



**ENVIRONMENT COMMITTEE**

*HIS WORSHIP, THE MAYOR  
AND COUNCILLORS*

**SUBJECT: SOLID WASTE OPERATION INITIATIVES - 2008**

**RECOMMENDATIONS:**

1. THAT Council approve the proposed solid waste operation initiatives as outlined in Section 4.0 of this report.
2. THAT Council authorize staff to proceed with the implementation of the proposed initiatives and to include the budgetary requirements in the 2008 5-Year Annual Financial Plan.

**REPORT**

The Environment Committee, at its meeting held on 2008 March 11, received and adopted the *attached* report presenting the proposed 2008 solid waste operation initiatives with the goals of improving workers' health and safety and enhancing litter/abandoned garbage pickup.

Respectfully submitted,

Councillor D. Johnston  
Chair

Councillor P. Calendino  
Vice Chair

Councillor L. Rankin  
Member

<p>Copied to: City Manager Director of Finance Director Engineering President, CUPE, Local 23</p>
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**TO:** CHAIR AND MEMBERS  
ENVIRONMENT COMMITTEE

**DATE:** 2008 March 5

**FROM:** DIRECTOR ENGINEERING

**SUBJECT:** **SOLID WASTE OPERATION INITIATIVES - 2008**

**PURPOSE:** To present the proposed 2008 solid waste operation initiatives with the goals of improving workers' health and safety and enhancing litter/abandoned garbage pickup to the Committee and Council for consideration and approval

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**RECOMMENDATION:**

1. **THAT** the Committee recommend to Council that:
  - a) the proposed solid waste operation initiatives as outlined in Section 4.0 of this report be approved; and
  - b) staff be authorized to proceed with the implementation of the proposed initiatives and to include the budgetary requirements in the 2008 5-Year Annual Financial Plan.

**REPORT****EXECUTIVE SUMMARY**

The history of Burnaby's waste collection service covers several decades and during these years of service, the in-house collection program has grown and become a tradition of excellence to the customers it serves. While the City's commercial garbage collection and multi-family recycling have adopted the fully automated and semi-automated processes respectively, single family garbage and yard waste collection still relies on manual pick up and loading to the present day.

To maintain a quality in-house solid waste management service for the community, several emerging issues that have arisen in recent years including worker injuries, higher waste diversion goal, litter and abandoned garbage on city streets must be addressed. This report is to provide an overview of these emerging issues and to recommend operational changes and solutions for consideration by the Committee and Council. Specific recommendations include: automated collection; enhanced litter management and abandoned garbage pick up; and maximize yard waste and recycling collection. Details and financial implications of the recommendations are outlined in the following report.

## 1. INTRODUCTION

Burnaby's solid waste and recycling program is one of the most comprehensive and integrated waste management models in the Greater Vancouver region. The multi-stream program includes the following key components:

- Single family, multi-family and commercial/institutional garbage collection
- Single family (Blue Box) recycling
- Single family (clear bag and/or container) yard waste collection
- Multi-family and commercial/institutional (Toter) recycling
- Multi-family (Toter) yard waste collection
- Central recycling and yard waste depots
- Special bulky item and appliance pick up
- Litter collection
- Street sweeping and roadside weed removal

The goal of Burnaby's solid waste management program is to provide its citizens and business customers with an efficient and reliable collection service and to reduce waste disposal through better yard waste composting and recycling alternatives. In concert with the recently Council adopted Zero Waste initiative, several key improvements to the current solid waste operations plan to provide greater waste reduction opportunities and better collection efficiency have been identified and are described in this report.

The purpose of this report is to present the proposed solid waste operation strategies aiming to improve the single family garbage and yard waste collection and to enhance the litter control and abandoned garbage pick up service for a better and cleaner city environment.

## 2. HISTORY OF BURNABY WASTE MANAGEMENT PROGRAM

The City started its single family garbage collection service over half a century ago. Over this time period, the city collection program has grown to 5 zones with 10 collection routes in each zone. Presently, there are approximately 35,000 single and two-family households in the City and weekly city garbage collection service is provided to all these homes.

In the early 1990's, as part of a comprehensive waste reduction initiative adopted by Council, a "Think Three" program was put in place to encourage residents to reduce waste by recycling and keeping the garbage to no more than 3 bags or cans per household per week. Under the City's Solid Waste bylaw, each can or bag can have a maximum weight of up to 20 Kg (44 lbs) and a maximum size of 77 litres. Garbage is collected by city crews manually and is disposed of at the Metro Vancouver's waste to energy facility located in south Burnaby. Since introducing the curb side recycling program in 1990, the residential waste disposal has been reduced by approximately 43%, a significant achievement in the overall waste reduction plan.

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In addition to garbage collection, a city wide single family yard waste collection program was initiated in 1997 and since that time, the annual volume of yard waste collected under the program has grown from 4,500 tonnes to 9,500 tonnes in 2006. The yard waste program has also become one of the strongest components in the City's waste reduction strategy and has evolved into a year round program served by a fleet of 4 vehicles. The collection method, weight and container size limits for the yard waste program, is similar to that employed in garbage collection. Yard waste collected by the City is transported to a composting facility for processing and marketing as finished compost materials.



**Photo 1. Burnaby's Single Family Garbage Collection**

Yard waste collection for multi-family buildings was initiated in 2002 and its annual tonnage has increased 100% in 5 years. Due to the larger volume of yard waste generated from the multi-family sites, wheeled toters are used for the collection. The toters (360 litres capacity) are wheeled out to the curb side on collection day by the building managers and emptied into the truck hopper by city workers using a hydraulic lifting device attached to the back of the truck. The collection is a semi-automated process minimizing manual lifting however it still requires the driver to manually move and attach the toter to the lifting device. With the implementation of the Zero Waste initiative approved by Metro Vancouver and Burnaby, it is expected that more yard waste and recyclables will be diverted from the garbage stream and greater demands will be placed on the recycling and yard waste collection programs.



**Photo 2. Multi-family Yard Waste Collection**

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### 3. CURRENT CHALLENGES IN SOLID WASTE OPERATIONS

In the last 50 years, the City had faced many challenges in the delivery of the waste management service and improvements in policies and operations were implemented to meet these challenges. In the past few years, several operational issues and challenges have risen that require a review of the current service delivery model in order to meet the long term expectation of the community and to continue with the delivery of the garbage collection service in a manner that is safe and efficient. These issues and concerns are related to:

- Workers' health and safety in relation to the manual collection task
- Roadside litter problem
- Abandoned garbage on City lands
- Higher waste diversion goal

Each of these challenges is further discussed in the following.

#### 3.1. Workers' Health and Safety

The current city garbage and yard waste collection service involves a labour intensive task that demands repetitive lifting of medium weight objects. The repetitive lifting and moving motions combining with working in an outdoor environment expose the workers to a higher risk of injury and weather related sickness. In the period between 2002 and 2006, approximately 28 injury claims were reported in the Sanitation division each year with a resultant WCB lost time of 650 days per year. In 2007, the WCB lost time was 1,030 days. Time lost in the Sanitation division is consistently higher than the average for the outside work force. The types of injury reported in the Sanitation division are predominately related to upper body and back strains and other musculoskeletal injuries.

Workers returning to work from injury often require transitional light duty work before they can resume their regular duties. In more serious injury cases, workers would require alternate work accommodation, modified duty or long term disability benefit. The average age of the regular full time Sanitation workers is in the mid 40's. As the work force ages, the physical aspect of the job will become harder and will probably lead to even higher injury rates. On the average, Burnaby's single family garbage collection crews collect 48 tonnes of waste per truck each week, or 9 tonnes per truck per day. The City has monitored the health and safety issue for many years and has implemented changes in an attempt to reduce the risk of injury through limiting the garbage container weight and providing workers training and education in work safe practices and exercises to maintain a healthy body. Despite the policy changes and training, the injury and sick time in the Sanitation division is still significant and a more effective solution must be advanced to address this issue.

### **3.2. Roadside Litters and Weed Growth**

Litters on city streets, boulevards and vacant lots and unauthorized advertising signs on lamp poles have been on the rise in the past few years and have projected a negative image of the City's streetscape. To mitigate this growing problem, additional staff resources are reallocated within the existing financial means to remove the litter and garbage. Extra effort also was made to coordinate with Translink staff to clean up litters around the SkyTrain stations.

There are approximately 250 waste receptacles installed in the City. A new style of receptacle incorporating newspaper and beverage container recycling was introduced at selected locations one year ago to provide opportunities for recycling as well as litter collection. However, littering on city streets remains a real issue and its effect has significant impact on the city streetscape. Despite the extra effort to control the litter and garbage problems, it is not uncommon to find litter accumulated on road sides and in areas where pedestrian traffic is high. In order to improve the general cleanliness of the city streets and to maintain a cleaner and healthier environment for the citizens, more manpower is needed to elevate the street sweeping and litter collection service to a higher level.

Aside from litter, excessive roadside weed growth also presents an unsightly condition. The City is committed to protecting the environment in part through non-chemical approaches to control roadside weed growth. The non-chemical approaches employ mechanical and manual means to eradicate roadside weeds during the growing season. As the City's road inventory grows, extra effort is required to counter the weed growth problem.

### **3.3. Environmental Leadership**

Since the early 1990's, Burnaby has taken the leadership in creating excellent programs for its citizens in the pursuit of the waste reduction goal and will continue to explore new opportunities to meet future waste reduction target. With the advancement of the Zero Waste Challenge initiative in the Greater Vancouver region, operational changes at the collection level are necessary to divert more recyclables from the waste stream. In 2008, additional public campaign and education will be launched to take the waste reduction and recycling message including composting to all residents and business owners in Burnaby to achieve the goal of zero-disposal of recyclables in the waste stream.

A greater emphasis on recycling and yard waste composting is needed in the multi-family sector to encourage higher participation in the City's waste reduction programs. Additional manpower and equipment will be required not only to meet the service demands arising from population growth in the city but also for the implementation of waste reduction initiatives in connection with regional waste reduction goal.

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#### **4. PROPOSED SOLID WASTE OPERATION INITIATIVES**

To move forward with Burnaby's waste management program in a sustainable way and to meet the challenges of maintaining workers' safety, collection cost efficiency and a clean environment, improvements to the existing service delivery model are recommended.

In the course of developing the recommended improvements, the following guiding principles were established:

Principle 1: To improve workers' health and safety and reduce work related sickness and injuries.

Principle 2: To improve long term garbage and yard waste collection cost and efficiency.

Principle 3: To increase diversion of recyclables and compostable materials.

Principle 4: To improve the overall community image and maintain a cleaner streetscape.

In the review of the City's solid waste operation program, staff are mindful that Metro Vancouver is updating its solid waste management plan and the recommended improvements presented in this report hence reflect the regional goal of a higher level of waste reduction and diversion. To meet the current and future challenges in waste management in the City, three operation initiatives were developed based on the guiding principles outlined above.

##### **4.1. Initiative 1 – Automate Waste Collection**

While manual collection is still a common practice within the private waste collection industry in the Greater Vancouver region, fully automated waste collection has been adopted by the cities of Vancouver and Port Coquitlam to reduce workers injuries arising from the repetitive and heavy lifting task associated with manual collection.

The automated waste collection technology was pioneered by the City of Scottsdale, Arizona in the late 1960's. In the past several decades, research and development have greatly improved the original automated process and its application in communities with narrow streets and lanes. The most unique feature of an automated collection truck is its one person operation. The single operator controls the pickup and loading process inside the truck cab by operating a remote control mechanical device. The automation technology is based on a specially designed vehicle that comes with an automated mechanical arm that grabs the collection containers and empties them into the truck hopper. The automated system requires the use of special totes and these totes come in various sizes. The most commonly used sizes are between 180 litres for garbage

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collection and 360 litres for yard waste collection. The current Burnaby standard container size for residential waste collection is 77 litres.



**Photo 3. Automated Collection – City of Port Coquitlam**



**Photo 4. Automated Collection – City of Tacoma, Washington**

The collective experience of many communities that employ the automated system shows that worker absenteeism in the waste collection division due to sickness and injuries has reduced significantly since the implementation of the automated system. In addition to the benefits of injury reduction and collection efficiency improvement, automated collection using the toter system would also reduce the use of plastic garbage bags and clear bags and make the city streets and lanes tidier and cleaner. The toters used for the automated system are more animal resistance than the standard garbage can and are larger in size thus reducing the number of garbage cans and bags lining the streets every week.



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From the technical and operational perspective, the automated system offers many benefits and some of which were described above. One of the most important advantages of an automated system is its certainty in reducing workers injuries and in improving the health and safety of the collection workers. Having examined the communities that have changed their garbage collection from manual to automated, staff are satisfied that the automated collection strategy will provide the means to improving workers health and safety and meeting Burnaby's waste management infrastructure needs. Therefore, it is recommended that the existing manual collection system for the single family garbage and yard waste and multi-family yard waste collection be replaced with a fully automated system. More details on the staff resource planning and financial implications of the automated proposal are presented in Sections 5.0 and 6.0 of this report. \*

An important lesson learned from communities of similar size to Burnaby that have undertaken the automation process is that for better results and customer satisfaction, it is preferable to roll out the program to the entire community all at once. A city wide implementation would minimize user confusion and maintain service equity. With automation it is recognized however that a manual crew should be kept to service properties with exceptional circumstances where the automated collection system may not be a viable alternative.

In concert with the automated system, it is proposed that Burnaby residents be provided with the choice of one 120 litres or 180 litres (equivalent to 2.4 standard cans) toter for garbage collection and one 245 litres or an optional 360 litres toter for yard waste collection. It is recommended that the introductory garbage toter and yard waste toter be provided to every single and two family homes at the City's cost. Additional yard waste toters may be purchased by homeowners from the City at cost. Manufacturer warranty on the toters is between 8 to 10 years and replacement toters due to loss, moving or damage by others may also be purchased from the City at cost.

#### **4.2. Initiative 2 – Enhance Litter Control and Abandoned Garbage Pickup**

Presently, there are approximately 250 waste receptacles located throughout the City including 6 of 3-compartment (old newspaper/containers/garbage) receptacles at selected locations. The waste receptacles are emptied daily including weekends by the litter collection crews. The 3-compartment trial receptacles are working well and have received good public review. More of these compartmentalized receptacles will be installed in 2008 to encourage more recycling in the public place.

In major traffic and pedestrian corridors, we have seen a significant increase of litter in recent years and greater effort must be made to mitigate the litter problem.

It is recognized that the existing litter control service level is inadequate to meet the current needs. In order to keep the city streets clean and meet the litter control challenge,

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it is proposed that more waste receptacles be placed at locations where the problem of littering is evident and additional litter crews be employed to improve the frequency of litter pickup and removal of unauthorized signs on city roads, bus stops and near SkyTrain stations.

City crews regularly pick up large abandoned items such as old mattresses, chesterfields, shopping carts and appliances on the roadside and city owned vacant properties. On occasions, the abandoned items remained on site for days until a service call was received by the City and a crew is dispatched to pick up the discarded items. In order to provide a better response plan on the removal of abandoned garbage on city lands, it is proposed that additional staff resources be allocated to increase inspection of problem dumping areas and to expedite the service requests. The combined enhanced litter and abandoned garbage pick up program would help staff to better address the current litter/garbage problem on city streets and to reclaim a "litter free" street environment for the community.

#### **4.3. Initiative 3 – Maximize Yard Waste Composting and Recycling**

The City's yard waste and recycling collection programs are firmly planted within the single family and multi-family sector and have enjoyed considerable success over the years. With the implementation of the Zero Waste Program and the growing number of multi-family units in the City, it is necessary to increase the collection capacity for the yard waste and recycling programs. As the City welcomes newcomers who may have a diverse cultural background, suitable communication materials and messages must be developed to allow the newcomers as well as existing residents to gain a better understanding of the waste reduction programs and how they can help to maintain a healthy and sustainable environment for Burnaby.

### **5. STAFF RESOURCE PLANNING**

The proposed solid waste management operation initiatives outlined in Section 4.0 have both positive and negative impacts on staff resources. On one hand, the automated collection system as described in Strategy 1 would reduce the number of operators from two to one for each truck and the overall staff resource requirement for the garbage/yard waste collection division. On the other hand, the expanded litter and abandoned garbage collection services as described in Strategies 2 and 3 would require additional staff resources to carry out the extra tasks.

A staffing need analysis was conducted for the Solid Waste division including future recycling needs in the multi-family sector and future waste reduction target. A summary of the analysis and the proposed staffing plan is presented in Table 1. The analysis was predicated on the basis that there will be no layoff of Regular Full Time (RFT) and Temporary Full Time (TFT) staff in the garbage and yard waste collection division and any displaced RFT and TFT collection workers as a result of the automation process will be

reassigned to other available positions and will retain their current rates of pay as a minimum for one year. Notwithstanding the above, there will be a net surplus of 7 RFT/TFT driver positions with the automation proposal and these 7 surplus positions will be eliminated through attrition. The proposed staff resource allocation plan was shared with CUPE, Local 23 representatives who have provided input to the plan and given concurrence of the proposed plan.

Current Staffing Plan		Proposed Staffing Plan	
1.	Single family garbage and yard waste collection	1.	Single family automated garbage collection 10 RFT
	29 RFT employees	2.	Single family automated yard waste collection 5 RFT
	5 TFT employees	3.	Bulky item collection 2 RFT
Total	<u>34 RFT/TFT</u> employees, plus	4.	Back up driver and automation program administration 2 RFT
	25 Aux employees (as required)	5.	Transfer to multi-family recycling 1 RFT
		6.	Transfer to single-family recycling 1 RFT
		7.	Transfer to multi-family automated yard waste 1 RFT
		8.	Transfer to yard attendant 1 RFT
		9.	Transfer to litter control 4 RFT
		Total	<u>27 RFT</u>

**Table 1 Current and Future Staff Allocation Plan**

One of the important conclusions of the staffing analysis is that the automated collection system will offer a more efficient collection system with a lower staffing level requirement. The saving in staffing will allow re-deployment of a portion of the surplus manpower to other programs to improve service level and delivery in litter collection and to meet the future demands in recycling and composting.

## 6. FUNDING

Implementation of the proposed operation initiatives as outlined in Section 4.0 would require the purchase of 18 new automated trucks to replace the existing fleet, 4 additional litter trucks and 80,000 new toters for residents. Capital vehicle replacement funds accumulated in the reserve for the existing garbage truck fleet and proceeds from the sale of the surplus garbage trucks will be used to partially offset the total capital costs required.

A summary of the estimated capital costs required for the implementation of the recommended initiatives and the projected annual operating cost savings is given in Table 2.

	COST
1. Acquisition of 18 automated garbage and yard waste collection trucks (including 2 spares)	\$4.4M
2. Acquisition of 4 additional litter trucks	\$.1M
3. Acquisition of 40,000 of 180 litres toters for garbage collection	\$2.0M
4. Acquisition of 40,000 of 360 litres toters for yard waste collection	\$2.8M
Total Capital Cost:	\$9.3M
5. Less available garbage collection vehicle replacement funds in the Vehicle Replacement Reserve:	(\$2.0M)
Net New Capital Fund Required:	\$7.3M
6. Estimated annual salary/WCB cost savings	\$0.6M

**Table 2 Estimated Capital Costs for Automated Garbage and Yard Waste Collection**

The recommended initiatives are advanced for the purposes of resolving the workers' health and safety issue, encouraging more public participation in the waste reduction programs and gaining a better control of the street litter problem. Although the recommended program has a significant capital cost implication, the long term operating cost will be lower due to the more efficient collection method and staff utilization plan. It is recommended that staff be

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authorized to include the \$9.3 Million capital acquisition in the 2008 5-Year Financial Plan with \$2 Million funded from the Equipment Reserve and the remaining \$7.3 Million be funded from the Gaming Fund account.

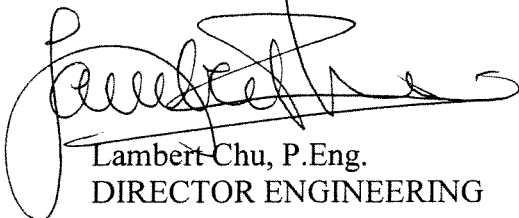
**7. PUBLIC COMMUNICATION AND SCHEDULE**

Public communication is one of the key components of the implementation plan. Subject to Council approval, a comprehensive public communication plan would be developed that will include pamphlets, information/fact sheets, displays at public events and in civic facilities, City web site, paper and electronic advertisements, etc. It is estimated that the automated collection service will require a 12-month preparatory period for the delivery of the public communication program and the acquisition of the specialized vehicles and equipment. The enhanced litter and abandoned garbage pick up initiatives will begin as soon as staff resources become available.

**8. RECOMMENDATION**

Over the years, the City of Burnaby has met many environmental challenges and one of which is waste reduction. Burnaby's waste management and recycling service has a history of outstanding achievements and has provided Burnaby residents and business operators with a service that meets the goals of service excellence and environmental sustainability. However, with the changing needs of a growing community and the region, it is necessary to re-assess the City's core services with the view to improve workers' health and safety, the street environment, waste diversion and collection efficiency.

The proposed strategies outlined in Section 4.0 of this report present a new direction for residential garbage and yard waste collection and an enhanced level of effort to meet future needs in waste reduction and to keep the city street environment "litter free". It is recommended that the proposed strategies be approved by the Committee and Council and staff be authorized to proceed with the implementation. Further progress report and equipment acquisition report will be submitted to Council in the future for approval as appropriate.



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LSC:

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