

STAFF REPORT: ENGINEERING AND PUBLIC WORKS DEPARTMENT

REPORT TO: Infrastructure and Recreation Committee
MEETING DATE: October 16, 2012
REPORT NO.: EPW.12.085
SUBJECT: Curbside Organics Implementation
PREPARED BY: Adam McMullin, Environmental Initiatives Coordinator

A. Recommendations

THAT Council receive Staff Report EPW.12.085 entitled “Curbside Organics Implementation” and;

THAT Council endorse in principal the establishment of a curbside source separate organics collection service commencing in 2014 for deliberation during the preparation of the 2013 budget.

B. Background**Purpose**

This report proposes to enhance waste management services for residences by providing curbside source-separated organics (SSO) collection.

This report provides background on the proposed service alternatives, the implementation plan and the financial implications.

Background

Staff are proposing to implement a curbside SSO program. These programs divert household organic waste from the garbage stream. Residents are provided a ‘green-bin’ and a ‘kitchen catcher’ that allows users to separate household organic wastes from the garbage.

The 2012 Waste Diversion Plan (found in Staff Report EPW.12.078) includes a detailed Justification report for the implementation of curbside SSO services. This document “Source Separated Organics Justification Report” is also included as Attachment #1 of this Staff Report. This Report highlights and re-emphasizes the key points of the implementation plan. These include:

- The waste disposal site has limited disposal capacity remaining;
- Organic waste diversion will extend the life of the waste disposal site (by 6 years) and will reduce greenhouse gas emissions;
- To reach the goal of 60% waste diversion (established in the waste diversion plan), a curbside source separated organics program must be implemented;

- The waste disposal site has the capacity to process and compost the quantities of household organic waste generated by the community without significant upgrades or site improvement;
- Residents are generally in favour of a curbside SSO program.

Under the proposed program, curbside organic material is collected in conjunction with regular garbage pick-up, using a split truck. The split collection truck delivers the organics waste to the compost pad at the landfill. The processing of the collected SSO materials is integrated into the current landfill leaf and yard waste composting operations. The organic material is blended with woodchips and formed into a windrow where the composting process is initiated.

Staff propose rolling-out the service in two phases;

- 1) Phase I (2014) – Thornbury / Clarksburg & Craigleith Collection Zones (Monday & Thursday Collection)
- 2) Phase II (2015) – Lora Bay / Wards Rd. & Rural Collection Zones (Tuesday & Wednesday Collection)

Implementation Plan

Should Council choose to proceed with implementation of the curbside SSO program in 2014, the following action is proposed:

- Complete and submit permit approvals (January 2013)
- Procure green-bins, compost material mixer (September 2013)
- Upgrade hydro at waste disposal site (October 2013)
- Develop promotion and education materials (October 2013)
- Modify Waste Diversion and Disposal and Solid Waste Collections by-laws (November – December 2013)
- Conduct public education and promotion program (January – April 2014)
- Implement phase one service (April 2014)
- Implement phase two service (April 2015)

Capital and Operating Requirements

Processing of the SSO material does not require the construction of new facilities or buildings at the waste disposal site, but does require the following capital purchases / improvements:

- Purchasing a stationary mixer, one piece of equipment that blends woodchips and food waste into a uniform pile;
- Minor site preparation for placement of mixer;
- Procuring green bins and developing promotional and education materials for residents; and
- Upgrading the hydro on-site to power the mixer.

Operationally, the Town's collection services contract will be modified to provide separate collection of the organic materials. The additional SSO material will marginally increase operating costs related to compost sampling, material screening and grinding, additional fuel and hydro, maintenance and training.

Points of consideration:

- Approximately 50% of residential household garbage is comprised of divertible organic material;
- A fully-implemented, optimized program will increase residential waste diversion rate from 42% to 59%;
- A fully-implemented program will also eliminate 540 tonnes of greenhouse gas emissions;
- Implementing a SSO program will extend the life of the landfill by 6 to 9 years; and
- A SSO program will have an immediate direct cost to the ratepayer.

An effective comparison of cost is price per tonne it has been identified that the cost of landfilling waste within the proposed landfill expansion will cost \$315/tonne including operational, debt and post-closure costs. However, the calculated cost of composting organics including collection is \$280/tonne. A SSO program also has predicted savings over the long term saving 6 to 9 years of landfill space depending on the SSO capture rate.

Recommendation

Staff are recommending Council approve the implementation of curbside SSO to commence in April 2014 through the 2013 budget deliberation process.

Should Council choose not to pursue with establishing the program in 2014, Staff suggest postponing future implementation decisions until at least 2018 at which time Staff will re-examine the proposed service and report to Council. This direction will allow Staff to re-establish priorities, workplans and appropriately allocate funding for key programs.

C. The Blue Mountains' Strategic Plan

Improving the waste diversion performance of the Town furthers the Town's Strategic Goal #2 "Addressing the Town's municipal infrastructure needs".

D. Environmental Impacts

Implementing an organics diversion program helps to the Town to:

- Assume full responsibility for the management of our wastes within regional borders;

- Sustainably manage waste generated within the community as locally as possible;
- Become a community that supports a movement towards a zero waste society; and
- Reduces community greenhouse gas emission.

E. Financial Impact

The financial impact of implementing the curbside SSO organics program is described herein. Attachment #1, “Source Separated Organics Justification Report” outlines the financial implications of the implementation of the curbside SSO program. The following conclusions are offered:

- Implementing the SSO represents a long term financial benefit compared to the current practice of landfilling organic waste material;
- The SSO program has an estimated cost of \$280 / tonne;
- New landfill disposal costs are estimated at \$315 / tonne;
- There is an immediate direct cost to the ratepayer;
- Collection costs represent the majority of SSO program expenditures;
- The SSO program costs are based on a conservative capture rate of 40%, it is estimated that the program will achieve a capture rate of 50 to 60% within five years of implementation;
- Capital project costs of the SSO program are gas-tax eligible, representing potential reduction in program cost to the ratepayer;
- Landfill expansion is gas-tax eligible, and could even be used for landfill debt repayment;
- Commercial tipping fee revenues will further enhance the financial viability of the SSO program. These have not been included in the attached financial analysis or taxation impact.
- Implementing the SSO program will extend the life (based on a 40 year life expectancy) of the landfill by 6 years (based on a 40% capture rate) for an estimated deferred saving of \$503,000, to 9 years (based on a 60% capture rate) for an estimated deferred saving of \$2,830,080;

By way of simple example Table 1 below identifies the deferred costs using a range of organics capture rates and a 40 year landfill life. SSO total costs decrease slightly as the capture rate increases due to the additional revenue for selling finished compost. A 60% capture rate could see the Town deferring \$2.83 million in costs over the life of the landfill.

Table 1: Deferred Cost Saving of SSO Program vs. Landfilling

SSO Capture Rate	Tonnage Diverted	SSO Cost Per Tonne	SSO Annual Cost	Landfilling Cost*	Annual Deferred Cost	40- Year** Deferred Cost
40%	360	\$280	\$100,818	\$113,400	\$12,582	\$503,260
50%	450	\$222	\$100,083	\$141,750	\$41,667	\$1,666,680
60%	540	\$183	\$99,348	\$170,100	\$70,752	\$2,830,080

*Landfilling cost is calculated by multiplying estimated annual diverted tonnage by estimated cost of landfilling (\$315/tonne)

** 40 years is the life expectancy of the landfill

Another strategy for use of gas tax is funding the landfill expansion. This option would help to reduce the overall debt that the Town will incur from the expansion. An upfront payment of \$425,000 will provide annual repayment relief and accumulated interest savings in the following manner;

Table 2: Annual Payment / MIL Rate Impact

Time Period	Annual Payment	Taxation (MIL Rate) Impact
20 Year	\$ 31,300	-0.29%
30 Year	\$ 24,600	-0.23%
40 Year	\$ 21,500	-0.20%

Table 3: Interest Savings

Time Period	Interest charges saved*
20 Year	\$ 200,000
30 Year	\$ 312,500
40 Year	\$ 434,000

*based on 4% annual interest

Table 2 outlines the annual payments *avoided* if \$425,000 of gas tax was utilized to initially pay part of the estimated \$7.6 million cost associated with the landfill construction, over three time periods. Table 3 shows the total accumulated interest saved over the same three time periods if the \$425,000 of gas tax is used to fund the landfill expansion.

A key finding with the above example is that an investment of \$425,000 of gas tax on the landfill expansion would save \$434,000 over 40 years in interest charges - alternatively investing \$350,000 of gas tax in SSO could save \$2.83 million in landfill capacity.

Initial Capital Costs

The mixer, resident materials (Green Bins, Promotion and Education Material) and permitting costs represent the major capital expenditures. These capital requirements and associated costs are summarized in Table 4 as follows:

Table 4: Initial Capital Costs

Item	Total Cost
Mixer	\$90,000
Hydro Installation and Line Extension	\$15,000
Green Bins, Waste Box Indicators, Promotion and Education Material	\$194,000
Certificate of Approval Amendment	\$50,000

Total: \$349,000

As part of the two phase implementation, these costs would be incurred over a three year period, but have been amortized over a 40 year period (based on the expected life-expectancy of the landfill). Other long-term capital considerations included mixer and asphalt replacement costs.

Operating Costs Impact

Increased collection expenses represent the major increase to operating costs. The additional SSO material will marginally increase operating costs related to compost sampling, material screening and grinding, additional fuel and hydro, maintenance and training. Table 5 summarizes the estimated increased operational expenses incurred at the landfill.

Table 5: Compost Site Operational Cost Impact at 40% SSO Capture Rate

Item	Annual Cost
Extra Fuel	1,500.00
Extra Sampling	2,000.00
Extra Hydro	1,000.00
Additional Training	500.00
Additional Maintenance	3,500.00
Green Bin Replacement	2,200.00
Additional Screening	5,687.50
Additional Grinding	1,300.00
Leachate Management	1,000.00

Total: **18,687.50**

These are operational expenses based on 2012 costs. Assuming a 2014 roll-out, with inflation, it is anticipated the additional landfill operational cost to be \$20,430. The quoted additional collections cost are \$93,298. Table 6 outlines the estimated operational cost impact for operational expenses over a two-year phase in, from 2014 – 2015.

Table 6: Operational Cost Impact 2014 – 2015 at 40% SSO Capture Rate

Cost	Phase I Costs 2014	Phase II Costs 2015	Total Cost - Phase II & II
Processing	\$12,757	\$7,663	\$20,420
Collection	\$56,253	\$37,046	\$93,298
Total :	\$69,010	\$44,709	\$113,718

Financing Mechanism & Immediate Budget Implications

Staff are proposing to roll-out the program in April 2014. This timeframe requires that Staff purchase the required materials and equipment in 2013. To this end, Staff will be requesting approval of a capital budget program for 2013 and 2015 during the 2013 Budget deliberation.

Operationally, implementing phase 1 in April 2014 will require an increase to the 2014 operational budget, mostly due to increases in collection costs. Furthermore, the 2015 operational budget will increase to reflect to additional cost associated with implementing phase 2.

Revenues generated from the sale of finished compost will offset the program cost. However, potential revenues generated from the sale of compost are not included in the 2013 Budget as these revenues will not materialize until 6 – 8 months following the program initiation and to take a more conservative approach.

F. In Consultation With

Jeffery Fletcher, Manager of Solid Waste & Environmental Initiatives
 Darcy Chapman, Capital Accountant

G. Attached

1. Source Separated Organics Justification Report

Respectfully submitted,

Adam McMullin

Adam McMullin
Environmental Initiatives Coordinator

Engineering & Public Works
Office: 519-599-3131 Ext.264
Fax: 519-599-7723
amcmullin@thebluemountains.ca

Reg Russwurm

Reg Russwurm
Director, Engineering and Public
Works

Appendix A

**Town of The Blue Mountains
Source Separated Organics Justification Report**

DRAFT

DRAFT

Introduction

This report presents the justification for the implementation of a municipal curbside residential source separated organics (SSO) program and the associated financial, environmental and social implications.

Background

The Town has been proactively assessing the waste management needs of the community. Two initiatives, the 'Long Term Solid Waste Solution' and 'The Sustainable Path' have provided the Town with an over-arching direction moving forward. These are described as follows:

Long Term Waste Management Solution

In 2006, the Town initiated a 'Long Term Waste Management Solution' to address the challenge of ensuring that adequate waste management capacity is available for the Town's residential, agricultural, industrial, commercial, institutional, construction and demolition sectors for the next 20 – 30 years.

As part of this initiative the following assessments, actions and reports were completed:

- A summary of the existing waste management system (May 2007);
- Assessment of the Town's current and future solid waste requirements (May 2007);
- Waste Diversion Plan (July 2008);
- Completion of a curbside organics collection and processing feasibility study (February 2010);
- Completion of organic diversion business case (June 2010);
- Complete an environmental screening report to the Ministry of the Environment to expand landfill capacity (2012).

The following conclusions are drawn from the Long Term Waste Management Solution:

- The waste disposal site has limited disposal capacity remaining;
- Organic waste diversion will extend the life of the waste disposal site and will reduce greenhouse gas emissions;
- To reach the goal of 60% waste diversion (proposed in the Waste Diversion Plan) a curbside source separated organics program must be implemented;
- The waste disposal site has the capacity to process and compost the quantities of household organic waste generated by the community without significant upgrades or site improvement;

- Residents are generally in favour of a curbside SSO program.

The Blue Mountains' Sustainable Path

In 2010 The Blue Mountains' Sustainable Path was completed, a long-term plan that steers the community towards a sustainable future. This plan was created collaboratively with participation from local organizations, businesses, institutions, residents and volunteer groups. The Plan focuses upon three pillars of The Blue Mountains, environmental integrity, community vibrancy and economic prosperity. Waste management is an integral component of The Sustainable Path. Specifically, within the environmental integrity pillar a number of goals, strategies and actions are identified that provide direction for the community moving forward, these are as follows:

- Implement a permanent curbside organics program in urban areas throughout the municipality
- Assume full responsibility for the management of our wastes within regional borders
- Sustainably manage waste generated with the community as locally as possible
- Become a community that supports a movement towards a zero waste society
- Reduce solid and hazardous waste generation in the community
- Increase the Town's diversion rate through implementation of various reduce, reuse and recycle programs
- Update the Town's Waste Reduction Action Plan with residential diversion rate targets of 60% by 2015, 75% by 2025 and 85% by 2050
- Develop local and regional waste diversion services specific to industrial, institutional and commercial sectors

The 'Long Term Waste Management Solution' and 'The Blue Mountains Sustainable Path' demonstrate that a curbside SSO collection and processing program will positively benefit the community's waste management system and provide a desired service for residents.

Program Implementation

Background

The Town currently provides curbside waste collection services for residents. This includes the traditional blue and grey box program to collect recyclable paper; plastics; glass and metal materials. Non recyclable materials including organic waste is collected at the curb in garbage bags. In addition to curbside waste management services, the Town owns and operates a waste disposal site (Landfill) with a variety of diversion programs.

The Town operates a compost program at the Landfill for delivered brush; leaf; yard and apple waste. These materials are processed using an active windrow technique on an asphalt pad. In a

windrow composting process, nitrogenous (green) material is mixed with carbonaceous (brown) woodchips. The mixed materials are formed into a windrow, generally 5 metres in width by 3 metres in height and up to 75 metres in length.

The piles are turned over as required to maintain an ideal internal operating temperature between 55 C and 60 C. Turning frequency depends on the types of materials composted, the time of year, temperatures within the windrow and other factors. Generally, windrows are turned weekly. Turning, which provides aeration and helps to break down the composting materials, is undertaken with a wheeled loader. The material will be processed for approximately six months to one year.



Curbside SSO programs divert household organic waste from the garbage. Residents are provided a 'green bin' and a 'kitchen catcher' that allows users to separate household organic wastes from the garbage. The catcher is used in the kitchen area to temporarily hold scrap food, tissues and other organic materials. These are relatively small containers (8 litre capacity) compared to the larger green bins (45 litre capacity). Participants frequently empty their kitchen catcher to the larger green bin which is placed at the curb for weekly collection.

Curbside 'Green Bin'

Collection and Service Description

Curbside collection of the green bin will occur in conjunction with regular garbage pick-up. The collection contractor, using a split truck, will pick-up the green bin and garbage bag(s) at each stop. The organic waste contained in the green bin will be placed in one side of the split truck with the garbage bag placed in the other side.

The split collection truck will deliver the organics waste to the compost pad at the landfill. Only the organic waste is tipped onto the compost pad for processing.

The processing of the collected SSO materials will be integrated into the landfill composting operations. Residential organic waste represents an ideal source of nitrogenous material and is readily composted utilizing a windrow processing technique.

The organic waste will be fed into the mixer unit with woodchips at the appropriate proportion. The mixer breaks down the material into a smaller uniform size and then sufficiently mixes the materials. Reducing the material size and mixing it to the proper proportion improves and speeds up the composting



Split-Truck Collections Vehicle

process producing more uniform product. After mixing, the material is formed into a windrow to initiate the composting process.

Program Roll-Out & Communications Strategy

The Town’s program will accept household food waste and paper products. Table 1 identifies the materials accepted and not accepted within the Town’s SSO program.

Table 1: Acceptable and Non-Acceptable Green Bin Materials

Accepted:	Not Accepted:
<ul style="list-style-type: none"> ✓ Fruits and vegetables ✓ Meat and Fish Products Includes bones, fat, skin and shellfish ✓ Grain Products Includes pasta, bread, rice and cereal ✓ Baked goods or baking ingredients Includes cake, cookies, flour, sugar, spices, eggs and egg shells ✓ Dairy Products Includes milk, cheese and yogurt ✓ Other food products Includes candy and confectionary, coffee grounds, coffee filters and tea bags ✓ Paper Products Includes soiled paper towels, paper napkins. 	<ul style="list-style-type: none"> ✗ Artificial Flowers & Plants ✗ Baby Wipes ✗ Candles ✗ Carpet & Rugs ✗ Cigarette Butts ✗ Clothing, Leather & Textiles ✗ Corks ✗ Cotton Balls, Ear Cleaners ✗ Dead Animals ✗ Disposable Mop Sheets ✗ Dryer Sheets ✗ Foil ✗ Gum ✗ Milk Bags ✗ Styrofoam ✗ Tissue Paper for Gift Bags ✗ Plastic Wrap & Baggies ✗ Personal Hygiene Products, diapers ✗ Pet Waste ✗ Wood ✗ Toothpicks ✗ Vacuum Cleaner Bags & Contents ✗ Yard Waste ✗ Compostable & biodegradable plastics.

The proposed SSO program will be rolled out in two phases as follows:

- 1) Phase I (2014) – Thornbury / Clarksburg & Craigleith Collection Zones (Monday & Thursday Collection)
- 2) Phase II (2015) – Lora Bay / Wards Rd. & Rural Collection Zones (Tuesday & Wednesday Collection)

Prior to each phase, a promotion and education (P&E) communications strategy will be employed to inform the public about the change to the curbside waste collection service. The educational material will serve to increase the awareness and understanding of the new program for all phases of the implementation. The material will give residents tools to deal with concerns such as odour and animal and other nuisances. A P&E campaign will address these concerns, provide consistent messaging for residents and clearly delineate the materials accepted in the green bin. The P&E communications strategy will include the following components:

- **Public Information Centres (PIC)**

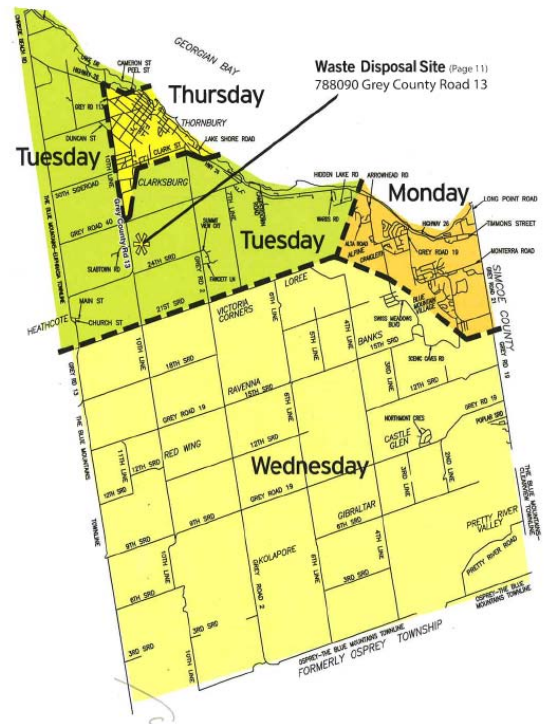
Public Information Centre(s) will be hosted to provide educational material to interested members of the public and address questions and concerns about the program. The PIC will be held in an open house format, whereby residents are free to roam and review information presented on easels and brochures.

- **Informational Letter Mail-Out**

Participating residents for each phase will receive an informational letter outlining the details of the program. A fact sheet will be included in the mail-out that addresses common questions and concerns associated with curbside green-bin programs.

- **Newspaper Advertisements**

Advertisements will be placed in the local newspapers that provide brief details about the program roll-out and sources for additional information.



- **Media Advisories / Magazine Articles**

Staff will circulate media advisories to local radio stations and newspapers. Local and regional magazines will often include articles from local government regarding new programs or initiatives. Staff will utilize the magazine circulation to enhance awareness of the SSO program.

- **Revised 'Oops' Collection Stickers**

Collection agents will be provided with updated 'Oops' collection stickers to include infractions related to improper use of the green bin.

- **Webpage Updates and Notifications**

All of the program information will be made available on the Town's website. Updates, public information centres and implementation notices will be circulated electronically to residents that choose to be notified by email.

Bin and Material Delivery

Single unit residences will be provided a green bin, kitchen catcher and educational material prior to the commencement of collection service. The educational material will include a fact sheet and other promotional tools.

Multi-unit residents will be provided with educational materials and individual kitchen catchers. Each multi-unit property will be supplied with larger collection bins dedicated to hold organic waste. Residents would be required to empty their kitchen catchers into these dedicated bins.

Multi-unit rollout will require collaboration with the condominium and property management companies. An update of the collections bylaw will obligate participation in the program by condo corporations and multi-unit properties to ensure continued garbage collection service.

Source Separated Organics Program Analysis

Service Delivery

Currently, organic waste material is collected at curbside in the garbage stream and disposed in the Landfill. The Town's waste management service has the capacity and the infrastructure to modify curbside service delivery with the addition of SSO collection and processing, without significant investment or financial impact to the ratepayers. The Town currently accepts and composts residential leaf and yard waste. This material is processed on site using an active windrow technique on a composting pad. Implementing an SSO curbside collection and processing program can be readily integrated within the current system operated at the Landfill.

Residential Organic Waste Generation and Composting Capacity

The SSO program will divert residential organic material from the garbage. Residential waste audits conducted in 2006 demonstrated that approximately ½ of all garbage is organics. In 2011, 1961 tonnes of curbside residential waste was collected and disposed in landfill. Assuming 50% is organic material, approximately 900 tonnes of organic material is available for diversion from the waste stream.

The Town's compost pad was initially designed to accommodate 1,000 tonnes of material annually. This capacity is based on a turning over period of 12 months, meaning that the delivered material takes 12 months to be processed and reach maturity. Utilizing the mixer and removing the finished compost from the compost pad area will decrease the material processing time to 6 – 8 months and create additional space for windrow construction. These changes will increase the annual processing capacity of the Town's composting operations to 2,000 tonnes.

Financial Implications

Increased collection service fees and procuring capital equipment represent the major cost drivers of the SSO program. The major capital expenditures include purchasing a material mixer and curbside green bins. The program will generate revenue from the sale of finished compost to help offset the annual program cost.

Capture rates for curbside SSO programs typically range from 40 – 60%. To be conservative, cost calculations will assume a relatively low capture rate of 40% or 360 tonnes annually.

The estimated net cost of the program is \$280/tonne. The program will generate revenue from selling finished compost. This revenue partly offsets the expense of the program and has been incorporated into the cost per tonne. Collection expenses are the major cost driver representing 75% of total project cost. The major capital expenditures (green bins, mixer) account for 9% of program cost. Composting operational cost increases account for 16% of the total program expense. These estimates are based upon full program implementation in 2015, adjusted for inflation. Figure 1 illustrates the program cost breakdown while Table 2 outlines the identified cumulative impact on taxation. This table only delineates the costs of the program and does not include program revenues.

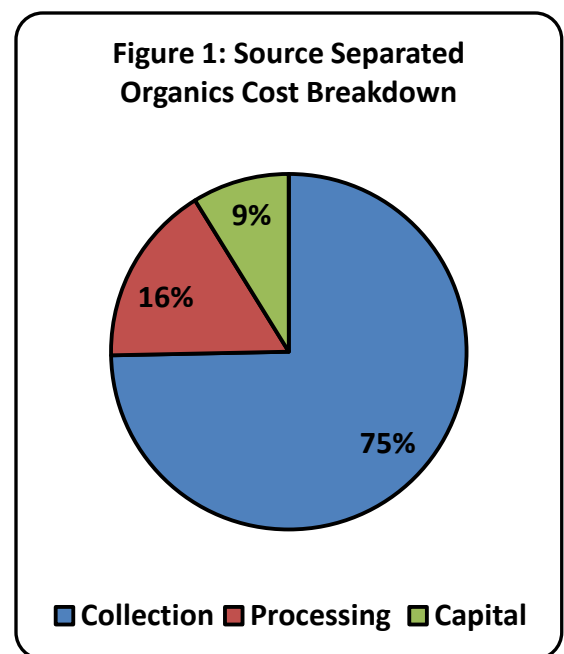


Table 2: Taxation Impact 2014 - 2015

Cost	Phase I - 2014	Phase II - 2015
Processing	\$12,757	\$20,420
Collection	\$56,253	\$93,298
Capital	\$11,250	\$11,250
Total :	\$80,260	\$124,968

Capital & Operating Requirements

The waste disposal site currently has the capacity to expand composting operations. The basic composting system will not require significant modification to process the additional organic material delivered on-site.

The SSO program will require some capital modifications to the Landfill composting facility including the purchase of processing equipment and materials for residents. These capital requirements and associated costs are summarized in Table 3 as follows:

Table 3: Capital Component Cost Summary

Item	Total Cost	Annual Amortized Cost
Mixer (12-15 year replacement cycle)	\$180,000	\$4,500
Hydro Installation and Line Extension	\$15,000	\$375
Green Bins, Promotion and Education Material	\$187,000	\$4,675
Certificate of Approval Amendment	\$50,000	\$1,250
Asphalt Replacement	\$18,000	\$450
Total:	\$450,000	\$11,250

The capital costs have been amortized over a forty year period. This timeframe was utilized to align with the estimated life expectancy of the Landfill as outlined in Expansion Scenario 2 of the report submitted to Council on June 20, 2011 entitled 'Long Term Solid Waste Disposal Needs Update Report on Financial Considerations'. Expansion Scenario 2 estimates an increased landfill capacity of 17 - 40 years¹. Scenario 2 identifies a waste disposal cost of \$315/tonne.

Operationally, the Town's collection services contract will be modified to provide separate collection of the organic materials. The additional SSO material will marginally increase

¹ The expansion scenario capacity range varies depending upon the quantities of received commercial waste. If no commercial waste is received, the landfill life expectancy is 40 years.

operating costs related to compost sampling, material screening and grinding, additional fuel and hydro, maintenance and training.

Implementing the SSO program will have an immediate direct cost to the existing taxpayer. However, to properly assess the financial implications of the SSO program, the costs of *not* composting or continuing to landfill organic waste must be considered. The landfill expansion project has estimated the cost of disposal of \$315/tonne which exceeds the identified SSO diversion cost of \$280/tonne. Therefore, the implementation of the SSO program represents a financial benefit to the Town in the longer term compared to continuing to landfill organics. Additionally, diverting organic material has the benefit of extending the life capacity of the Landfill by an additional 6 years (based on a 40% capture rate) over a 40 year period. Table 4 summarizes the financial impacts of implementing the SSO program compared to the current practice of landfilling organic waste.

Table 4: Source Separated Organics Program Cost Comparison

Item	SSO Program	Landfilling Organics	Deferred Cost
Annual Costs	\$124,968	\$113,400	n/a
Annual Revenue	\$24,150	\$0	n/a
Net Cost per tonne	\$280	\$315	\$35
Annual Financial Impact:	\$100,818	\$113,400	\$12,582

These cost calculations are conservative as they are based on a capture rate of 40%. As the capture rate increases the financial benefit of SSO implementation grows compared to landfilling organic waste.

Well managed, optimized SSO programs generally achieve a 60% capture rate or greater. It is anticipated that the program will achieve a 60% capture rate within 5 years of full implementation. Table 5 summarizes the financial implications of the SSO based on a 40%, 50% and 60% capture rate compared to the cost of landfilling the organic waste.

Table 5: Financial Impact of Capture Rate on SSO Program Annual Cost vs. Landfilling

Capture Rate	Tonnage Diverted	SSO Cost Per Tonne	SSO Annual Cost	Landfilling Cost*	Annual Deferred Cost	40- Year** Deferred Cost
40%	360	\$280	\$100,818	\$113,400	\$12,582	\$503,260
50%	450	\$222	\$100,083	\$141,750	\$41,667	\$1,666,680
60%	540	\$183	\$99,348	\$170,100	\$70,752	\$2,830,080

*Landfilling cost is calculated by multiplying estimated annual diverted tonnage by estimated cost of landfilling (\$315/tonne)

** 40 years is the life expectancy of the landfill

Other Considerations

The SSO program cost evaluation has excluded potential commercial tipping fee revenues to assess the program viability of residential service only. Revenues from commercial tipping fees will offset program costs. At a minimum there are 450 tonnes of commercial organic waste material available, representing potential revenue of \$22,500 (at \$50/tonne tipping fee). However, over the long term, these revenues are not guaranteed and therefore have not been included when assessing the financial feasibility of the program. Furthermore, the major capital costs associated with the SSO program (the green bins and mixer) are gas-tax eligible, and if utilized, would reduce the program expense.

The financial assessment of the SSO program incorporates collection costs while the landfilling of organics scenario has only considered disposal costs (\$315/tonne), excluding the collection expenses. In 2011, costs for garbage collection (not including recyclables collection) were \$144/tonne. Adding \$144/tonne with \$315/tonne gives one a full cost view of garbage management for a total of \$459/tonne.

Based on the financial assessment of the SSO program, the following conclusions are offered:

- Implementing the SSO represents a long term financial benefit compared to the current practice of landfilling organic waste material;
- The SSO program has an estimated cost of \$280 / tonne;
- New landfill disposal costs are \$315 / tonne;
- There is an immediate direct cost to the ratepayer;
- Collection costs represent the majority of SSO program expenditures;
- The SSO program costs are based on a conservative capture rate of 40%. It is estimated that the program will achieve a capture rate of 60% within five years of implementation;
- Capital project costs of the SSO program are gas-tax eligible, representing potential reduction in program cost to the ratepayer;
- Landfill expansion is gas-tax eligible too, however, due to the scale of the project costs its use of the gas-tax will have a minimal impact on reducing the cost per tonne;
- Implementing the SSO program will extend the life of the landfill by 6 years (based on a 40% capture rate) over 40 years with an estimated deferred cost saving of \$503,260.
- Commercial tipping fee revenues will further enhance the financial viability of the SSO program.

Environmental Implications

The SSO program reduces the Town's dependency on landfilling and supports the processing of material for reuse. Diverting 360 tonnes of organic waste from landfill will add nearly 12% to

the residential diversion rate and a fully optimized program, with a capture rate of 60% will add 17% to the diversion rate, from 42% to 59%.

Diverting organics from landfill reduces methane emissions, a potent greenhouse gas, which is generated when organic material is landfilled and decomposes anaerobically. Composting 360 tonnes of organic waste eliminates approximately 360 tonnes of eCO₂ emissions, representing nearly 6.5% of the community greenhouse gas reduction goal².

Social Implications

The SSO program augments the current residential curbside diversion program and further instills personal responsibility for household waste management.

Source separated organic programs have been implemented in a number of the surrounding municipalities and are recognized as a progressive and essential component of leading integrated waste management programs.

Residents have a desire to sustainably manage waste as locally as possible. The majority of participants in the curbside feasibility study that completed the mail-in survey voted in favour (76%) of implementing a Town wide program. Part-time residents have noted a desire for a curbside green bin program similar to the services offered at their primary residence.

Conclusions & Recommendations

Implementing an SSO program will provide long term economic benefits to residents, provide a desired service to ratepayers and improve the environmental performance of the Town. Based on the analysis of the SSO program outlined in this report the following conclusions are offered:

- Approximately 50% of residential household garbage is comprised of divertible organic material;
- The Town's waste management system can be readily modified to collect and divert the residential organic waste material;
- The cost (per tonne) of collection and processing organic waste under a SSO program is less than the cost to dispose the material in landfill;
- An SSO program will have a positive financial benefit to ratepayers over the long-term compared to the current practice of landfilling organic waste;
- An SSO program will have an immediate direct cost to the ratepayer;
- Implementing an SSO program will extend the life of the landfill;

² Reduction goal established in the Town's Partners for Climate Protection milestone 1 submission, at 6% below 2005 levels by 2016.

- Utilization of gas-tax funding and soliciting revenues from IC&I tipping fees will further improve the economic feasibility of the SSO program;
- A fully implemented SSO program will divert 360 tonnes of greenhouse gases (eCO₂) annually and add an additional 12% on the diversion from 42% to 54%;
- Curbside organics diversion will be required to meet the provincial goal of 60% residential waste diversion;
- Residents are generally in favour of a curbside SSO program;
- Promotion and education will be an essential part of the SSO launch to ensure residents participate in and understand the program;
- SSO programs are considered an essential component of a progressive, optimized waste management system.

Based on the identified environmental, social and financial benefits, it is recommended that the Town implement a two-phase roll-out of the curbside SSO program, commencing in 2014.