaf and yard waste) is high. Experience in other municipalities demonstrates that, although there is an initial feeling that separating kitchen waste is messy and smelly, most households take up the activity and do so with few complaints.

Enhancing Capture Rates of Leaf and Yard Wastes

There is benefit to the City to increase the capture rates of leaf and yard wastes since considerable savings can be achieved from diverting this fraction of the waste from disposal. There would be no additional land requirements and the materials could be handled at the existing facility. The City is currently saving collection costs and recovering 1700 tonnes from this fraction through the drop-off system.

Requiring residents to take leaf and yard waste to the facility is an inconvenience, and may be the reason why only 55% of the public use it, although there is also a greater than average (47%) number of households composting in their yards, according to the survey of residents. A curbside collection program might increase the amount of material at the facility if there is significant leaf and yard waste being disposed. However, since the estimates show that dropped-off material quantities are unusually high, it is unknown how much is being put in the garbage and sent to disposal. Thus, it is impossible to judge the cost-benefit of implementing curbside yard waste collection without the benefit of a waste audit, which would determine the amount of the material currently going to landfill.

There would be no additional land acquisition required to expand the program, and no additional approvals.

Source Separated Organics Collection and Processing

There is significant public and stakeholder support for implementing a source separated organics program in Owen Sound. It is estimated that up to 1750 tonnes of organics could be available for composting, thus diverting a significant amount of materials from disposal. Organic materials can be composted with leaf and yard wastes at the City's composting site. However, the City needs to carefully consider the feasibility and costs before moving forward with this option.

The following steps are proposed to determine a path forward for both leaf and yard waste and source separated organics:

- Conduct a waste audit to establish the quantities of available SSO, leaf and yard waste.

Assuming that the waste audit supports the quantities needed to support the program, the following steps are proposed:

- Prepare a feasibility study on collecting and composting organic food waste, together with leaf and yard waste, and potentially sewage sludge at the City's composting facility. Consider the following:
 - The capacity of the City's current site;
 - A separate site should quantities warrant, taking into consideration the potential to process compostable material from outside of the City;

- ❑ Determine the type of collection container (cart, bin, plastic or paper bag,) and vehicles;
- ❑ The advantages and disadvantages of collecting with municipal forces or contracting the services out;
- ❑ Convene discussions with local partners in Grey County and others to determine any willingness to participate in a City or partner-led program;
- ❑ Convene discussions with the contractor regarding contractual issues;
- ❑ Determine the type and location of the processing facility; and,
- ❑ Prepare necessary drawings to obtain a Certificate of Approval under the Environmental Protection Act.
- ❑ In the interim, continue to promote backyard home composting through the education campaign.

Costs: There are a number of cost components to the SSO program

- ❑ Waste Audit: \$15,000-\$30,000 (assumes City manages this program, utilizing students and summer assistance. This will avoid the potential cost outlay of \$50K-\$75K should it be contracted out). The audit can also encompass the assessment of all components of the waste stream, and assess waste reduction activities. Funding may be available for this waste audit from Stewardship Ontario, FCM or other sources listed in Section 6.0.
- ❑ Feasibility Study including siting and approvals: up to \$150,000. Funding may be available for 50% of this cost.
- ❑ Collection and Operating: Range: \$85-\$95/tonne for collection; \$40-\$60/tonne operating; \$500K-\$1.5M for capital cost.

4.1.3 Promotion and Education Campaign

The City currently spends approximately \$15,000/annum on communications and education. To achieve the waste reduction and recycling targets set out in this Plan, and to ensure that residents are familiar with both the current and the new programs, an increase to approximately \$40,000/annum should be considered. This would enable the following activities to take place:

- ❑ Development of a comprehensive, 5-year promotion and education campaign strategy, including a community-based social marketing program;
- ❑ Implement a community-based social marketing campaign in the first year (subject to funding);
- ❑ Enhancement of communications materials to be more visually pleasing, effective and consistent in messaging and look;
- ❑ Establish a small seed fund to enable Owen Sound to partner other organizations to increase capacity and resources in promoting and delivering the programs (e.g. Salvation Army, Georgian College and Green Owen Sound);
- ❑ Obtain partner funding from the provincial and federal governments, along with local organizations such as TD Canada Trust, that will lever the City's dollars to at least double the \$40,000 funding;
- ❑ Developing monitoring programs to document program success and implement continual improvements.

It is anticipated that for this modest investment, Owen Sound will realize savings in waste management operating costs.

4.1.4 Waste Disposal Program

Survey results and workshop participants indicated that the City could establish a plan where waste is minimized, and the residuals managed locally. Survey participants indicated support for energy-from-waste within the City boundaries, and workshop participants suggested further research and investigation into this option. The quantity of available residuals needs to be carefully considered in light of the Plan's overall waste management goals. Some participants in this process suggested that landfill would not be required given this Plan's aggressive waste diversion goals. The success of the waste diversion plan relies heavily on the public changing their waste management behaviours and strive to achieve the goal of waste elimination. To date, there are no examples of complete achievement of the zero waste goal. However, as Owen Sound proceeds with the implementation of this Plan, it would be eligible for membership in the Zero Waste International Alliance. This Alliance has developed standards for participation and provides support and recognition for members striving to achieve virtual elimination of waste.

The Study Team reviewed both local and export waste management incineration and landfilling options. The following approach is suggested:

Incineration: Explore energy-from-waste with private sector providers by developing a business case approach to determine:

- Quantities of waste available from Owen Sound, and from other municipalities in the area;
- Proven ability of proponents to meet and obtain regulatory approvals;
- Costs;
- Social acceptability; and,
- Determine path forward by 2010.

Local/Regional Landfill: To provide absolute certainty that Owen Sound will be in a position to control and manage its own waste, consideration should be given to developing a local/regional land fill site. Owen Sound currently disposes of almost 5,000 tonnes of residential garbage per year, and approaching 13,000 in total when waste from the ICI sector, Meaford and Georgian Bluffs is taken into account. While this amount will be reduced by at least 22% over the short term in light of the implementation of this Plan's recommendations, with growth, residual waste quantities can be expected to increase over time. Public support for collaborating with neighbouring municipalities in the siting and development of a local landfill site appears to be high.

This could be a lengthy siting and approvals process, requiring an individual environmental assessment approvals. Determining the willingness of neighbouring municipalities to embark on a landfill site search process is key to the feasibility of this option. The City should initiate discussions with its neighbours (including individual municipalities, Grey County, Bruce County) to determine the potential for a viable partnership. If interest is identified, it is recommended that the partners:

- ❑ Develop a business case, based on this Waste Management Plan, to confirm the quantities of waste requiring disposal (with and without incineration), potential management options and identify the business model needed to embark on a landfill siting and development process;
- ❑ Consider pre-processing of wastes to stabilize residuals and/or an organic wastes ban to provide community certainty on the environmental acceptability of the selected site; and,
- ❑ Establish an environmental assessment process, commencing with the development of a scoped Terms of Reference, focusing on landfill, utilizing this Waste Management Plan as a basis.

Development of Contingency Plans: It is important that Owen Sound develop a contingency plan for disposal of its wastes, should, for any reason there becomes no operational alternative through the Miller Waste contract. While Miller Waste is obligated through its contract with Owen Sound to provide waste disposal facilities in the event of the border closing, risk protection is paramount. The City should:

- ❑ Explore mechanisms with other private sector providers to solicit capacity at market rates;
- ❑ Consider the Warwick Landfill in Lambton County, which received MOE approval in January 2007 for an expansion from 50,000 to 750,000 tonnes per year, and is expected to make that capacity available to Ontario municipalities;
- ❑ Consider two available but distant landfill sites that could take Owen Sound's wastes, Lafleche Environmental and Ridge Landfill.
- ❑ Confirm Miller Waste's ability to provide capacity at market rates; and,
- ❑ Over the longer term, solidify the City's waste management requirements by exporting to the KMS Incinerator in Peel Region, or other facilities that may be operational in 2015.

Disposal Plan Cost:

- ❑ Business case and management model for incineration and disposal – Estimate: \$50K - \$100K
- ❑ Terms of Reference for Environmental Assessment if needed – Estimate: \$150K - \$300K
- ❑ Contingency Plans through private sector facilities – minimal.
- ❑ Funding may be available from partners and FCM Green Municipal Fund for the development of green technology, and a “dry” landfill site.

4.2 Summary of Diversion Program - 60%+ by 2010

Table 12 below presents a summary of the recommended waste diversion program and its components. Full implementation targets up to 66% waste diversion, as shown in the table below.

Table 12
60%+ Diversion Program Summary
Based on 2008-10 Implementation

Program	Diversion (tonnes)	Diversion (%)	Capital Cost	Net Operating Cost (NOC)	NOC/hhld	NOC/capita	Operating Cost per tonne
Blue Box	2,092	20%	\$0	\$211,496	\$21.54	\$9.86	\$101.12
Organics	3,369	33%	\$1,020,000	\$301,971	\$30.75	\$14.08	\$89.63
HSW & C&D	82	<1%	\$0	\$36,000	\$3.67	\$1.68	\$441.37
Electronics	54	<1%	\$0	\$24,631	\$2.51	\$1.15	\$459.74
Polystyrene	11	<1%	\$0	\$16,066	\$1.64	\$0.75	\$1,485.10
BYC	1,045	10%	\$0	\$6,000	\$0.61	\$0.28	\$5.74
Garbage Collection	1,704	0%	\$0	\$242,864	\$24.73	\$11.32	\$127.55
Garbage Disposal	1,704	0%	\$0	\$158,472	\$15.97	\$7.17	\$93.00
P & E	0	0%	\$0	\$40,000	\$4.07	\$1.87	\$2.08
Scrap Metal & Tires	61	<1%	\$0	\$0	\$0.00	\$0.00	\$0.00
Deposit/Refund	56	<1%	\$0	\$0	\$0.00	\$0.00	\$0.00
Garbage at TX Station	2,040				\$0.00		
Totals	10,712	66%	\$1,280,000	\$1,037,500.00	\$102.61	\$46.03	\$96.85

Notes:

1. Tonnage estimates based on projected population growth
2. Blue Box includes curbside collection of textiles
3. It is expected that most of the 1,500 tonnes of SSO collected would come from the material now going to the landfill. For the purpose of this analysis, the curbside garbage collection has been reduced by 1,000 tonnes to balance the SSO organic collection.
4. The table does not include planning, approvals and waste auditing costs of approximately \$200K net of funding.

4.3 Achieving and Maintaining 70% Diversion by 2015-2031

The maximum diversion system includes all of the elements of the previous system, but adds a waste diversion program for construction and demolition wastes, enabling an additional 5% to be diverted from landfill.

Implement Construction and Demolition (C & D) material ban

Currently, C&D materials are on the City's "Prohibited Materials" list and are prohibited from being placed in the curbside garbage. However, in most municipalities, residents do set out these materials if there is no obvious enforcement. The Transfer Station currently accepts these materials.

Promotion of this ban could assist in further reducing the waste at the curb and creating green economic recycling opportunities, by up to 5%.

The City could announce that an enforceable ban will occur in the future, and encourage local businesses to establish in order to recycle the material. By ensuring that the material will be available to the private sector beginning at a future date, it allows businesses time to plan, get any financing or approvals required, and prepare for the day when the ban begins.

The cost to the City of implementing a C&D ban is minimal, as it simply requires a change to the existing by-law. Promotion of the ban is essential to its success. It is expected that a \$5,000 investment in promotion will be sufficient to launch the ban.

Table 13
Maximum Diversion System – Based on 2010 Implementation

Program	Diversion (tonnes)	Diversion %	Capital Cost	Net Operating Cost (NOC)	NOC/hhld	NOC/capita	Operating Cost per tonne
Blue Box	2,134	20%	\$0.00	\$226,372	\$22.60	\$10.55	\$106.10
Organics (SS0 and Yard)	3,437	33%	\$0.00	\$301,971	\$30.14	\$14.08	\$87.86
HSW & C&D	527	5%	\$0.00	\$36,000	\$3.59	\$1.68	\$68.36
Electronics	55	<1%	\$0.00	\$24,631	\$2.46	\$1.15	\$450.68
Polystyrene	11	<1%	\$0.00	\$16,066	\$1.60	\$0.75	\$1,455.83
BYC	1,066	10%	\$0.00	\$6,000	\$0.60	\$0.28	\$5.63
Garbage Collection	1,704	0%	\$0.00	\$242,864	\$24.24	\$11.32	\$127.55
Garbage Disposal	1,704	0%		\$158,472	\$15.97	\$7.17	\$93.00
P & E	0	0%	\$0.00	\$45,000	\$4.49	\$2.10	\$2.30
Scrap Metal & Tires	61	<1%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Deposit/Refund	56	<1%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Garbage at TX Station	2,240				\$0.00		
Totals	11,289	71%	\$0	\$1,057,376.00	\$104.58	\$46.98	\$93.67

Overview of Implementation of the Plan

Developing the maximum diversion scenario as outlined will result in a progression of increased waste reduction and diversion and reduced waste for disposal.

Figure 1 on the following page presents a graph that demonstrates the percentage of the total waste stream attributed to each program. As is demonstrated, waste disposed shrinks considerably as new diversion programs are added and existing ones are improved. A pictorial representation of the maximum diversion system is represented in Figure 2.

Figure 1
Distribution of Residential Waste Stream (by Program and Destination)

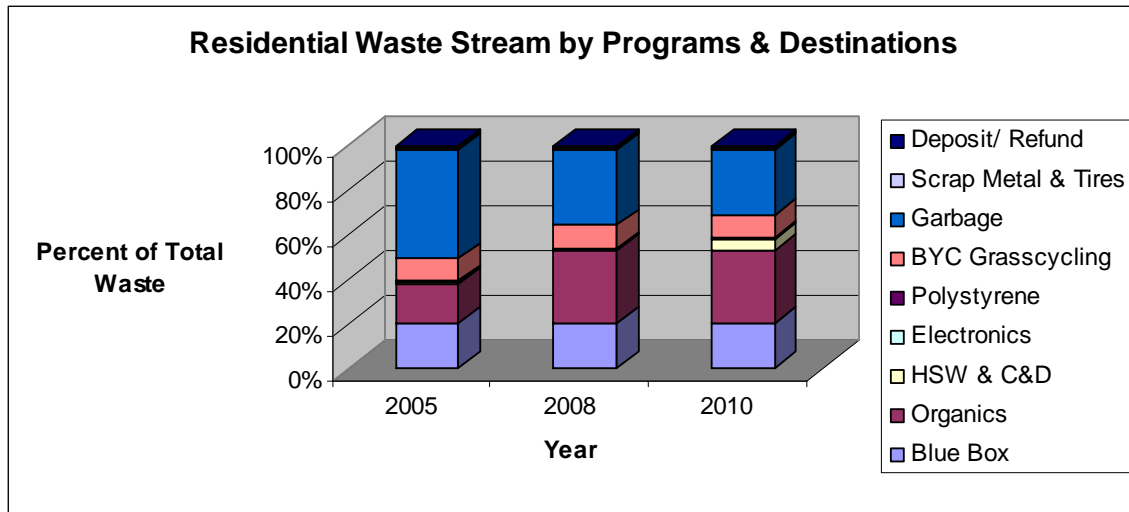
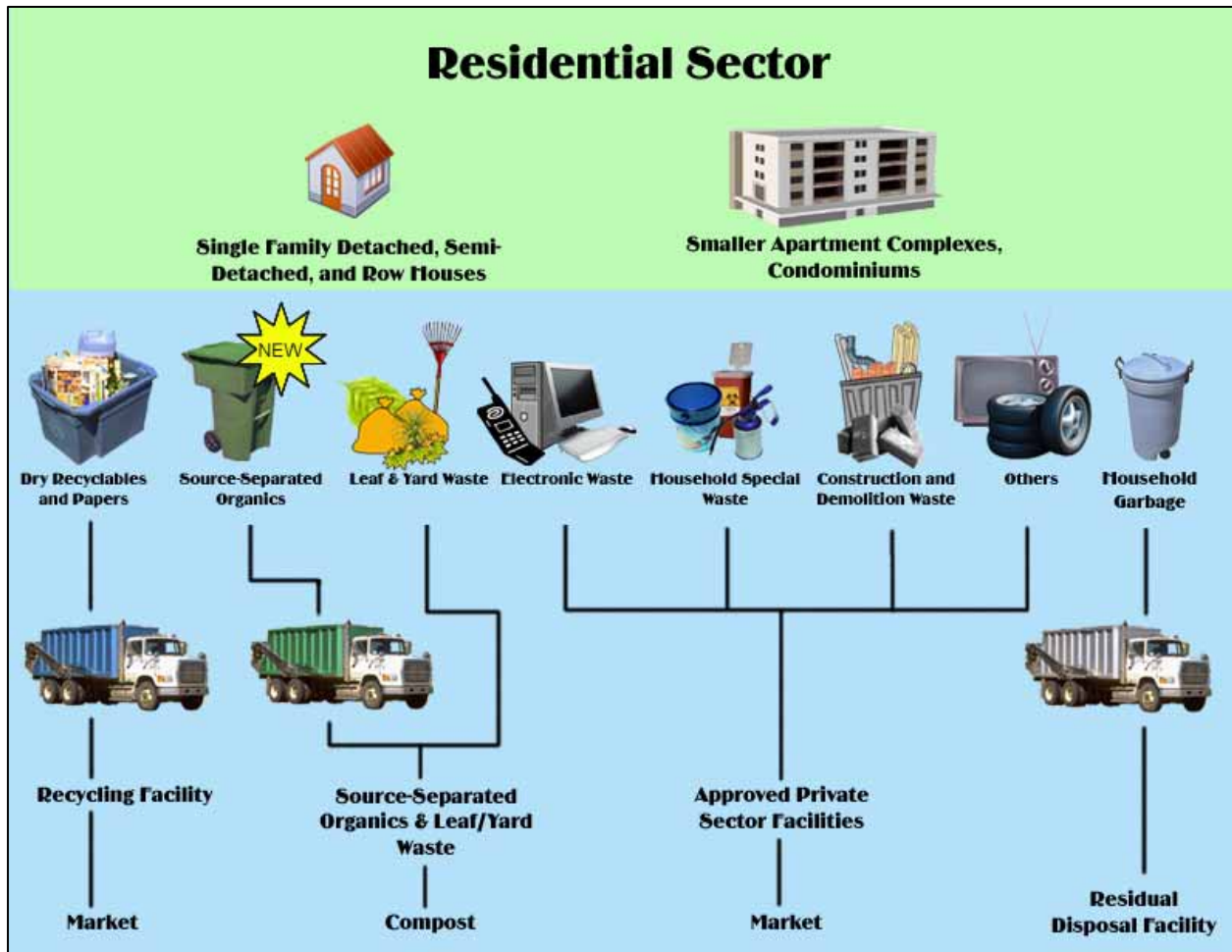


Figure 2
Residential Maximum Waste Diversion System



4.4 Monitoring and Continual Improvement

It is recognized that changes in waste management technology will continue to take place over the planning period. For this reason, it is suggested that Owen Sound report on target achievement annually. In addition, the plan should be formally updated every 5 years to enable the City to take advantage of new and emerging technologies.

Owen Sound Waste Management Model

As part of the development of this Sustainable Waste Management Plan, a computer model of Owen Sound's current system was developed, based primarily on 2005 data.

The model includes diversion, disposal, and capital and operating costs, as well as waste characterization data as developed for this project. The model also incorporates planning projections on population and households. Projections are made to 2023 as beyond that timeframe the model naturally becomes less accurate due to uncertainty over planning projections, and inflation.

The benefits of modeling the waste management system are:

1. It provides an accurate picture of the current waste management system;
2. It can be used to forecast future costs of the existing system;
3. The model can be used as a planning tool, particularly for the addition of new programs in the future;
4. The effect of a new program or policy on the overall system can be determined. For instance, the model can identify the effect a new Source-Separated Organics collection and composting system has on the amount of waste in the garbage stream and the cost of such a proposal;
5. The ability to predict the practical and financial impacts of Provincial and Federal programs, such as the recent imposition of a deposit/refund system for liquor containers; and,
6. The ability to use what-if scenarios to inform decision-making on capital expenditures and program changes.

The model has been used extensively in the development of the waste management system. Although it is complex and takes into account many parameters, it can also be used by staff after suitable training.

It is suggested that the model continue to be utilized as follows:

- ❑ Updated annually by populating it with the previous year's data. This will allow for accurate predictions in future planning;
- ❑ Utilize the information required for the WDO datacall, which takes up a considerable amount of staff time;
- ❑ Engage the model as a tool for measuring and improving the performance of the waste management system;
- ❑ Providing an annual report to the community on progress; and,
- ❑ Updating the Waste Management Plan every five years.

The Owen Sound Waste Management Model, developed for this project, is an excellent tool for measuring success, developing what-if scenarios, and planning program roll-outs and capital expenditures.

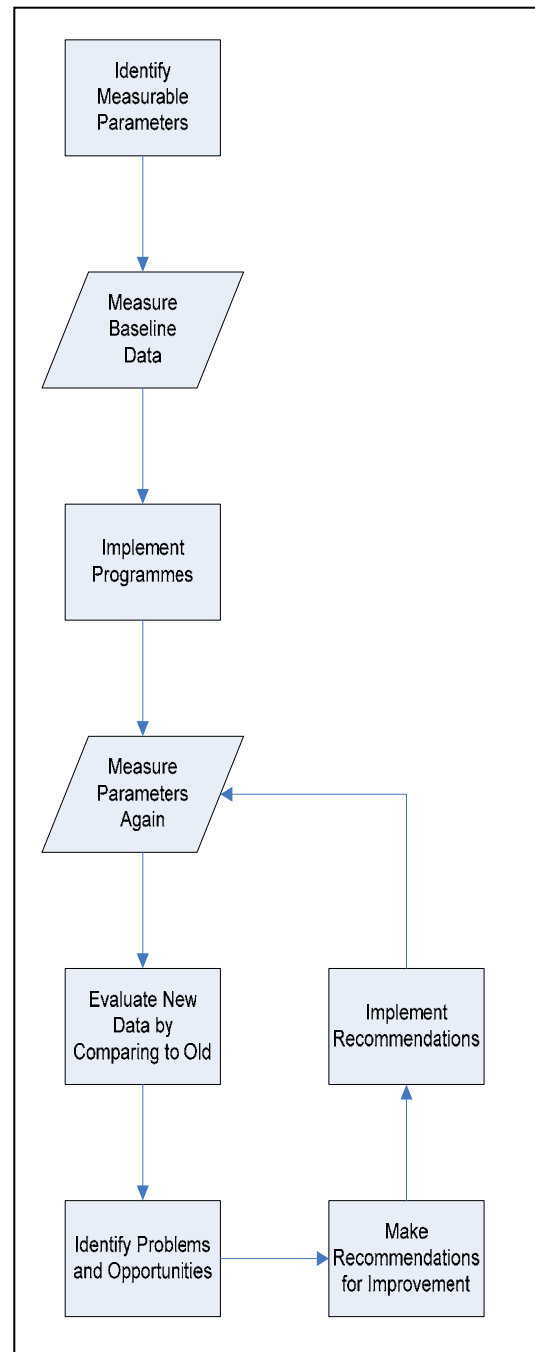
Adaptive Management and Continual Improvement Program

Owen Sound should implement an Adaptive Management and Continual Improvement Approach for the waste management system to ensure that the system continues to ensure a sound system performance. This comprehensive sustainable waste management plan covers the first two steps of a eight-step Adaptive Management and Continual Improvement Approach, which is depicted in Figure 3.

Further to recommendations for program improvement, there is also a need to fine-tune the approach itself as new programs are introduced. For example, if a new recyclable material is introduced, it is necessary to modify the measurement methodology and dataset to measure the capture rate of the new material and to accommodate it as an integrated component of the overall waste management system which will have an effect on other performance measurements.

Adoption of standardized evaluation methodologies will allow for the evaluation of programs and for the identification of best practices. The Adaptive Management and Continual Improvement Approach will allow for regular evaluation and improvement of programs, ensuring the best possible return on investment in the waste management system.

**Figure 3
Adaptive Management and
Improvement Process**



5.0 PLAN IMPLEMENTATION

Owen Sound's current waste management system has a high diversion rate and provides cost effective and efficient services to its residents. By as early as 2010, with further emphasis on waste reduction, increasing the capture rate of recyclables, adding food waste to its composting program, and for a reasonable upfront investment, Owen Sound can achieve a greater-than 60% waste diversion rate – one of the highest in the country. Further increases, up to 70%, can be achieved by diverting construction and demolition wastes to a private sector facility through the implementation of a C & D ban by 2010.

With widespread community support, these high diversion rates are considered cost effective and achievable. Effective community participation can only be achieved with a strong and consistent education and information program, modeled on a sustained community-based social marketing campaign.

Providing cost effective, self-reliant disposal for the City presents a wider challenge. Given the history of waste disposal facility siting in the community, community leaders may be reluctant to pursue a local solution. However, it is apparent that there is widespread community support for a local solution and with a successful waste diversion program in place, and an environmentally sound disposal plan, the chances of success increase exponentially.

An important consideration for further program implementation is the level of staffing in the City for waste management. The City currently has a progressive and multi-faceted waste management program, which is managed with minimal staffing. The implementation and operation of new programs likely would require an increase in the current staff complement.

There are a number of facets involved in implementing this ambitious plan that include engaging and partnering with the community, both within and outside of Owen Sound. This section sets out these considerations.

5.1 Management Options and Alternate System Delivery

Owen Sound manages its waste through its Operations Department, Public Works Division. The City oversees all matters relating to waste reduction, collection and disposal of wastes.

This Plan recommends that the City consider the following City-led management options for its future waste management system:

Table 14
Alternate Management and Service Delivery Options

Component	Management/Service Delivery Options
Waste Reduction Program	City/NGO/Institutional/IC&I Partners
Waste Recycling	City/Private sector partner
Source Separated Organics	City owned/operated City/Private sector partner Develop Business Case to determine best value operations
Waste Disposal – Incineration Waste Disposal - Landfill	City/Private Sector Partner City/Region-wide partnership or City/Private Sector partner Develop Business Case to determine feasibility

5.2 Partnership and Collaboration

A key theme of this report is the development of value-added partnerships. Partnerships can enable the City to achieve its goals through maximizing the benefit of additional materials, potentially reduced costs, and the fostering of community support.

Examples of partnerships that the City could pursue are:

- ❑ Waste Reduction: Work with non-government organizations such as Green Owen Sound, Salvation Army, FreeCycle™, www.iWasteNot.com, EarthDay Canada, Recycling Council of Ontario, local hardware stores and nurseries, waste collection contractor, and others to develop and implement waste reduction programs.
- ❑ Waste Recycling: Develop co-marketing with the LCBO and AMO to encourage returnable bottles and containers.
- ❑ Source Separated Organics: Develop a partnership with neighbouring municipalities and the IC&I sector to implement an SSO program utilizing City facilities.
- ❑ Disposal: Develop a partnership with neighbouring municipalities to plan and develop an environmentally sound landfill site.
- ❑ Program monitoring: work with Georgian College and/or students to conduct a waste audit during the first year of implementation. This will build capacity in the community and reduce outsourcing costs.

5.3 Community Engagement

Owen Sound has an active volunteer community. The current Environment and Waste Management Advisory Committee is comprised of municipal politicians, staff and citizens-at-large. Through this waste management planning process it became clear that citizens, non-government organizations, businesses, institutions and the City all have extended responsibility and thus a larger role to play in furthering the goals of this waste management plan.

It is suggested that an active multi-stakeholder committee be established to work with the City in implementing this plan. Multi-stakeholder committees are a key component to sustainable communities initiatives, since they spread the responsibility beyond the government authority into the community.

5.4 Green Economic Development

In concert with Owen Sound's Strategic Plan, Owen Sound could utilize its waste management resources to stimulate green economic development.

Examples of economic development activities are:

- ❑ Attracting construction and demolition waste recycling businesses;
- ❑ Implementing green procurement policies;
- ❑ Establishing a re-use center;
- ❑ Expanding the composting facility;
- ❑ Creating jobs through the development of a landfill site; and,
- ❑ Using local businesses to promote waste reduction.

5.5 Measuring Success

The waste audit conducted under this Plan will provide the City with a sound basis for measuring and monitoring the success of the program's achievements towards the established targets. With the use of the waste management model, and with performance and success measures built into each component of the Plan, Owen Sound will be in a position to report on its progress and adapt its Plan as necessary.

5.6 Funding Programs

Owen Sound is currently funding its waste management programs from the following sources:

- ❑ Revenue from the bag tag program;
- ❑ Provincial grants;
- ❑ Supplementary financing from the landfill reserve fund; and
- ❑ Surcharges on disposal charges from the ICI Sector Provincial funding.

There are a number of provincial and national funding agencies to which Owen Sound could apply for funding of its new program. They are listed in the table below, with a summary of requirements.

**Table 15
Funding Programs**

Initiative	Funding Agency	Conditions	Amount
Waste Reduction			
Waste Audit	Waste Diversion Ontario E & E Fund FCM-Green Municipal Fund		Up to \$70,000 to approved applicants
Communications and Education, Community-based social marketing	Environment Canada – EcoAction Fund Waste Diversion Ontario E & E Fund	Owen Sound must partner with a Non- Government Organization Matching Funding	
Communications, Education, CBSM, waste audits and SSO	Ontario Centres of Excellence	Owen Sound must partner with a private sector and academic partner (Georgian College)	Comprehensive program, multi- partner approach, must demonstrate benefit to Ontario’s economy
SSO	FCM-Green Municipal Fund	Demonstrate additional funding sources and provincial government support	50% of cost: feasibility studies
Sustainable Community	FCM- Green Municipal Fund	Demonstrate additional partners/funding sources	
HHSW and Discarded Electronics	Waste Diversion Ontario E & E Fund		

Owen Sound could take best advantage of the available funding opportunities by combining partners and packaging. For example, coupling Waste Diversion Ontario’s E & E Fund (www.wdo.ca) funding with FCM Green Municipal funding could result in 100% funding for eligible projects. Should Owen Sound decide to move forward with a Sustainable Community Plan, then additional funding could become available through FCM.

There also may be an opportunity in the future to sell carbon credits for the existing and future composting programs. This is a policy area that is under current scrutiny at the federal and provincial level.

5.7 Implementation Schedule

Upon approval of this Plan by Council, it is suggested that Staff and their consultants prepare a detailed implementation plan to guide the development of programs and planning throughout the next four years.