
Talking Trash: Options for Increasing Toronto's Waste Diversion Rate



Carly Bowman
Suzanne Brooks
Jordan Harrison
Danielle Murray
Dan Nicholson
Amanda O'Rourke
Devyani Srinivasan

December 14, 2006

This report was generated as a course requirement for PLA 1106 – Workshop in Planning Practice, in the University of Toronto Masters Programme in Planning. We gratefully acknowledge the guidance and editorial suggestions from our course coordinators, Philippa Campsie and Zack Taylor.

We would like to thank our client, the volunteer Community Environmental Assessment Team (CEAT), chaired by Philip Knox, for their enthusiasm and interest. We are especially appreciative of Karen Buck's liaising efforts between our team and CEAT, as well as her many helpful suggestions for other model programs to look to.

Finally, we very much value all the excellent input from those we interviewed over the course of our research. Phil Byer, Jodi Callan, Alan Charky, Bill Colucci, Renee Dello, Ellen Giles, Dave Hardy, Yunis Kariyuki and Jason Tower all gave willingly of their time and ideas, broadening our perspective, for which we are thankful.

The Study in Brief

This report summarizes three workable options for increasing the City of Toronto's waste diversion rate, determined through criteria that emphasized "bang for buck", technical feasibility and ease of implementation from the City's perspective.

Options one and two focus on better educating Torontonians as to what materials can be diverted and how to participate in diversion programs, as well as convincing them that their participation matters. We suggest a new information source called the "Green Pages" and a motivational "Community Waste Ambassadors" program as ways to achieve these objectives. We chose to highlight education, awareness and engagement because no amount of technological innovation will substantially increase diversion unless everyone is aware of and correctly using the recycling and composting options available to them.

Option three is targeted toward City waste planners, suggesting improvements to the durable goods management strategy. Durable goods are long-lasting items, and they make up a large component of the residual waste stream. While Solid Waste Management Services recognizes the need to divert durable goods away from landfill, it has only begun to develop a strategy to do so. We offer suggestions as to how the City could better divert durable goods from the residual stream.

While the purpose of this report is to generate new ideas, implementation is the determining factor for any policy's success. Recommendations for implementing and improving current programs and policies, as well as a push for widespread diversion program evaluation, conclude this report.

Table of Contents

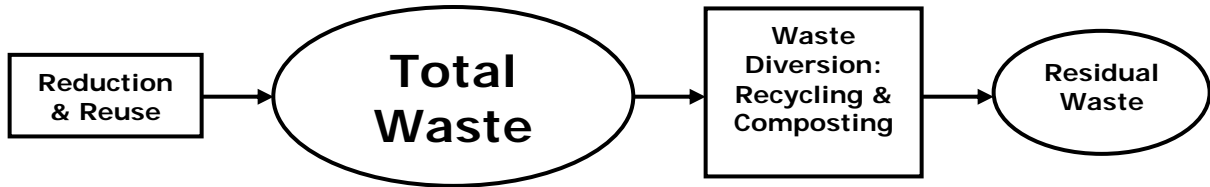
THE STUDY IN BRIEF	2
1. TORONTO’S WASTE: A SNAP SHOT	5
2. OUR APPROACH: REMOVING BARRIERS TO WASTE DIVERSION	6
3. INCREASE EDUCATION AND AWARENESS: THE GREEN PAGES	8
OPTION 1: THE GREEN PAGES.....	9
Recycling Guide	9
Reuse Guide.....	10
A Comprehensive Resource	10
Suggested Marketing Strategy	11
4. INCREASE MOTIVATION: COMMUNITY WASTE AMBASSADORS	12
OPTION 2: COMMUNITY WASTE AMBASSADORS PILOT PROJECT.....	13
Single Family Residences	13
Multi-Unit Residences.....	13
Objectives	14
Incentives.....	14
Community Engagement.....	15
5. TARGET DURABLE GOODS: IMPROVE THE CITY’S RECYCLING STRATEGY	16
OPTION 3: A BETTER DURABLE GOODS MANAGEMENT STRATEGY	17
Three Preliminary Steps.....	17
1. Survey resource recovery agents to create a database/inventory and map	17
2. Identify business opportunities based on the value of recovered materials	18
3. Explore different technical and business options.....	18
Roles and Responsibilities	19
Planning	19
Promotion.....	19
Collection	20
6. TO DO LIST: POLICIES AND PROGRAMS TO IMPLEMENT	21
Green Procurement	21
Recycling and Organics.....	22
Multi-Unit Waste Reduction Levy	22
Hire additional by-law officers as per Recommendation 3, “Getting to 60% Diversion and Beyond”	23
Community Environment Days.....	23
Existing Information Channels.....	23
7. GOING FORWARD	25
8. REFERENCES	27

APPENDIX 1: METHOD	34
APPENDIX 2: SCOPE	35
Why focus on residential – what about all the other waste streams?	35
Why not just focus on multi-unit diversion? Multi-unit buildings have much lower diversion rates at present	35
Won't technology save us?.....	36
It's all about the money anyway – how do we know these options can work?	36
APPENDIX 3: WASTE REDUCTION AND DIVERSION OPTIONS	37
REDUCTION	37
1. Excess packaging and waste from commercial products is beyond the City's control.....	37
2. The City alone cannot force producers to be responsible for the lifecycle of their products.....	39
3. Multi-unit superintendents and owners have little motivating them to increase diversion	41
REUSE: DURABLE HOUSEHOLD GOODS.....	43
1. Community Environment Days, reuse depots, and non-profit or commercial donation centres are not accessible or convenient.	43
2. Lack of coordination amongst multiple community and City programs.....	44
RECYCLING AND COMPOSTING.....	45
1. Residents must purchase blue and green bins, making waste diversion more costly and inconvenient	45
2. Multi-unit building tenants are unaware of available recycling programs or do not understand how to properly use them.	47
3. Residents do not recycle electronic waste properly because it is inconvenient to travel with these items for drop-off.	48
EDUCATION AND AWARENESS	49
1. Toronto residents are not well informed about the types of materials that can be diverted from the waste stream because existing educational materials are neither widely accessible nor easy to use.	49

1. Toronto's Waste: a Snap Shot

This report summarizes three workable options to increase the City of Toronto's (the "City") waste diversion rate. In Toronto, "waste diversion" refers to recycling and composting. The waste remaining after these diversion efforts, reuse, and reduction, is known as "residual waste" (Figure 1). Residual waste is what we send to landfill and right now is equal to about 60% of the total waste we produce.¹

Figure 1: Residual Waste



We all benefit by reducing Toronto's residual waste. Trucking residual waste to landfills and paying to dump it is very expensive, not to mention bad for the environment.

While Toronto is doing a pretty good job of recycling and composting, we can certainly do better.

Torontonians can cut down on the amount of garbage sent to landfill by reducing the amount of garbage they generate, and by doing a better job of using waste diversion programs the City has in place. Right now, the City diverts 40% of residential waste from landfill.² With full participation in existing and planned City diversion programs, it is estimated that we could keep 60% of waste from landfills.³ New materials for recycling and a multi-unit green bin program, for instance, are slated for roll-out in the near future. In fact, with these new programs and an aggressive diversion strategy, Mayor David Miller thinks that a 70% diversion rate may even be possible!⁴ So, while Toronto is doing a pretty good job of recycling and composting, we can certainly do better.

The 2002 closing of the Keele Valley Landfill site and the 2010 deadline for ceasing garbage shipments to Michigan have made garbage big news in Toronto. Waste is high on the minds of Torontonians, and the time is ripe to improve waste diversion in our city.

¹ CEAT (2006)

² City of Toronto (2006).

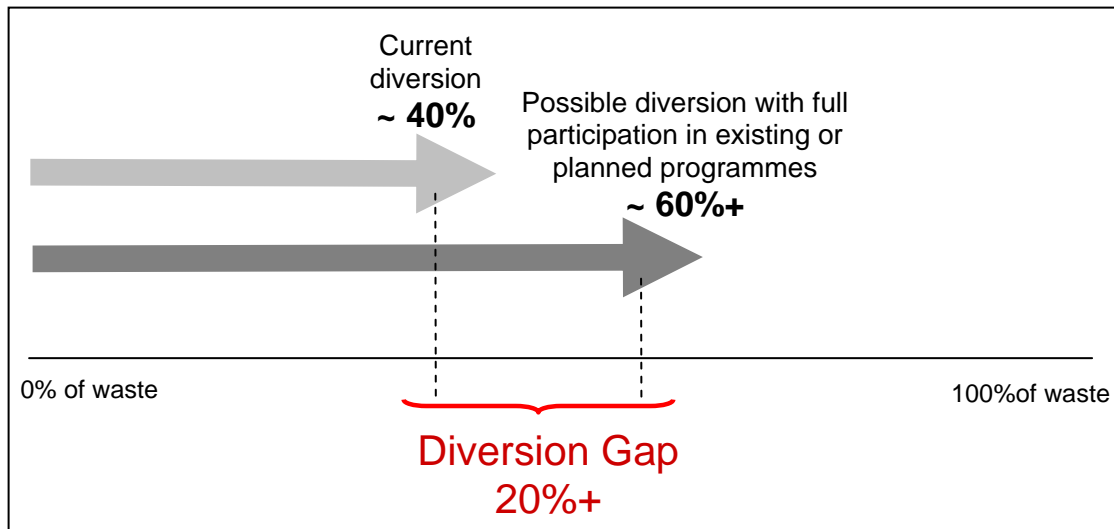
³ City of Toronto (2004a)

⁴ Barber (2006)

2. Our Approach: Removing Barriers to Waste Diversion

Toronto is falling short of its waste diversion potential. We refer to the shortfall between what we could be diverting using existing or forthcoming programs (60%) and what we are actually diverting (40%) as the “diversion gap” (see Figure 2).

Figure 2: The diversion gap



There are likely many reasons for the diversion gap.⁵ Other researchers have cited specific barriers to waste diversion, such as a lack of:

- Understanding of the waste problem
- Awareness of existing diversion programs
- Accessibility (e.g. most multi-unit dwellings are not currently part of the green bin program)
- Convenience (perceived or actual)
- Availability of effective program or environmental information
- Feedback and reinforcement regarding program use
- Enforcement of diversion by-laws
- Balance between (perceived and actual) benefits and costs.⁶

This diversion gap is significant. Toronto trucks roughly 400,000 tonnes of residual solid waste to Michigan each year.⁷ Twenty per cent of this amounts to about 80,000 tonnes of

⁵ The barriers to proper waste diversion have been studied widely. Researchers have found barriers related to lifestyle (Coggins, 2001); socio-economic demographics (Ando and Gosselin, 2005; Davis et al. 2006; Hopper and Nielsen, 1991); attitudes and awareness (Davis et al. 2006; Barr and Gilg, 2005; Evison and Read, 2001; Boldero, 1995); convenience (Ando and Gosselin, 2005; Tonglet et al. 2004); ease of use (Tonglet et al. 2004; Coggins, 2001); accessibility (Tonglet et al. 2004); and availability of effective information and educational material (Mee et al. 2005; Evison and Read, 2001; MacDonald and Ball, 1998).

⁶ Coggins (2001).

⁷ City of Toronto (2006b).

material that Torontonians *could be diverting*, which instead ends up in landfill. This is the biggest category of Toronto’s residual waste.

Our first two workable options, described in Sections 3 and 4, target this diversion gap by focusing on better educating Torontonians as to what they can divert, and convincing them that their participation matters. We focus our recommendations strongly on education and engagement, because no amount of technological innovation will substantially increase diversion unless everyone is aware of and correctly using the programs that are available.

Our third option, outlined in Section 5, targets the next largest component of the residual stream: durable goods. Durable goods are long-lasting items, such as clothing, household appliances, furniture or sports equipment, and they make up about 7% of Toronto’s residual waste.⁸ While many charities in the city collect durable goods, their service areas are a bit piecemeal, with multi-residential buildings – often having the least storage space – served most poorly. Solid Waste Management Services (SWMS) recognizes the need to divert durable goods from landfill, but has only just begun to develop a strategy to do so. We offer suggestions as to how the City could better divert durable goods from the residual stream.

We chose our “workable options” based on a set of criteria established through brainstorming sessions, expert consultations, and an extensive literature review. The three options featured here are by no means representative of all our ideas: A total of 31 workable options are summarized in Appendix 3. We chose to highlight these three best options because of their “bang for buck” potential for the City: they target big components of the residual stream with minimal investment and effort. We also considered the feasibility and ease of implementation of our options when selecting our best three.

Workable Option Criteria

- Not in the City’s plans, or room for improvement
- Technically Feasible
- Addresses a component of the residual waste stream and/or addresses a significant gap in the City’s waste plan
- Likely to generate sustainable behaviour change

We sought advice on our focus areas and “workable option” criteria through key informant interviews, and gratefully acknowledge the guidance of our professional advisors and experts: Dr. Phil Byer, Mr. Jason Tower, Mr. Dave Hardy, Mr. Alan Charky, Ms. Renee Dello, Ms. Jodi Callan, Mr. Bill Colucci, Ms. Ellen Giles, Ms. Yunis Kariyuki and members of the Community Environmental Assessment Team (CEAT). For more details on our methods and project scope, please see Appendices 1 and 2.

While the purpose of this report is to generate new ideas, we conclude in Section 6 with a push for implementing and improving current programs and policies, as well as in Section 7 with a recommendation to evaluate programs the City already has in place. These actions are at the top of any “bang for buck” list.

⁸ City of Toronto (2004b)

3. Increase Education and Awareness: The Green Pages

Research and experience show that successful participation in waste diversion programs depends largely on public motivation, education, and awareness. In this context, we have identified **two major barriers** that have prevented Toronto from achieving its waste diversion goals:

- 1) **Lack of accessible information:** Toronto residents are not well-informed about the types of waste that they can and cannot divert.
- 2) **Public apathy:** many Toronto residents do not link the consequences of their individual actions with the broader problems associated with the accumulation of waste in our landfill.

Many experts agree that clear messages, accessible information, and motivational programs are the key to a successful public education campaign.⁹ Toronto, a city that offers one of the more sophisticated solid waste management services in North America, should do more to engage the public in waste diversion.

One of the main barriers to increased waste diversion in Toronto is that residents are not well informed about the types of materials that can be diverted from the waste stream. This is due to the fact that existing educational materials are often not widely accessible or easy to use, and diversion programs and policies are constantly evolving.

Currently, print-versions of educational materials on waste management, such as posters, newsletters, and waste collection calendars, are distributed primarily to single family residences. Apartment dwellers may receive educational posters through motivated landlords or building supervisors, or from the City's website. The City of Toronto has also recently produced a "Green Guide," available on the City's website. This reliance on information dissemination through the internet puts households without home internet access at a disadvantage, and reduces their ability to take part in the City's waste diversion programs. It also requires residents to take the initiative to search for information online.

The Green Guide provides information on current City waste management programs, but few details on how to participate, and does not give practical information regarding day-to-day household waste management (such as what materials are recyclable, or where to bring items for reuse). It provides instead additional websites and phone numbers residents may call for further information. Having all of this information in one convenient document, within arms reach, would making waste diversion less burdensome for residents, and accessible to those without internet access.

The second difficulty with educational materials and awareness campaigns is that they do not always keep pace with changes in waste management policies and programs. On the other hand, when frequent public education campaigns are used, residents may feel overwhelmed or befuddled by repeated changes, leading to confusion, a decline in self-efficacy, or even apathy towards waste management.¹⁰ Households may have reference materials that are

⁹ McKenzie-Mohr (2000); Burn and Oskamp (1986); Kassirer and McKenzie-Mohr (1998).

¹⁰ Barr and Gilg (2005)

outdated, multiple copies of similar materials, or no materials at all because they have tossed them out, leading to confusion over which is the most current and what they are actually supposed to do with their waste. Finding a way to provide residents with regularly updated, straightforward information, would improve understanding and thus household waste management practices.

Option 1: The Green Pages

The Green Pages



To improve awareness and accessibility, and to provide up-to-date information, we suggest that the City partner with local phone companies to publish what we call the “Green Pages”. Adapted from the Yellow Pages for businesses and the Government Blue Pages, the Green Pages would be a part of every phone book, present in every household. Instituting a Green Pages section would allow the City to piggyback on a publication that has a large and established distribution, and that residents are already accustomed to using as a resource guide. Revised and published annually, this would create an easy to use and easy to access, up-to-date reference. The Green Pages could include information on what and how to recycle and reuse household items, a complete directory of services and programs related to waste management in Toronto, and green business listings and advertisements.

Recycling Guide

The Green Pages would provide an opportunity to put an up-to-date list of recyclable materials into every home, every year.

From the original grey and blue box programs and the switch to single-stream recycling, to the introduction of the green bin program, Toronto’s recycling and composting programs have gone through many changes. Every year, new items are added to the list of materials recycled in the City. Even the most conscientious residents must work to keep on top of improvements in the programs. The Green Pages would provide an opportunity to put an up-to-date list of recyclable materials into every home, every year. This would also help reach multi-unit buildings, which do not currently receive the City’s waste collection calendars, the main conduits of updated waste management information and instructions.

The Green Pages could also provide an opportunity to promote diversion beyond the kitchen, a major challenge in waste management. Since household recycling and green bins are usually located in or near the kitchen, other recyclables and compostables (such as toothpaste boxes, shampoo and detergent bottles, and soiled diapers) may be overlooked.¹¹ In fact, Toronto’s waste audit results show that many of the recyclable materials associated with low diversion rates are those that are produced in the bathroom and laundry rooms.¹² In addition, most organics diversion takes place in the kitchen or yard, despite the fact that diapers, sanitary products, and tissues can all go in the green bin. The Green Pages could include a list or diagram of recyclable and compostable materials, broken down by room in the house, much like the brochure developed by the City of Hamilton.¹³ This brochure acts as a quick reference guide, helping to eliminate confusion as to what items can and cannot be recycled

¹¹ For example, a number of studies in British Columbia found a lack of awareness concerning the full range of plastic bottles being accepted in the recycling program, in particular for those types of plastic bottles that are used outside the kitchen. See Environment and Plastics Industry Council (2002).

¹² City of Toronto (2004b)

¹³ City of Hamilton, (2006c)

in *each* room of the house. ‘Mini’ green and blue bins (described further in Appendix 3) would compliment this guide by providing a convenient receptacle for organics and/or recycling, as well as acting as a visual reminder to separate waste throughout the house. The City could subsidize these bins.

Reuse Guide

Given the diversity of items that may be reused, and the decentralized nature of reuse opportunities here in Toronto, residents may not know how or where to bring items for reuse, or even if such programs exist at all. This is particularly true of residents in multi-unit buildings who are rarely targeted by non-profit organizations for donation drives and the like. Providing residents with an easy to reference guide to reuse opportunities may be the first step to increasing knowledge and enabling behavioural changes. A reference chart of organizations accepting reusable goods, with checkmarks below the categories of goods they accept would be easier and faster to look through than the current list on website, which is quite difficult to locate and navigate. Making this chart, along with information on City reuse programs (including a calendar of Community Environment Days), non-profit organizations, and local repair/reuse businesses, available in the Green Pages would ensure that all households have easy access to this information.

The Green Pages could be used to provide information about manufactures that will take back products as part of extended producer responsibility programs. Many computer companies and carpet manufacturers, for example, have rolled out product stewardship policies.¹⁴ Charities are also willing to provide a new life for useful components of used goods and safe disposal of the remainder, once their initial user is finished with them. Car Heaven, for example, will recycle old cars donated to the program.¹⁵ Computers for Schools, an Industry Canada program, refurbishes donated computers and distributes them to schools, libraries, and non-profit learning organizations.¹⁶ A more complete listing of take-back programs and how to take part could be included in The Green Pages.

A Comprehensive Resource

We envision the Green Pages serving as a comprehensive resource, including information beyond waste management. Like the Green Guide, the Green Pages could include information on other local environmental services and programs, such as those related to air and water pollution, energy and electricity conservation, parks and trees, and transportation, in partnership with the appropriate government agencies and departments. Business listings and advertisements from “green” businesses could augment the government listings, providing additional information, and helping to offset publication costs. Putting all of this information in one convenient publication, particularly one that everyone is accustomed to using as a reference, would improve information accessibility. It would also make sure that the information was up-to-date, and would stay in the home, rather than being discarded after a couple of days as most flyers and posters are. Putting the information at residents’ fingertips is the first step in enabling them to take action, and participate in City programs.

¹⁴ Computer TakeBack Campaign (2006); Fishbein (2000))

¹⁵ Car Heaven (2006)

¹⁶ Industry Canada (2006)

*It's easy being
green*



Suggested Marketing Strategy

Finally, we suggest pairing the new Green Pages with an aggressive marketing campaign along the lines of “It’s easy being green.” Strong initial marketing could help make the Green Pages an established part of Toronto culture, something that people think of and refer to as naturally as they do the Yellow Pages. It’s a very simple idea, and one that we think could easily be replicated in other areas thanks to the ubiquity of the Yellow Pages.

4. Increase Motivation: Community Waste Ambassadors

While the lack of public awareness and knowledge of diversion programs is a significant barrier to achieving a higher diversion rate, the problem is not only that Toronto residents do not know what or how to recycle and compost. **Another key barrier to waste diversion is that City residents lack the motivation to take responsibility for their own waste management.**

Motivating individual behaviour is a huge challenge and achieving widespread participation in any new program and rarely occurs as a result of simply providing information. A number of different studies on the effectiveness of public education campaigns have suggested that ‘active methods’ of promotion, including home visits and interactive surveys, are significantly more effective at changing people’s behaviour than information delivered in a more traditional manner such as through regular advertising, leaflet drops, and/or newsletters.¹⁷ These active types of waste management campaigns have proven to be successful in increasing recycling tonnage and participation rates. For example, the Waste Partnership for Buckinghamshire was able to increase the recycling rates of residents by 2.5% through direct door-to-door canvassing, in addition to increasing the recycling rate in the County by 12%.¹⁸

Community based social marketing (CBSM) has also emerged as an attractive alternative to information-based campaigns. This approach is grounded in research that shows behaviour change is most effectively achieved through initiatives delivered at the community level that focus on removing barriers to an activity while simultaneously enhancing the activity’s benefits.¹⁹

A local community-led project for energy reduction used some of the methods of a CBSM strategy for their “Reduce the Juice” campaign.²⁰ This campaign aimed to raise awareness within the community of Shelburne about energy conservation and renewable energy technologies, as well as to motivate residents to reduce their energy use by 5%. Local high school students knocked on doors and used tools such as prompts (e.g. door hangers that reminded residents to turn off the lights) and commitment forms to encourage residents to adopt more sustainable behavior.²¹ Analysis of town electricity consumption following the *Reduce the Juice* campaign indicated that the project was successful in achieving a 5% reduction in electrical load demand in homes and small businesses.

Based on the research described above, our team has come up with a recommendation that employs both an active and community-level public education strategy that will significantly increase Toronto’s waste diversion rate.

¹⁷ Read (1999); Read (2000); Hopper and Neilson (1991)

¹⁸ Waste Partnership for Buckinghamshire, (2006)

¹⁹ McKenzie-Mohr (2000)

²⁰ Power-Up Renewable Energy Co-operative (2005)

²¹ For more information on successful use of prompts and commitments in promoting more environmentally sustainable behaviour visit www.cbsm.com

Option 2: Community Waste Ambassadors Pilot Project

Waste Ambassadors



We suggest that the City run a one year pilot project that involves volunteer waste ambassadors going door-to-door to teach their neighbours about waste reduction, recycling and composting while providing the tools to motivate residents to increase their household waste diversion rate.

The pilot project will employ a two-pronged approach: one project for single-family residences that focuses on waste diversion based on individual wards, and another project for multi-unit residences that focuses on recycling rate in individual buildings.

Single Family Residences

For single-family residences the pilot project would involve the City engaging in the following steps:

1. commission a study to determine waste diversion rates for each ward
2. target wards that have low waste diversion rates
3. partner with a local high school in one of the poorly performing wards and train a team of students to become 'waste ambassadors' in their neighbourhood.

The students would form multilingual waste ambassador teams to educate their neighbours about waste diversion programs.....

The local high school students would form multilingual waste ambassador teams that go door-to-door to educate their neighbours about waste diversion programs and how to properly recycle and compost, as well as to answer residents' questions about waste. The students would also distribute educational materials in different languages and would ask residents to sign a commitment form promising to reduce their residual waste by 5%. The students would also be able to sign households up for new blue boxes and green bins, so that residents are equipped to meet their diversion goals.

The students would be able to use their volunteer hours as waste ambassadors to fulfill their high school community service requirements, while also learning about waste and community outreach. After the pilot project is finished the City would monitor the change in the ward's diversion rate to determine if the project was successful, adapt as necessary, and use the program as a model for other wards.

Multi-Unit Residences

Multi-unit residences would employ a similar approach as that for single-family residences, however there are several differences that should be considered. First, currently multi-unit buildings have not yet achieved widespread diversion of organics, and second, individual buildings may not have local high school students as residents. Therefore the pilot project would involve the following steps by the City:

1. determine recycling rates for individual buildings²²

²² Solid Waste Management Services (SWMS) already monitors the volume of waste collected in multi unit residences in preparation for the waste reduction levy (WRL) and could therefore use this existing data to

2. target buildings with low recycling rates
3. partner with volunteers from the building (potentially from a condo board or tenants association) and train them to become 'waste ambassadors' in their building.

The volunteers would go door-to-door just like the high school students, answering questions, distributing materials, collecting signatures for commitment forms, and signing residents up for free blue boxes and green bins (see Appendix 3 for more information about providing boxes and bins).

As this project involves the use of volunteers with no obligation to remain committed to the project, the City could potentially offer payment (e.g. honoraria) to these volunteers in order to ensure the project is carried out to completion. Again, if the pilot project is successful in increasing the recycling rate in the building, the project can act as a model for other buildings across the city.

Objectives

The overall objectives of this pilot project are to:

1. Increase Toronto residents' participation in waste diversion programs, with a call to action for non-recyclers/composters.
2. Increase the quality of participation in diversion programs by creating a better understanding of what materials are accepted and how to properly sort them.
3. Increase the quantity of divertible material set out for collection through increased education and awareness of programs and greater motivation to recycle/compost.

Incentives

Community based social marketing strategies not only aim to reduce barriers to motivation, but also provide benefits for the desired behaviour. Therefore, in conjunction with this recommendation for a waste ambassador pilot project, we also suggest a means for incorporating incentives into the approach.

If the City finds that the pilot project is successful, it can provide the residents in each of the buildings and wards with a reward. This can be in form of park beautification, improvements to public space, or cash rewards. In addition, the City could hold a celebratory event, such as a community barbeque or picnic, and encourage coverage in the local media to give praise to residents for their achievements. One example of an innovative reward system is the City of Hamilton's Gold Box Program, where individual households that achieve 65% diversion or more are given gold boxes (instead of blue boxes), as well as a \$100 cheque and recognition at Council and in the local media for their efforts.²³

determine recycling rate. More information about the WRL is available at <http://www.toronto.ca/garbage/multi/levy/index.htm> (Accessed 13 Nov, 2006).

²³ \$100 is the estimated amount the residents are saving the city for disposal. More information about the Hamilton Gold Box Program can be found at <http://www.myhamilton.ca/myhamilton/HotTopics/2006-10-25-GoldBoxRecycling.htm> (Accessed 10 Dec 2006).

Moreover, in subsequent years (after the first pilot project) the City could run the project among a few (3-4) poorly performing wards and buildings in the city and issue a “Community Waste Challenge”. For this challenge, the ward/building that increases its diversion/recycling rate the most will be awarded a prize such as those described above.

Community Engagement

This community-led waste ambassador project not only addresses the need to increase participation in waste diversion programs but it will also actively engage residents in the waste issue in Toronto. In addition, poor recycling and composting infrastructure is often linked to areas of lower income, which may face larger social problems. This project will provide an avenue for the city to actively invest in these areas.

The campaign promotes community engagement by encouraging neighbours to come together and work collectively to solve a problem. It invites youth and residents to contribute positively to their community, breaking down potential existing social barriers. This pilot project also employs a culturally sensitive approach, which facilitates information exchange between volunteers and potentially socially isolated populations such as newcomers who may experience segregation as a result of language barriers, as well as people who may not be able to leave their homes.

5. Target Durable Goods: Improve the City's Recycling Strategy

Durable goods are those goods which are not consumed or destroyed in use and can be used for a period of time, usually three or more years. Examples include clothing, household appliances, furniture, and sports equipment.

By definition, durable goods are very difficult to dispose of. Charities will pick them up, but not frequently. The City's current method of collecting large bulky items such as mattresses precludes their re-use or recycling, as compactor trucks collect these items and crush them, rendering them impossible to reuse and difficult if not impossible to recycle.²⁴ While Solid Waste Management Services (SWMS) recognizes the need to divert durable goods away from landfill, it has only begun to develop a strategy to do so.

This is an obvious barrier to increased diversion. **While the City plans to collect durable goods, it does not have a strategy in place to ensure that non-reusable goods are recycled.**

SWMS has proposed the need to collect materials separately from the current waste stream and in a manner that ensures that collected items could be reused or recycled. Although the nature of these materials has not been determined, an April 2004 report from SWMS entitled, "Getting to 60% Waste Diversion" anticipates special collection of computers, other electronics and scrap metal. The report also recommends that the City expand such a collection to include goods such as clothing, sports equipment, toys, furniture, bedding, various building materials and VCRs and DVDs.

In addition, SWMS has been advancing the need for a facility or several facilities to serve as central locations for the collection and resale of durable goods. According to The SWMS Multi-Year Business Plan (2005), it is estimated that approximately 12,000 tonnes of durable goods a year could be diverted from landfill through a series of six City-owned reuse facilities.²⁵ A brief February 2006 staff report discussed the possible use of vacant City-owned lands adjacent to the Ingram Street Transfer Station for the first reuse facility.²⁶ While this report anticipates that durable goods would be provided to charitable organizations, it does not deal in any significant way with:

1. Durable or reusable goods that are not suitable for reuse for a number of reasons. For example, the goods may be in poor condition or market demand for them may not exist. What proportion of good collected does the City expect to reuse, and what will be done with the remaining materials?
2. What will the City do with non-reusable materials that are proposed to be collected, including mattresses and carpets?

These questions will presumably be addressed when the plan for the re-use facility is brought forward to the Works Committee early in 2007, but the information we have to-date from SWMS staff indicate that up to 75% of some of these materials will not be acceptable for re-

²⁴ Callan (2006)

²⁵ City of Toronto (2005)

²⁶ City of Toronto (2006j)

use and will have to be recycled or otherwise disposed of.²⁷ We need a better durable goods management strategy.

Option 3: A Better Durable Goods Management Strategy

Durable Goods



There are benefits to increased recycling of durable goods for industry, the environment and society as a whole. The benefits to industry include decreased production costs through increased material and energy efficiency, waste recycling and the elimination of practices which incur regulatory penalties. A decrease in production costs can also result in a more competitive product. For the environment, the recycling of durable goods can reduce demand on limited, virgin resources and on the capacity of the environment to accommodate solid waste and pollution. There is also the opportunity to deal with waste as near as possible to its source of origin (the proximity principle). With regard to society as a whole, the recycling of durable goods has the potential to create new local businesses and can be used as an economic development tool to create well-paying jobs in a range of skills.

We recommend that the City:

1. Implement a management strategy to ensure that durable goods that cannot be reused are recycled.
2. Ensure that durable goods are collected regularly, particularly from multi-residential buildings.
3. Promote the recycling of durable goods.

There are three preliminary steps the City could take to improve its durable goods management strategy. First, the City should survey resource recovery agents to create a database/inventory and map. Next, the City should identify business opportunities in recycling, focusing on bridging market-induced service voids. Finally, the City needs to explore different technical and business options.

We also suggest the City throughout this process continually reassess who the best actor might be for planning, promotion and collection responsibilities in this strategic approach, and offer some preliminary recommendations to this end.

Three Preliminary Steps

1. Survey resource recovery agents to create a database/inventory and map

Resource recovery agents are a mix of for-profit, not-for-profit, and public organizations that operate recycling facilities. Urban Ore, a California-based reuse company, surveyed other resource recovery agents in its home town of Berkeley and discovered a much higher number of operators than it had expected.²⁸ A similar inventory and map of such companies in and around Toronto is an important basis for the City's plan to eliminate durable waste. Once the

²⁷ Callan (2006)

²⁸ Lowe (1997).

City has identified these agents and knows where they are located, it can work to coordinate their efforts and help them increase the amount of waste that they recycle.

2. Identify business opportunities based on the value of recovered materials

The first step in identifying business opportunities in recycling is to categorize discarded goods based on actual reuse markets. This categorization of discarded goods will highlight service voids – materials and resources that are now not recycled because markets have not been developed and are therefore treated as waste. Resources should then be prioritized by both quantity and potential reuse value.²⁹

Reusable goods would go to one or more of the various charities which currently collect and resell them. The remainder are ripe for our proposed improved management strategy.

SWMS has discussed the possibility of collecting a broad range of durable goods including furniture, building materials, various types of scrap metal, sporting goods, computers and electronic equipment, clothing and textiles. SWMS reports on durable goods and proposed reuse centres suggest that reusable goods would go to one or more of the various charities which currently collect and resell them. The remainder, including those goods not suitable for reuse or for which there are no markets currently available are ripe for our proposed improved management strategy.

The SWMS reports which deal with the collection of durable goods discuss the need to explore markets for components from products such as used carpets and mattresses. SWMS staff have also discussed the possibility of a pilot project to disassemble mattresses if and when sufficient room can be found to one of the proposed reuse centres.³⁰ Such pilot projects may be useful in identifying opportunities to disassemble durable goods with the possibility for additional benefits to industry, the environment and the City.

3. Explore different technical and business options

Filling service voids effectively requires the exploration of different technical and business options. With some materials, research will be necessary to find technologies ready for commercial application or firms that have demonstrated proprietary technologies that may be available for licensing.³¹ With others, suitable resource recovery agents will have already been identified (in step 1), but may require assistance in expanding either their material intake or customer base.

The extent to which municipal governments are involved in facilitating these kinds of business transactions differs from city to city. For example in Japan, where 60 eco-industrial projects are currently operating or under development, central and local governments provide funding, foster research and pass tight regulations concerning waste disposal and recycling practices.³² Alternatively, the City could encourage the formation of an investment recovery firm instead, that would act as a network to a hub of companies engaged in these transactions, coordinating planning, logistics and research.³³

²⁹ Lowe (1997).

³⁰ Callan (2006)

³¹ Lowe (1997).

³² Morikawa (2000), p. 3.

³³ Lowe (1997).

Roles and Responsibilities

Our durable goods management strategy does not envision that the City will be solely responsible for the recycling of these materials. While there are some responsibilities that the City must assume, other actors have an important role to play as well. This section discusses the major responsibilities in the management of durable goods, and the appropriate actors to undertake them.

Planning

While some aspects of planning could be done by an investment recovery firm, if it becomes necessary to either locate new or move existing recycling operations within Toronto then the City is uniquely positioned to facilitate this process. In exploring technical and business options, the City should consider recycling operators not only in Toronto and the GTA but in neighbouring municipalities as well. In some cases, the most cost-effective option may be to send durable goods outside the City to be recycled.

However, if recycling operations require sites within Toronto, the City should consult with resource recovery agents to find out their location criteria and needs. In collaboration with these agents, the City could explore the optimal locations for each recycling operation. The City can also:

- Prepare a master development plan for the entire project
- Co-ordinate a fast track permitting process
- Hire a permit coordinator to assist developers through the development review process
- Waive permit and development fees; and
- Amend zoning.³⁴

Promotion

Whether the City decides to manage the recycling of durable goods directly or leave it to other actors, it has a critical role to play in promoting the concept. In Japan, Morikawa identified the roles of both central and local governments as promoters as one of the driving factors behind eco-industrial parks. He noted that in Japan there is a “growing perception that improving resource efficiency and reducing waste and emissions can have tangible benefits for business and the economy”.³⁵ Unfortunately, this perception may not have reached the same stage of public consensus in Canada at present. A Toronto/Ontario consultation on a Canadian resource recovery strategy, held by Natural Resources Canada in 2002, identified one of the main barriers to resource recovery as a “lack of appreciation of opportunities for savings that can be realized by networking across sectors” and applying eco-industrial principles.³⁶ SWMS has recommended that the Province of Ontario should designate, under the Waste Diversion Act, electronics, mattresses, furniture and carpets as

³⁴ Lowe (1997)

³⁵ Morikawa (2000), p. 5.

³⁶ Natural Resources Canada (2002), p.6.

types of waste which require manufacturers of these items to meet recycling targets and share with municipalities the cost of diverting these items from the landfill.³⁷

Collection

The City has many important responsibilities in the management of durable goods, but collection is not necessarily one of them. For example in San Leandro, California, a not-for-profit corporation called The Reuse People collects and recycles a wide variety of materials.³⁸ While the regular collection of durable goods must be ensured, particularly from multi-residential buildings, an actor other than the City may be best suited for this task.

³⁷ City of Toronto (2004a)

³⁸ Materials include bathtubs, bathroom fixtures, bicycles, bricks, building materials, cabinets, cinder blocks, clay roofing tiles, doors, garden tools, hardware, kitchen and light fixtures, stoves/ovens, water heaters, windows, and screens. California Integrated Waste Management Board (2001).

6. To Do List: Policies and Programs to Implement

A policy is only as good as its implementation.

A policy is only as good as its implementation. Over the course of researching options for increasing Toronto's waste diversion, we came up with several ideas that have proven effective in other jurisdictions – only to discover that they were already on the books in Toronto, but were not being fully implemented. City staff have already done a lot of excellent work in the area of waste diversion, but often these ideas are not implemented.

This section provides a few examples of programs or policies which we feel the City needs to implement or improve. While these are not new ideas, they surface again and again as necessary elements of a successful waste diversion program in Toronto. We raise them here both as a reminder to the City of the importance of implementing its existing ideas, as well as a caveat that our new ideas, presented in this paper, will only work if they are effectively implemented. The policies and programs discussed below are elaborated on in Appendix 3.

Green Procurement

The City adopted an “Environmentally Responsible Procurement Policy” (ERPP) in 1999, which commits Toronto to base all purchasing and allocation decisions on environmental criteria, such as waste implications, in addition to criteria such as price and quality.³⁹ As one of Ontario's biggest purchases of goods and services, valued at over \$1 billion per year, this policy puts the City in a position to create market demand for green products, and to serve as a model for the purchasing habits of industry and of the public.⁴⁰

However, Toronto lags behind other jurisdictions in implementation of its green purchasing policy. Although the Policy is included in all formal competitive bidding quotation requests issued by the Purchasing and Materials Management Division, there is no set of specific implementation instructions to accompany the green purchasing mandate.⁴¹ As such, implementation varies across City departments. The City should create a set of resources for City staff to facilitate implementation of its green procurement policy, including guidelines for purchasing specific products, lists of suppliers that provide green alternatives, and sample specifications that City workers can present to suppliers for individual product requirements.⁴²

³⁹ ICLEI (2001).

⁴⁰ City of Toronto (2006c).

⁴¹ MacNamara (2006)

⁴² Toronto could follow the example of other Canadian cities, such as Richmond, BC's *Environmental Purchasing Guide*. See City of Richmond (2000).

Recycling and Organics

Toronto offers wide-ranging recycling and composting programs to its citizens. While these have successfully increased diversion rates, the City could further improve their effectiveness by improving implementation to make the programs easier and more accessible for everyone.

One aspect of this is bin distribution. Currently, single-family households receive one free blue and green bin, but must purchase additional bins from designated locations. Apartment dwellers are not provided with any free bins. The added cost, effort and inconvenience of purchasing bins may deter proper waste diversion. The City should provide all single-family and multi-unit households with appropriate waste diversion receptacles free of charge. These could be picked up by residents at specific outlets, e.g. participating hardware stores or existing City of Toronto Recycling Container Pick-Up locations, delivered upon placing a request, or provided upon move-in by the landlord or property owner (in the case of multi-unit buildings).

A second problem with recycling is implementation in multi-unit buildings, where residents may not be aware of the programs in place. Currently, landlords and property managers are encouraged to share waste diversion information with their tenants by delivering print materials or displaying posters. This depends on the landlord's own initiative and is not always done.

To improve awareness, the City should provide a comprehensive waste diversion package to all multi-unit building tenants, for mandatory distribution upon move-in. This package should: explain what materials can be diverted, how to make use of large bins and household bins/bags, instructions for the multi-chute system (if applicable), up-to-date information about Environment Days and Drop-Off Depots, where to obtain additional bins/bags, and who to contact with additional questions. The package should be offered in a number of languages and its contents should be *explained* to tenants in person by the property manager or landlord. Ensuring that landlords deliver the package to his or her tenants should be added to the mandate of the waste by-law enforcement officers, who should periodically spot-check that this is occurring.

Multi-Unit Waste Reduction Levy

The City has adopted a Waste Reduction Levy, aimed at collecting financial compensation from multi-unit residential buildings that are not meeting Toronto's diversion targets.⁴³ This Levy was scheduled to be implemented as of July 1, 2006, however it has yet to come into effect. We stress that the Waste Reduction Levy must be implemented immediately, by charging multi-unit buildings that exceed their waste quota. As well as implementing the Waste Reduction Levy, the City should inform affected landlords and building managers that they must file a Recycling Improvement Plan for each building they own/manage, and set a deadline for this shortly after the Levy roll-out.

⁴³ City of Toronto (2006f).

Presently, the link to the online form for filing this plan, along with all the explanation of the Multi-Unit Waste Reduction Levy, is in English only.⁴⁴ Recognizing the diversity of landowners and building managers active in Toronto, this information must be more easily accessible in multiple languages.

Hire additional by-law officers as per Recommendation 3, “Getting to 60% Diversion and Beyond”

In a 2006 Staff Report to the Works Committee, it was suggested that in order to achieve greater diversion, the City needs to hire additional officers to enforce its waste by-laws.⁴⁵ In addition to implementing this recommendation, the City should empower officers to fine offenders as per the City’s Municipal Act section 77 powers. This measure should be used to balance the levy imposition on multi-unit buildings with increased monitoring and, where appropriate, penalties, to single family homes.

Community Environment Days

Reducing the amount of reusable items in the residual waste stream saves money, resources, energy and landfill space. The City currently offers Community Environment Days, which allow residents to donate reusable items right in their own ward. However, the infrequency of the City’s Community Environment Days, presently held only once per year, presents a problem for households with limited storage capability, including most condo and apartment dwellers. To better implement Community Environment Days, the City should increase their coverage and frequency.⁴⁶ Further, to increase the accessibility and convenience of re-use for those that do not have access to cars,⁴⁷ the City should also consider offering curb-side pick-up of reusable goods.

Existing Information Channels

Currently, useful information about waste diversion is available on the City’s Solid Waste Management Services (SWMS) website. However, this website is not very user-friendly. We suggest that the City improve the website by providing a comprehensive list of what can and cannot be recycled/composted/reused with the existing infrastructure. This list could be organized alphabetically, so that if the user clicks on the letter “B” all materials that can be diverted that start with “B” come up. Also the website could have a search function so that a user can enter the name of the item they wish to recycle/compost

⁴⁴ City of Toronto (2006f).

⁴⁵ City of Toronto (21 April 2004). Staff Report to Works Committee: Getting to 60% Diversion and Beyond. Retrieved November 13, 2006 from

http://www.toronto.ca/wes/techservices/involved/swm/net/pdf/getting_to_60_diversion_and_beyond.pdf.

⁴⁶ For more information on successful reuse programs, see: California Integrated Waste Management Board (2006a) and (2006b) and U.S. EPA (1999b).

⁴⁷ 25% of Toronto households lack access to a private vehicle (Data Management Group 2003, p. 9). A study by Cantos finds that car ownership rates are particularly low in multi-residential units (2004, p. 18).

and the website will determine if it is currently on the list of recyclables/organics or if it can be reused.⁴⁸

Another current source of information is City of Toronto staff. The City currently offers information hotlines for questions about the green bin, recycling, and hazardous waste programs. However, they are not live (i.e. recorded messages are often used), they can be difficult to find, and they all have different telephone numbers. The City's telephone waste information system could be substantially improved by creating a waste hotline. The hotline would allow residents to ask any questions they may have about household waste. Residents could be encouraged to use this resource with an effective advertising campaign and a hotline number that is catchy and easy to remember such as "1-800-NO-WASTE."⁴⁹

⁴⁸This could be modelled after the City of Hamilton's Waste Management Division website. See City of Hamilton (2006b).

⁴⁹A similar programme is currently in place in the Province of British Columbia. The RCBC Recycling Hotline (604-RECYCLE) is a comprehensive, toll-free service that provides information on waste reduction, recycling, disposal and pollution prevention throughout the entire province. Hotline staff answer over 200 calls per day from all over BC. See RCBC (2005).

7. Going Forward

We are confident that the workable options highlighted in this report are great opportunities for the City to target both its diversion gap, through educational sources such as the Green Pages and the Waste Ambassadors program, and the residual waste for which there are not currently diversion options through an improved durable goods strategy. Also, these are relatively easy fixes: pilot projects in partnership with community volunteers are already virtually set up for the Waste Ambassadors and a durable goods facility, the Green Pages can effectively pay for itself through inclusion of green advertising, while the To Do List includes programs which are already organized and simply require better implementation.

This is a good news report: we believe the City can achieve big bang-for-buck impacts because, except for the Green Pages, program groundwork is already in place. The Green Pages are such a simple, strong idea that we feel creating them will not be too arduous. If the City wants to go above and beyond these three workable options, we include our list of additional suggested options, categorized moderate and aggressive, in Appendix 3.

The City should take stock of its many proposed, partially implemented and fully implemented strategies.

While our ideas are fresh and exciting, the premise of this report is not. The City has already comprehensively searched for strategies to divert additional waste from its residual stream. Many excellent reports containing smart recommendations have already been presented.⁵⁰ Our most important conclusion, beyond the many ideas we came up with to further reduce the quantity of waste going to landfill, is that the City should take stock of its many proposed, partially implemented and fully implemented strategies. See what works well and what does not measure up, and then make educated, tough decisions for strategic investments going forward.

Monitoring and evaluation are not traditional strengths in municipal planning⁵¹ - often municipal resources are not equal to their responsibilities, and something has to give. Solid waste planning would certainly benefit from an added element to the waste audits which links results from past years with the reduction and diversion programs actively practiced at that point, and tries to draw some conclusions from the data as to program effectiveness.

Without this evaluation aspect, reduction and diversion programs can not be defensibly cited as progress: there is debate, for example, as to whether the one-stream recycling system the City converted to last year is making it easier for citizens to recycle or just increasing contamination of recyclables.⁵² Gord Perks suggests that perhaps the diversion rate is not the right measure of residual waste reduction anyway. He recommends that the City instead report on the *end uses* of recycled products, making clear how much of what residents “recycle” is in fact being landfilled.⁵³

⁵⁰ See, for example: City of Toronto (2006j); City of Toronto (2004a); City of Toronto (2004); Parizeau et al (2004)

⁵¹ Seasons (2003)

⁵² Lorinc (2006)

⁵³ Lorinc (2006)

We strongly recommend the City rigorously assess its reduction and diversion programs, as well as their measures of success, to create a clearer record of our residual waste patterns going forward.

8. References

- Ando, A. and A. Gosselin (2005). Recycling in Multifamily Dwellings: Does Convenience Matter? *Economic Inquiry*, 43(2): 426–438.
- Barber, J. (14 November 2006). There's no room for excuses this time around. *The Globe and Mail*: A16.
- Barr, S. and A. Gilg (2005). Conceptualising and analysing household attitudes and actions to a growing environmental problem: Development and application of a framework to guide local waste policy. *Applied Geography* 25: 226–247.
- Boldero J. (1995). The prediction of household recycling of newspapers; the role of attitudes intentions and situational factors. *Journal of Applied Social Psychology*, 25(5): 440–62.
- Burn, S.M., and Oskamp, S. (1986). Increasing community recycling with persuasive communication and public commitment. *Journal of Applied Social Psychology*, 16: 29-41.
- Byer, Philip (2006). Professor, University of Toronto Civil Engineering Department. Interviewed at the University of Toronto (27 October 2006).
- California Integrated Waste Management Board (2001). "Resource Recovery Parks: A Model for Local Government Recycling and Waste Reduction." Retrieved 25 October 2006 from www.ciwmb.ca.gov/LGLibrary/Innovations/RecoveryPark/.
- California Integrated Waste Management Board (2002a). "Community Cleanups: Models for Local Government Recycling and Waste Reduction." Retrieved 20 October 2006 from www.ciwmb.ca.gov/Publications/LocalAsst/31002005.pdf.
- California Integrated Waste Management Board (2002b). "Last Chance Mercantile: A Model for Local Government Recycling and Waste Reduction." Retrieved 20 October 2006 from www.ciwmb.ca.gov/Publications/LocalAsst/31002011.pdf.
- California Integrated Waste Management Board (2004). "Central Contra Costa Solid Waste Authority: Best Creative Partnerships Program." 2001 Trash Cutter Awards Program Case Studies. Retrieved 20 October 2006 from www.ciwmb.ca.gov/Trashcutters/Winners/2001/ContraCosta.htm.
- California Integrated Waste Management Board. (2006a). "Innovations" Case Studies: Community Cleanups, Retrieved 16 October 2006 from www.ciwmb.ca.gov/lglibrary/innovations/CleanUps/CaseStudies.htm.
- Callan, Jodi (2006). Senior Analyst, Waste Diversion Planning, Solid Waste Management Services. Interview at City of Toronto (27 November 2006)
- Cantos, Jeffrey (2 April 2004). Parking Strategies For Affordable Housing: An efficient and equitable approach (Current Issues Paper). University of Toronto Programme in Planning. Retrieved 11 November 2006 from
-

www.geog.utoronto.ca/programs/planning/planning%20new/recentwork/2003/CIP/parkingstrategiespdf.pdf.

Car Heaven (2006). Website. Retrieved 10 November 2006 from www.carheaven.ca/.

Central Contra Costa Waste Authority (2006). "Special Clean-Ups: Reuse and Cleanup Days." Website. Retrieved 20 October 2006 from www.wastediversion.org/specialcleanups.htm.

Chang, F., LePage, E., Otten, L., and van Opstal, B. (2004). *Is 100% Diversion from Landfill an Achievable Goal?* Toronto: New and Emerging Technologies Policies and Practices Advisory Group, Sub-Committee on 100% Diversion, 15 December 2004. Retrieved 10 December 2005 from www.toronto.ca/wes/techservices/involved/swm/net/pdf/2004-12-15_report/final_report_100_diversion.pdf.

Charky, Alan (2006). President, WOR On Waste Ltd. Interview at the University of Toronto (6 November 2006)

City of Dunedin (2006). Recycling Services Website. Retrieved 3 November 2006 from www.dunedingov.com/home.aspx?page=departments/PublicWorks/recycle&title=Recycling%20Services.

City of Hamilton (2006a). Apartment Recycling website. Retrieved 3 November 2006 from www.myhamilton.ca/myhamilton/CityandGovernment/CityDepartments/PublicWorks/WasteManagement/ProgramsAndServices/ApartmentRecycling/.

City of Hamilton (2006b). Green Pages. Accessed 13 November 2006 from www.myhamilton.ca/myhamilton/CityandGovernment/CityDepartments/PublicWorks/WasteManagement/GreenPages.htm.

City of Hamilton (2006c). Blue Box Brochure "Room by Room Recycling: A Self Guided Tour. Retrieved 13 November 2006 from <http://www.myhamilton.ca/NR/rdonlyres/F9F08EF7-5A1C-463A-B68E-0F45F5C70CFF/0/BlueBoxBrochure05.pdf>.

City of Richmond (2000). Environmental Purchasing Guide. Retrieved 6 November 2006 from www.richmond.ca/_shared/assets/complete_guide6687.pdf.

City of Paramount (2006). CityScape: Recycling Options for Paramount. Retrieved 3 November 2006 from www.paramountchamber.com/files/2006_SeptemberCityTalk.pdf.

City of Toronto (1998). A Vision for The Future of the Environment in Toronto: A Report Based on a Vision and Priority Setting Workshop. City of Toronto Environmental Task Force. Retrieved 25 October 2006 from www.toronto.ca/council/environtf_visionwkshop.htm.

City of Toronto (1999). Environmentally Responsible Procurement Policy. Finance Department Policy Statement.

City of Toronto (2003). City of Toronto Requirements for Garbage and Recycling Collection from New Developments and Redevelopments. Retrieved 17 October 2006 from www.toronto.ca/garbage/pdf/requirements_all.pdf.

City of Toronto (2003b). New & Emerging Technologies Policies & Practices Advisory Group "Task Force 2010 Update Report" p. 3. Retrieved 20 October 2006 from www.toronto.ca/wes/techservices/involved/swm/net/pdf/task_force_2010_updates.pdf.

City of Toronto (2004). New and Emerging Technologies, Policies and Practices Advisory Group Final Report. Retrieved 21 September 2006 from www.toronto.ca/garbage/net/pdf/2004-12_final_report/2004-12-13_final_report.pdf

City of Toronto (2004a). Staff Report to Works Committee: Getting to 60% Diversion and Beyond (21 April). Retrieved November 13 2006 from www.toronto.ca/wes/techservices/involved/swm/net/pdf/getting_to_60_diversion_and_beyond.pdf

City of Toronto (2004b). Is 100% Waste Diversion from Landfill an Achievable Goal? New and Emerging Technologies Group, Sub-Committee on 100% Waste Diversion (15 December 2004).

City of Toronto (2005). Solid Waste Management Services Multi-Year Business Plan.

City of Toronto (2006) Solid Waste Management Services (15 February 2006). Staff Report: 2005 Residential Waste Diversion Rate.

City of Toronto (2006a). Addition of New Materials to Blue Box Programme. Staff Report, prepared by Solid Waste Services for Works Committee. 20 June 2006.

City of Toronto (2006b). Mandate of the Community Environmental Assessment Team. Retrieved 25 September from www.toronto.ca/garbage/ceat/pdf/schedule_1_mandate_for_agreement_2006-02-14.pdf.

City of Toronto (2006c). Purchasing and Materials Management. Retrieved 10 November 2006 from <www.toronto.ca/finance/about_purchasing_fin.htm>.

City of Toronto (2006d). ReUseIt. Retrieved 20 October 2006 from www.toronto.ca/reuseit/links.htm.

City of Toronto (2006e). Waste and Recycling. Retrieved 13 November 2006 from www.toronto.ca/greenguide/waste_recycling.htm.

City of Toronto (2006f). Multi-Unit Waste Reduction Levy. Retrieved 13 November 2006 from www.toronto.ca/garbage/multi/levy/index.htm.

City of Toronto (2006g). ReUseIt - Why should I reduce and reuse before I recycle? Retrieved 20 October 2006 from www.toronto.ca/reuseit/why_reduce.htm

City of Toronto (2006h). Community Waste Days. Solid Waste Management Services website. Retrieved 20 October 2006 from www.toronto.ca/environment_days/index.htm.

City of Toronto (2006i). Recycling and Solid Waste Depots, Household Hazardous Waste. Solid Waste Management Services website. Retrieved 20 October 2006 from www.toronto.ca/garbage/depots.htm.

City of Toronto (2006j). Solid Waste Requirements for Lands at Ingram Transfer Station. Staff Report to Works Committee. Retrieved 13 December 2006 from <http://www.toronto.ca/legdocs/2006/agendas/committees/wks/wks060307/it032.pdf>.

Coggins, C. (2001). Waste prevention — an issue of shared responsibility for UK producers and consumers: policy options and measurement. *Resources, Conservation and Recycling*, 32: 181–190.

Colucci, Bill (2006). Property Manager, Brookfield Residential Services Ltd. Interviewed at Timothy's, Toronto (20 November 2006)

Community Environmental Assessment Team (2006). Information Package for Public Consultation participants. Retrieved 15 Oct 2006 from www.toronto.ca/garbage/ceat/ea.htm.

Computer TakeBack Campaign (2006). Recycling Your Computer: which companies will take back your old computer? Retrieved 10 November 2006 from, www.computertakeback.com/docUploads/using_takeback_programsv6.pdf.

County of San Mateo Recycle Works (2006). Where to Recycle Electronics Website. Retrieved 3 November 2006 from www.recycleworks.org/cgi-bin/bin/user/guide.pl?id_guide=8.

Data Management Group, University of Toronto, Joint Program in Transportation (April 2003). 2001 Transportation Tomorrow Survey: City of Toronto, Summary by Wards. Retrieved 11 November 2006 from www.jpint.utoronto.ca/ward01/toronto_wards.pdf.

Davis, G., Phillips, P., Read, A. and Y. Iida (2006). Demonstrating the need for the development of internal research capacity: Understanding recycling participation using the Theory of Planned Behaviour in West Oxfordshire, UK. *Resources, Conservation and Recycling*, 46:115–127.

Dello, Renee (2006). Coordinator, Waste Diversion Planning, Solid Waste Management Services. Interviewed at the City of Toronto (10 November 2006).

Enviros RIS.(2000). Information Technology (IT) and Telecommunication (Telecom) Waste in Canada. Report prepared for Environment Canada. Retrieved 3 Nov 2006 from www.epsc.ca/pdfs/IT_Telecom_Waste_Canada_ENG.pdf.

Environment and Plastics Industry Council (2002). *Tech Talk*, Volume 6, number 2 (June). Retrieved 18 October 2006 from www.cpia.ca/files/files/files_techtalk2Q2002.pdf.

Evison, T. and Read, A.D. (2001). Local Authority recycling and waste- awareness publicity/promotion. *Resources, Conservation and Recycling*, 32: 275-291.

Fishbein, B. 2000. Carpet Take-Back: EPR American Style. Retrieved 24 November 2006 from <http://www.informinc.org/carpettakeback.php>

Fitchburg Public Works (2002). “City of Fitchburg Solid Waste Management Plan.” Retrieved 20 October 2006 from www.2.city.fitchburg.wi.us/SolidWaste/solidwasteplan.pdf.

Fitchburg Public Works (2003). “City of Fitchburg Solid Waste Annual Report.” Retrieved 20 October 2006 from www.city.fitchburg.wi.us/files/3534060.pdf.

-
- Gilles, Ellen (2006). Toronto Green Community. Interviewed at Second Cup, Toronto (29 November 2006).
- Government of Canada (2006). Department of Public Works and Government Services. Green Procurement. Retrieved 16 Oct 2006 from www.pwgsc.gc.ca/greening/text/proc-e.html.
- Government of Manitoba (2002). Manitoba's Sustainable Procurement Goals. Retrieved 16 October 2006 from www.gov.mb.ca/gs/psb/SD_Proc_Goals.pdf.
- Hardy, Dave (2006). Principal, Hardy Stevenson and Associates Limited. Interviewed at the office of Hardy Stevenson and Associates Ltd. (9 November 2006)
- Hopper, J. and J. Nielsen (1991) Recycling as altruistic behavior: normative and behavioral strategies to expand participation in a community recycling programme. *Environment and Behavior*, 23: 195-220.
- Industry Canada (2006). Computers for Schools. Retrieved 24 November 2006, from Computers for Schools. 2006. Website: <http://cfs-ope.ic.gc.ca/Default.asp?lang=en>.
- International Council for Local Environmental Initiatives (2001). The World Buys Green: International Survey on Green Procurement Practices. Freiburg, Germany: ICLEI.
- Kariyuki, Yunis (2006). Toronto Green Community. Interviewed at Second Cup, Toronto (29 November 2006).
- Kassirer, J., & McKenzie-Mohr, D. (1998). Tools of change: Proven methods for promoting environmental citizenship. Ottawa, Ontario, Canada: National Round Table on the Environment and the Economy.
- Liss, G. and Associates. (2000). "Innovations" Case Study: Save Money and the Environment Too. California Integrated Waste Management Board.
- Larkin, C., Morrison, K., and G. Buchan. (2000). Social forces in the promotion of recycling: case study analysis in rural New Zealand. Presented at the Sixteenth International Conference on Solid Waste Technology and Management. Philadelphia, PA, p. 10-13.
- Lowe, Ernest A (2005). Eco-industrial Park Handbook for Asian Developing Countries.
- Lowe, Ernest A. (1997) Regional Resource Recovery, and Eco-Industrial Parks: An Integrated Strategy. Prepared for the symposium, Verwertungsnetz Obersteiermark Innovation durch regionale Recycling-Netzwerke. 28-29 April, 1997. Karl-Franzens Universitat Graz.
- MacNamara, J. (2006). Manager, Goods and Service, City of Toronto. Personal Communication (24 November 2006).
- McDonald, S. and R. Ball (1998). Public participation in plastics recycling schemes. *Resources, Conservation and Recycling*, 22: 123-141.
- McKenzie-Mohr, D. (2000). Fostering sustainable behaviour through community-based social marketing. *American Psychologist*, 55(5): 531-537.
-

-
- McKerlie, K., Knight, N. and B. Thorpe (2006). Advancing Extended Producer Responsibility in Canada. *Journal of Cleaner Production* 14: 616-628.
- Mee, N., Clewes, D., Phillips, P. and A. Read (2004). Effective implementation of a marketing communications strategy for kerbside recycling: a case study from Rushcliffe, UK. *Resources, Conservation and Recycling*, 42: 1–26.
- Morikawa, M. 2000. *Eco-Industrial Developments in Japan*. Indigo Development Working Paper # 11. RPP International, Indigo Development Center, Emeryville, CA.
- Natural Resources Canada (7 May 2002). Consultations on a Canadian Resource Recovery Strategy. Mississauga, Ontario.
- OECD - Organisation for Economic Co-operation and Development (2001). Extended Producer Responsibility: A Guidance Manual for Governments. Retrieved 10 November 2006 from www1.oecd.org/publications/e-book/9701041e.pdf.
- Ontario Municipal Act, S.O 2001, Chapter 25, as amended. Retrieved 17 October 2006 from www.e-laws.gov.on.ca/DBLaws/Statutes/English/01m25_e.htm#BK509.
- Parizeau, K., Vokey, S., Yap, C. and K. Zaletnik (2004). Increasing waste diversion in multi-family buildings in Toronto: Best Practices and New Ideas. University of Toronto Programme in Planning PLA 1107, Supervisor V. Maclaren.
- Power Up Renewable Energy Co-operative (2005). “Reduce the Juice; a Shebourne Community Energy Pilot Project.” Final Report, December 31. Retrieved 13 November 2006 from www.reducethejuice.ca/RTJExecutiveSummary.pdf.
- RCBC (2005). RCBC Hotline. Accessed 13 November 2006 from www.rcbc.bc.ca/resources/hotline.htm.
- Read, A. (1999). A weekly doorstep recycling collection, I had no idea we could!’ Overcoming the local barriers to participation. *Resources, Conservation and Recycling*, 26: 217-49.
- Read, A. (2000). Pounding the streets? Public participation is vital for the success of curbside recycling. *Recycler Review*, 2: 6-8.
- Read, A. (2001) Making good use of the things that we find: a rally call for a generation of waste managers in the UK. *Environmental Education and Information*, 20(1): 1-18.
- Region of York. “Reusable Goods Collection Program.” Website. Retrieved 20 October 2006 from www.region.york.on.ca/Services/Garbage+and+Recycling/Reusable+Goods+Collection+Program.htm.
- Simmons, D. and R. Widmar (1990). Motivations and barriers to recycling: toward a strategy for public education. *Journal of Environmental Education*, 22(1):13–8.
- Simmons, Phil, et al. (April 2006). “The State of Garbage in America,” *Biocycle*.
-

Taskforce 2010 (2001). Waste Diversion Taskforce 2010 Report. Retrieved 10 October 2006 from www.toronto.ca/taskforce2010/report.pdf.

Tonglet, M., Philips, P. and M. Bates (2004). Determining the drivers for householder pro-environmental behaviour: waste minimization compared to recycling. *Resources, Conservation and Recycling*, 42: 27–48.

Tower, Jason (2006). Partner, Waste Solutions Group. Interviewed at Waste Solutions Group Head Office (5 November 2006).

U.S. EPA (1999a). Analysis of Five Community Consumer/Residential Collections End-Of-Life Electronic and Electrical Equipment. Region 1, EPA-901-R-98-003, pg. 4. Retrieved 3 November 2006 from www.epa.gov/ne/solidwaste/electronic/pdfs/csifinal.pdf.

U.S. EPA (1999b). Cutting the Waste Stream in Half: Community Record-Setters Show How. Washington DC: EPA. Retrieved 20 October 2006, from www.ilsr.org/pubs/cuttingwaste.pdf.

Urban Mines. “Sustainable Growth Park.” Retrieved 10 November 2006 from www.urbanmines.org.uk/?c=/pages/sgp.jsp.

Waste Commission of Scott County (2006). Electronic Demanufacturing Facility Website. Retrieved 3 November 2006 from www.wastecom.com/index.php?option=com_content&task=view&id=17&Itemid=41

Waste Diversion Ontario (2006). Waste Electronic and Electronic Equipment Study. Report prepared for the Ontario Ministry of the Environment. Retrieved 2 November 2006 from <http://webservices.siriusweblabs.com/dotconnector/files/domain4116/WEEE%20Study%20Report.pdf>.

Waste Partnership for Buckinghamshire (2006) Recycle Now Partners Success Stories. Retrieved 12 December 2006 from http://www.recyclenowpartners.org.uk/brand_in_action/success_stories/buckinghamshire.html.

Wastewatchers (2006). Recycle for Hampshire Campaign-one year old. Issue 19, Spring 2006. Retrieved 13 November 2006 from www.integra.org.uk/news/pdf/wastewatchers19.pdf.

Appendix 1: Method

We started by attending CEAT meetings: internal meetings, a City Councillor information session, and public consultations. In this way we familiarized ourselves with CEAT, its mandate and its working structure.

We studied the composition of the City's waste streams based on waste audits and collection data, focusing on the diversion rates for each material stream and the residual materials entering the landfill. We then identified those materials with low diversion rates despite existing opportunities for diversion (such as plastic bottles not being diverted through the blue box, or organic materials not being diverted through the green bin).

We performed an academic literature review to better understand the research that has been done on this subject, and to help us determine which areas of waste management to focus on. This literature review revealed the common barriers to successful waste reduction and diversion. We reviewed case studies from jurisdictions in Canada and abroad to determine how others are successfully managing their waste. Based on this review and our examination of Toronto's residual waste stream, we selected our focus areas: Reduction, Reuse, Recycling and Composting, and Education and Awareness. While the fourth is somewhat different from the well-known "Three R's", we felt that Education and Awareness merited special attention as it plays a key role in improving diversion in each of the other areas.

Within these focus areas, we worked as a team to develop options to address the various barriers to waste diversion. Our ideas were the result of brainstorming sessions, journal and web-based research, and interviews with experts in the field of waste management. We developed a total of 31 ideas that met our "workable option" criteria and from these we selected the three 'best' options to research in more depth. These three workable options are discussed in the body of this report and were highlighted in our presentation on December 7, 2006.

Appendix 2: Scope

Prior to a fuller discussion of our research method and proposed options for removing barriers, we briefly explain why we did not focus on several aspects of waste diversion. These include non-residential waste, increasing multi-unit residential diversion, possible technological innovations, political will, and financing.

Why focus on residential – what about all the other waste streams?

Residential waste makes up 62% of Toronto's total waste, and is the largest waste stream that the City manages.⁵⁴ Because of this, reducing residential residual waste will have the biggest positive impact for the City, and therefore we focus on the residential stream is in this report. The City also manages waste for small commercial users through a pay-per-throw system called the Yellow Bag program, as well as waste generated by its own agencies, boards, commissions and divisions. Large commercial and industrial operations typically use private disposal.

Why not just focus on multi-unit diversion? Multi-unit buildings have much lower diversion rates at present

Repeated City waste audits have shown multi-unit residential housing lagging significantly behind single-family dwellings in waste diversion. Most recently, multi-unit diversion was measured at 13%, compared to a single-family diversion rate of 53% (resulting in 40% overall residential diversion).⁵⁵ The City has projected that based upon 2001 development applications the supply of housing produced between 1996 and 2031 will include approximately six times as many apartment units as single family units. If multi-unit diversion is lagging but construction of multi-unit housing is surging, the need to target these residences is obvious and pressing.

While we recognize this as the most important step the City can take to improve diversion rates, we will not focus exclusively on multi-family housing. This is because two years ago colleagues in the PLA 1106 class studied this topic, generating many innovative ideas through a series of interviews with planners in cities deemed to have "best practice" diversion strategies.⁵⁶ Thus, while increasing multi-unit diversion is a major focus area in our proposed options to remove barriers to diversion, we will examine residential diversion barriers more broadly.

⁵⁴ City of Toronto (2005).

⁵⁵ City of Toronto, Solid Waste Management Services (February 15, 2006) Staff Report: 2005 Residential Waste Diversion Rate.

City of Toronto, Policy Planning and Research Division (June 2002) Flashforward: Population and Employment to 2031 in a Mature Urban Area

⁵⁶ Parizeau, et al. (2004).

Won't technology save us?

Popular hope is that a technological cure, such as Thermal Generation,⁵⁷ could perhaps solve our waste crisis. Indeed, a valuable component of strategic management of residual waste could include new mechanical, biological, thermal, chemical, or landfill technologies, as well as facilities that divert waste for recycling, compost, energy or reduction in volume. Recognizing this, the City appointed the New and Emerging Technologies, Policies and Practices Advisory Group (2005), which produced a report that extensively considered such solutions. In addition, a number of studies commissioned by the City have investigated the feasibility of new and emerging technologies.⁵⁸

As environmental planners, we respect the value of this research and the possibilities technology offers for waste management. However, we see a real opportunity for Toronto to close its “diversion gap” using existing methods before embarking on costly new technological solutions. As such, apart from a few simple-to-implement technologies relating specifically to removing barriers to diversion, we do not focus on technology.

It's all about the money anyway – how do we know these options can work?

We recognize that many decisions at the municipal level depend on available funding. However, we have chosen to focus on the generation of ideas instead of detailed financial analysis, and have not precluded any options based on cost. While we have tried to include ballpark figures where we found them in our research, we expect that the City will conduct pilot studies and financial projections that will evaluate the economic aspects of the options we present.

⁵⁷ Involves the incineration of waste, containing energy. Refer to City of Toronto (2005).

⁵⁸ Examples include: City of Toronto (2004) and Chang, et al. (2004).

Appendix 3: Waste Reduction and Diversion Options

In addition to the barriers to diversion, three final options, and steps toward policy implementation discussed in this report, we present a range of options – some overlapping and many mutually reinforcing – that the City could also undertake to address these barriers and reduce the amount of reusables, recyclables, and compostables in the residual waste stream.

Bearing in mind the need to balance “big ideas” with incremental steps, we categorised all of our options for removing barriers to waste diversion as either “moderate” or “aggressive”. A moderate option is one that we consider to be voluntary, lower in cost, and relatively easy to implement. An aggressive option may be regulatory, associated with higher cost, and not as easily implemented. Rather than being based on objective evaluation, these categorizations are largely comparative. They provide a useful starting point for further in-depth assessment of the options we present.

Reduction

Waste management and related legislation falls under the jurisdiction of all three levels of government. Waste collection and management occurs at the municipal level, regulated by municipal by-laws written under the authority of Ontario’s Municipal Act and the Building Code. Legislative authority to regulate waste generation and management is generally provincial (through the Environmental Protection Act and Waste Diversion Act), with the occasional federal initiative (i.e. the 1990 Canadian National Packaging Protocol).

Limited municipal jurisdiction is a clear obstacle to the City’s use of such waste reduction policy tools as Extended Producer Responsibility (EPR). Despite these challenges, the City could take several approaches to overcome policy-related barriers to reduction. Below, we describe a set of policy-related barriers to reducing waste generation. For each barrier, we offer strategic suggestions for the City.

1. Excess packaging and waste from commercial products is beyond the City’s control

	Options
Moderate	<ul style="list-style-type: none"> a. Actively publicize and promote Green Procurement Policy b. Work with other Canadian jurisdictions to act as a source of green product information for consumers.

An actively pursued Green Procurement Policy (GPP)⁵⁹ can make a difference in Toronto's waste generation. The City should purchase goods which minimize resource use, are re-used where possible, contain re-used or re-cycled materials, contain no hazardous materials, can be easily dismantled for reuse or recycling, have minimal packaging, and can be recycled or returned to manufacturer at end-of-life. With over \$1 billion in purchases per year, the City represents one of the largest purchasers of materials, supplies, equipment and services in Ontario.⁶⁰ Government purchasing on this scale has the power to create market demand for green products, and can serve as a model for the purchasing habits of industry and of the public.

The City adopted an "Environmentally Responsible Procurement Policy" (ERPP) in 1999, following upon a recommendation of a visioning exercise sponsored by the Environmental Task Force⁶¹. This policy commits Toronto to base all purchasing and allocation decisions on environmental criteria, such as waste implications, in addition to criteria such as price and quality.⁶² Although the policy itself is laudable, there is significant scope for improving its implementation.

a. Actively publicize and promote the Green Procurement Policy

Although the City is clear in its objectives to favour the purchasing of products that reduce waste, are reusable or are recyclable, Toronto lags behind other jurisdictions in developing promotional materials to accompany its policy at all levels. Although the City's new "Green Guide", available on-line, offers information about its Green Purchasing Policy, this information is not easily found unless one is specifically seeking it out. There is scope for improvement in this area, drawing upon existing models (Box 1).

Box 1: Case Studies

Richmond, BC: Along with adopting a green procurement policy in 2000, the City of Richmond, has produced an *Environmental Purchasing Guide* designed to be a resource for City staff to "stimulate market development opportunities for environmentally preferred products".⁶³ This Guide is a detailed toolkit for City staff to implement the green procurement policy, including guidelines for purchasing specific products, lists of suppliers that provide green alternatives, and sample specifications that city workers can present to suppliers for individual product requirements.

The Government of Canada, which committed to a Green Procurement strategy in 2006, has an impressive implementation component to its policy. The federal policy includes a decision-making tool allowing government departments to identify purchasing areas with

⁵⁹ Green procurement is a policy ensuring that governments procure, operate and dispose of assets in a manner that protects the environment and supports sustainable development objectives.

⁶⁰ City of Toronto (2006c).

⁶¹ City of Toronto (1998).

⁶² ICLEI (2001).

⁶³ City of Richmond (2000).

the most potential for improvement through green procurement. Departments identify areas for improvement, and then set a green procurement action plan detailing what they will do, including quantifiable measures, a timeline for implementation, and targets.

b. Work with other Canadian jurisdictions to act as a source of green product information

One of the major difficulties encountered at all levels with making green purchasing decisions is a lack of information. Governments have an important role in collecting and disseminating facts on the environmental characteristics of products and services.⁶⁴ Purchasers cannot make proper decisions without the presence of a sound database of options. As part of its *Green Guide*, the City should offer consumer purchasing information on green products. It could also include information on common green labels, such as “Energy Star” or “Environmental Choice”, and what they represent. The City could draw on green purchasing information already available, for example from the Center for Pollution Prevention.⁶⁵

2. The City alone cannot force producers to be responsible for the lifecycle of their products

	Options
Moderate	<p>a. Lobby the Provincial and Federal governments.</p> <p>b. Provide better information about what products are being taken back.</p>
Aggressive	<p>c. Use Municipal Act section 130 to force producer responsibility on products for the “health, safety and well-being” of Toronto’s citizens.</p>

Canadian Extended Producer Responsibility (EPR) campaigns are commonly referred to under the heading of “product stewardship”. While true EPR programs “shift the physical and/or financial responsibility of the post consumer product to the producer and/or manufacturer, away from municipalities and consumers,”⁶⁶ product stewardship as it is commonly used in Canada generally refers to a government-industry partnership in waste

EPR is an environmental policy approach under which producers accept significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products.

⁶⁴ ICLEI (2001).

⁶⁵ See Centre for Pollution Prevention website, www.c2p2online.com.

⁶⁶ City of Toronto (2006d).

management.⁶⁷ Thus, recycling in Ontario, partially funded by related industries, is an example of product stewardship.

Increased producer responsibility for products throughout their lifecycle is a simple way to reduce waste. If all components put into a product will return at the end of their usable life to the producer, this is a strong motivator to make things that are easily broken into useful component parts. Also, if producers take more responsibility for products at the end of life, there is one less stream of residuals the City has to manage. As some of the components in products are inherently valuable and long-lived, when producers step up – as the Beer Store can attest – everyone wins.

a. Lobby the Provincial and Federal Governments for EPR.

Mandated EPR programs are common in other provinces and in Europe.⁶⁸ British Columbia's Full Product Stewardship Program (Box 2) is a particularly good example:⁶⁹

Box 2: Case Study

British Columbia's Full Product Stewardship Program defines full responsibility as “producers financing and operating all aspects of solid waste management for their products including consumer education, collection, recycling and responsible disposal”.⁷⁰ First generation stewardship products were household hazardous wastes, legislated in 1994. Because of the toxicity of this first product category choice, public support built behind the legislation and thus facilitated inclusion of an increasing number of additional streams. Estimated savings to local governments is pegged at \$22 million each year, with the added benefits of reduced environmental liability and regulatory responsibility.

b. Provide better information what products are being taken back.

Many computer companies, for example, have rolled out product stewardship policies.⁷¹ Charities, such as Car Heaven,⁷² are also willing to provide a life for useful components and safe disposal of the remainder of products, once their initial user is finished with them. The City should praise those producers who are extending EPR schemes of their own accord, support charities working to reduce wastefulness, and work to connect citizens with these existing programs. More comprehensive take-back information could be included in The Green Pages (see section 5.5), as well as other publications informing citizens of the occasional changes in the City's recycling and other diversion programs.

⁶⁷ McKerlie et al. (2006).

⁶⁸ OECD (2001).

⁶⁹ McKerlie et al. (2006)

⁷⁰ McKerlie et al. (2006): 622.

⁷¹ Computer TakeBack Campaign (2006).

⁷² CarHeaven (2006).

At a minimum, this information could be included in the Green Guide Waste and Recycling section.⁷³

c. Use Municipal Act section 130 to force producer responsibility on select products for the “health, safety and well-being” of Toronto’s citizens.

Municipal Act section 130 authorizes a municipality to regulate matters not specifically provided for by the Municipal Act or any other act for purposes related to the health, safety and well-being of the inhabitants of the municipality. The City could try to use this provision to mandate producers to take responsibility for hazardous components in the residual waste stream, or, better yet, to force a reconsideration of these products’ composition encouraging more reusable parts. A precedent exists in the February 2005 passing of Toronto’s residential pesticide-use by-law.⁷⁴

3. Multi-unit superintendents and owners have little motivating them to increase diversion

	Options
Aggressive	<ul style="list-style-type: none"> a. Implement the Multi-Unit Waste Reduction Levy b. Hire all 25 by-law officers as proposed in “Getting to 60% Diversion and Beyond” c. Require that multi-unit buildings have internal as well as chute sorting technology

Despite impressive initiatives and infrastructure in place, it is challenging to achieve the level of buy-in needed to for our diversion programs to succeed. It is tempting to adopt an “if we build it, they will come” approach with waste infrastructure: build the facilities, introduce recovery streams, roll out programs, and hope for the best. Yet the City is missing opportunities to generate change. These opportunities take the form of both “carrots” and “sticks”, namely competitive incentive programs encouraging compliance and financial or regulatory penalties when residents and/or property owners fail to comply.

⁷³ City of Toronto (2006e).

⁷⁴ By-law No. 456-2003.

a. Implement the Multi-Unit Waste Reduction Levy.

This seems to be an obvious step toward increasing waste diversion, notwithstanding that it may well be unpopular with some residents. Once multi-unit and single family dwellings have the same support and infrastructure in place (see Recycle Section), the City should start charging multi-unit buildings that exceed their waste quota. As well as implementing the Waste Reduction Levy, the City should inform affected landlords and building managers that they must file a Recycling Improvement Plan for each building they own/manage, and set a deadline for plan submission shortly after the Levy roll-out. At present the link to the online form for filing this plan, along with all the explanation of the Multi-Unit Waste Reduction Levy, is in English only.⁷⁵ Recognizing the diversity of landowners and building managers active in Toronto, this information must be more easily accessible in multiple languages. Perhaps, to get the word out, Solid Waste Management Services staff should provide a multi-lingual hotline.

b. Hire all 25 by-law officers as proposed in Recommendation 3 of the 2004 Works Staff Report, “Getting to 60% Diversion and Beyond.”⁷⁶

Empower officers to fine offenders as per the City’s Municipal Act section 77 powers. In particular, this measure should be used to balance the levy imposition on multi-unit buildings with increased monitoring and, where appropriate, penalties, to single family homes.

c. Require, through the Guidelines for New and Re-development,⁷⁷ that multi-unit buildings have internal as well as chute sorting technology.

The City requires recycling (and composting, where applicable) be as convenient as garbage disposal in new multiple unit buildings and re-developments. This only applies to chutes and bins, but we believe builders should also be required to install sorting facilities in kitchens so that recyclables and organics can be easily sorted and stored.

In redevelopments where all kitchen facilities are not being retrofitted, the City should at a minimum deliver, for free, sorting bins as was presented to single family homes at the roll-out of the Residential Green Bin Program. Perhaps hard plastic containers are not the right solution for often-small multi-unit buildings. The City should in those instances explore alternative solutions.

The City must also address retrofitting existing multi-unit buildings for waste separation. The Levy is the “stick”; a fitting carrot would be to assist existing multi-unit building owners with the costs of planning and implementing a waste management retrofit. Mr.

⁷⁵ City of Toronto (2006f).

⁷⁶ City of Toronto (2004a).

⁷⁷ City of Toronto (2003). City of Toronto Requirements for Garbage and Recycling Collection

Jason Tower of Waste Solutions Group (2006) notes that installing tri-sorter technology⁷⁸ on existing waste chutes costs \$25,000 to \$40,000, depending on building size. It is worth investigation if some level of up-front retrofitting subsidy could save the City significant waste management costs.

Reuse: Durable Household Goods

Reducing the amount of reusable items in the residuals stream saves money, resources, energy, and landfill space. It creates local jobs and keeps resources in the local economy. Reused items are more affordable than new items, and increasing their availability can play a role in meeting the needs of low-income households and community organizations.⁷⁹

1. Community Environment Days, reuse depots, and non-profit or commercial donation centres are not accessible or convenient.

	Options
Moderate	a. Increase the frequency of community environment days in each ward
Aggressive	b. Establish a reusable goods curbside collection program and rummage sale

a. Increase the frequency of community environment days in each ward.

Community environment days provide residents with an opportunity to donate reusable items right in their own ward, but these events are only held once a year. This may be a problem for households with limited storage space (including most apartment dwellers).

⁷⁸ A “tri-sorter” is a mechanized system installed to the bottom of a traditional garbage chute. Using a computerized, colour-coded key-pad, residents at a waste chute on any floor select what they are sending down. That button – white for waste, blue for recycling and green for organics – lights up on all floors so other residents are aware of what the chute is positioned to take at present. Waste is directed to the appropriate container through a movable metal platform inside the tri-sorter.

There is some dispute about the effectiveness of this strategy. City staffer Renee Dellow (2006) has found contamination to be a major concern in her experience. Yet Jason Tower, who with his partner is producing and installing this technology in 90% of new multi-unit buildings under construction in Toronto, cites very positive results from a Mississauga pilot study and has not found contamination to be an issue.

The system is space-efficient (other “as convenient” options – multiple chutes and blue boxes in each floors’ garbage room – take up comparably more valuable floor space). It is also relatively easily installed on existing single-chute systems, allowing retrofitting without extensive reconstruction. These factors have no doubt contributed to the widespread use of the technology in Toronto.

⁷⁹ City of Toronto (2006b).

Increasing the coverage and frequency of existing and new collection events would improve accessibility and convenience of reuse.⁸⁰

b. Establish a reusable goods curbside collection program and rummage sale

For those who do not own cars⁸¹ the City should organize curbside pick-up of unwanted goods biannually, followed by sales through events such as the “Great Toronto Cleanup and Spring Swap”. Leftover materials would be redistributed to existing organizations and reuse centres. These cleanups could also be scheduled to coincide with university student move-out in the spring, thereby redirecting considerable quantities of reusable items away from the waste stream.⁸²

2. Lack of coordination amongst multiple community and City programs

	Options
Moderate	a. Facilitate greater coordination amongst non-profit organizations, private reuse shops

a. Facilitate greater coordination amongst non-profit organizations, private reuse shops, and public reuse depots

Toronto is covered by a patchwork of non-profit agencies, community organizations, private repair and reuse shops, and City programs that play a role in promoting reuse in the city. While this provides a variety of opportunities for households to donate and reuse items, the lack of coordination can mean that some areas are left out, while others are well served by reuse centres or repeatedly appealed to for donations through non-profit neighbourhood campaigns. Greater coordination, facilitated by the City, would promote greater geographical coverage of reuse programs, and even increase efficiency (for example, by encouraging redistribution of materials to ensure that there is adequate storage space for received goods). It could also be used to coordinate education and awareness campaigns about reuse programs.⁸³

⁸⁰ For more information on successful reuse programs, see: California Integrated Waste Management Board (2006a) and (2006b) and U.S. EPA (1999b).

⁸¹ 25% of Toronto households lack access to a private vehicle (Data Management Group 2003, p. 9). A study by Cantos finds that car ownership rates are particularly low in multi-residential units (2004, p. 18).

⁸² California Integrated Waste Management Board (2002a).

⁸³ For more information on successful reuse programs, see: California Integrated Waste Management Board (2006a) and (2002a).

Recycling and Composting

The Blue Box Recycling Program services all curb-side collected single family dwellings as well as all multi-unit dwellings receiving City collection services. New items, such as milk cartons, TetraPaks, and plastic tubs have been introduced to the collection stream in recent years. Plastic film and polystyrene (e.g. grocery sacks, bread bags, foam cups) will also be added to the program soon, as viable recycling markets are now available. The Green Bin Program provides curb-side collection of organics (fruit and vegetable scraps, paper towels, coffee grinds, etc.) from 510 000 single-family households across Toronto. Pilots are under way in 29 multi-unit buildings to test the feasibility of collecting organics from apartment and condo buildings. After collection, the organic material is made into high-quality compost for farmlands and parklands.

While these programs have successfully increased diversion rates, mostly in the single-family sector, there is still room for improvement. Recycling and composting programs must be inexpensive, easy and convenient to use in order to maximize participation. Residents must also *understand* how the program works and how to properly use the available facilities.

1. Residents must purchase blue and green bins, making waste diversion more costly and inconvenient

	Options
Moderate	<ol style="list-style-type: none"> a. Provide all households with green bins, and blue bins or bags, free of charge. b. Provide mini green and blue bins to all households, free of charge
Aggressive	<ol style="list-style-type: none"> c. Conduct a pilot study on the feasibility of an enforceable three bag system for multi-unit buildings.

Currently, single-family households receive one free blue and green bin, but must purchase additional bins from designated locations. Apartment dwellers are not provided with any free bins. The added cost, effort and inconvenience of purchasing bins may deter proper waste diversion.

a. Provide all households with green bins, and blue bins or bags, free of charge

The City should provide all single-family and multi-unit households with appropriate waste diversion receptacles free of charge. These can be picked up by residents at

specific outlets, e.g. participating hardware stores or existing City of Toronto Recycling Container Pick-Up locations, delivered upon placing a request, or provided upon move-in by the landlord or property owner (in the case of multi-unit buildings). The City should consider providing multi-unit households with reusable blue *bags* to both store their recyclables and carry them to the building's common bin (see Box 3).

Box 3: Case Study

Hamilton, Ontario: Apartment owners and tenants are provided with reusable blue bags to collect and store their recyclables in. When full, residents bring their blue bags to the central recycling area and empty them into the proper blue cart or bin. The bags sit upright and provide both storage and a convenient way to carry recyclables out of the unit. A Guide to Apartment recycling pamphlet explains which items can be recycled and how to use the blue bag. The slogan is: "Save it. Tote it. Pitch it in the cart". The message is simple and the process relatively easy.⁸⁴

b. Provide mini green and blue bins to all households, free of charge.

The City should provide 'mini-bins' for the bathroom and other rooms of the house. These bins would provide a convenient receptacle for organics and/or recyclables, as well as a visual reminder to recycle or compost materials from all rooms in the house. These bins could be made to hook on to existing garbage bins to take up less space.

c. Conduct a pilot study on the feasibility of an enforceable three bag system for multi-unit buildings.

An interview participant, Mr. Alan Charky, has developed a plan for increasing the diversion rate in multi-unit buildings.⁸⁵ He suggests that the City should consider introducing a new system for waste separation, storage and disposal in multi-unit buildings. Under this system, residents are required to dispose of their waste, recycling and organics in three transparent bags (clear, blue and green). A municipal by-law should ban the use of opaque bags (e.g. grocery bags) for waste disposal. By using transparent bags, the landlord, fellow residents, and by-law enforcement officers can see if people have separated their waste correctly. The bags should be large and structured so that they sit upright. This way, they can serve as storage until the bag is full and ready to be placed in the proper bin or chute (if applicable). The organics bag should be sealable to prevent odours and leakage. All bags should be biodegradable so as to not add to the waste

⁸⁴ City of Hamilton (2006a).

⁸⁵ Charky (2006)

stream. Residents should be charged a fee for the garbage bags but given the recycling and organics bag for free to encourage diversion.⁸⁶

2. Multi-unit building tenants are unaware of available recycling programs or do not understand how to properly use them.

	Options
Moderate	a. Ensure all multi-unit building tenants are provided with a ‘waste diversion’ information package.

Currently, landlords and property managers are encouraged to share waste diversion information with their tenants, by delivering print materials or displaying posters. However, if the landlord fails to do this on his own initiative, the City has missed an important opportunity to reach multi-unit dwellers and make them aware of the programs in place. The provision of comprehensive waste diversion information to every multi-unit tenant could increase the diversion rate through heightened awareness and understanding.

a. Ensure all multi-unit building tenants are provided with a ‘waste diversion package’.

A comprehensive waste diversion package should be provided to all multi-unit building tenants. New tenants should receive the package upon move-in from the landlord or property manager. This package should: explain what materials can be diverted, how to make use of large bins and household bins/bags, instructions for the multi-chute system (if applicable), up-to-date information about Environment Days and Drop-Off Depots, where to obtain additional bins/bags, and who to contact with additional questions. The package should be offered in a number of languages. Most of this information is already produced by the City and could easily be provided to landlords. Any information specific to the building should be provided by the landlord and added to the package.

Landlords should be instructed to not only deliver the package to tenants, but take the time to *explain* its contents and answer questions related to waste diversion in the building. This is an important step often overlooked when informational material is simply pushed through the mail slot or posted on the wall. Up-to-date posters should be displayed *in addition* to the package to provide tenants with a visual reminder to recycle. Ensuring that the package is delivered and explained should be added to the mandate of the waste by-law enforcement officers, who should periodically check that this practice is occurring.

⁸⁶ For more information on the three bag system, please see Alan Charky’s white paper, “Mandatory Collection Bags Program”, at <http://www.woronwaste.com/paper.html>

3. Residents do not recycle electronic waste properly because it is inconvenient to travel with these items for drop-off.

	Options
Aggressive	a. Introduce regular, no-charge curbside collection of E-waste

Electronic waste is a growing problem, largely due to the rapid advances in consumer electronics technology, particularly in the computer sector. Diversion Ontario estimates that nearly 200 000 tonnes of electronic products were discarded in 2004, out of which only 35% was diverted (through recycling, refurbishment or reuse).⁸⁷ These devices contain toxic materials, such as lead, mercury, cadmium fire-retardant chemicals and arsenic. As such, e-waste poses a serious risk to human health and the environment if inappropriately disposed of, landfilled, or incinerated. It is doubly important, therefore, for Toronto residents to properly divert e-waste. While electronic products that are still in working condition should be donated for reuse, a great deal of e-waste is better suited for recycling or refurbishment.

a. Introduce regular, no-charge curbside collection of E-waste.

Currently in Toronto, electronic waste can be dropped off for recycling or safe disposal at one of 42 Community Environment Days or at selected permanent Drop-Off Depots. In addition to publicizing these locations and the e-waste materials collected widely, the City should institute regular, no-charge curbside collection from single family homes, and bulk collection from multi-unit buildings.

The City should provide single-family households with orange bags designated for e-waste. A separate orange bin should be added to the current bin system in multi-unit buildings, to be collected regularly by the City. A pilot study might be necessary to depend which collection model is most effective and feasible in terms of frequency (i.e. weekly, monthly, bi-annually, yearly collection). A number of municipalities offer some form of curbside e-waste pick-up and offer potential program models (Box 4):

Box 4: Case Studies

Minneapolis, Minnesota: A combination of permanent drop-off facilities, one-day drop-off events and curbside collection. E-waste is collected on regular recycling days and must be placed next to the blue box. The processing and dismantling of the equipment takes place at a “train-to-work” non-profit organization.⁸⁸

Dunedin, Florida: E-waste is collected curbside on residents’ normal collection day. After material is collected, a \$15 Utility Billing charge is applied to cover the costs of

⁸⁷ Waste Diversion Ontario (2005).

⁸⁸ Enviro RIS (2000).

collection and recycle processing. In addition to computers, monitors, copiers, fax machines, printers, and televisions, appliances and other large white goods are also collected in this way.⁸⁹

Paramount, California: Free collection of e-waste for single-family homes, multi-unit housing, and mobile home parks. A pick-up must be scheduled at least one day before the normal garbage collection day. E-waste should be placed curbside on this day.⁹⁰

Davenport and Beendorf, Iowa: Residents that currently receive curbside collection can put e-waste out as bulky waste on their recycling day. No extra fees or pick-up appointments are required.⁹¹

San Carlos, California: Free curbside pick-up and permanent drop off centres for computers and televisions.⁹²

City of Salisbury, Maryland: Curbside e-waste collection event every January.

Education and Awareness

Many experts agree that clear messages, accessible information, and motivational programs are the key to a successful public education campaign.⁹³ Toronto, a city that offers one of the more sophisticated solid waste management services in North America, should do more to engage the public in waste diversion.

1. Toronto residents are not well informed about the types of materials that can be diverted from the waste stream because existing educational materials are neither widely accessible nor easy to use.

	Options
Moderate	a. Establish a live, integrated “Waste Information Hotline” for Toronto b. Improve the City’s Solid Waste Management Services website
Aggressive	c. Both moderate options (a,b) coupled with an aggressive social marketing ⁹⁴ campaign.

⁸⁹ City of Dunedin (2006).

⁹⁰ City of Paramount (2006).

⁹¹ Waste Commission of Scott County (2006).

⁹² San Mateo County Recycle Works (2006).

⁹³ McKenzie-Mohr (2000); Burn and Oskamp (1986); Kassirer and McKenzie-Mohr (1998).

a. Establish a live, integrated “Waste Information Hotline” for Toronto.

This hotline would allow residents to ask any questions they may have about household waste. Although this information is provided on the City’s website, it is not accessible to those who do not have, or feel comfortable using, the internet. Also, while the City does have information hotlines for questions about the green bin, recycling, and hazardous waste programs they are not live (i.e. recorded messages are often used), can be difficult to find, and all have different telephone numbers.

Because the City’s website can be difficult to navigate, an integrated “Waste Information Hotline” offers a convenient alternative (see B.C. case study, Box 5). Residents could be encouraged to use this resource with an effective advertising campaign and a hotline number that is catchy and easy to remember such as “1-800-NO-WASTE.”

Box 5: Case Study

Recycling Council of British Columbia: The RCBC Recycling Hotline (604-RECYCLE) is a comprehensive, toll-free service that provides information on waste reduction, recycling, disposal and pollution prevention throughout the entire province. Hotline staff answer over 200 calls per day from all over BC.⁹⁵

b. Improve the City’s SWMS website.

The City’s Solid Waste Management Services (SWMS) website provides some useful information about Toronto’s waste diversion programs. However it is not very user-friendly. We suggest that the City improve the website by providing a comprehensive list of what can and cannot be recycled/composted/reused with the existing infrastructure. This list could be organized alphabetically, so that if the user clicks on the letter “B” all materials that can be diverted that start with “B” come up. Also the website could have a search function so that a user can enter the name of the item they wish to recycle/compost and the website will determine if it is currently on the list of recyclables/organics or if it can be reused.

Box 6: Case Study

City of Hamilton: The Waste Management Division provides a search function and alphabetical listing of private companies that manage waste (recycling, compost, reuse).⁹⁶ This type of database could be set up for Toronto, however, instead of a list of companies, SWMS could provide a list of all the different materials and their respective “streams” (i.e. recycling, organics, reuse, or garbage/landfill streams).

⁹⁴ Social marketing involves marketing and promoting a message for the benefit of a social concern such as waste diversion.

⁹⁵ RCBC (2005).

⁹⁶ City of Hamilton (2006b).

c. Both moderate options (a,b) coupled with an aggressive social marketing campaign.

The moderate options outlined above provide residents with useful tools to increase their knowledge of existing waste diversion programs, however, in order to reach the greatest number of people in Toronto, an aggressive social marketing campaign is necessary. An aggressive social marketing strategy would utilize a broad range of media outlets such as TV, radio, billboards, magazines, and local and national newspapers, so that the message is delivered to a wide and diverse audience. For example, television advertisements could be run in different languages that tell people what materials go in the green bin/blue box.
