

TORONTO STAFF REPORT

April 21, 2004

To: Works Committee

From: Barry H. Gutteridge, Commissioner, Works and Emergency Services

Subject: Getting to 60% Diversion and Beyond Report

Purpose:

The purpose of the report is to outline the major initiatives that will be required if the City is to achieve 60% waste diversion.

Financial Implications and Impact Statement:

There are no direct financial implications arising from this report. Subject to approval of this report by Council, staff will report further requesting specific approval for the individual diversion initiatives and will identify any financial commitments necessary at that time.

Recommendations:

It is recommended that:

- (1) Council approve the principle that the initiatives in the attached Getting to 60% Diversion and Beyond report will need to be approved if the City is to achieve 60% waste diversion, before new and emerging technologies are employed; and
- (2) Staff use the recommendations in the Getting to 60% Diversion and Beyond report as a guideline to report further requesting specific approvals including the financial commitments necessary to implement the individual initiatives.

Background:

In 2001, Council adopted the recommendations of Waste Diversion Task Force 2010, setting waste diversion goals of 30%, 60% and 100% by 2003, 2006 and 2010 respectively.

The City has exceeded its goal of 30% residential waste diversion by 2003. In 2003, approximately 287,000 tonnes of residential waste resources were diverted from landfill, which represents a residential diversion rate of 32%. The rate of 32% is a combined diversion rate for single-family and multi-family residences. The individual diversion rates are 43% for single-family homes and 12% for multi-family dwellings. Homes participating in the Green Bin Program are exceeding 50% diversion.

Council approved diversion initiatives, such as rolling-out the Green Bin program to all remaining single-family homes in the City (Toronto, East York and York in October 2004 and North York in 2005), and improving recovery of recyclables is expected to get us to a combined diversion rate of 41%. We have been working with the New and Emerging Technologies, Policies and Practices Advisory Group to develop further initiatives to maximize the quantity of material diverted to meet or exceed 60% diversion.

Comments:

Major initiatives will be required to achieve a level of 60% diversion set by Council. The key residential diversion initiatives that have been identified in the Getting to 60% and Beyond report are as follows:

- Increasing the Recovery of Recyclables in Apartments
- Mandatory Diversion Programs and Enforcement
- Reduced Bag Limits/Excess Bag Fees
- Single Stream Recycling and New Recycling Containers
- Addition of More Materials to the Recycling Program
- Implementation of SSO Programs in Apartments
- Reuse Centres and Diversion of Durable Goods

These major residential diversion initiatives will all need to be implemented if the City is to achieve 60% diversion. If achieved, the remaining 40% residual waste will be processed through the use of New and Emerging Technology.

Conclusions:

Continuing to ship the City's waste to Michigan landfill is tenuous and every effort must be made to divert as much waste as possible from landfill. As well, source separation programs, such as those recommended in the Getting to 60% and Beyond report should be employed before the City utilizes new and emerging technologies for its waste.

A level of 60% waste diversion, before new and emerging technologies are employed, cannot be achieved if all the initiatives in the Getting to 60% and Beyond report are not ultimately implemented.

Contact:

Geoff Rathbone
Director – Policy and Planning
Solid Waste Management Services
Works and Emergency Services
25th Floor, East Tower, City Hall
Tel. No.: (416) 392-4715
Fax: (416) 392-4754
E-mail: grathbo@toronto.ca

Angelos Bacopoulos
General Manager
Solid Waste Management Services

Barry H. Gutteridge
Commissioner, Works and Emergency Services

Attachments:

1. Getting to 60% Diversion and Beyond Report
2. Table 1 – City of Toronto Residential Solid Waste Diversion Projections
3. Table 2 – City of Toronto Managed Solid Waste Diversion Projections
4. Appendix A – Program Support Recommendations of the New and Emerging Advisory Group

(p:\2004\wes\swm\April\027WC.doc)

Getting to 60% Diversion and Beyond

Summary of Recommendations

Increasing the Recovery of Recyclables in Apartments

1. The City mandate that apartment owners provide adequate recycling container capacity to enable residents to fully participate in the recycling program, with failure to comply resulting in suspension from City waste collection services for a minimum three-month period.
2. Collection from apartments on a cart system be changed to a bulk container system where feasible, to increase the capture of recyclable materials, such as large pieces of cardboard, and to improve collection efficiencies.

Mandatory Diversion Programs and Enforcement

3. The City hire 25 By-Law Compliance Officers and associated managerial and administrative support in 2005, to enforce the mandatory diversion procedures outlined in this report for single-family and multi-family residences.
4. The City's residential collection by-law be amended to require the source separation of Green Bin organics once the Green Bin program is fully implemented in single-family homes across the City. SSO collection in apartments will be mandatory once an SSO program is implemented in the building.
5. The City investigate the feasibility of requiring that bags of residual waste put out for collection be translucent to ensure they do not contain recyclable or organic materials.

Waste Limits/ Fees

6. A hybrid Pay-As-You-Throw (PAYT) program which features a limit of 3 bags per bi-weekly collection funded through the tax base and a charge (tags purchased from the City) for each bag or item collected above that set-out rate be implemented for single-family residences in 2006. Recycling and SSO collection would be provided at no charge.
7. The City provide phased implementation of a PAYT program (e.g., free tags) in 2006 to allow single-family residents to adjust to the program, followed by full implementation in 2007.
8. A PAYT program be fully implemented for apartments in 2005 with no phase-in period, as diversion rates are significantly lower in apartments (12%) than single-family residences (43%).

Single Stream Recycling and New Recycling Containers

9. The City convert all residences to single stream recycling and inform residents of the change in January 2005.
10. The City implement an automated recycling cart pilot involving a total of 3600 homes (six routes) in a cross section of areas including areas of traditionally poor recyclers, areas of average recyclers and areas with on-street parking, in early 2005.
11. Following analysis of the cart pilots and other alternatives such as allowing the use of special recycling bags for overflow material, switching to weekly recycling collection or providing more blue boxes, the City implement a system that provides residents with adequate capacity for their recyclables.

Addition of More Materials

12. The City issue a Request for Quotations for plastic tubs and lids and add this material to the Blue Box program in January 2005, if a viable bid from a stable market results.
13. Subject to the existence of a stable market for plastic film, this material be added to the City's Blue Box program once a new container system that will provide residents with the necessary capacity for their recyclables is implemented.
14. The City include ceramics and other types of traditionally non-recyclable glass as an option in its RFQ for mixed glass for the period 2005-2010.
15. The City monitor polystyrene markets and conduct further evaluation of the impact polystyrene has on sorting/processing operations.

Implementation of SSO Programs in Apartments

16. Source separated organics (SSO) pilots be implemented in 50 multi-residential buildings by 2006, including high-rises, low-rises, Toronto Community Housing buildings and townhouse complexes, using various collection techniques.
17. The City send test loads of apartment mixed waste to the mixed waste facility operated by Comporec in Quebec, to determine whether this is a viable contingency method in the event that SSO collection is not suitable for all apartments.
18. Subject to the pilots demonstrating that SSO collection and processing is viable for apartments and a Waste Limit/Fees policy being in place, the main rollout of SSO collection in apartments commence in 2007 and be phased in according to the following schedule: District 4 – 2007; District 2 – 2008; District 3 – 2009; District 1 – 2010.

19. The Provincial Minister of the Environment be requested to adopt the Canadian Council of Ministers of the Environment (CCME) guidelines for compost, including any future changes adopted by CCME.

Reuse Centres and Diversion of Reusable Goods

20. The City establish a reusable goods drop-off centre in 2005 to provide residents with a one-stop location for reusable goods. Various charitable organizations would pick up the accumulated items. Depending on the success of the initial reusable goods drop-off centre, the City would establish drop-off centres at other locations and possibly a large reuse centre (operated in co-operation with charitable organizations) that would accept reusable goods and then re-sell them to the public.
21. The City request the Provincial Minister of Environment to designate, under the Waste Diversion Act, electronics, mattresses, furniture and carpets as types of waste that require manufacturers of these items to meet recycling targets and share with municipalities the cost of diverting these items from landfill.
22. The City conduct a scrap metal collection pilot involving approximately 20,000 homes in 2005. The materials collected would include smaller scrap metal items such as computers and electronic equipment, copper pipes, door hinges, forks and knives, pots and pans, nails, metal light fixtures, nuts and bolts, coat hangers, taps, wire and lawn chairs.
23. The City conduct an evaluation of the feasibility of expanding a separate scrap metal collection to include reusable goods such as reusable clothing, sporting goods, toys, small appliances, furniture, bedding, building materials such as kitchen cupboards, bathroom fixtures, lighting, windows and doors, and electronics such as televisions, telephones, VCRs and DVDs.

Public Space Litter and Recyclables

24. The City request the Provincial Minister of Environment to designate litter, under the Waste Diversion Act, as a type of waste that requires manufacturers of products contributing to litter to meet recycling targets and share with municipalities the cost of diverting these items from landfill.

Program Support Recommendations of the New and Emerging Technologies Advisory Group

25. The City support the recommendations of the New and Emerging Technologies, Policies and Practices Advisory Group related to ensuring effective implementation of diversion programs, as described in Appendix A.

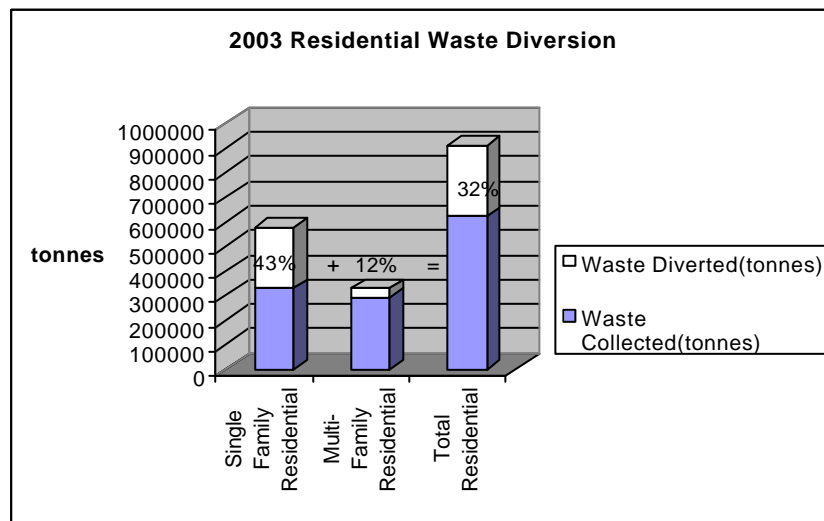
Introduction

In 2001, Council adopted the recommendations of Waste Diversion Task Force 2010 calling for the City to achieve waste diversion goals of 30%, 60% and 100% by 2003, 2006 and 2010 respectively. At that time, the City was diverting 215,000 tonnes of residential waste, equating to a 25% diversion rate.

Following adoption of the recommendations of Task Force 2010, the City implemented a number of initiatives designed to meet the 30% diversion by 2003 goal. These initiatives included:

- Rolling out the Green Bin program to single-family households in Etobicoke and Scarborough.
- Introducing a corresponding shift from weekly to bi-weekly residual waste collection.
- Undertaking a blitz to ensure basic recycling programs are available in all 5,000 multi-family apartments and condominiums.
- Expanding the Blue Box Program, both in terms of introducing a wider range of acceptable items (e.g. – milk and juice cartons, drink boxes, empty paint and aerosol cans) and capturing more recyclables overall through mandatory use of the Blue/Grey Box program.
- Moving to kraft paper bags designed to enhance collection of leaf and yard waste for composting.

As a result of these initiatives, the City exceeded its goal of 30% residential waste diversion by 2003. In 2003, approximately 287,000 tonnes of residential waste resources were diverted from landfill, which represents a residential diversion rate of 32%. The rate of 32% is a combined diversion rate for single-family and multi-family residences. The actual diversion rate is 43% for single-family homes and 12% for multi-family dwellings. Homes in Etobicoke and Scarborough that have access to the new Green Bin program are diverting more than 50% of their waste from landfill.



Continuing to ship the City's waste to Michigan landfill is tenuous and every effort must be made to divert as much waste as possible from landfill. Michigan has a deposit on carbonated

beverage containers and has passed legislation that forbids carbonated beverage containers in waste delivered to the state. If all the policies and programs recommended in this report are put into place, it is estimated that the City would achieve an 80% capture rate on carbonated beverage containers, which would be comparable to the Michigan deposit/return system.

The Provincial Minister of the Environment has also recently announced that the Province is working towards a strategy that aims to divert 60% of Ontario's waste from landfill by 2008. WDO funding that is now provided for recycling makes this an opportune time to improve existing programs and implement new ones. With the new WDO funding, the cost of recycling in the City of Toronto is now less than the cost of shipping and disposing of waste in Michigan.

Council approved diversion initiatives, such as rolling-out the Green Bin program to all remaining single-family homes in the City (Toronto, East York and York in October 2004 and North York in 2005) and improving recovery of recyclables, are expected to get us to 41% diversion. As these initiatives are not enough to allow us to reach the 60% target, we have been working with the New and Emerging Technologies, Policies and Practices Advisory Group to develop further initiatives to maximize the quantity of material diverted.

The 60% waste diversion goal has been set by Council. The purpose of this report is to outline the major initiatives that will be required to meet this goal and maximize diversion before new and emerging technologies are employed. The major residential diversion initiatives recommended in this report are as follows:

- Increasing the Recovery of Recyclables in Apartments
- Mandatory Diversion Programs and Enforcement
- Waste Limits/Fees
- Single Stream Recycling and New Containers
- Addition of More Materials to the Recycling Program
- Implementation of SSO Programs in Apartments
- Reuse Centres and Diversion of Durable Goods

These major residential diversion initiatives must all be implemented if the City is to achieve 60% diversion and are, in many cases, interdependent. For example, SSO collection in apartments will not likely be successful without waste limits/fees and the recovery of new materials such as plastic film will not be maximized if a new container system is not implemented that will provide residents with the necessary capacity for their recyclables

This report also considers other City managed waste including waste from the City's Agencies, Boards, Commissions and Departments (ABCDs), schools, municipally collected commercial establishments (Yellow Bag Program) and from public spaces.

Increasing the Recovery of Recyclables in Apartments

All 5,000 apartments that are part of the City's waste collection system have access to recycling. Waste composition studies undertaken in 2000 and 2003 show that the capture rate for

recyclables is consistently lower for multi-family dwellings (30%) than single-family dwellings (60%).

The two major initiatives that are required to significantly increase recovery of recyclables in apartments, mandatory diversion enforcement and waste limits, are discussed in other sections of this report.

To maximize the recovery of recyclables, we have to ensure that the apartments have the necessary tools to participate fully in the recycling program. We are investigating the current standards used to determine how many recycling containers buildings should have and assessing how many buildings require additional recycling container capacity.

Currently, many apartment buildings in the City are using 90 gallon carts for recycling. Other buildings use bulk containers. The relatively small size of carts makes it difficult to capture cardboard, and presents some challenges in collection efficiency in that some of the larger buildings have up to 40 and 50 carts, as opposed to bulk containers that have 3 and 4 cubic yard capacities. Some of the buildings have space issues and have no option other than carts.

District 3 is currently assessing which buildings could be brought onto bulk container recycling. It is estimated that 486 buildings have the potential for bulk container recycling; however, this must be followed up with site visits to assess space requirements and collection accessibility.

District 3 has purchased a new bulk container collection truck, which is expected to be delivered in July of this year. Two additional trucks will likely be required to make the transition to bulk collection in District 3. These two bulk container collection trucks will replace existing trucks.

We will also survey apartment buildings in other areas to determine which buildings can be brought onto bulk collection. Purchase of bulk containers would be the responsibility of the apartment owner.

For those buildings with insufficient space for adequate recycling containers, we will investigate the possibility of more frequent recycling collection. This can be assessed in conjunction with our plans to implement SSO collection, as we will be investigating the option of reducing garbage collection frequency and increasing recycling/SSO collection frequency. Any changes to collection frequency would have to take into account current collection contracts and the impact on collection costs.

We are also considering a requirement that apartment owners/property managers must provide new tenants with a pamphlet explaining how to participate fully in the City's recycling program. The recycling pamphlet could be produced in different languages. We will investigate whether Waste Diversion Ontario (WDO) will fund the City to produce and print the pamphlets.

Based on waste audits, it is estimated that the current capture rate of recyclables in apartments is 30% (compared to 60% for single-family homes). We are currently collecting approximately 30,000 tonnes of recyclables from apartments annually. If the policies recommended in this report for apartments are put into effect (e.g., mandatory diversion enforcement, waste limits), we feel it is reasonable to project a 70% capture rate for recyclables from apartments. This would result in diversion of an additional 40,000 tonnes annually of recyclables from apartments.

Mandatory Diversion Programs and Enforcement

Section 844.3 (D) of the Toronto Municipal code states that all owners or tenants of residential locations receiving municipal garbage collection services must participate fully in the City's recycling program. Mandatory recycling is not currently enforced for single-family households. Most homes do participate regularly; however, there are some single-family residences that consistently do not recycle.

The recovery of recyclables from apartments is significantly lower than single-family residences. Some apartments are monitored to determine if they are participating; however, resources are limited and there is a lack of consistent enforcement policies. For example, some apartments that are not providing adequate recycling have been removed from City waste collection until the problem is rectified, while other problem buildings are encouraged to recycle through education.

Enforcement of mandatory recycling is required if the City is to meet its waste diversion goals.

Single-Family Residences

Progressive education and written warnings will be used to enforce mandatory recycling in single-family homes. If the household still does not participate fully in the City's recycling program, a fine will be issued. The City can issue fines to single-family homes in the amount of \$55 for not recycling, under Section 844-20G of the Toronto Municipal Code.

The intent of the enforcement is to change the behaviour of those who blatantly refuse to recycle. The enforcement procedures will be used as a guideline and City staff will exercise discretion before any fines are issued.

It is difficult to determine how many By-Law Compliance Officers will be required. While there are 500,000 homes, most do participate and it is only the blatant offenders that we will be pursuing. It is estimated that, initially, five By-Law Compliance Officers will need to be hired to monitor and enforce recycling in single-family homes.

SSO diversion will be mandatory for single-family homes once the Green Bin program is fully implemented in single-family homes across the City.

Apartments

By-Law Compliance Officers will routinely inspect apartment buildings to determine if the buildings are adequately recycling. The officers will decide if there are enough recycling bins for the number of units within a building based on a pre-determined formula for minimum requirements, and whether the recycling bins are being used. The recycling bins will also be checked for contamination and the garbage bins will be checked to ensure they do not contain a significant quantity of recyclables.

It is anticipated that the following notification process for buildings that are providing inadequate recycling may be used:

- An apartment building that has been continually non-compliant over the course of two weeks (2 collections) will receive a letter stating that they have not been participating fully in the recycling program and that they will be removed from City waste collection if they do not comply. The building will then be monitored over the next two weeks.
- If upon inspection after the next two weeks (2 collections) the building is still non-compliant, a registered second letter will be given to property management. This letter will state their failure to comply, notify them that they are being removed from City collection services for a minimum three-month period and identify the date that service will be discontinued.
- Service will be reinstated after the suspension period if the apartment owner/property manager proves that they have rectified the problems leading to the suspension and will provide proper recycling.

The intent of the stringent notification process for apartments is to change the behaviour of apartment owners/property managers who blatantly refuse to offer proper recycling to their tenants. The enforcement procedures will be used as a guideline and City staff will exercise discretion before municipal collection service is discontinued.

Agreements will be signed with owners/property managers of apartment buildings, outlining the terms of waste management services provided by the City including the penalties for non-compliance with the City's recycling program.

It will be necessary to hire twenty additional By-Law Compliance Officers and associated managerial and administrative support to adequately enforce mandatory recycling in the 5,000 apartment buildings in the City.

SSO collection will be mandatory in apartments once an SSO program is put in place in the building. Education and discretion will be used, as organics collection will be a new program.

We are also investigating incentives to encourage participation in the City's diversion programs, such as special lottery prizes for those participating in diversion programs and providing municipal awards recognizing individuals and groups who go beyond the norm in diverting waste. We will also investigate the feasibility of requiring that bags of residual waste put out for collection be translucent to ensure they do not contain recyclable or organic materials.

Waste Limits/Fees

In order to enhance recycling programs and in turn boost their diversion rate, many jurisdictions around the world have introduced Pay-As-You-Throw (PAYT) programs for their residential sectors. Within the GTA, several municipalities in York Region have introduced PAYT and Peel Region has a comprehensive PAYT program for both the single-family and multi-family (i.e. apartments, townhouses and condominiums) sectors.

Region of Peel PAYT Program

The program in Peel is of particular interest to Toronto because it has been successfully introduced in a community that is on a comparable scale to Toronto, with a population base of over one million residents.

In 2001, Peel introduced a PAYT program known as the “Three Bag Standard.” It provides each single family residential household with collection of three bags per week at no charge (funding is provided through general tax revenues). A \$1.00 charge for each additional bag that is set out at the curbside is levied through the required purchase of a tag at a local retail outlet or civic centre.

The \$1.00 charge per tag represents only a partial cost recovery of the actual cost for collection, transport and disposal. The program also provides residents with curbside recycling programs at no charge, creating a financial incentive to recycle.

Since its introduction, the Three Bag Standard program has consistently assisted in boosting Peel’s diversion rate. In 2003, Peel experienced a 5.7 percent increase in recycling and a 22 percent increase in organics collection (currently limited to the Town of Caledon).

Peel’s Three Bag Standard also applies to multi-family residential buildings. Similar to the single-family residential sector, multi-family buildings are granted the equivalent of three bags per rental unit, which is then measured in cubic meters of solid waste within collection bins.

PAYT Programs in the City of Toronto

Currently, Toronto has in place a PAYT policy for the following sectors that we collect from:

- small and mid-size businesses participating in the Yellow Bag program;
- School Boards and private schools; and
- Agencies, Boards, Commissions and Departments of the City.

Common to all of these sectors is the requirement to pay for disposal while receiving no charge recycling to create a financial incentive to divert waste from landfill.

Previous Report to Works Committee

The Commissioner of Works & Emergency Services submitted a report to Works Committee, dated March 17, 2003, that carried recommendations for the introduction of a PAYT program for the residential sector. The basis of the report was a recommendation from Task Force 2010 regarding the introduction of a residential PAYT program for Toronto.

Included with that report was a summary of a comprehensive public consultation program carried out in the Fall of 2002. The report stated:

“The majority of participants expressed support for a PAYT program similar to Peel’s Three Bag Standard as they could readily conform to such a program if introduced in Toronto because they are currently setting out for collection three bags of solid waste a week or less. This public feedback is supported by studies in Toronto and Peel that found in excess of 80 percent of residential households set out three bags or less a week.”

Following its review of the Commissioner’s report, Works Committee recommended that additional consultation be undertaken. However, City Council turned down this recommendation (Report No. 3C of the Works Committee, which was before City Council at its meeting held on July 22, 23 and 24, 2003).

Recommended System

This report carries recommendations regarding the proposed introduction of a PAYT program for Toronto’s residential sector. Key facets of the program are start-up for the multi-family sector in 2005 and start-up for the single family sector in 2007, following an introductory phase in 2006 after City-wide roll out of the Green Bin program.

This report also recommends establishing a once every two week three bag per household limit. This recommended limit reflects the fact that the Green Bin provides Toronto residents with the ability to beneficially manage their organics, which is a substantial component of the waste stream. The majority of Peel residents do not currently have curbside organics collection.

Based on audits in the former Etobicoke, which is serviced by the Green Bin program, approximately 76 percent of residents would comply with the proposed bi-weekly three bag per household bag limit.

An increase of 29,000 tonnes in single-family diversion is shown on the appended Residential Solid Waste Diversion Projections table as being attributed to waste limits/fees and mandatory diversion enforcement. This represents a 10% increase in single-family recycling, SSO and yard waste tonnages. However, as stated previously, the initiatives recommended in this report are in many cases interdependent and the projected tonnage increases for most other initiatives would not likely materialize without waste limits and diversion enforcement. The impact of waste limits and diversion enforcement for apartments is captured under the Increasing Recovery of Recyclables in Apartments and Implementation of SSO Programs in Apartments sections of this report.

Single Stream Recycling and New Recycling Containers

Single-stream recycling allows the City to co-collect recyclables and Green Bin organics in the same two-compartment truck rather than sending two trucks down the street. This reduces the number of trucks needed, which in turn saves on collection costs and reduces traffic and air

pollution. It also provides residents with the convenience of mixing their containers and paper materials.

A new single stream processing facility is currently operating in Scarborough and a second single stream facility is currently being constructed at our Dufferin Transfer Station. The Dufferin facility is expected to be operational by the end of the year; therefore, we are planning to convert to single stream collection throughout the City and inform all residents of the change in January 2005.

As we have added materials to our Blue/Grey Box program over the years and switched recycling collection to every two weeks, a blue and a grey box may no longer provide enough capacity for all residents. The addition of more materials to the Blue Box program, as recommended in this report, will further increase the need for additional bin capacity. The new capability to process recyclables in a single stream format opens the door to exploring new collection containers as a replacement or supplement to the undersized blue/grey box system.

There are four options available to provide residents with additional capacity to store and set out their recyclable materials for collection. These include:

1. Provide residents with a large wheeled cart to store and set out their single-stream recyclables.
2. Allow the use of special recycling bags for overflow material to supplement the blue and grey boxes.
3. Provide residents with more blue boxes.
4. Maintain the current system and switch to weekly recyclables collection.

The City is currently testing a new container for single stream recycling collection: a 242 litre cart with wheels. The pilot commenced in November 2003 and is being monitored for a period of one year. The cart system is being piloted in a neighbourhood in Scarborough consisting of 647 households bounded roughly by Centennial on the West, Lawson on the North, Port Union on the East and Lawrence on the South.

The truck collecting the material uses an automated mechanical arm to tip the blue cart, but the driver must get out to tip the green bin into the truck. We will be undertaking some time-motion studies on the automated collection as the project progresses.



Automated Arm Tipping Cart



Recycling Carts along Street

The participation rate in the cart pilot is high; approximately 96% of residents are setting out their carts for collection. Approximately 60% of the carts are full on collection day and 17% are 3/4 full. The cart has the equivalent capacity of 4 blue/grey boxes.

The pilot will provide valuable information on capture rates and the impact on collection costs of operating an automated cart based system. However, further study is warranted as the current pilot is in an area of traditionally good recyclers and is in a suburban area.

Therefore, it is recommended that an expanded automated recycling cart pilot be implemented in 2005, involving a total of 3600 homes (six routes). The routes would include a cross section of areas including areas that have a history of being poor recyclers, areas of average recyclers and areas with on-street parking.

For the purpose of this report, we have made a preliminary estimate that a system that provided adequate, convenient capacity for single-family residents to store and set out their recyclables for collection could divert up to an additional 25,000 tonnes of materials annually.

Addition of More Materials

Secure, stable markets are required before we add materials to the City's recycling program, in order to ensure that the materials that residents sort and put out for collection are actually recycled. The most recent additions to the program were empty paint cans and aerosol cans, milk and juice cartons and drink boxes in 2001. Staff monitor markets continuously looking for opportunities to add new materials to the Blue/Grey Box program.

Plastic Tubs and Lids

Recent market developments indicate that viable markets for plastic tubs and lids are emerging. It is recommended that the City issue a Request for Quotations (RFQ) for plastic tubs and lids. If the RFQ results in a stable market bidding on this material, it is recommended that the City add plastic tubs and lids to its Blue Box program in January 2005. Our new single stream processing

contracts allow for the addition of various types of plastics and, as mentioned earlier, the second single stream MRF will be operational at the beginning of 2005.

Based on waste audits, it is estimated that there are approximately 3800 tonnes of plastic tubs and lids in the residential waste stream. Based on the current capture rate for PET and HDPE plastics, the City would recover 2,000 tonnes of plastic tubs and lids annually from single-family and multi-family residences. If the policies recommended in this report are put into effect (e.g., bag limits, mandatory diversion enforcement, automated cart system), it is estimated that 3,000 tonnes of tubs and lids could be diverted annually.

It is expected that there would not be a net increase in costs to the City to add plastic tubs and lids to the Blue Box program. The avoided disposal savings and increased Waste Diversion Ontario (WDO) funding would offset increased processing costs and the negligible impact on collection costs.

Plastic Film

Plastic film markets have been investigated and it has been determined that there are no stable markets available, at this time, that could accept the quantity of plastic film that would be collected in the City's Blue Box program. Plastic film would include items such as plastic grocery bags, laundry garment bags, milk bags, bread bags, plastic wrap etc.

Based on waste audits, it is estimated that there are approximately 9,500 tonnes of plastic film in the residential waste stream. Based on the current capture rate for PET and HDPE plastics, the City would recover 5,000 tonnes of plastic film annually from single-family and multi-family residences, if stable markets materialized. If the policies recommended in this report are put into effect (e.g., bag limits, mandatory diversion enforcement, automated cart system), it is estimated that 7,000 tonnes of plastic film could be diverted annually.

Polystyrene

We are hesitant to recommend the addition of polystyrene to the City's Blue Box program. Markets for this material are limited at this time and problems occur when expanded polystyrene breaks apart when sorting/processing, causing litter and contamination in other materials. Some smaller municipalities collect polystyrene but they have experienced problems marketing the material. We will monitor polystyrene markets and conduct further evaluation of the impact polystyrene has on sorting/processing operations.

Polystyrene is currently accepted at Environment Days and two City recycling depots. The polystyrene from depots and Environment Days goes directly to market and therefore, the problems associated with processing polystyrene is not an issue.

Ceramics and Other Glass

We are also investigating the possibility of including ceramics and other types of glass such as drinking glasses, heat-resistant glasswares and mirrors as acceptable glass items in our recycling

program. While these types of glass are contaminants for glass container markets, this material may not be a problem for some mixed glass markets such as those using crushed glass in drainage applications. We will be issuing an RFQ for mixed glass for 2005-2010 and will include ceramics and other types of traditionally non-recyclable glass as an option. It is estimated that an additional 500-1000 tonnes of glass could be diverted annually if these types of glass were accepted.

Implementation of SSO Programs in Apartments

The City has been operating organics collection pilots utilizing deep collection systems in 2 apartment buildings since 2002. The deep collection systems are being tested at a small condominium building with no garbage chutes and a large 260 unit rental building with a garbage chute. Participation in the program has been very good, with an average organics capture rate of 75kg/hh/year.

To implement SSO collection in the multi-residential sector across the City, one system will not fit all. Buildings differ in size, layout, and whether there are garbage chutes. There are also a number of infrastructure issues that must be considered such as underground utilities and underground parking, overhead clearance for deep collection systems, overhead balconies and odour issues with carts and bulk bins.

There are three systems that we would recommend for SSO collection in apartments.

1. A deep collection system
2. A modified bulk container system for those buildings that do not have the proper grounds for a deep collection system, possibly in conjunction with a chute conversion system.
3. A cart system for those buildings where space is very limited



Deep Collection System

Testing of these three systems in low rise, high rise and Toronto Community Housing buildings, as well as townhouse complexes, would provide the City with the knowledge and experience to develop the most suitable SSO systems for multi-family complexes. It is recommended that we test SSO collection systems in 50 buildings by 2006. Toronto Community Housing buildings represent a significant percentage of multi-family dwellings and therefore, it is important to include some of their buildings in the pilots.

Traditionally, recyclable materials from apartment buildings are more contaminated than materials collected from single-family homes. If SSO loads from apartments contain hazardous contaminants, such as car batteries or motor oil, the anaerobic digestion facility at Dufferin would be compromised and could require shutdown for a significant amount of time, which would affect single-family Green Bin processing capacity. It is recommended that the City send a test load of apartment mixed waste for processing to the mixed waste facility operated by Comporec in Quebec, as there may be buildings where SSO will not be possible and some type of backup method will need to be available.

The Province should be requested to adopt the Canadian Council of Ministers of the Environment (CCME) guidelines for compost, including any future changes adopted by CCME, to ensure there are adequate markets for finished compost from both single-family and multi-family residences. As well, the City could reassess its approach to recovering SSO from apartments if significant changes were made to Ontario’s compost guidelines.

It is proposed that the main rollout of SSO collection in apartments commence in 2007. This will enable us to learn valuable lessons from the 50 pilot buildings before implementing SSO programs in apartments city-wide. It will allow us time to focus on improving recovery of recyclables in apartments and have the Green Bin program operating smoothly for the 500,000 single-family homes in the City. It will also allow time for new, recently bid, organics processing capacity to be brought on line to accommodate the anticipated quantities from multi-family homes. Many apartments are not providing adequate recycling for their residents and participation is significantly lower than single-family homes. It is important that the City focus its efforts on ensuring proper recycling programs that maximize the recovery of recyclables are in place before implementing SSO programs in apartments. As well, current apartment collection contracts have to be honoured (Districts 1 and 2 collection contracts expire on June 30, 2007).

It is proposed that the apartment SSO program be implemented one district at a time, completing one area before moving on to the next. Roll-out of the SSO program would be subject to the pilots demonstrating that SSO collection and processing is viable for apartments and a Waste Limit/Fees policy being in place. Implementation of SSO programs in apartments would have a significant impact on collection. The schedule would be as follows:

Year	District	Number of complexes
2007	District 4	790
2008	District 2	620
2009	District 3	1370
2010	District 1	2220

Under existing policies, we do not expect apartments to divert the 75kg/hh/yr currently being achieved in the two pilots, as these two buildings have traditionally been very good recyclers. However, if the policies recommended in this report for apartments are put into effect (e.g., mandatory diversion enforcement, waste limits), we feel it is reasonable to project SSO diversion from apartments to be 75kg/hh/yr. This would result in diversion of approximately 35,000 tonnes annually of SSO (462,000 units x 75kg).

Reuse Centres and Diversion of Reusable Goods

There are numerous charitable organizations in Toronto such as Goodwill, Salvation Army, St. Vincent de Paul Society, Habitat for Humanity and homeless shelters that accept and utilize reusable goods. Examples of these goods include clothing, electronics, small appliances, furniture, dishes, bedding, toys and building materials such as kitchen cupboards, bathroom fixtures, lighting, windows and doors. In order to increase diversion, the City should work co-operatively with these charities by assisting them to obtain more reusable items.

Drop-off Points for Reusable Goods

In order to assist the charitable organizations to obtain and divert more reusable goods from landfill, it is proposed that the City establish a drop-off centre at a City location in 2005. Residents would drop off reusable goods at the site and interested charitable organizations would pick up the accumulated items. Depending on the success of the initial location, reusable goods drop-off centres could be established at other locations in the City.

Reuse Centres

It is also proposed that the City consider building one large reuse centre on City property, depending on the success of the drop-off centres. The facility, which would accept reusable goods and then re-sell them to the public, would be operated in co-operation with charitable organizations. The Region of Peel currently has three reuse centres that operate under this model. Using the Peel model as an example, the City would construct and own the facility and pay all utilities; the charitable organization would be responsible for staffing and would keep all, or the majority of, revenue from the sale of goods.

In addition to accepting reusable goods from the public, items received at the reusable goods drop-off centres could be delivered to the reuse centre for re-sale. Depending on the success of the reuse centre and other reuse initiatives, additional reuse centres could be recommended in the future.

Special Collection of Durables/Reusables

There are a number of durable goods that may not be in good enough condition to be reused, but can be recycled. This includes computers and other electronics and scrap metal. Large metal items such as fridges, stoves, pipes, barbecues and swing sets are currently collected separately for recycling. Small scrap metal items are not currently collected separately.

A pilot collecting small scrap metal items from approximately 8,000 households was conducted in 2003. This followed an initial pilot involving 4,000 households in 2002. Approximately 6% of the households in the pilot areas participated in the one-day collection, with each participating household diverting 22 kilograms. The average quantity diverted from all households in the pilot was 1.4 kg/hh.

It is recommended that the City conduct a larger pilot in 2005, collecting small scrap metal items from approximately 20,000 homes. Each home would receive one collection on a designated day. The materials collected would include small scrap metal items such as computers and electronic equipment, copper pipes, door hinges, forks and knives, pots and pans, nails, metal light fixtures, nuts and bolts, coat hangers, taps, wire and lawn chairs.

It is also recommended that the City conduct an evaluation of the feasibility of expanding separate scrap metal collection to include reusable goods such as reusable clothing, sporting goods, toys, small appliances, furniture, bedding, building materials such as kitchen cupboards, bathroom fixtures, lighting, windows and doors, and electronics such as televisions, telephones, VCRs and DVDs. The reusable goods would be provided to charitable organizations.

We will also investigate other potential reuse initiatives, such as community based garage sales in public locations such as parks and “SWAP Days.” The City could proclaim two “SWAP Days” or weekends per year where residents would be encouraged to place reusable items such as toys, books, furniture, sporting goods etc. at the curb for other residents to take what they like.

It is estimated that an additional 16,000 tonnes of reusable goods and durable goods could be diverted from landfill (electronics - 3,000 tonnes; textiles - 7,500 tonnes; sporting goods, toys etc. - 500 tonnes; small scrap metal items - 3,000 tonnes; reusable building materials – 2,000 tonnes). These projections were based on the following assumptions:

Electronics - Based on waste audits conducted by the City, it is estimated that there are 6,000 tonnes of residential computers and other electronics such as small appliances and radios generated annually. Assuming a 50% capture rate, 3,000 tonnes of electronics could be diverted annually.

Textiles and Sporting Goods, Toys etc. - It is estimated that there are approximately 15,000 tonnes of textiles in the residential waste stream. Assuming a 50% capture rate, 7,500 tonnes of textiles could be diverted annually. There is no data available on the quantity of reusable sporting goods, toys etc. in the waste stream; however, for the purpose of this report, we have assumed that 500 tonnes could be diverted annually.

Small Scrap Metal Items - The average quantity of small scrap metal items diverted in the one-day collection pilots was 1.4kg/hh. Assuming the program was offered to all single-family and multi-family households, the diversion would be 1,350 tonnes or 2,700 tonnes for two collections per year. We have assumed that as people become more aware of the program, diversion would increase to 3,000 tonnes annually.

Reusable Building Materials – There is no data available on the quantity of reusable building materials such as lighting, windows and doors. For the purpose of this report, we have assumed diversion of 2,000 tonnes annually.

Potential Markets for Other Durable Goods

There are potential recycling markets developing for other durable goods, including mattresses, non-reusable furniture and carpets.

The components of mattresses can be separated manually or mechanically and then recycled. For example, Correctional Services Canada (CORCAN) has small mattress recycling operations in Alberta and New Brunswick. The process is labour intensive as the mattresses are taken apart manually. Approximately 70% of the components of the mattress are recyclable. There is also a company in Massachusetts that crushes and separates the components of mattresses mechanically. It is estimated that approximately 3,000 tonnes of mattresses from Toronto residents end up in landfill annually. Assuming an 80% capture rate as these items are large and therefore, easier to recover, 2,400 tonnes could be potentially diverted from landfill annually.

Non-reusable furniture such as sofas and chairs have similar components to mattresses and can potentially be recycled. It is estimated that 8,000 tonnes of non-reusable furniture are generated per year. Assuming an 80% capture rate, as these items are large and easy to recover, 6,500 tonnes could be diverted from landfill annually.

Carpets can technically be recycled, but to date recycling of residential used carpet has not proved viable. There were two companies in North America recycling residential carpets that we are aware of, however the process did not prove viable and was discontinued. The US carpet industry has been working with companies in an attempt to develop processes to effectively recycle carpets. It is estimated that 10,000 tonnes of residential carpets are generated annually. Assuming an 80% capture rate, 8,000 tonnes could be diverted from landfill annually.

While we have not recommended collection programs for mattresses, carpets and non-reusable furniture at this time as viable markets do not currently exist, we have assumed that the markets will develop and have shown projected quantities of these materials diverted starting in 2007.

We recommend that the Provincial Minister of Environment designate, under the Waste Diversion Act, electronics, mattresses, furniture and carpets as types of waste that require manufacturers of these items to meet recycling targets and share with municipalities the cost of diverting these items from landfill.

Promotion and Public Education

In order to effectively implement any new diversion programs, public education will be extremely important. Introducing a new waste diversion initiative using the proper promotional activities can be very successful, such as seen with the Green Bin program. However, the receptivity of the audience, the specifics of what they are being asked to do, the tools they are provided, their underlying socio-economic characteristics, etc. are all important factors in the ultimate success rate of a new program. Each of the new initiatives discussed in this report will need to be researched regarding the target audience for each program. Of special importance will be studying the barriers to reaching that audience and assessing how receptive they will be to adopting the new behaviour that we are requesting.

For instance, adding new materials to the Blue Box program, such as plastic tubs and lids, is a relatively simple communications issue. Homeowners are largely already sold on household recycling and will embrace the addition of a new material that can be tossed into the Blue Box rather than thrown in the garbage. The challenge will be one of simply informing residents that these materials can now be recycled. For this we would use advertisements, *Waste Watch*, collection calendars, point-of-purchase promotion, the website, etc.

New initiatives, such as pay-as-you-throw or enforcing mandatory recycling rules will require messaging that goes back to the reason why we are implementing such programs. Residents will need to be reminded of the “why” in addition to hearing that everyone is being asked to equally share the responsibility of managing their own waste.

Implementing promotion and public education in apartment buildings for such initiatives as source separation of organics and increased recycling will be challenging due to the transient nature of apartment dwellers, significant language and cultural differences, the lack of “ownership” of the waste they produce, space issues, and other barriers. The most effective communications method for such an audience is a combination of mass media such as advertising and newsletters, and community outreach such as in-person visits and working with individual building superintendents.

With respect to making the most of existing programs such as Blue Box recycling in order to ensure that every material is being diverted to the greatest extent possible, there are two different communications issues. Residents who already recycle can be reminded how important it is to include every item. Those who currently do not participate will be a more difficult audience, and research, such as focus groups, will be required to probe the reasons for their non-participation and determine what will bring them on board.

All the initiatives discussed in this report will require a substantial investment in public education. Implementing a new program operationally will not make it happen until the public has been informed, embraced it and is actively engaging in the required behaviour. Existing public education budgets will not be enough to cover these new programs. With the exception of the Green Bin program, the current budget amounts reflect the communications needs of programs that are largely mature and merely require maintenance rather than large-scale introduction and buy-in. For each new diversion initiative, a communications plan will be created and budgets will be refined and finalized for each program as it is approved.

Municipally Collected Commercial Establishments / ABCDs / Schools / Public Spaces

Solid Waste Management Services (SWMS) provides waste and diversion program collection to small commercial establishments, the City’s ABCDs, schools and from public spaces. Table 2 “City of Toronto Managed Solid Waste Diversion Projections: 2003-2010” includes current and projected tonnes generated and diverted from this sector.

Yellow Bag Commercial

Under the Yellow Bag Program, all commercial customers receiving City waste collection services are required to pay for garbage collection. Recycling and organics collection are provided at no charge. The Yellow Bag Program encourages commercial customers (retail stores, restaurants and green grocers) to decrease garbage while increasing recycling and organics collection.

The City currently collects waste from about 18,000 small business establishments within the City, the remainder using private collection services. The Yellow Bag Program has been highly successful. Participation in the recycling program is high and most restaurants and green grocers are separating their SSO for separate collection by the City.

As there are not dedicated routes for waste from commercial establishments, it is difficult to determine an accurate diversion rate. SWMS is planning to conduct waste composition audits to determine the volumes of different materials generated by this sector, and to determine the diversion rate being achieved. Based on a general idea of the waste that the commercial sector serviced by the City generates, it is anticipated that a 60% diversion rate is achievable.

City Agencies, Boards, Commissions and Departments

The City's ABCDs have been meeting regularly since May 2003 as part of the City's Waste Diversion Team initiative. The Team has addressed various waste diversion issues in working towards the City's waste diversion targets.

It is estimated that the ABCDs as a whole diverted approximately 27% of their waste from landfill in 2003. Members of the ABCD Waste Diversion Team feel that an average diversion rate of 60% can be attained but have stressed that this will only be possible if the required funding for equipment and related staff is available. The recommendations of the Team and a summary of the ABCDs' 3 year Waste Diversion Plans will be the subject of a report to be submitted to the next Works Committee meeting.

Schools

SWMS have met regularly with the Toronto District School Board and the Toronto Catholic District School Board about their waste diversion initiatives. All parties have worked together at improving waste diversion programs at schools. Many schools have converted from private waste collection to City collection so that they may be eligible to receive the City's "no charge" Blue and Grey Box and Yard Waste collection.

The implementation of user fees for the collection of waste from schools by SWMS together with the "no charge" collection of Blue and Grey Box materials and yard waste, has been a strong incentive for the schools to divert their waste. The amount of waste disposed by schools has decreased considerably from the amount disposed prior to the implementation of user fees. Further gains in waste diversion will be achieved by ensuring that all schools are participating fully in the Blue and Grey Box and yard waste programs and potentially in a SSO collection

program, which will be discussed in a separate Works Committee report to be submitted at a later date.

Public Spaces Litter and Recyclables

There are currently approximately 3600 recycling/litter bins with advertising located throughout the City. It is estimated that approximately 1.13 tonnes of material are collected in each bin per year, of which approximately 520 kg are recyclables diverted from landfill and 610 kg is garbage. This represents a diversion rate from the recycling/litter bins of 46% and an annual diversion of over 1,800 tonnes. Negotiations are underway with EUCAN to improve the litter bins with advertising program, including the possibility of installing additional bins in the City, which would enhance our litter control program and increase diversion. Any suggested changes to the EUCAN contract will be submitted to Works Committee for their consideration.

Waste diversion initiatives related to special events in the City, such as requiring diversion as part of the permit process and charging for non-diverted waste will also be investigated. We also recommend that the Provincial Minister of Environment designate litter, under the Waste Diversion Act, as a type of waste that requires manufacturers of products contributing to litter to meet recycling targets and share with municipalities the cost of diverting these items from landfill.

Program Support Recommendations of the New and Emerging Advisory Group

The New and Emerging, Policies and Practices Advisory Group has made a number of recommendations aimed at ensuring that there is program support for the various diversion initiatives to be implemented. Please see Appendix A for a list of their recommendations.

ICI Waste Delivered to City Transfer Stations

The City accepts waste from the ICI sector, which pay a tipping fee to drop off their waste at City transfer stations. It is not the City's intent to implement diversion programs or construct and operate processing facilities for this waste. Paid waste from the ICI sector is not part of the diversion calculations in this report.

Conclusions

In 2003, approximately 287,000 tonnes of residential waste were diverted from landfill, which represents a combined residential diversion rate of 32% (single-family-43% / multi-family-12%). Further Council approved initiatives, such as rolling out the Green Bin program to all single-family homes by 2005 are expected to get us to a combined residential diversion rate of 41%.

Council has set a goal of 60% waste diversion. Staff have been working with the New and Emerging Technologies, Policies and Practices Advisory Group to develop further initiatives to maximize the quantity of material diverted. This report recommends the major initiatives that will be required to achieve 60% diversion and maximize diversion before new and emerging technologies are employed.

The major residential diversion initiatives are as follows:

- Increasing the Recovery of Recyclables in Apartments
- Mandatory Diversion Programs and Enforcement
- Waste Limits/Fees
- Single Stream Recycling and New Containers
- Addition of More Materials to the Recycling Program
- Implementation of SSO Programs in Apartments
- Reuse Centres and Diversion of Durable Goods

Table 1 “City of Toronto Residential Solid Waste Diversion Projections: 2003-2010” summarizes the diversion that can be achieved through these initiatives.

A level of 60% waste diversion, before new and emerging technologies are employed, cannot be achieved if all the initiatives recommended in this report are not ultimately implemented. Many of the initiatives are interdependent. For example, SSO collection in apartments will not likely be successful without waste limits/fees and the recovery of new materials such as plastic film will not be maximized if a new container system that will provide residents with the necessary capacity for their recyclables is not implemented.

Continuing to ship the City’s waste to Michigan landfill is tenuous and every effort must be made to divert as much waste as possible from landfill. As well, source separation programs, such as those recommended in this report, should be employed before the City utilizes new and emerging technologies for its waste.

APPENDIX A

Program Support Recommendations of the New and Emerging Advisory Group

The following recommendations were made by the New and Emerging, Policies and Practices Advisory Group aimed at ensuring that there is program support for the various diversion initiatives to be implemented.

- **Working Group:** The City should establish a Waste Diversion Working Group to oversee the development, implementation, promotion and monitoring of diversion programs.
- **Cost Estimates:** In order to determine the net revenue/cost of various diversion programs, the City should estimate the following for each program: a) cost of implementation; b) cost savings from diversion (landfill cost avoidance), and c) revenues. These estimates should account for possible future changes over time, and uncertainties in these estimates should be explicitly included.
- **Funding:** The City should establish as soon as possible, dedicated, long-term funding to support its waste diversion programs. Such funding could come from any or all of the following sources: user fees (PAYT), private sector tipping fees, waste utility fee (similar to water and sewage bill), and/or city budget.
- **Contracts:** New contracts for waste collection and processing should include incentives to maximize diversion and be written to encourage, and not be impediments to, the effective implementation of the above recommendations.
- **City Staff:** The City should establish ways to recognize City staff who meet or exceed diversion targets.