TORONTO STAFF REPORT

September 1, 2000

To: Works Committee

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

Subject: A 3Rs Implementation Plan for the City of Toronto

Purpose:

The purpose of this report is to provide Works Committee with a detailed plan for achieving the City of Toronto's target of 50 percent waste diversion by 2006.

Financial Implications and Impact Statement:

The funding implications of the proposed 3Rs Implementation Plan are summarized below:

(a) Operating Budget

In order to proceed expeditiously, the following initiatives will be absorbed within the existing 2000 Operating Budget:

- $60,000 for public focus groups and a public attitude telephone survey on options for increasing recycling and organics waste diversion.
- $15,000 for a market assessment study for compost that could be produced by future Toronto waste diversion facilities.

The following initiatives will be considered as part of 2001 Operating Budget request:

- $20,000 for a feasibility study on utilizing municipal waste to generate methane for district energy, in co-operation with Enwave District Energy Limited.
- $100,000 for promotion costs associated with adding new materials to the Blue Box program.
- $50,000 for hiring and supervising summer students to visit apartment buildings in order to improve recycling system performance.
- $40,000 for retrofitting two apartment buildings with automated chute systems.
- $50,000 for collecting, processing and communications related to the cart-based co-collection test project with Miller Waste Systems. (Funding for an additional amount of

$204,000 for the purchase of the carts will be requested from the Vehicle and Equipment Replacement Reserve).

The preliminary annual cost estimate for full implementation of weekly recycling collection and weekly summer time yard waste is $2.9 million per year in increased operating costs.

Potential build/own/operate contracts for waste processing facilities in Scarborough and the Portlands area will have operating budget impacts in 2002 and beyond.

(b) Capital Budget

The $100,000 cost for retrofitting the Commissioners Street Material Recovery Facility to accommodate polycoat containers is provided for in the 2000 Solid Waste Management Capital Budget (CSW004).

The expansion of the Dufferin Mixed Waste Recycling and Organics Processing Facility would have Capital Budget impact in 2002 and 2003 of approximately $22 million.

The Chief Financial Officer and Treasurer has been made aware of the financial implications included in this report and will be reviewing the year 2000 expenditures as part of the variance reporting process and the 2001 budget impacts as part of the 2001 budget approval process.

Recommendations:

It is recommended that in order to achieve the City's waste diversion target of 50% by 2006 and to reduce reliance on landfill, City Council authorize the Commissioner of Works and Emergency Services to undertake the following integrated activities:

(1) Intensify the use of existing recycling and composting programs to divert an estimated 50,000 additional tonnes of materials per year by:

(i) adding polycoat containers (e.g. milk cartons and aseptic drink boxes), empty paint cans, and empty aerosol cans to the Blue Box Program effective March 1, 2001, retrofitting the Commissioners Street Material Recovery Facility to allow for the recovery, storage and baling of polycoat containers at a capital cost of $100,000, and creating a public communications campaign to launch the new materials, subject to approval of $100,000 in the 2001 Operating Budget;

(ii) developing a detailed plan for the potential implementation of year-round once per week curbside collection of recyclable materials and weekly summer time collection of yard waste, including projected increases in the volumes of recovered materials, and report to Works Committee as part of the 2001 Operating Budget request on the cost and required phase-in cashflow to support such enhanced programs;

(iii) retrofitting two rental apartments in the downtown core with automated chute systems for garbage, fibre and containers to determine the impact on recycling levels at a cost of $40,000, subject to matching funding from the Waste Diversion Organization and subject to approval of funding in the 2001 Operating Budget;

(iv) hiring eight summer students in 2001 to visit targeted apartment buildings receiving municipal recycling collection to review performance and to make recommendations for improved performance of existing systems at an estimated cost of the study of $50,000, subject to approval in the 2001 Operating Budget;

(v) continuing to seek opportunities to ensure that the City through its own facilities and those of its agencies is optimizing its waste diversion activity, and co-ordinating a corporate report as part of the 2001 Operating Budget process on the benefits of achieving the 50 percent diversion target, and on any financial implications;

(vi) continuing to explore any and all opportunities through the Association of Municipalities of Ontario, the Federation of Canadian Municipalities, the Waste Diversion Organization and the Provincial Government to enhance product stewardship, including the pursuit of deposit/return systems, mandatory use of recyclable product packaging, and any other measures which will reduce the waste stream.

(2) Enhance the level of knowledge on public opinion, system cost impacts and market capacity related to options for increased waste diversion by:

(i) conducting a series of focus groups, a broad-based public attitude survey, consultation with environmental groups, presentation to the Sustainability Roundtable, public deputations at the 3R's Committee, and community forums to determine what changes Toronto residents and business would be prepared to make to increase waste diversion including the various methodologies for source separation and the potential for financial incentives to impact on behaviour, at an estimated cost of $60,000 and report to the February Works Committee with findings;

(ii) based on the findings from the foregoing recommendation 2(i), developing a consultation and communications strategy to encourage an increased rate of residential recycling activity and an implementation strategies for kitchen waste diversion for consideration by the Works Committee at its February meeting and as part of the 2001 Operating Budget Request;

(iii) conducting an eight month project in 2001 to test the co-collection of organic kitchen waste and garbage in two compartment automated collection carts from 2,400 single family households in the York Community Council Area, using a dual compartment fully automated collection truck to be supplied and operated by Miller Waste Systems at a net cost of $254,000 after funding by the Waste

Diversion Organization, subject to approval of funding in the 2001 Operating Budget.

(iv) engaging consultants to prepare a comprehensive market assessment study for restricted and unrestricted compost at a cost of $15,000, subject to matching funding from the Waste Diversion Organization; and,

(v) reporting back to Works Committee on the experience with the recently approved pilot project for separate collection or organic waste from commercial establishments with recommendations on the continuance/expansion of the program as part of the 2001 Operating Budget process.

(3) Expand the City's waste diversion capacity by up to an estimated 350,000 tonnes per year of input in order to achieve up to 250,000 tonnes of diversion per year by:

(i) completing the first phase of the Dufferin Mixed Waste Recycling and Organics Processing Facility for up to 25,000 tonnes of annual input capacity as soon as possible under the capital funding already approved, assessing its operation, developing recommendations of expansion of the facility up to 165,000 tonnes of input capacity and reporting to Works Committee as part of the 2002 Capital Budget process thereon;

(ii) conducting a study, in co-operation with Enwave District Energy Ltd., on the feasibility of siting an anaerobic digestion facility on City-owned property which would process municipal waste to generate biogas for the district energy needs of the downtown core, and report back to Works Committee in July, 2001 on the findings of the feasibility study and with recommendations on how to proceed further, subject to approval of funding for the study by the Federation of Canadian Municipalities' "Green Municipal Enabling Fund"; and,

(iii) entering into negotiations with Miller Waste Systems and the consortium of Groupe Conporec and Services Matrec for the design, construction and operation of aerobic composting facilities for mixed waste and/or source-separated organic material, and reporting back to Works Committee in January with the results of the negotiations and for consideration of the financial implications as part of the 2001 Capital and Operating Budget processes.

Background:

At its meeting on October 1 and 2, 1998, Toronto Council adopted a target of 50 percent waste diversion by 2006. This target was previously adopted by the former Metro Council in 1997, after completion of a comprehensive 3Rs Strategy. Subsequently, as part of the TIRM process, Council authorized the release of a Request for Proposals (RFP) for Proven Diversion Capacity. At its meeting on June 7-9, 2000, Council authorized staff to open the price envelopes for the submissions from two of the Respondents to the Proven Diversion RFP – Miller Waste Systems and Groupe Conporec/Services Matrec.

At its meeting on August 1 to 3, 2000, Council, in considering recommendations for long term disposal capacity, directed staff to report back to Works Committee "on how the City of Toronto will meet its 50 percent waste diversion target by 2006 in, in particular, the expansion of composting facilities and improvements in the diversion rates for multi-residential buildings".

Comments/Discussion:

As of 1999, the City of Toronto had achieved a residential waste diversion level of 25 percent, or approximately 250,000 tonnes per year, primarily through Blue/Grey Box recycling (138,000 tonnes) and leaf and yard waste composting (60,000 tonnes). To achieve the 50 percent waste diversion target, Toronto must divert an additional 250,000 tonnes of waste per year by: (1) increasing the recovery of recyclable material and leaf and yard waste, and (2) by starting to divert large quantities of organic kitchen waste. The 50 percent of Toronto's residents that live in multi-family residential buildings pose the greatest challenge in terms of capturing additional recyclable material and organic kitchen waste.

Staff have developed an aggressive 3Rs Implementation Plan that addresses each of these challenges. The components of this plan are described below.

1) Increased Recovery of Recyclable Material and Leaf and Yard Waste

The current Blue/Grey Box program and leaf and yard waste programs divert approximately 50 percent of the available material in Toronto's residential waste stream. In other words, it is estimated that 140,000 tonnes of potentially recyclable material and 60,000 tonnes of leaf and yard waste is still in the waste steam. Recovering a portion of this available material through existing diversion programs is a cost effective method of moving towards 50 percent overall waste diversion. Increased recovery can be attained by adding new materials to the Blue/Grey Box Program and by encouraging Toronto residents and businesses to increase their participation in the City's recycling and composting programs.

Materials that could potentially be added to the Blue/Grey Box program in the near term include polycoat cartons (e.g., milk cartons and aseptic drink boxes), empty aerosol cans, empty paint cans, polystyrene foam packaging, plastic food containers and plastic bags. Adding all these materials to the Blue/Grey Box Program would result in an estimated 5,000 tonnes of extra diversion, based on current program recovery levels. Staff have been working closely with secondary material markets to identify opportunities to add new materials to Toronto's recycling program and we are now in a position to add polycoat containers, empty paint cans and empty aerosol cans. It is projected that 700 tonnes of polycoat containers would be collected annually in Toronto. Two Michigan paper mills are offering approximately $100.00 per tonne, FOB our Material Recovery Facilities (MRFs). The increase in collection and processing costs for adding polycoat containers, after revenue and avoided contracted disposal costs, is estimated at $4,200 per year, or $6.00 per tonne. Included in this net cost is the amortized capital cost of upgrading the Commissioners MRF to add polycoat sorting and baling capacity. A capital cost expenditure of $100,000 is required for this purpose and is provided for in the 2000 Capital Budget.

Empty paint cans and aerosol cans can be combined with food and beverage cans for shipment to steel mills. It is expected that 170 tonnes per year of these containers will be recovered. The net operating benefit, after revenue and avoided contracted disposal costs, is estimated at $8,500 per year, or $50 per tonne. Prior to adding aerosol cans, Solid Waste Management Services needs to receive written confirmation from the Ontario Ministry of Labour (MOL) that there are no major health and safety concerns associated with processing this material. Since several small municipalities have been collecting aerosol cans now for some time without incident, we expect to receive a positive response from the MOL.

A media campaign to promote the addition of these materials is projected to cost an additional $100,000 in 2001. However, one of the recommendations of the Waste Diversion Organization (WDO) is the provision of free advertising space for municipal diversion programs in major newspapers. (See the separate report on this agenda regarding the recommendations of the WDO). If this recommendation is accepted by the Provincial government, the media campaign could be accommodated within existing budget parameters.

Based on this analysis, it is recommended that polycoat containers, empty aerosol cans and empty paint cans be added to the Blue Box effective March 1, 2001. This implementation date will give sufficient time to retrofit the Commissioners MRF to accommodate polycoat containers. Staff will continue to work with industry to identify opportunities to add polystyrene, plastic food tubs and plastic bags to Toronto's recycling program as adequate markets become available.

Encouraging Toronto residents to participate more actively in the current Blue/Grey Box and Leaf and Yard Waste programs could potentially have a much larger impact than adding new materials. Basically, there are three ways to increase resident participation:

(1) intensify communication and education activity;

(2) increase the convenience of, and opportunities for, participation; and

(3) introduce financial incentives (positive or negative).

Communication and Education

Ongoing communications and education activity is essential to maintain participation by residents in voluntary waste diversion programs, although funding for such activity within municipal budgets is limited. The expected provision of free advertizing space for municipal waste diversion programs by the major daily and weekly newspapers (through the WDO) will help in this regard. Communications with apartment residents is particularly challenging. One of the tasks of summer students we propose to hire to visit apartment buildings with poor recycling performance (see recommendation below) is to assess the needs for improved communications (e.g. posters, information stickers on recycling bins, etc.).

Increased Convenience and Opportunity

Increasing the frequency of curbside recycling and yard waste collection is one way of increasing the opportunity to divert waste. Although the changes to once every two weeks curbside recycling collection and once every two weeks summertime yard waste collection have not resulted in a measurable decrease in the amount of material collected for diversion, many residents have complained to the city that they are less able to store and set out material as a result of these changes. The addition of new materials to Toronto's recycling program will take up more capacity in each household's Blue Box and exacerbate storage problems. Staff have previously estimated that the cost impact of implementing once per week curbside recycling collection across the city would be $2.5 million per year, and the cost of weekly summertime yard waste collection would be $400,000 per year. It is therefore recommended that staff be authorized to develop a detailed plan for the potential implementation of once per week recycling collection and once per week summertime curbside collection of yard waste, including projected increases in the quantities of materials recovered, and report to Works Committee as part of the 2001 Operating Budget submission on the cost and required phase in of cash flow to support such enhanced programs.

Another barrier to increased recovery of recyclables is the fact that recycling is often much less convenient than garbage disposal in the multi-residential sector. In many apartment buildings garbage is deposited down a chute located on each floor, while recyclables must be taken to a bin located in the basement or outside the building. One solution to this barrier is to retrofit apartment buildings with an automated chute system which allows residents to deposit up to three different materials (e.g. garbage, fibre and containers) down the chute by pressing a button.

Such a system has been implemented successfully in a few "high end" residential buildings in Toronto. Staff propose to retrofit two rental apartment buildings in the downtown core with automated chute systems to determine the impact on recycling levels at a total cost of $80,000, subject to 50% funding ($40,000) from the Waste Diversion Organization. The $40,000 net cost will be included in our 2001 Operating Budget submission.

Poor recovery levels in apartment buildings is a function, not only of inconvenience, but also of language and cultural barriers, high resident turnover, indifferent building management, and inadequate communication. It is therefore recommended that SWM Services hire eight summer students in 2001 to visit targeted buildings to review recycling program performance, meet with building superintendents, distribute communication materials, install improved signage, and recommend system improvements. The estimated $50,000 cost for this project will be included in our 2001 operating budget submission. A portion of the proposed public focus groups and public attitude (see recommendation below) will also address apartment related issues.

Financial Incentives

Financial incentives, both positive and negative, can have a powerful impact on waste diversion behaviour. Examples of negative financial incentives include volume based service fees for garbage collection and mandatory recycling by-laws with fines for non-compliance. Both

approaches have been proven to increase recycling and composting activity by giving a financial incentive to residents to recycle as a means of avoiding garbage service fees or possible fines.

The most common example of a positive financial incentive is a deposit/return system for beverage containers in which consumers receive their deposit back when they return their containers for recycling. Broad-based deposit/return systems have been implemented effectively in eight other provinces but are not currently being considered by the Ontario provincial government. Another form of positive financial incentive that staff are considering is offering rewards for recycling behaviour. One potential reward mechanism would involve working with the consumer goods industry to develop marketing campaigns in which consumers would receive identification stickers when they purchase packaged products. Consumers would affix the stickers to discarded packages before placing them in their Blue or Grey Box. Containers would then be randomly drawn at our recycling facilities and prizes awarded to the households identified on the stickers.

It is recommended that a communications firm be engaged at an estimated cost of $60,000 to conduct a series of focus groups, followed by a public opinion telephone survey, to determine what residents and businesses perceive as barriers to increased waste diversion, what activities they would be prepared to undertake to increase waste diversion, and the potential impact of financial incentives on behaviour. Funds for this project can be absorbed in our 2000 Operating Budget. We will also be applying to the WDO for partial funding for this project.

Staff will also continue to pursue opportunities through the WDO, the Association of Municipalities of Ontario, and the Provincial government for extended producer responsibility related to consumer packaging and disposable goods, including deposit/return systems, and mandatory use of recyclable packaging material.

Increased Waste Diversion in City Facilities and Operations

In addition to achieving 50 percent diversion of waste collected from residents and businesses, the city should also set out to achieve 50 percent diversion in all its facilities and operations, including those of its agencies, boards and commissions. The implementation of three compartment recycling and litter bins on city sidewalks is an example of improving waste diversion in city operations, and this type of approach should be extended to all city owned public spaces, including parks, golf courses, Nathan Phillips Square, and subway stations. SWM Services is prepared to co-ordinate a corporate report as part of the 2001 operating budget process on the benefits and financial implications of achieving the 50 percent diversion target at city facilities and operations.

2) Increased Recovery of Organic Kitchen Waste

The increased recovery of organic kitchen waste, including food waste and low grade paper products (e.g. paper towels and napkins), is essential in order for Toronto to achieve its 50 percent waste diversion target. It is estimated that these materials compose 25% of the current waste stream, or about 200,000 tonnes per year. Conversion of these materials into compost and/or biogas for energy production can also play a significant role in achieving the city's

greenhouse gas reduction targets. The three waste management system options available to achieve higher levels of organic kitchen waste diversion are:

(i) Recycling Plus Mixed Waste Processing;

(ii) Wet/Dry System; and

(iii) Three Stream System – Recyclables Organics and Garbage.

Descriptions of these three systems, along with their advantages and disadvantages and examples from other Canadian cities, are provided in Attachment 1.

The 3Rs Strategy adopted by the former Metro Council in 1997 included, as a first step, the implementation of a small scale mixed waste recycling and organics processing facility at which all three systems could be tested prior to making a decision on a full scale system. The new City of Toronto Council awarded the contract for the design, construction and operation of this facility to Stone & Webster Canada Ltd. and Canada Composting Inc. in July 1998. The facility will utilize anaerobic digestion technology to produce compost and energy from biogas, and can be expanded to process up to 100,000 tonnes per year of mixed waste or 165,000 tonnes of source separated organic material. It was originally projected that the facility would be operational by May 2000, but due to protracted contract negotiations and financial restructuring by Stone & Webster, the facility is now scheduled to be operational by July 2001.

Subsequently, Solid Waste Management Services issued a second Request for Proposals or Diversion Technology under the TIRM process (the TIRM RFP for Proven Diversion Services). The results of that RFP are discussed in a separate In Camera report also on this agenda. One of the work tasks of the TIRM Proven Diversion Services consulting team (MacViro Consultants in association with Enviros-RIS and EarthTech) was to develop a model to project the cost of implementing the two waste diversion systems contemplated under the TIRM Diversion RFP process (i.e. Recycling plus Mixed Waste Processing and Three Stream – Recycling, Organics and Garbage). This task was later expanded to include an analysis of the Wet/Dry System proposed by CUPE Local 416 and the Toronto Environmental Alliance (TEA). A summary of how the three system options were applied to the single and multi-family waste streams to achieve 50 percent diversion is provided below:

Alternative 1: Recycling plus Mixed Waste Processing

This alternative is similar to the current system except that a portion of the current mixed waste stream, presently being landfilled, is processed for recovery of organic material and recyclables. Sufficient mixed waste is processed in order to achieve the overall 50 percent diversion target.

Alternative 2: Wet/Dry (Single family) and Recycling (Multi-family)

Under this alternative all the material from the single family residential sector is divided into a wet stream, which is composted or digested, and a dry stream which is processed to recover

recyclable materials. The current recycling program would continue in the multi-residential sector and the mixed waste from this sector would continue to be landfilled.

Alternative 3: Three Stream – Recycling, Organics (Single Family) plus Mixed Waste Processing

Under this alternative the current recycling program continues and, in addition, organic materials are separated out by single family households for separate collection and processing. To achieve 50 percent diversion, all the mixed waste from multi-family residences plus a portion of the mixed waste residue from single family households must also be processed.

A summary of the projected system cost ranges for each of the system alternatives is provided in Attachment 2. A previous report to the July 21, 2000 Special Meeting of Works and Policy and Finance Committees contained preliminary cost projections, which have now been further refined. The system cost information presented includes the cost per tonne and per household, the total annual cost and the annual cost premium over the current waste management system. All the systems provide for the management of all the residential materials (recyclables, organics and waste) generated within single family and multi-residential sectors of the City of Toronto. No provision is made for managing municipally collected commercial waste, or waste generated by from Toronto's agencies, boards commissions and departments, although this material could be accommodated through further system expansion.

The costs include direct operating and amortized capital cost estimates for collection, transfer, processing and contracted waste disposal. All costs are estimated at current (year 2000) price levels. The costs for mixed waste processing, wet stream processing and organics composting are based on a consideration of the bid prices received through the TIRM Diversion RFP, as well as cost information from Halifax and Edmonton. Dry processing costs for the Wet/Dry system are based on a review of facilities currently operating in the City of Guelph and Northumberland County, coupled with a consideration of recent developments in dry processing technology.

Collection costs for wet/dry and three stream systems assume the use of one person, dual compartment packer trucks outside the downtown core, and two person, dual compartment packer trucks in the downtown core to co-collect two waste streams in one pass (wet and dry or garbage and organics). For comparative purposes, collection costs for recycling plus mixed waste processing assume the use of one person packer trucks for garbage collection outside the downtown core. These assumption were made to keep the cost premium for moving to high diversion systems as low as possible. The one person and dual compartment trucks will need to be tested in Toronto to confirm the productivity assumptions in the model. It should be noted that CUPE Union Local 416 opposes the use of one-person vehicles for waste collection, and as such, this issue will have to be discussed further with CUPE prior to any tests using municipal staff.

Under each system alternative, major new processing facilities are required. The model assumes that these facilities will be located at the Dufferin Transfer Station in North York, the Scarborough Transfer Station and the Portlands area. These three locations are strategically located to allow for direct delivery of material from across the city. Specifically, in Alternative 1, three mixed waste processing facilities are required, one at each of these locations. Under Alternative 2, two wet processing facilities are identified for Dufferin and the Portlands, and three dry processing facilities at Dufferin, the Portlands and Scarborough. For Alternative 3, one organics processing facility is identified for Scarborough and two mixed waste facilities are identified for Dufferin and the Portlands.

The implementation of any of these high diversion systems in the City of Toronto poses a number of risks and challenges. Mixed waste processing provides the potential for diverting high levels of organic material from our multi-family residential buildings, however the technology has a limited track record and the low grade compost material that will be produced may be difficult to market in large quantities. Wet/Dry systems also have a limited track record, require a major change in resident behaviour and collection methods, and have not been implemented successfully in the multi-family residential sector. Three stream systems require a major change in resident behaviour, require the collection of an additional waste stream and have never been implemented on a large scale in apartment buildings. All the systems involve a cost premium over the current system of recycling and garbage disposal (this is discussed in more detail below).

Another important consideration is the ease of transition from the existing waste management system to the new system. Recycling plus mixed waste processing requires the least amount of behaviour and system change, with only the need to add sufficient mixed waste processing capacity. The three-stream system requires the addition of a kitchen waste collection stream and sufficient organics and mixed waste processing capacity to achieve 50 percent diversion. A wet/dry system poses the greatest challenge since the existing Blue/Grey Box program must be replaced by a dry collection system, and new wet and dry material processing capacity must be brought on line to process the entire single family residential waste stream.

As can be seen in Attachment 2, an $8.4 to $28.5 million annual cost premium is projected to achieve the 50 percent diversion target, based on current information. Presently there is a very limited track record in implementing diversion systems that achieve 50 percent or more diversion within major urban centres. The cost projections are conservative in the sense that the consultants assumed minimal growth in recovery of Blue/Grey Box recyclable material and leaf and yard waste material. In fact, as stated earlier, approximately 50 percent (or 200,000 tonnes) of potentially recyclable material and leaf and yard waste is still in the waste stream, a portion of which could be diverted at lower cost.

Based on the results of the modelling, it appears that Alternative 1: Recycling Plus Mixed Waste Processing is the most cost effective waste diversion system. However, the following issues need to be resolved before proceeding with full-scale implementation of any one alternative:

(1) Will mixed waste processing prove to be technically and financially viable for processing Toronto's residential waste stream?

(2) Can existing markets accommodate the large volumes of restricted and/or unrestricted use compost that would be produced by major Toronto facilities?

(3) To what extent will Toronto residents be prepared to set out organic kitchen waste or wet and dry waste for separate collection? (Previous organics collection pilot projects in Toronto have captured less than one third of available organic material.)

(4) Can kitchen waste be co-collected effectively with other waste streams to reduce the impact on collection costs?

Subsequent to the Diversion RFP being issued, Enwave District Heating Ltd. and Toronto Hydro have approached the City regarding the possibility of siting an anaerobic digestion facility in the Portlands area which would process up to 150,000 tonnes per year of municipal waste and co-generate steam and electricity from the biogas. Such a facility offers a number of potential advantages. First, it would generate "green" electricity for Toronto Hydro and "green" steam production for Enwave. Second, it would provide essential waste diversion processing capacity to the City in a key strategic location. When combined with full scale facilities at the Scarborough and Dufferin Transfer Stations, the three facilities could provide all the required processing capacity for Toronto to meet and exceed its waste diversion target. Third, the facility could potentially provide environmentally progressive waste management and power generation for the proposed 2008 Toronto Olympics. The City of Toronto has applied for funding to the Federation of Canadian Municipalities "Green Municipal Enabling Fund" to conduct a feasibility study for such a facility.

The issues and opportunities described above must be addressed in a timely manner to ensure that Toronto meets its 50 percent diversion target by 2006. The recommended activities described below address the issues sequentially so that critical information is obtained before major commitments are made and allow for flexibility to adjust collection methods and facility feedstocks as more information becomes available on system performance and costs.

(1) Include in the previously recommended focus groups and public attitude telephone survey questions on what behavioural changes Toronto residents would be prepared to make to increase organic waste diversion, including source separation of food waste and separation of all waste into wet and dry categories; and on the potential impact of financial incentives on resident behaviour. Conducting the focus groups and the public attitude survey will provide valuable input for designing future organic waste diversion systems. Based on the findings from the focus groups and public attitude survey we will report back to Works Committee in February, as part of the 2001 Operating Budget Request, with a communications strategy to encourage an increased rate of residential recycling activity and an implementation strategy for kitchen waste diversion.

(2) Prepare a comprehensive market assessment study for both restricted and unrestricted use

compost that may be produced by Toronto facilities, in order to determine the markets' capability to absorb the significant quantities of additional material that Toronto could generate. A funding proposal for the study is being prepared for submission to the WDO. Toronto's portion of the cost is estimated at $15,000.00, which will be absorbed in Solid Waste Management Services' 2000 Operating Budget submission.

(3) Implement an eight-month project to test the co-collection of kitchen waste and garbage from 2,400 single family homes, utilizing a dual compartment packer truck with fully automated split carts. The Town of Markham and the City of Toronto have received a funding commitment of $90,000 from the WDO to test using a fully automated truck and split collection cart system proposed by Miller Waste Systems. Then test project would take place in the York community where Miller Waste Systems is our contracted garbage and recycling collection service provider. Each household in the test area would be provided with a 340 litre wheeled cart spit into two sections – one for organics and one for garbage. The carts would be collected weekly by a dual compartment truck fitted with an automated arm which would empty both sides of the cart into the truck in one lift. This test project will provide useful information on the cost effectiveness of co-collection and on residents attitudes towards cart-based collection systems. The cost of the pilot project, estimated at $254,000, will be incorporated into the 2001 Operating Budget submission.

(4) Enter into negotiations with Miller Waste Systems and the Consortium of Groupe Conporec and Services Matrec to design, construct and operate and organics and/or mixed waste composting plant at the Scarborough Transfer Station or alternative location and report back to Works Committee with the results of these negotiations.

(5) Conduct a study, in co-operation with Enwave District Energy Ltd., on the feasibility of study on anaerobic digestion facility on City-owned property which would process municipal waste to generate biogas for the district energy needs of the downtown core, and report back to Works Committee in July 2001 on the fundings of the study and recommendations on how to proceed, subject to approval of funding for the study by the Federation of Canadian Municipalities' "Green Municipal Enabling Fund".

(6) Based on a positive outcome of the feasibility study, request Enwave and Toronto Hydro, separately or in partnership, to submit detailed business proposals to the Commissioner of Works and Emergency Services for review and development of recommendations to Works Committee for a waste diversion facility on City-owned property to serve the district energy needs of the downtown core. The proponent(s) will have the responsibility for selecting an appropriate technology, defining the site location parameters, identifying the necessary mixture of waste (including bio-solids as appropriate) to provide the most efficient energy source, as well as responsibility for the design, construction, operation of the facility and marketing of any usable by-products, using approximately 150,000 tonnes per year of municipal waste as source material. The City would be responsible for the disposal of any resulting residue through its proposed contract with Rail Cycle North;

Staff plan to report back in late 2001 with results from the Dufferin Mixed Waste Recycling and Organics Processing Facility and the proposed kitchen waste/garbage co-collection test project with recommendations for full scale waste diversion system implementation.

Conclusions:

The 3Rs Implementation Plan presented in this report provides a comprehensive approach to ensure that Toronto achieves its 50 percent waste diversion target by 2006.

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(3Rs.doc)

Attachment 1

Description of Waste Diversion System Options

(1) Recycling Plus Mixed Waste Processing

Under this system residents would continue to set out recyclables and garbage separately, and the garbage would be processed to recover some remaining recyclable material and to convert the organic fraction into biogas and/or compost. The advantages of this system are that it requires no change to resident behaviour or collection methods. The disadvantages are that the compost produced from mixed waste is likely to be of low quality with only certain restricted uses and that the cost of mixed waste processing is higher than processing source separated organic material.

The City of Edmonton has recently implemented this type of system with all recyclables collected commingled in blue bags and all other waste processed through a 220,000 tonne per year mixed waste/sewage sludge co-composting facility designed and constructed by TransAlta Utilities. TransAlta has a long term need for low-grade compost material to rehabilitate coal mine tailings, and as a result, in Edmonton's case, the market risks have been reduced. The City of Tracy, Quebec also has a recycling/mixed waste processing system. The mixed waste is processed through a composting facility designed, constructed and operated by Groupe Conporec. The Tracy system achieves a 75 percent diversion rate. Compost from the Conporec plant is marketed under Quebec regulations as Grade B compost, which can be used for non-agricultural applications.

The City of Toronto is currently constructing a small scale mixed waste anaerobic digestion plant at the Dufferin Transfer Station property which will produce compost and energy from biogas. It is expected to be operational in July 2001. SUBBOR Corporation is currently constructing a mixed waste anaerobic digestion plant adjacent to the Guelph Wet/Dry facility.

(2) Wet/Dry System

In this system, residents would be required to separate all household waste into dry material (recyclable material plus other dry waste such as light bulbs, textiles, non-recyclable plastics, etc.) and wet material (food waste, diapers, soiled paper, etc.). The dry stream would be processed to recover recyclable material and the wet stream processed to produce biogas and/or compost. A Wet/Dry System has been proposed for Toronto by CUPE Local 416 and the Toronto Environmental Alliance (TEA). The advantages of this system are that a high level of diversion can potentially be obtained because all material is processed, and a higher quality compost with unrestricted use may be produced if residents sort material properly. The disadvantages are that a major change in resident behaviour and collection methods is required, and large scale wet and dry processing facilities must be constructed to process all residential waste.

The City of Guelph implemented a full wet/dry system in 1995. The Guelph system diverts about 40 percent of residential waste from single family households only. This is comprised of approximately 19 percent of the dry waste processed at the facility being diverted and 73 percent of the wet waste. The system has not been implemented in apartment buildings because of the difficulty of getting residents to sort material properly. The County of Northumberland has implemented a dry processing system (with wet material going to landfill). Approximately 68 percent diversion of the dry material processing at their facility is diverted. This indicates that higher diversion levels than are currently being achieved in Guelph are possible from a wet/dry system .

(3) Three Stream System – Recyclables, Organics and Garbage

Under this system, in addition to setting out recyclables and garbage separately, residents also would set out kitchen organics (food waste and soiled paper) for separate collection. The organic material is processed to produce energy and/or compost. The remaining garbage stream can be sent straight to landfill or be sent first to a mixed waste processing facility. The advantages of this system is that a high quality, unrestricted use compost material will likely be produced, which can be easily marketed. The disadvantages are that a major change in resident behaviour is required and collection systems must be modified.

The City of Halifax implemented a three stream system in 1999, providing all single family homes with 340 litre wheeled collection carts for once every two weeks collection of organics. In addition, Halifax implemented a mixed waste processing facility at the front end of their landfill, to process the residual garbage stream. The low-grade compost material produced is used for landfill cover. The Halifax system, which services single family homes only, is currently achieving a 60 percent diversion level, and is expected to achieve higher levels as the system matures.