



WASTE MANAGEMENT MASTER PLAN

COUNTY OF PETERBOROUGH



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EXECUTIVE SUMMARY

Cambium Environmental Inc. was retained to prepare a municipal solid Waste Management Master Plan (WMMP) for the Corporation of the County of Peterborough (County) that will expand on the existing joint County/City plan, which was completed in 1993 (*The Peterborough County/City Waste Management Master Plan, Waste Management Systems Plan Final Report*). The new WMMP will be a tool for the County to use in the development of waste management policies, guidelines, and best practices for both short and long term planning. The City of Peterborough (City) has prepared a WMMP for its own purposes; however, the County and the City are committed to working together to effectively and efficiently manage municipal solid waste through formal partnerships, aligned policies, and operational relationships. The County and the City were involved in mutual consultations throughout the development of their respective WMMPs.

The goals and objectives of the WMMP are to:

- Optimize Waste Management
- Implement Best Practices for Waste Management
- Expand Outreach for Waste Management

There are several challenges facing the County waste management system including:

- Diminishing life capacity of County/City landfill and the remaining Township landfill sites;
- Non-uniform level of service and varying waste management policies among the Townships and on a broader scale with the City and Province-wide;
- Missed efficiencies due to distinct Township service areas and policies;
- Limited influence/partnership with industrial, commercial and institutional sector waste generators;
- Limited potential for organics processing;
- Uncertain life capacity of the Materials Recovery Facility; and,
- Difficulty in engaging the seasonal population which can cause dramatic fluctuations and unique demands on waste management services.

While waste management in the County is a complex issue due to the problems stated above, many of these problems can be resolved by implementing County-wide policies to increase diversion, minimize waste generation and create efficiencies in waste disposal.



Current Waste Management System

The year 2010 was selected as the baseline year for the WMMP, and all service offerings and data presented in the WMMP are reflective of that baseline. According to the 2010 Waste Diversion Ontario (WDO) Datacall, the County reported services to 34,269 single residential households and 10 multi-residential buildings, with a total population of approximately 58,000 persons. Due to the seasonal nature of the area, it has been estimated that an additional 30,000 people can inhabit the area during the summer months.

The County covers an area of 3,805 square kilometres and is comprised of eight (8) Townships including:

- Township of Asphodel-Norwood
- Township of Douro-Dummer
- Township of Havelock-Belmont-Methuen
- Township of Otonabee-South Monaghan
- Township of Cavan Monaghan
- Township of Galway-Cavendish and Harvey
- Township of North Kawartha
- Township of Smith-Ennismore-Lakefield

Each Township within the County provides varying levels of waste management services to its residents. The Townships of Asphodel-Norwood, Havelock-Belmont-Methuen, and Smith-Ennismore-Lakefield each still operate active landfills. The majority of the waste generated is hauled to the Peterborough County/City Waste Management Facility on Bensfort Road, in the Township of Otonabee-South Monaghan. As of 2010, the County/City facility will provide waste disposal capacity for the County and City of Peterborough for an estimated 12 to 15 years.

The management of residential waste in the County has been focussed primarily on implementing an effective blue box program in tandem with the collection of garbage. Waste diversion rates in the County have been slowly increasing in recent years, with an overall growth of 4.8% between 2008 and 2010. Even though the goal of 50% diversion was established 16 years ago, from 2007 through 2010 waste diversion rates have remained below 40% (Waste Diversion Ontario, 2011). Therefore, the County has a long way to go in order to meet the socially desired and politically guided diversion rate of 60%.

The following summary provides important details regarding the current waste management system in the County:

- Approximately 23,700 tonnes of residential waste (total including diverted and landfilled) was generated within the County in 2010.
- The results of the 2010 WDO Datacall submission indicate 9,350 tonnes (39.4%) of residential waste produced in the County was diverted through programs such as blue box material recycling, leaf and yard material composting, MHSW collections, and backyard composting. The County's diversion rate is less than the 2010 Rural Regional municipal grouping average of 40.9%.

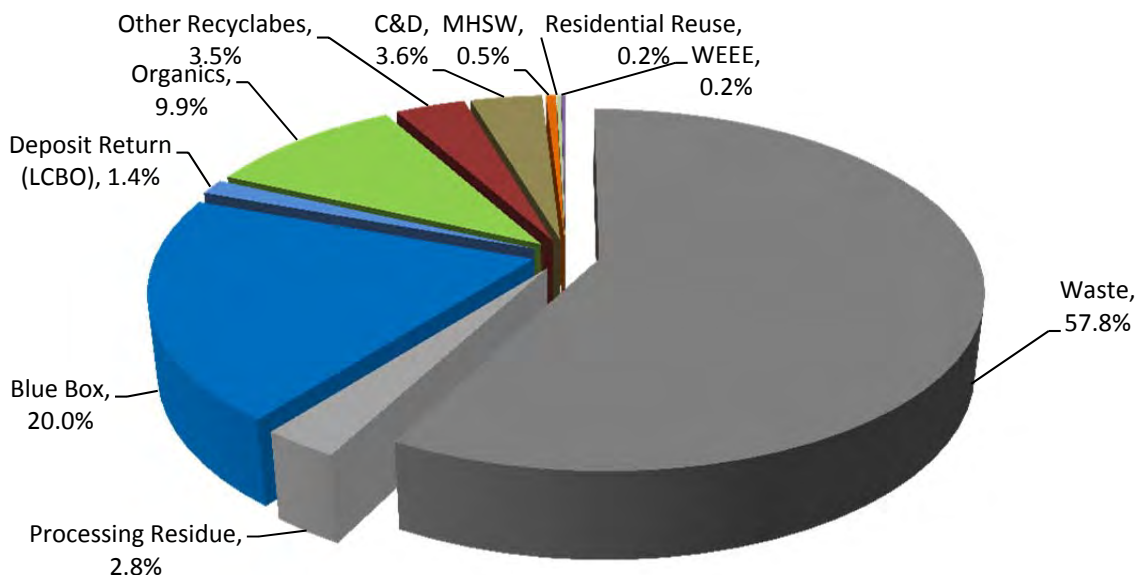


- In 2010, the net cost for the County's blue box program was \$253 per tonne. When compared to the average net cost of \$332 per tonne for municipalities of a similar circumstance by municipal grouping, the County is considered more cost efficient than others in the Rural Regional setting.
- The County disposed of 14,350 tonnes of residential waste in 2010 at the PCCWMF, which is calculated as 227 kilograms per capita. In comparison with other municipalities within the Rural Regional municipal grouping, the County disposes more waste per capita than the peer average (199 kilograms per capita). The higher waste generation rate is likely influenced by the seasonal population and differing waste management policies between Townships.
- While most waste diversion programs, including blue box materials, are managed at the County level each of the Townships is responsible for disposal of their waste either through transfer to the PCCWMF and/or landfilled locally.
- Each Township within the County provides varying levels of waste management services to its residents and is responsible for the operation of their waste transfer stations and/or landfill sites, and any bag tag/limits/user pay system or policy enforcement.

Overall, when comparing the County to other municipalities within the Rural Regional municipal grouping,

- total waste diversion is average;
- the blue box program is cost effective; and,
- the residential waste per capita generated is more than average.

The County's waste composition is represented graphically below.

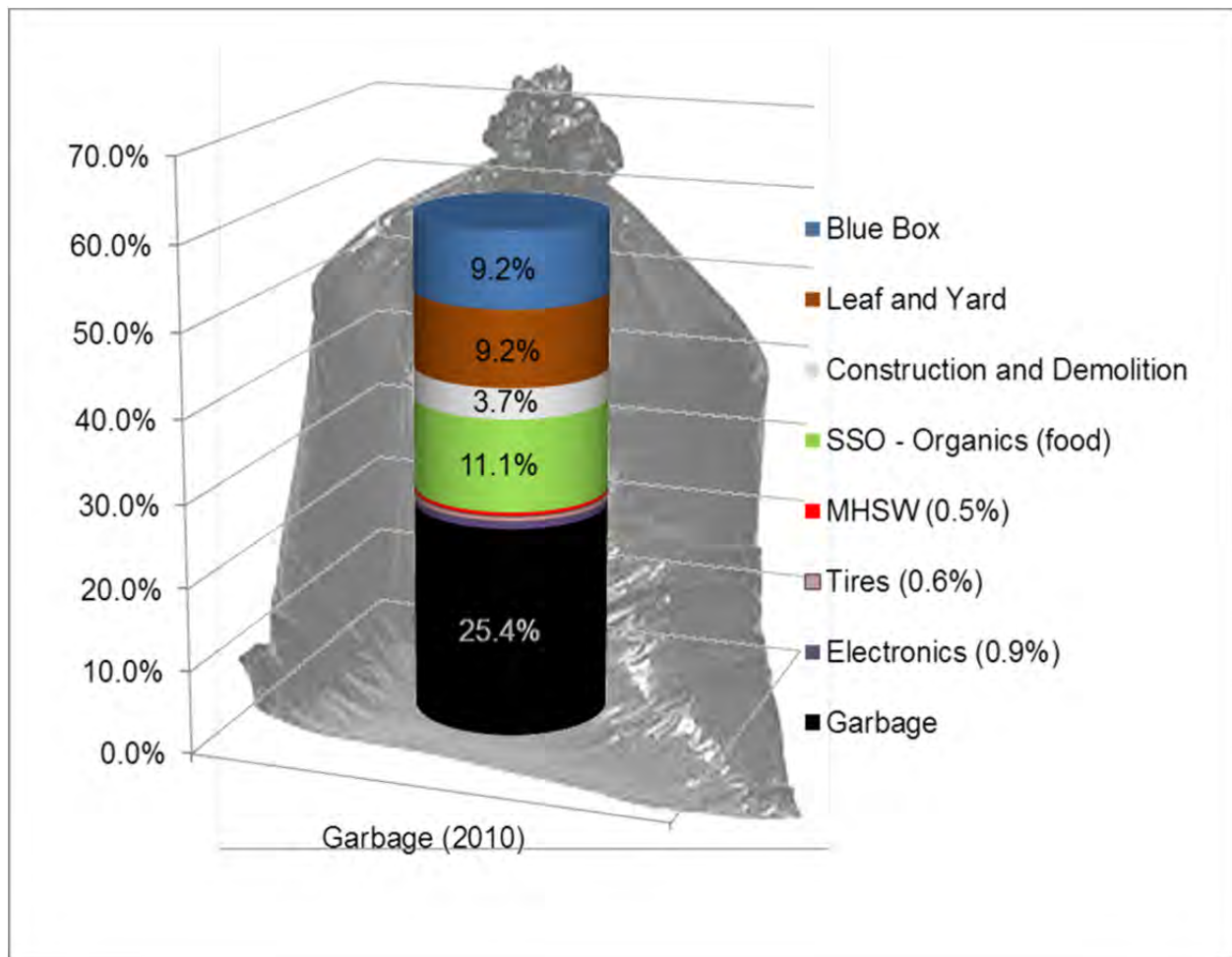




The waste management system of the County provides a solid foundation on which to enhance and expand to meet the sustainability needs (i.e. social, economic, and environmental) of the County over the next 20 years.

As a component of the WMMP, a divertible waste opportunity analysis was conducted to assess the performance of the County's diversion programs. The divertible waste opportunity analysis shows that it is possible to divert 75% of the waste in the County; therefore, achieving the 60% diversion target is a realistic goal over the next 20 years. It is recognized that even with increases in waste diversion in the County, there will still be a need for disposal of materials that cannot be, or are not, diverted.

The graph below demonstrates how much more waste could be diverted from garbage bags by achieving a 75% capture rate, and the corresponding decrease in garbage going to landfill after implementation of potential options. As illustrated, the greatest gains in diversion would be realized through increased capture of blue box, food waste, leaf and yard materials and construction and demolition debris.





To address the waste management needs of the County, a long list of waste management options was assembled and assessed for suitability, based on the County's unique waste management system and circumstances. Fifty seven options for waste diversion and three categories of waste disposal options were reviewed. Some of the options evaluated were determined to be unsuitable for the County and Townships at this time; however, the County and Townships may decide to revisit the long list of options in the future as some options may become suitable at a later date, in a specific circumstance or jurisdiction, or based on conditions that are not foreseen at this time.

Consultation Program

The County undertook comprehensive consultations with the public to gain an understanding of residents' facility and program usage, overall participation in waste diversion, and to learn their opinions of improvements that could be made to waste management in the County. The County's objective for the consultation program was to ensure that the WMMP process was open and transparent, and that interested parties could maintain involvement in, and knowledge of the plan. A Technical Advisory Committee was established to provide study direction and technical input on an on-going basis. Aboriginal communities in the County as well as First Nations associated with the William's Treaty were contacted to solicit input.

The initial public consultation included presentations to each Township Council, and County staff hosting "Environment Days" events, attending meetings and fairs, and visiting business areas to inform residents and other waste management system users about the WMMP. Promotional materials encouraging public input into the WMMP process were distributed at such events and meetings. Public information centres were held at five locations in the County in August, 2011. Results of the initial round of public consultation suggested that residents of the County confirm agreement with the objective to reduce waste. The methods to reduce waste that were determined to be the most acceptable to the public include:

- Increase blue box items
- Increase public promotion and education
- Implement bag limits for garbage

With regard to disposal options, residents ranked the presented waste disposal options in the following way:

- Increase waste reduction (extend life of landfill).
- Combustion with the potential for energy generation (if approved).
- Expand existing landfill (if approved).

The least desirable option was to export waste outside County boundaries.



The secondary public consultation included presentations to each Township Council and a County wide information centre held in November 2012. In conjunction with this open house session, an online survey was posted to the County website during both the initial and secondary consultation periods to obtain public opinion on the current waste system, preferences for system improvements, and general comments related to waste management. Results of the secondary round of public consultation suggested that seasonal residents felt that they already pay high taxes for the service they receive and therefore were unwilling to increase taxes for additional diversion.

All input received through the consultation program was considered by the County, and was used to guide the recommendations for future waste diversion and disposal.

Recommendations for Waste Diversion

Opportunities to maximize waste diversion depend on having appropriate, efficient and affordable infrastructure and operations in place to collect and process the materials. An ideal waste diversion program must:

- allow for modular implementation opportunities working cooperatively between the County and Townships;
- be flexible enough to be accessible and understood by residents;
- be structured enough to allow for short and long term planning; and,
- be affordable for all.

The WMMP has identified a number of strategies that will allow the County to meet or exceed the 60% diversion target set by the Province, which has been accepted by the County as a realistic and achievable goal. The following Key Recommendations are made on a County-wide level to take a positive step toward meeting the 60% waste diversion target:

Short Term Actions (1-5 years)

Collection Strategies

- Enhance Collection of Leaf and Yard Materials - Establish seasonal curbside collection of leaf and yard materials in strategic population centres and allow for collection at all landfills and transfer stations within 2 years. All material collected should be formally diverted, such as being processed at a composting facility. The anticipated increase in diversion is 9.2%.
- Increase Diversion of C&D Debris - Create designated drop-off areas at all landfills and transfer stations to allow for proper separation of C&D debris from other waste types within the next 2-5 years. The C&D debris should be hauled to a C&D processing facility for proper sorting for eventual recycling, reuse or disposal. The County should work with local companies and individuals in the construction and



demolition trade to promote the proper sorting and collection of C&D debris. The anticipated increase in diversion is 3.7%.

- Promote Backyard Composting - Continue to assist and promote the use of backyard composters to all residents. The anticipated increase in diversion is up to 1%.

Policy and Enforcement Approaches

- Align By-laws - Introduce a new County-wide waste management by-law, which will support activities and policies designed to increase diversion and preserve landfill capacity at the PCCWMF (e.g. 2 bag limit, bulky item limits, encourage and improve diversion, outline responsibilities of the Townships and County, etc.), within the next 2 years. The anticipated increase in diversion is 3%.
- Increase Enforcement - Provide increased enforcement for all existing, enhanced and new diversion programs, beginning within the next 5 years. Increasing enforcement is anticipated to help all of the key recommendations reach their noted diversion potential.
- Mandatory Recycling - Re-establish mandatory blue box recycling and the proper diversion of tires, MHSW, WEEE and C&D debris, banning these materials from disposal within the next 5 years.

Promotion and Education Strategies

- Coordinate P&E Campaigns - Provide consistent messaging through current on-going P&E for all County-wide diversion programs within the next 5 years and beyond. Use a variety of materials, techniques and approaches to capture and maintain the interest of the public. Consistent public messaging is anticipated to help all of the key recommendations reach their noted diversion potential.

Monitoring and Reporting

- Measuring Success - The overall success of waste diversion programs should be monitored on a regular basis to allow for modifications to increase or maintain waste diversion as necessary to meet the desired waste diversion targets. Section 8.0 includes a description of the items to be monitored on a regular basis. The first review should be completed in 2018, with reviews completed every 5 years thereafter.

Medium Term Actions (5-10 years)

Collection Strategies

- Expand SSO Collection at Curbside and Transfer Stations - Provide “green bin” service to strategic population centres and install additional collection systems (i.e. Molok©) at strategic landfill or transfer stations. The anticipated increase in diversion is 11.1%.

Policy and Enforcement Approaches



- Building Permit Waste Reduction Plans - Establish the requirement for waste reduction plans during project planning for development, demolition and construction projects. Applicants seeking a building permit would be required to review a guidance document and then complete a Project Waste Reduction Summary. The anticipated increase in diversion is 5%.

IC&I Diversion Strategies

- Investigation of IC&I Waste - Measure the quantity and composition of waste generated by the IC&I sector, including agricultural waste, that is collected in the Townships and report the data to the County.

Long Term Actions (10-20 years)

Policy and Enforcement Approaches

- Materials Ban (Organics) - Once the expanded SSO collection program has been introduced, prepare for and mandate an organics disposal ban within the next 10-20 years. Considerable lead time will be required to have the appropriate infrastructure in place to support an organics ban; therefore, the County and Townships should begin to work toward this goal. The anticipated increase in diversion is 3%.

It is important to note that the implementation of the waste diversion options is likely to occur over several years, with some options requiring substantial lead time for public notification, planning, financing, funding, and preparation. Due to the structure of the County, some of the programs would be led by the County while others would be managed at the Township level. Due to the differing needs of each Township, some flexibility in selecting tailored and appropriate diversion programs is necessary. Each Township should review all waste diversion options presented in this WMMP for applicability and suitability to their jurisdiction, and implement programs as required to supplement the County-wide initiatives recommended.

Recommendations for Waste Disposal

It is recognized that there is limited capacity remaining at the County/City Waste Management Facility, and that despite best efforts toward waste diversion, eventually additional waste disposal capacity will be required. To implement many of the solid waste disposal options discussed, the County will be required to follow a provincial environmental assessment process (individual or screening). The environmental assessment process can also be used to assist in determining the most suitable option for disposal. It is recommended that the County initiate the environmental assessment process a minimum of 8 years prior to reaching capacity at the existing facility, to ensure that sufficient time is allocated for necessary supporting studies.

The WMMP presents a discussion of several options to manage disposed waste into the future, and each has a unique set of strengths and challenges as discussed in Section 5.7.

The following Key Recommendations will bring the County closer to identifying the most suitable means of waste disposal once capacity is no longer available at the County/City Waste Management Facility.



- Investigate Suitable Options for Future Landfill Capacity
 - Monitor existing landfill capacity, landfill expansions and potential greenfield locations over time to allow the widest selection of suitable options.
- Undertake a Formal Review of Waste Management Technologies
 - As a component of these reviews, the County should monitor the progress of the Durham York EFW facility and investigate options for use of this facility. The County should also continue to investigate internal and external sources of capacity for compost processing. Reviews should be completed on a regular basis (every 3 to 5 years).
- Undertake a Full Feasibility Study for Waste Disposal
 - A cost/benefit assessment for future residual waste capacity within the County should be completed. Options to create mutually beneficial partnerships with other municipalities and the private sector outside its jurisdiction should be investigated.
 - The study should be developed so that it may be used as necessary to meet the requirements of the EAA and other relevant legislation, should the County decide to proceed with implementation of a specific residual waste disposal option.

Most of the waste disposal options presented within the WMMP would be subject to major studies, municipal and provincial approvals and possibly federal approvals (i.e. existing landfill capacity expansion, new landfill site, thermal treatment facility). The intent of the studies and approvals is to make sure that the expansion or creation of a new facility, and subsequent operation, does not have a negative impact on the environment. Components of the environment considered in the required studies include natural, cultural, social and economic aspects.

Implementation of Recommendations

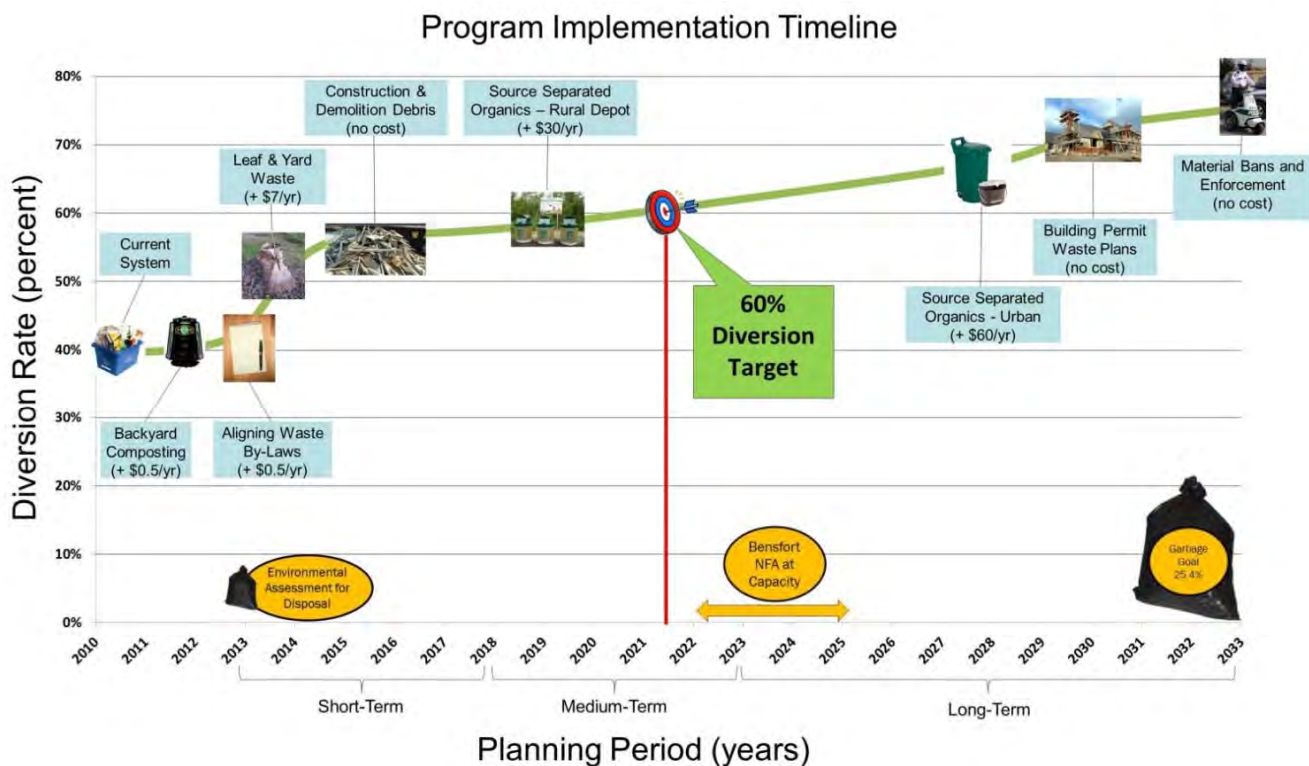
The implementation and performance of the waste management system improvements identified in the WMMP should be monitored on a regular basis, to ensure that the system continues to evolve with waste generation, diversion and disposal conditions. An annual review of the status of waste diversion programs, the impact on waste diversion rates, remaining waste disposal capacity and a summary of any consultations should be undertaken, and documented in an annual monitoring report.

The WMMP is intended to be a living document that will be occasionally revised to reflect the ever changing conditions of waste management. A review and update to the WMMP should be completed every 5 years to ensure that it remains a relevant, current and applicable tool to assist with the management of waste throughout the County.



It is understood that diversion programs can take several years to reach their full diversion potential. In the case of the County, it is assumed that all programs will reach maturity (i.e. the maximum sustainable diversion rate) in 5 years from implementation. This assumption has been adopted to illustrate the progress that the County will make toward meeting the 60% waste diversion target over the planning period, as outlined above. Based on the implementation schedule provided, it is anticipated that the County will reach the 60% diversion rate target between 2021 and 2022.

The 60% waste diversion target set by the Province and adopted by the County can be met by implementing the Key Recommendations, as presented in the figure below.



The current cost for diversion programs is estimated to be \$84 per household. To get to the 60% diversion target it is estimated that an average additional cost of \$7 per household per year over a ten year period will be required.

It was recognized through the public consultation program that residents feel they are currently paying high taxes for the services received. Moving forward, it will be important to ensure that Key Recommendations of this Plan are implemented in a financially accountable manner, in order to reach the 60% diversion rate target. The County and Townships should work together to identify opportunities to off-set the costs associated with the addition of diversions programs to minimize the tax burden to residents.



Funding for some diversion programs is made available through government initiatives and stewardship programs. Funds can also be made available by seeking efficiencies within all waste management services, at the Township, County and co-operative levels. Improving efficiencies will increase finances available to use for improvements in County-wide waste management services. The County should continue to monitor funding availability from internal and external sources throughout the planning period to assist with program implementation and operating costs.



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