

Appendices

Areas of Supplementary Review

Appendix 1 – Supplementary Review of Toronto’s Solid Waste Diversion

In April 2008, when Council reviewed Toronto’s 2006 Performance Measurement and Benchmarking Report, Council requested in the future that the City Manager annually select one target improvement area where the City’s performance is found to be within the fourth/bottom quartile in comparison to other municipalities, and to develop a remediation plan for consideration by the Executive Committee.

Scope of the Review

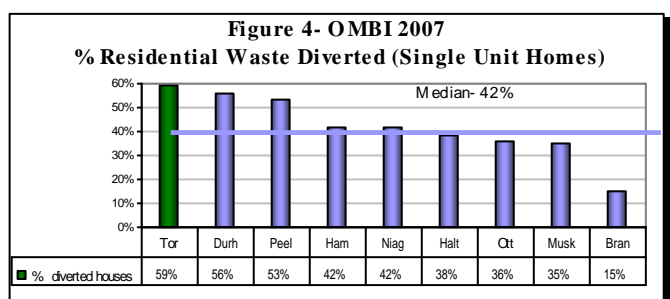
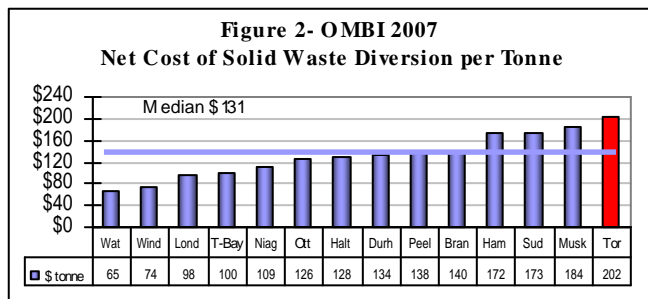
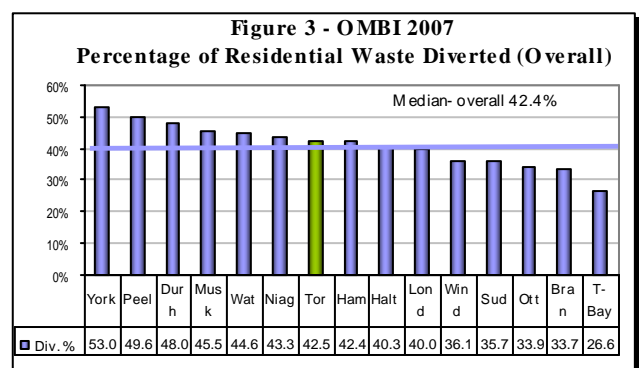
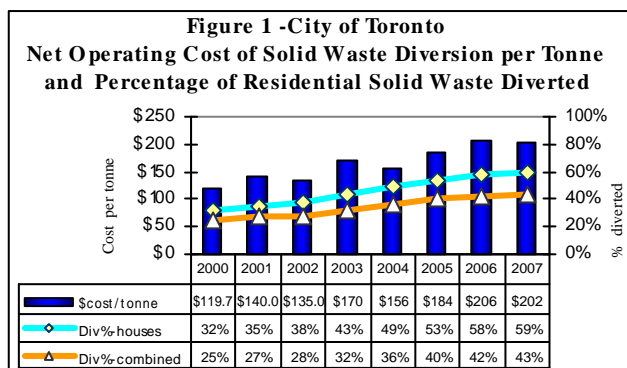
The area selected for this review, based on 2007 benchmarked results, was solid waste diversion where Toronto’s costs have historically been higher than those of other municipalities.

This review was not limited to just costs, but also included other aspects of service delivery, including:

- Components of Toronto’s solid waste diversion program
- Revenues from the sale of processed materials
- The linkage between costs and diversion rates
- Service levels provided in Toronto’s diversion activities
- Factors that contribute to Toronto’s higher costs in relation to other municipalities
- Initiatives already implemented that have improved the efficiency and effectiveness of Toronto’s diversion programs
- Additional initiatives staff are planning or investigating to improve the efficiency and effectiveness of operations in the future

How Do Toronto’s Diversion Cost and Rates Compare to Other Municipalities?

Figures 1 through 4 below have been drawn from section 18 of the main report.



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In summary the information in Figures 1 through 4 shows that:

- Toronto’s diversion rate for single-unit homes has increased steadily from 32% in 2000 to 59% in 2007, and was the highest of the OMBI municipalities in 2007 (Figure 4)
- Toronto’s diversion rate for multi-unit buildings, which accounts for almost half of Toronto’s housing stock, is much lower rising from 9% in 2000 to 13% in 2007
- Toronto’s blended diversion rate (of the two components above) rose from 25% in 2000 to 43% in 2007 with Toronto ranking 7th of 15 (2nd quartile) in terms of the highest rate, because of the low diversion rate in multi-residential buildings
- Toronto’s cost per tonne of solid waste diverted has also increased steadily and is linked to the new programs introduced to increase diversion rates. In 2007 Toronto’s cost per tonne was the highest of the 15 OMBI municipalities

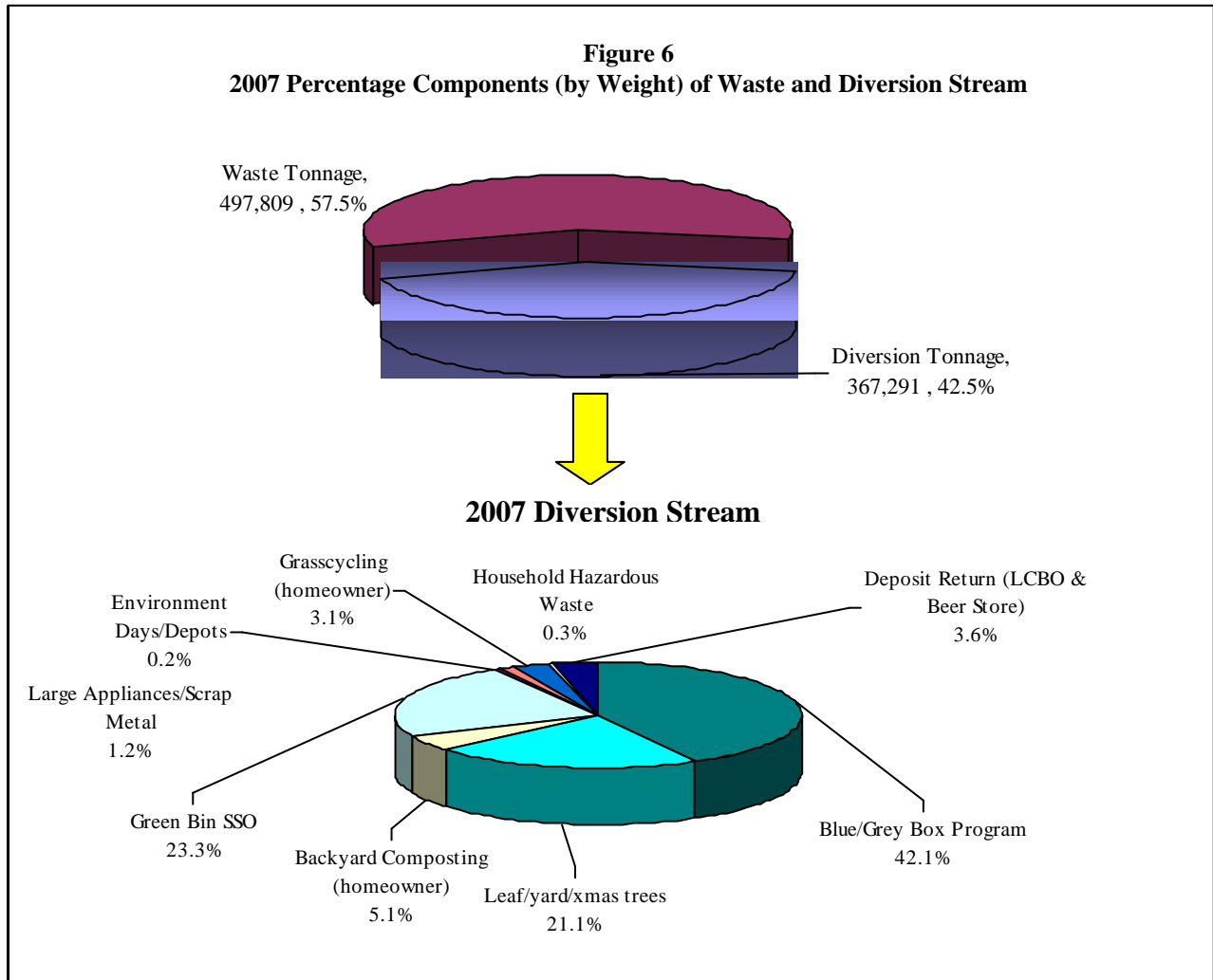
Because Toronto’s costs are directly related to the extent of our diversion programs both of these elements have been included in this review.

What Are the Materials in Toronto’s Solid Waste Diversion Programs?

Figure 5 below summarizes the tonnes, by type, of waste and diversion materials in Toronto’s diversion programs between 2005 and 2007, as well as the diversion rate achieved. It also provides tonnage and diversion rate data for the two main housing types in Toronto.

Figure 5 Tonnage of Residential Solid Waste Managed			
	Tonnes		
	2005	2006	2007
Diverted Material			
Blue/Grey Box Program	158,116	163,385	154,799
Leaf/yard/xmas trees	81,574	80,069	77,509
Green Bin SSO	60,273	87,505	85,552
Environment Days/Depots	843	768	860
Large Appliances/Scrap Metal	7,450	5,908	4,422
Household Hazardous Waste	808	1,015	1,086
Grasscycling (done by homeowners)	11,936	11,680	11,296
Backyard Composting (done by homeowners)	18,460	18,554	18,652
Deposit Return (done by LCBO & Beer Store)	6,690	6,737	13,115
Total Diversion	346,150	375,621	367,291
Total Waste	527,878	509,403	497,809
Total Diversion and Waste	874,028	885,024	865,100
Diversion %	39.6%	42.4%	42.5%
Diversion by Housing Type			
Single family			
Diversion	309,262	337,994	326,313
Waste	270,444	247,601	226,787
Total	579,706	585,595	553,100
Diversion rate	53.3%	57.7%	59.0%
Multi-family residential			
Diversion	36,888	37,627	40,978
Waste	257,434	261,802	271,022
Total	294,322	299,429	312,000
Diversion rate	12.5%	12.6%	13.1%
All Residential			
Diversion	346,150	375,621	367,291
Waste	527,878	509,403	497,809
Total	874,028	885,024	865,100
Diversion rate	39.6%	42.4%	42.5%

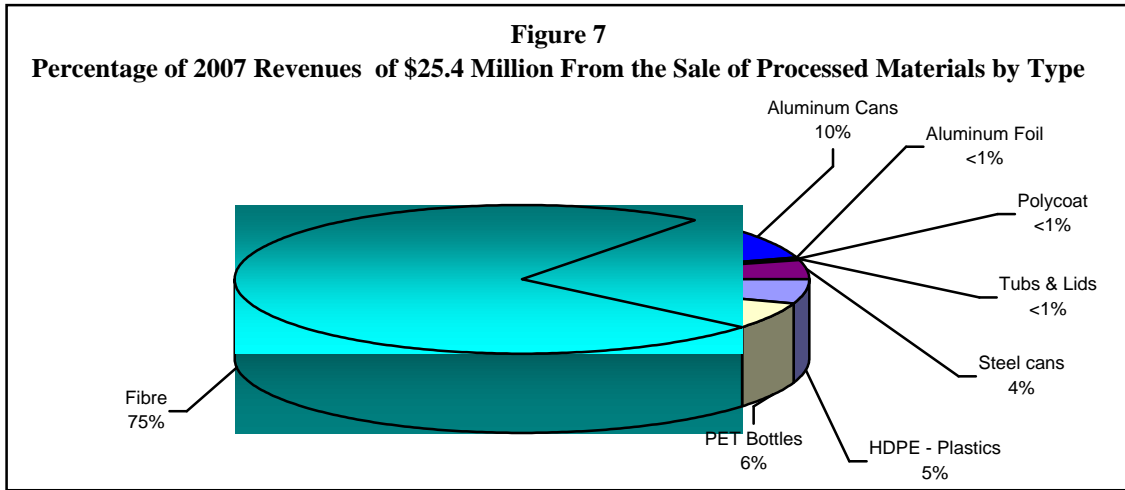
Figure 6 provides a percentage breakdown, by weight of the residential waste and diversion materials managed by Toronto in 2007.



How Much Revenue is Realized from the Sale of Processed Materials?

For the purposes of comparing Toronto’s results to other OMBI municipalities, revenues from the marketing and sale of materials recovered through diversion programs is offset against the collection and processing cost of those materials. In 2007, this amounted to \$25.4 million (\$22.8 million in 2006) in Toronto.

Figure 7 provides a percentage breakdown of the revenues received in 2007 by the type of processed material.



Approximately 85% of the total revenues relate to fibres (paper and cardboard) and aluminum cans. In 2009 these total revenues are expected to decrease, because of the significant decline in commodity prices in the last quarter of 2008, as discussed in the next section.

What is also noteworthy are some of the material types diverted that are not reflected on this chart because they have very little or no market value and instead the city must pay recyclers to take these materials. This includes materials such as glass and organics from the green bin program.

In examining the components included in figures 6 and 7 a number of observations can be made:

- Blue and grey box materials tend to have lower processing costs and higher market values. The programs for residents for these materials are also user friendly and, as such, have been embraced by residents resulting in high participation and recovery rates
- New materials added to the diversion stream such as organics tend to have higher processing costs and little or lower market values
- As new material types are added to increase diversion rates, the incremental net cost per tonne to process these materials will increase. However, the avoided costs of landfilling these new materials will partially offset the higher processing costs.

Are 2009 Revenues from the Sale of Processed Materials Expected to be Impacted by the Economic Downturn?

Commodity prices for the processed materials can be volatile and can significantly impact municipal revenues from the sale of these materials that is used to offset costs.

Currently Toronto staff market processed container materials directly to recyclers and utilize brokers for the sale of fibres. Some of this material is shipped overseas but the

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long-term plan is to seek more local solutions and markets to reduce recycling’s carbon footprint.

The largest market and importer for recyclables is China. The United States, for example, exported 11.6 million tons of recovered paper and cardboard in 2008 to China, up from 2.1 million tons in 2000, according to the American Forest and Paper Association. More than 70 percent of the materials that feed China’s recycling industry must come from abroad, according to the China National Resources Recycling Association.

When the world markets were hit by the global recession in the fall of 2008, manufacturing around the world declined leading to a significant drop in world prices and demand (particularly in China) for recyclables, that happened very quickly in October 2008.

As an illustration of this change, the Globe and Mail reported on March 7th that “recycling companies in the Greater Toronto Area are scrambling to fend off a near collapse in demand for recyclable materials such as newsprint, waste cardboard and discarded cans and plastics. Spot market prices for commodities such as cardboard have plunged by almost 70 per cent since last fall.”

As noted earlier in Figure 7, Toronto’s 2007 revenues from the marketing and sale of materials recovered through diversion programs amounted to \$25.4 million. In 2008 this revenue was reduced only slightly to \$25.1 due to the commodity price decrease in the last quarter of the year, although Toronto was somewhat protected through existing contracts that were in place.

In 2009 if the low commodity prices for recycled materials continues, as they are expected to, there could be a significant drop in total revenues relative to 2008 and 2007 levels, which will lead to an increase in the net cost of Toronto’s diversion programs.

Toronto staff have been diligent at protecting the City’s interests in contracts for the sale of these recycled material, by including, terms such as premiums over market prices financial assurances such as performance bonds, letters of credit, certified cheques and in some cases payment prior to shipment. This protects the City from additional costs if companies are unable to honour their contractual commitments.

The revenues generated from the sale of recyclable materials in both 2007 and 2008 were approximately \$2,000,000 per month. The high market values of the recyclable materials in the summer of 2008 helped to offset the low market values in the markets after October 2008.

The monthly revenues for the first 2 months of 2009 have averaged approximately \$800,000 per month which represents approximately 40% of revenues received over the previous two years. It is difficult to predict the markets for the remainder of 2009, however staff remain optimistic they will recover from the levels experienced in the past six months. It is important to note that the revenue shortfalls that the City is currently

experiencing will ultimately be shared on a 50/50 basis through the Waste Diversion Ontario funding formula.

Why Are Toronto’s Solid Waste Diversion Cost Higher than Other Municipalities?

Figures 6 and 7 showed the material volumes and revenues from the sale of processed materials which influence Toronto’s year to year cost of solid waste diversion per tonne. This is also the case in other municipalities with their 2007 cost of solid waste diversion per tonne (Figure 2) representing a blended figure reflecting the mix of material types collected and processed, and the revenues realized from the sale of those materials.

We do not have detailed data on the percentage composition of materials and revenues of the other municipalities in OMBI (the Ontario Municipal CAOs Benchmarking Initiative), however given the fact that Toronto has the highest diversion rate for houses (Figure 4) there is a strong likelihood that Toronto had a greater proportion of source separated organics (SSO or green bin) in its program than other municipalities in 2007.

Toronto launched the Green Bin Program in Etobicoke in September 2002, in Scarborough in June 2003, in the former Toronto, East York and York in October 2004, and North York in 2005. In 2007, the green bin/SSO organics accounted for 23% of Toronto’s diversion volumes. Other municipalities may not have fully implemented their green bin programs by the end of 2007.

Toronto’s green bin program also differs from many others in that it accepts diapers, sanitary products and plastic bags (with the organics). This however, requires an additional process and costs in Toronto to remove the plastic materials compared to other programs that do not accept these materials.

Toronto currently has only one organics processing facility and the capacity of this facility is well below that of the volumes generated from the green bin program. This has required the City to utilize three to four external facilities throughout Ontario that requires additional transportation costs.

In 2007, the cost of Toronto’s blended solid waste diversion cost per tonne was \$202, which included collection, transfer, processing and administration costs less the revenues from material sales.

Toronto’s 2007 cost for these external facilities to accept the SSO/green bin materials was approximately \$130 per tonne and this excludes costs to collect the SSO through the green bin program and then transfer and transport this material. Any revenue, which would be low, from the final processing and composting of the SSO material remains with the contractor.

This cost is high in relation to the net cost of many other material types in Toronto’s diversion program.

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Other factors that contribute to Toronto’s higher solid waste diversion costs include:

- Higher public education and communication costs with education materials often being produced in eleven other languages besides English, to reach Toronto’s diverse population (see section on public education and outreach)
- Higher transportation costs, as currently there is insufficient capacity or appropriate locations within Toronto, because of our urban form, for some waste diversion activities services such as SSO (green bin) processing and leaf and yard waste composting. This requires the transport of these materials to contractors outside of Toronto.
- A greater level of by-law enforcement and education activities may be required in Toronto than in other municipalities. Multi-residential dwellings in Toronto represent approximately 48% of the total dwellings/households, which is far more than any other Ontario municipality. Multi-unit residential buildings also have a far lower diversion rate (13% in 2007) than houses (59% in 2007), thus proportionately higher levels of education and enforcement activities may be required in Toronto for these buildings in order to raise their diversion rates.

What are Toronto’s Current Service Levels for Solid Waste Diversion Activities?

From an effectiveness standpoint the recovery rate of materials is a significant factor in both the success of the City’s diversion programs, costs and the makeup of residual waste. The recovery rate is based on:

- Participation rates- the number of eligible households participating in each diversion program
- The proportion of material available for diversion provided by each participating household in relation to the residual waste/garbage

Toronto’s key diversion programs are described briefly in the sections that follow, including steps the city has taken to improve the efficiency and recovery rates of the programs.

Single Stream Program (Blue and Grey Box)

- Recyclables and residual waste are collected from houses on alternating weeks
- Prior to 2005 the range of acceptable items was widened to include items such as milk and juice cartons, drink boxes, empty paint and aerosol cans
- In 2005, the program expanded to include tubs and lids (e.g., margarine containers and yogurt tubs)
- In the spring of 2005, through single stream recycling, Toronto residents were able to combine Blue Box and Grey Box recyclables together in one box. This provided residents with the convenience of mixing their containers and paper materials and allowed for more efficient collection and processing

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- Single stream recycling also allowed the City to co-collect recyclables and Green Bin organics in the same two-compartment truck rather than sending two trucks down the street. This reduces the number of trucks needed, which in turn saves on collection costs and reduces traffic and air pollution.
- In 2006, cardboard cans (refrigerated dough, frozen juice, chip, nut, powder drink mix and powdered cleanser containers – minus peel-off seal or pull-off strip) were added
- In late 2008 plastic grocery and retail bags as well as foam polystyrene (protective packaging, meat trays, takeout food containers, plates, egg cartons coffee cups), could be placed in blue bins.
- Starting in 2008, larger blue bins/carts were introduced for houses to replace the blue/grey boxes. This will provide capacity to add more material types in the future and allow for the use of an automated mechanical arm to tip and empty the blue cart.
- In 2009 residents in multi-unit residential buildings are being provided with free in-unit recycling containers (a hard-shell blue box or a soft-shell blue bag). Once full, residents can use the in-unit recycling container to carry the recyclables to the designated recycling area in each building.

The participation rate of homeowners in the blue and grey box and single-stream programs has been very good at approximately 92%. The participation rate in the blue/bin cart pilots was also very high with approximately 96% of residents setting out their carts (equivalent capacity of 4 blue/grey boxes) for collection. Approximately 60% of the carts were full on collection day and 17% were 3/4 full. In addition, to improved participation and increased capture of recyclables, the recycling cart pilot also showed reduced instances of blowing litter due to the fully enclosed container.

The recovery rate of recyclables from apartments is slightly less than half that of single-family residences.

Currently there are two, single stream processing facilities located in Scarborough (contractor owned) and at the Dufferin Transfer Station. These facilities are operating at their maximum capacity. With the projected increase in single stream tonnage, based on the increased capture rates from multi-residential buildings, the City is planning on building a large new single stream facility. This will provide the City with an additional 33% in processing capacity when it comes on-line, which is expected in 2012.

Green Bin/ Source Separated Organics (SSO) Program

- Green Bin materials are household organic waste, which is collected once a week from houses and is then processed into finished compost
- Toronto launched the Green Bin Program for single family houses in Etobicoke in September 2002, in Scarborough in June 2003, in the former Toronto, East York and York in October 2004 and North York in 2005
- In 2007, the green bin program accounted 86,000 tonnes or 23% of Toronto’s diversion volume by weight

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- Toronto’s green bin program differs from many others in that it accepts diapers, sanitary products and plastic bags (with the organics). This however requires an additional process and costs in Toronto to remove the plastic materials compared to other programs that do not accept these materials.
- Pilot projects testing organics collection were undertaken in 30 multi-residential buildings throughout the City
 - Implementation of multi-residential SSO program started in January 2009 with a targeted completion date of August 2010. A current shortage in Ontario of processing capacity for the organics processing industry could delay this.
 - Residents will be provided with free in-unit kitchen containers to collect their organics, and once full, residents will take their organics to thirty-five gallon carts, or bulk bins likely to be located near the recycling drop-off area(s)

It is estimated that each single-family home on the Green Bin Program contributes more than 200 kilograms of organic waste annually to the program and the program has a 90% participation rate.

Of the multi residential buildings the pilots showed the buildings were setting out an average of approximately 1 kg per household per week (kg/hh/wk) as compared to the potential volumes estimated at 4 kg/hh/wk of organics available in the waste stream. In comparison single-family houses set out approximately 4 kg/hh/wk.

The city currently has one Organic Processing Facility at the Dufferin Transfer Station with a capacity to process 25,000 tonnes per year, which is well below that of the volumes generated from the green bin program. Three to four external facilities throughout Ontario are contracted to process the remaining organics, which requires additional shipping costs.

In order to increase the capacity in City facilities for SSO processing, Toronto’s long-term capital budget includes funding for ongoing design and construction of two facilities at the Disco (2012) and Dufferin (2013) locations.

Household Hazardous Wastes

Household Hazardous Wastes (HHW) includes materials that are corrosive, flammable, explosive (such as aerosol containers) poisonous (such as cleaning fluids, pesticides, medicines) and compact fluorescent lamps, which have some mercury content that can be recovered.

The service levels offered by Toronto for residents to dispose of these materials include:

- Six permanent depots located at Solid Waste Management Transfer Stations where residents can drop off their HHW
- Used motor oil can be taken to oil drop-off centres

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- The Toxics Taxi provides free pick-up of HHW from residents of Toronto with a minimum quantity of 10 litres and maximum quantity of 50 litres
- Computers can be taken to the HHW depots
- There are four HHW Depots located at City transfer stations where residents can donate useable but unwanted HHW materials, including oil and latex paint. Staff sort donations and set reusable materials aside for other residents to pick up-for free.

In 2008 to improve service, the operating hours of these facilities were expanded from 2 days a week, to where the majority of them are now open for five days from Tuesday through Saturday.

Yard Waste

In September 2008, the Leaf and Yard Waste and Christmas Tree collection schedules were amended to be on a bi-weekly basis with extended spring and fall Leaf and Yard Waste collection and extended Christmas tree collection.

A kraft bag policy for leaf and yard waste collected was implemented to improve composting. The City encourages the use of, and sells backyard composters to residents.

The City has banned grass clippings from garbage and yard waste collection and encourages residents to “grasscycle” (leave grass clippings on the lawn), use them as mulch, or compost them in their backyard bin.

The City does not currently have a composting facility, so operating agreements with the four different processing contractors are in place for the composting of 115,000 tonnes of leaf and yard waste at locations outside of Toronto. The long-term capital budget includes funding for leaf & yard waste composting facilities.

White Goods (Appliances)

Residents can call Solid Waste Management to book an appointment for the pick up of large appliances and metal.

Environment Days

There are forty-four Community Environment Day events hosted by the local Councillor each year during the spring, summer, and fall months. These are held at locations closer to the community such as at schools, parking lots, arena or parks.

Items accepted at these events include:

- Unwanted, used and unused household items and products that can be offered to someone else for reuse such as:
 - Small household items like dishes and ornaments, which go to Goodwill, along with books, linens and clothing

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- Art supplies such as pencils, markers, crayons, yarn and fabric, as well as used buttons, costume jewellery and dress-up clothing, which is donated to ArtsJunktion – a Toronto District School Board warehouse for teachers for re-use with students
- Items that can be recycled or disposed of properly by the city such as:
 - Cell phones, computers, monitors, printers and fax machines
 - Household hazardous wastes such as, leftover cleaning supplies and solvents, motor oil, paint, old and unused medication, mercury thermometers/thermostats and pesticides
 - Used tires

What Other Cost-Effective Methods are Being Used to Encourage Greater Diversion?

Promote Reuse of Items by Not-for-Profit Agencies

Clothing and household items that are no longer required by one family can, if in good condition, be re-used by another instead of entering Toronto’s waste or diversion streams, where cost are incurred for the collection and processing of these materials.

Not-for-profit groups use donations in various ways. Some, such as Goodwill and The Salvation Army, re-sell the clothing and household items to provide support and/or employment for those in need and to fund their activities and research. Other charitable groups, such as the Furniture Bank, shelters or hostels, distribute donations directly to their clients.

The Solid Waste Management website <http://www.toronto.ca/reuseit/nonprofit.htm> includes a list of Not-for-profit groups, the items they accept and contact information for further information.

The City also has four of the HHW Depots located at City transfer stations where residents can donate useable but unwanted HHW materials, as noted earlier.

In-Store Packaging

The packaging used by manufacturers of products sold in stores is a major source of the materials that must be diverted away from landfill sites. Some of this packaging would be considered by many to be excessive, but regulations regarding packaging are not in the jurisdiction of municipal governments but lies primarily with the Provincial and Federal Governments.

The City formed an in-store packaging working group to review possible voluntary measures to reduce in-store packaging. One of the outcomes of this work was an initiative to reduce the number of plastic grocery bags that are used, and encouraging the

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use of re-usable bags. The city is proceeding with a by-law that will mandate retailers within Toronto to charge a 5-cent fee for plastic bags requested by customers starting in June 2009.

Public Education and Outreach

Public education and outreach on recycling and diversion is another important element in encouraging the public to both participate in diversion programs and maximize the amount of waste they are able to divert in their household.

One example of the scope of these efforts is the 2009 roll out of in-unit recycling containers for multi-unit residential buildings. A quick review of the Solid Waste Management website shows an information card for residents on how to use the container, and what material types can be placed in the new in-unit recycling containers. To reach Toronto’s diverse population, this information has been prepared in eleven other languages besides English.

In the summer of 2008, an advertising campaign was launched in ethnic newspapers, the Metro, the Toronto Star, transit shelters and the subway, which encouraged all residents in of multi-residential buildings to recycle and that the current diversion rate for these buildings is only 13%. Owners are able to download an article for building newsletters as well as posters (in eleven languages) to reinforce the recycling message in their own building.

There are costs associated with translating and providing documents in multiple languages but this is essential to communicate with residents and improve the efficiency and effectiveness of Toronto’s diversion programs. Other municipalities with less diverse populations may have lower costs for these education and outreach activities.

By-Law Enforcement

The By-law Enforcement unit’s mandate is to serve the community through a combination of public education and enforcement of waste by-laws.

Approximately 92% of single family households currently participate regularly, however there are some single-family residences that consistently do not recycle which requires enforcement.

The diversion rate for from multi-residential buildings (13% in 2007) is significantly lower than single-family houses (59% in 2007). Multi-residential dwellings in Toronto represent approximately 48% of the total dwellings/households in the City, which is far more than any other Ontario municipality. Given this significance and the much lower diversion rate noted above, proportionately higher levels of education and enforcement activities may be required in Toronto (compared to other municipalities) for these buildings in order to raise their diversion rates.

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Once residents receive appropriate communication and education, the intent of by-law enforcement is to change the behaviour of those who refuse to recycle. By-law Compliance Officers routinely inspect apartment buildings to determine if the buildings are adequately recycling. The officers decide if there are enough recycling bins for the number of units within a building based on a pre-determined formula for minimum requirements, and whether the recycling bins are being used. The recycling bins are also checked for contamination and the garbage bins are also checked to ensure they do not contain a significant quantity of recyclables.

The following notification process for buildings that are providing inadequate recycling may be used as a guideline, but City staff exercise discretion before municipal collection service is discontinued:

- An apartment building that has been continually non-compliant over the course of two weeks (2 collections) will receive a letter stating that they have not been participating fully in the recycling program and that they will be removed from City waste collection if they do not comply. The building will then be monitored over the next two weeks.
- If upon inspection after the next two weeks (2 collections) the building is still non-compliant, a registered letter will be given to property management. This letter will state their failure to comply, notify them that they are being removed from City collection services for a minimum three-month period, and identify the date that service will be discontinued.
- Service will be reinstated after the suspension period if the apartment owner/property manager proves that they have rectified the problems leading to the suspension and will provide and promote proper recycling.
- Starting on July 1, 2008 building owners pay garbage collection fees based on the amount of garbage produced by residents. The advertising campaign and education materials on the web noted earlier, reminds residents that more recycling means less garbage and lower costs for the building owner.

What Other Initiatives Have Already Been Implemented to be More Efficient and Effective?

In addition to the initiatives described within the previous sections on Toronto’s diversion activities, the following initiatives have also been implemented to improve the efficiency and effectiveness of Toronto’s solid waste diversion activities:

- Single-stream recycling (mixing papers and containers) made it possible for recyclables and Green Bin organics to be collected in the same two-compartment truck rather than sending two trucks down the street. This reduced the number of trucks needed, which in turn saves on collection costs and reduces traffic and air pollution.
- The new and larger recycling bins introduced in 2008 allow for an automated mechanical arm to tip and empty the blue cart. Using this system will allow for the

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reduction of two person crews to one person, which is both more efficient and is also expected, in the longer term, to reduce the number of injuries through reduced lifting.

- A four-day workweek was implemented in co-operation with CUPE Local 416 in Districts 1 and 3, which improved working conditions for staff, reduced confusion and collection day changes for residents, and reduced the operating budget by \$1 million
- Introduction in 2008 of a volume-based rate structure for residential solid waste services to provide waste generators with a financial incentive to reduce the amount of waste they dispose of
- Developed and implemented a hand-held information system for enforcement officers to provide daily updated information on by-law calls
- Constructed bi-level recycling depots at the Bermondsey and Ingram Transfer Station

What Other Initiatives Are Planned or Being Investigated for the Future?

The following initiatives are in the planning stages or are being investigated for possible implementation in the future to further improve the efficiency and effectiveness of Toronto’s solid waste diversion activities:

- Start of installation in 2009 of RFID/GPS (Radio Frequency Identification/ Global Positioning System) on collection vehicles to measure multi-residential waste collection volumes and billing data
- Larger “next generation” green bins to replace the existing bins, which will provide greater capacity and allow automated pick-up with a mechanical arm. This is expected to be more efficient and also reduce the rate of injuries through reduced lifting.
- The long-term capital budget includes establishment of approximately six reuse facilities across the City. These reuse facilities will receive reusable/recyclable goods (e.g., furniture, building materials, electronics, clothing, mattresses, carpets and sporting goods) from the public and redistribute these items to local charities for reuse or to appropriate facilities for disassembly and recycling.
- Implementation of door-to-door, curbside collection, Blue Cart Recycling and Green Bin program for townhouses including the purchase of smaller collection vehicles to service these customers. Implementation of this initiative has started in 2009.
- Mobile units are planned in the future that will go to apartments to collect Household Hazardous Wastes (HHW) from residents in multi-unit buildings
- Expanding the range of recyclable materials in the blue box/cart to include materials such as all plastic packaging not currently part of the program, and other items like ceramics
- Investigation of emerging source separation techniques, including initiatives such as the possible recycling of residential construction and demolition waste

Summary

Toronto’s solid waste diversion costs are higher on a cost per tonne basis than other municipalities, however this must be linked with diversion rates, where Toronto’s has the highest diversion rate for houses at 59% in 2007. As new materials are added to the diversion stream in the future, costs are likely to continue to rise as higher cost are often associated with higher effectiveness/diversion. Given the scale and scope of Toronto’s waste diversion program our costs are not unreasonable in relation to other municipalities.

Besides our high diversion rate, there are other key factors we have identified that are also likely key contributors to Toronto’s higher costs including:

- Green bin/organics materials in Toronto in 2007 are thought to have been a larger proportion of Toronto’s diversion stream than in other municipalities. Processing organic material is significantly more expensive than other recyclable materials.
- Toronto’s green bin program also differs from many others in that it accepts diapers, sanitary products and plastic bags (with the organics). This however requires an additional process and costs in Toronto to remove the plastic materials compared to other programs that do not accept these materials.
- Higher public education and communication costs with education materials often being produced in eleven other languages besides English to reflect Toronto’s diversity.
- Higher transportation costs since currently there is insufficient capacity or appropriate locations for diversion facilities within Toronto because of our urban form. For some waste diversion activities services such as SSO (green bin) processing and leaf and yard waste composting, this requires the transport of these materials to contractors outside of Toronto.
- A greater level of by-law enforcement and activities may be required in Toronto than in other municipalities. Multi-residential dwellings in Toronto represent approximately 48% of the total dwellings/households, which is far more than any other Ontario municipality. Multi-unit residential buildings also have a far lower diversion rate (13% in 2007) than houses (59% in 2007), thus proportionately higher levels of education and enforcement activities may be required in Toronto (than in other municipalities) for these buildings in order to raise their diversion rates.

Due to the significant drop in commodity prices from the sale of recycled/processed materials that commenced in the last quarter of 2008, the total revenues realized by Toronto for these sales is also expected to drop in 2009, and our net costs of solid waste diversion will likely increase.

Much of Toronto’s diversion efforts are now being focussed on increasing the diversion rates for multi-residential apartments, which in 2007 had a diversion rate of 13%, through the introduction of in-unit containers for blue box materials and organics in 2009 and 2010. Historically, the recovery rates (based on participation rates and quantities separated from garbage) for multi-residential units has been much lower than for houses,

Appendix 1 – Supplementary Review of Toronto’s Solid Waste Diversion

because it tends to be less convenient. Education and enforcement activities are intended to encourage a greater recovery rate.

Staff are not aware of any other large North American city undertaking such a large-scale source separated organics program project, so we could be considered as trailblazers without the benefit of lessons learned from other organizations.

Toronto’s Solid Waste Management staff have already implemented a number of innovative initiatives as outlined in this report to improve the efficiency and effectiveness of diversion programs, and have a number of others are planned for the future.

There has also been external recognition of Toronto’s efforts such as the Recycling Council of Ontario's 2007 Ontario Waste Minimization Awards for Solid Waste Management’s. “Getting to 70 per cent Waste Diversion Plan”.

Appendix 2 – Supplementary Review of Toronto’s Library Services

In April 2008, when Council reviewed Toronto’s 2006 Performance Measurement and Benchmarking Report, Council requested in the future that the City Manager annually select one target improvement area where the City’s performance is found to be within the first/top quartile in comparison to other municipalities, and identify how this has been achieved.

Scope of the Review

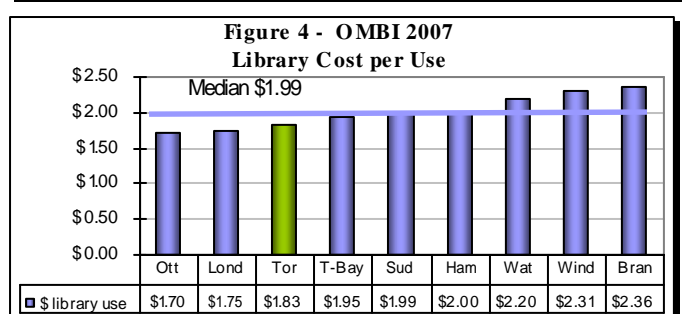
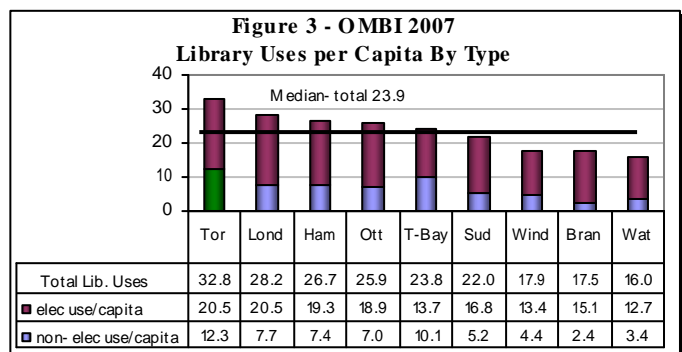
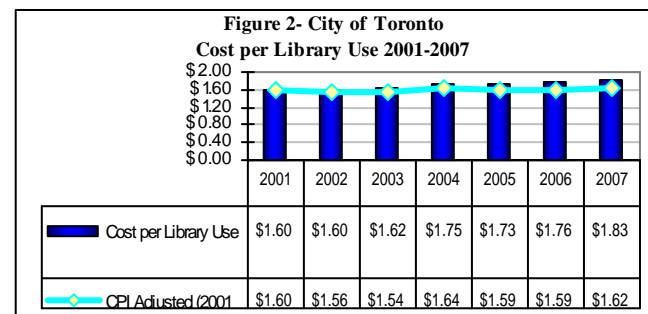
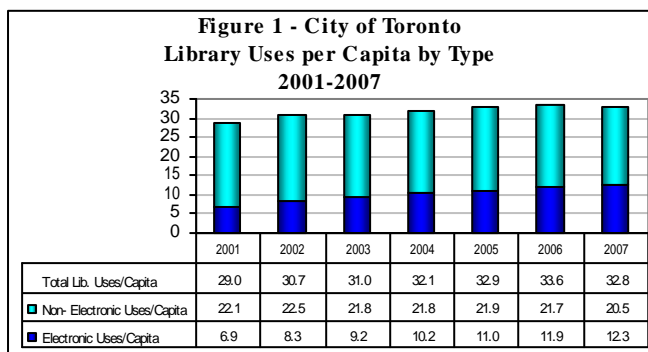
The area selected for this review, based on 2007 benchmarked results, was library services where the Toronto Public Library’s (TPL) results show a combination of very high library use and lower cost per use than in other Ontario municipal library systems.

This review covered a number of aspects of service delivery, including:

- A comparison of the TPL’s library use statistics to other large North American and World library systems
- Services and service levels provided at the TPL
- Staffing levels at the TPL since amalgamation
- The different components of Toronto’s library use and in which areas they excel and what factors contribute to Toronto’s higher library usage and lower cost per use in relation to other municipalities
- Initiatives the TPL has implemented to improve their efficiency and effectiveness
- Other key factors contributing to the TPL’s success
- Initiatives planned in the future by the TPL to further improve the efficiency and effectiveness of operations

How Does the Toronto Public Library’s Costs and Library Usage Compare to Other Ontario Library Systems?

Figures 1 through 4 below have been drawn from section 9 of the main report.



Appendix 2 – Supplementary Review of Toronto’s Library Services

In summary this data shows that:

- Figure 1- From 2001 to 2006 library use per capita increased each year, with this increase primarily related to electronic library use, while non-electronic use per capita remained stable. In 2007 electronic use continued to increase but cost containment measures undertaken in the fall of 2007, which included Sunday closings, a freeze on spending the library materials budget, and a hiring freeze may have resulted in declining library visits and other non-electronic uses.
- Figure 3 - In 2007 Toronto falls in the 1st/top quartile for the highest rate of library use per capita, ranking 1st of 9 municipalities for total library uses, electronic library uses and non-electronic. The other municipalities referred to are from Ontario and are members of the Ontario Municipal CAOs Benchmarking Initiative (OMBI).
- Figure 2 – Toronto has had a modest increase most years in its cost per library use. Adjusted for changes in Toronto’s consumer price index the cost per library use in 2007 was almost the same as in 2001.
- Figure 4- Toronto’s 2007 result for cost per library use places us 3rd of 9 (2nd quartile) in term of the lowest cost

How Does the Toronto Public Library Compare to Other Large Library Systems in North America and the World?

The International Context

On the international front, the Toronto Public Library is the world’s busiest urban public library system. Results show that:

- The TPL has higher circulation per capita (11.56) than any other international library system serving a population base over 1 million
- The TPL has the highest number of visits per capita (tied with Singapore).

The North American Context

The Toronto Public Library is also the largest and busiest public library system in North America, a result that has been consistent for the past seven years. The TPL has the highest circulation (both total and on a per capita basis) and the highest number of library visits (both total and on a per capita basis). Figure 5 reflects 2007 statistics for all North American libraries serving populations of two million or greater.

Figure 5
2007 North American Library Statistics for Library Systems Serving >2,000,000 Residents

Library System	Library Circulation			No. of Library Branches			No. of Library Visits			Pop’n Served	
	Total	Ranking on Total	Per capita	Total	Ranking on Total	Per 100k pop’n	Total	Ranking on Total	Per capita	Total	Ranking on Total
Toronto Public Library (ON)	28,925,965	1	11.56	99	1	4.0	16,391,516	1	6.5	2,503,281	5
Queens Borough Public Library (NY)	21,033,861	2	9.43	61	6	2.7	14,077,794	3	6.3	2,229,379	8
New York Public Library (NY)	16,556,899	3	5.00	86	2	2.6	13,815,951	4	4.2	3,313,573	3
Brooklyn Public Library (NY)	16,488,414	4	6.69	58	7	2.4	12,410,531	5	5.0	2,465,326	6
Los Angeles Public Library (CA)	15,574,773	5	3.88	71	5	1.8	16,003,909	2	4.0	4,018,080	1
County of Los Angeles Public Library (CA)	13,981,247	6	3.81	84	3	2.3	11,952,539	6	3.3	3,673,313	2
Chicago Public Library (IL)	7,771,541	7	2.68	78	4	2.7	-	-	-	2,896,016	4
Miami-Dade Public Library System (FL)	7,582,777	8	3.64	41	8	2.0	5,872,671	7	2.8	2,083,984	9
Houston Public Library (TX)	5,643,846	9	2.53	38	9	1.7	4,261,685	8	1.9	2,231,335	7

Source: Public Library Data Survey 2008 - Information compiled by TPL Planning & Development, July 2008.

Note: Toronto's population in these statistics is based on census and is considered understated relative to the most recent estimate used in OMBI of 2,730,000

Appendix 2 – Supplementary Review of Toronto’s Library Services

While Toronto has the largest total circulation and library visits of the ten largest North American library systems, by population it ranks only fifth. One important factor that contributes to Toronto’s high library usage is the number of library branches (columns 5 to 7 in figure 5) with Toronto having the most branches (99) and a significantly higher rate of 4.0 branches per 100,000 population, than the other systems.

What are the Services and Services Levels the Toronto Public Library Offers?

Branches and Mobile Library Services

As cornerstones of their neighbourhoods, the Library’s 99 branches strive to reflect the diverse communities they serve. Branches are strategically located for visibility and accessibility. They are positioned in a range of facilities including community centres, shopping malls and stand alone sites; they are designed to be welcoming and safe. The Toronto Public Library is committed to achieving architectural excellence in design and green principles in all renovations. The planning of all branch renovations includes broad consultation with local residents, stakeholders and community leaders.

The service delivery model is comprised of 79 neighbourhood, 17 district and 3 research and reference branches, and city wide services. Neighbourhood libraries are smaller branches meeting the needs of the immediate community. District libraries offer larger collections within a larger facility and provide extensive services to a wider audience. Research and reference libraries provide comprehensive and specialized collections and services with an emphasis on access, research and preservation. City wide services include services such as home library service and bookmobile services.

Virtual Branch and Technology Based Services

The Toronto Public Library’s virtual branch is its online face providing e-services that extends and integrates with all other library services. The use of technology extends service 24/7 remotely and conveniently, which not only makes it easier for customers to find information, it has also allowed the Library to manage increasing demand in an effective and efficient manner without additional staff.

Demand for technology based services has increased dramatically with the shift to electronic sources of information, access to increasingly rich digitized content, the availability of downloadable e-content, and the rise of user generated content and social networking sites. Web 2.0 technology is offering new opportunities to reach residents, deliver service and engage online community participation in collaborative learning, programming and discussions.

Access to the Library’s 1,922 public workstations, office software applications and high speed internet computers is an essential feature of 21st century public library service. The demand now extends to wireless service, increased bandwidth to support multimedia, and laptop lending to allow increased access to the online world of information.

Appendix 2 – Supplementary Review of Toronto’s Library Services

Collections

The Toronto Public Library has 11 million items in its collection and actively develops collections in 40 languages and in multiple formats including books, CDs, audio books, videos, DVDs, magazines, newspapers, and downloadable content such ebooks. The Library also has five major Special Collections which include over 2 million items and feature rare, fragile and valuable books, manuscripts, art, pictures and newspapers that require special care, cataloguing and use.

The online collection which is accessible at home or within branches includes full-text magazine and newspaper databases, encyclopaedias, information on careers and computers, and products for self-testing academic and reading skills. The growing collection of downloadable content includes books, audio books, music and videos accessible anywhere with an internet connection.

Programs

The Toronto Public Library’s programs are popular and varied with over 24,000 programs delivered by staff or in partnership annually, reaching an audience of 650,000 participants in 2007. The types of programs range from weekly children’s programming to local music concerts for youth, celebrity author readings, literary and arts events, cultural activities that celebrate heritage and help build community memory, and online computer training.

Reference Service

Staff are, well trained in delivering customer service, and help customers navigate the wealth of information available to them; there were 2.2 million reference service transactions in 2007.

Outreach Programs

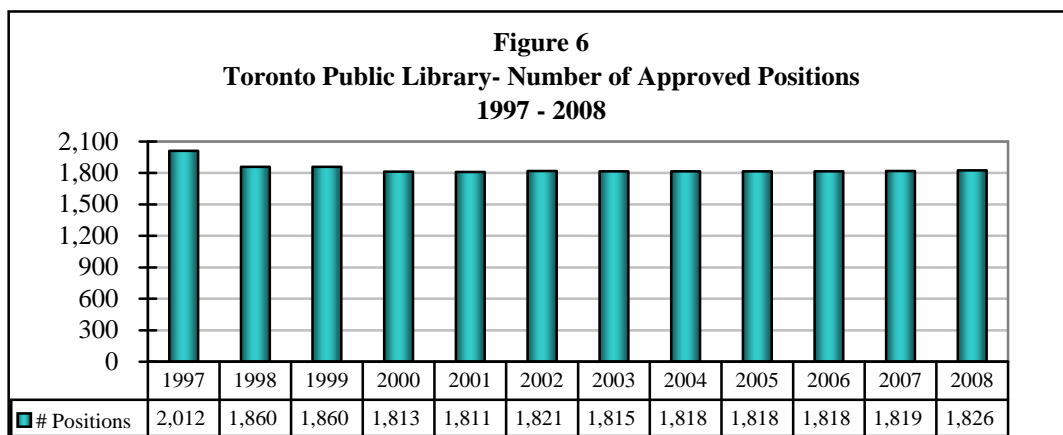
The Toronto Public Library excels in community outreach by identifying and promoting library services for increased access to its resources. Outreach initiatives are throughout the city and are an important focus in all communities including Toronto’s priority neighbourhoods. Outreach programs include:

- Ready for Reading early literacy programs
- Kindergarten Outreach
- High School Outreach promoting electronic services
- Participation in Neighbourhood Action Teams in priority neighbourhoods
- Newcomer Orientation (Library Settlement Partnership)
- Outreach to youth shelters
- Home library service and book deposits for frail and housebound seniors.

Appendix 2 – Supplementary Review of Toronto’s Library Services

How Have Staffing Levels Changed at the Toronto’s Public Library?

Staffing is the largest area of the TPL’s expenditures, with salaries and benefits representing 75% of the 2008 gross operating budget in 2008. Figure 5 shows the number of approved positions from 1997 (the year prior to amalgamation) to 2008.



Over the 11 year period staff decreased by-186 position or -9.2%. If the three-year amalgamation downsizing period of 1998 to 2000 is excluded, over the past 8 years from 2001 through 2008 staffing increased by only +13 positions or +0.7% in total.

As noted earlier the utilization of technology and electronic services by the TPL has grown quickly and made it easier and more convenient for many users to access and find information in branches and on a 24/7 basis remotely. It has allowed the TPL to manage increasing demand and manage its costs in an effective and efficient manner without adding staff.

In What Areas of Library Use is the Toronto Public Library Excelling?

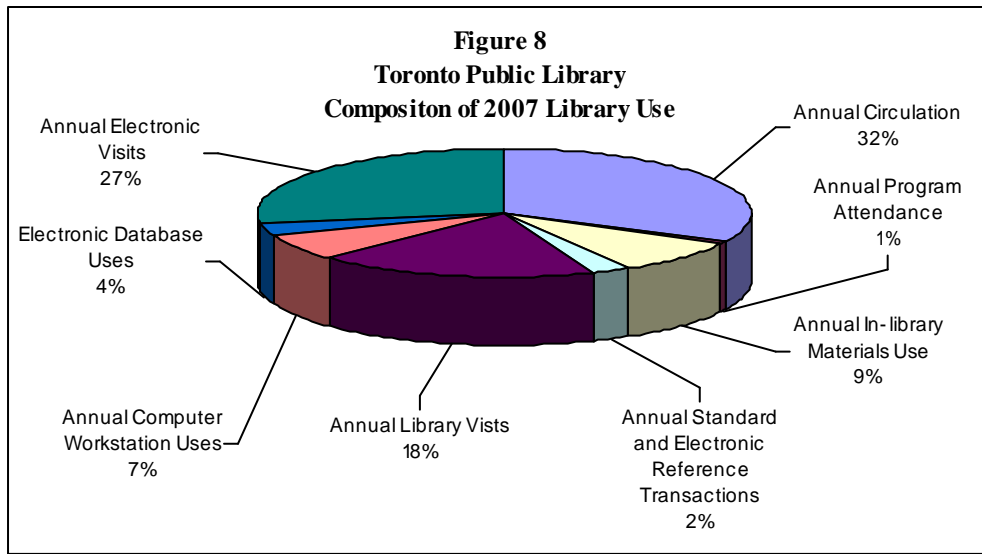
Figure 7 provides an overview of the number and different types of library use there were at the TPL in 2007 by Toronto residents. It includes the total number of uses, the number of uses per capita and Toronto’s ranking based on per capita results (in terms of the highest use) in relation to the nine members of the Ontario Municipal CAOs Benchmarking Initiative (OMBI).

Figure 7
Toronto Public Library - 2007 Library Uses

Type of Use	Number of Uses	Uses per Capita	OMBI Ranking of Nine Munic.
Non-Electronic			
Annual Circulation	28,925,965	10.60	2
Annual Program Attendance	646,457	0.24	4
Annual In-library Materials Use	7,717,000	2.83	3
Annual Standard and Electronic Reference Transactions	2,219,750	0.81	2
Annual Library Visits	16,391,500	6.00	4
	55,900,672	20.48	
Electronic			
Annual Computer Workstation Uses	5,845,950	2.14	1
Electronic Database Uses	3,208,750	1.18	4
Annual Electronic Visits	24,472,075	8.96	1
	33,526,775	12.28	
Annual Library Uses	89,427,447	32.76	1

Appendix 2 – Supplementary Review of Toronto’s Library Services

Figure 8 provides a percentage breakdown of Toronto’s 2007 library uses, by type of use.

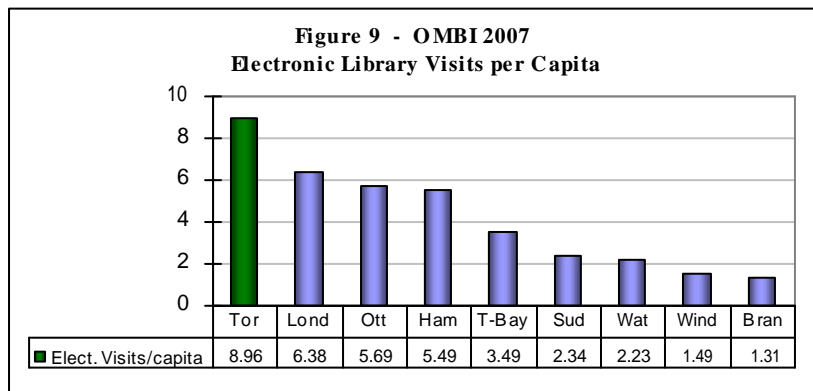


Together figures 7 and 8 show that electronic library visits and the circulation of library materials:

- Are the two largest types of library use in Toronto, together accounting for 59% of all library uses
- Are the two key areas of significance where Toronto ranks either first or second of the nine OMBI municipalities

Annual Electronic Visits per Capita

Figure 9 provides 2007 data for Toronto and the other OMBI municipalities on electronic library visits per capita. Electronic visits represent the number of visits made to the library website via the internet. Toronto ranks first by a wide margin.



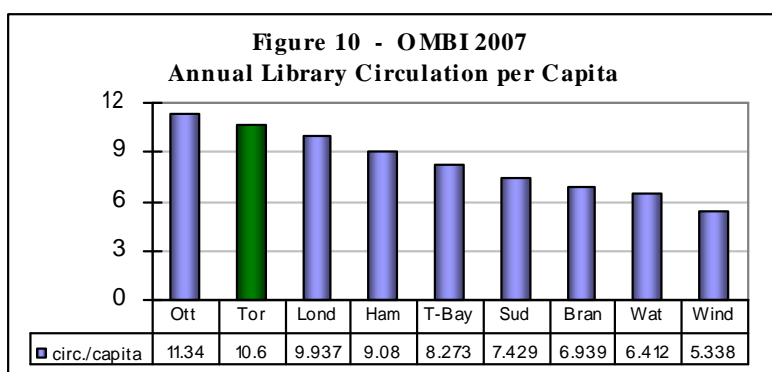
Appendix 2 – Supplementary Review of Toronto’s Library Services

The Toronto Public Library achieves high electronic visits per capita through:

- Availability of a broad range of resources that are easy to access and use
- Community awareness of electronic products and services which include enriched digitized content, online programs, downloadable books, movies, magazines and music, amongst other deliverables
- Availability of 1,922 public access workstations and high speed internet computers in branches throughout the city
- Availability of 24/7 access to e-content remotely
- Increased availability of wireless service, currently available in 33 branches.
- The TPL also provides provincial-level service in establishing and developing the Virtual Reference Library

Annual Circulation per Capita

Figure 10 provides 2007 data for Toronto and the other OMBI municipalities on annual circulation (borrowing) of library materials per capita. Toronto ranks 2nd of the 9 OMBI municipalities.



Toronto Public Library is able to achieve high circulation per capita through:

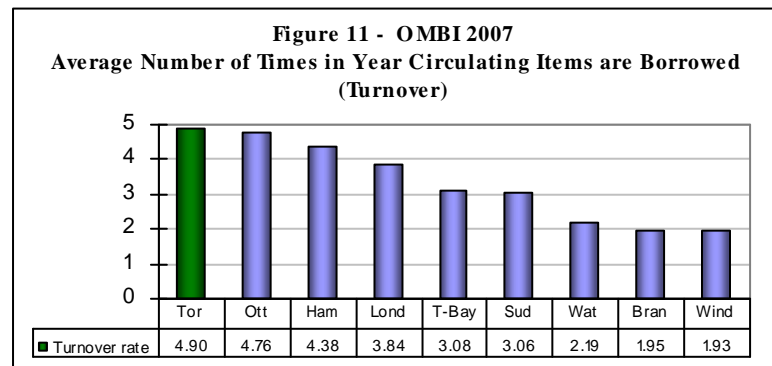
- Convenience of 99 library facilities offering neighbourhood based facilities
- Customer focused circulation policies/loan periods
- An online catalogue available in library branches and remotely (web) with the ability to request delivery of books and other materials to any of the 99 TPL branches
- Effective marketing of resources
- Having well maintained library collections that range from popular to research and respond to the needs of local communities
- Recreational materials for people of all ages, extensive children’s collections for pre-school and school age children, materials for youth for education and employment, personal development resources for activities such as skills upgrading, accreditation and employment, special collections, diverse and community targeted collections available in a variety of formats

Appendix 2 – Supplementary Review of Toronto’s Library Services

- The TPL has a diverse multilingual collection with 40 different languages in its circulating collections that are available at various branches throughout the city
- The Languages Centre of the Toronto Reference Library houses materials in more than 100 languages
- English as a Second Language (ESL) collection - The TPL keeps extensive collections of books and other tools for studying English as a Second Language (ESL). Many of their 99 libraries across the city offer ESL materials for people who want to learn English, or improve their speaking, reading, writing and understanding of the language.

Average Number of Times in a Year Circulating Items Are Borrowed (Turnover Rate)

The quality of a library’s collection is an important consideration for library users and the total circulation of a library system. The average number of times each item in a library’s circulating collection is borrowed (turnover), is one way of measuring this quality. Figure 11 provides 2007 data for Toronto and the other OMBI municipalities and Toronto ranks 1st of the 9 OMBI members.



Generally, if the number of times an item has been borrowed in a year is higher, it is an indication of how popular and relevant the item is to users. It is a challenge for library systems to balance demand for popular material with maintaining and enhancing a collection with subject depth.

In addition to the factors relating to high circulation per capita noted above, the TPL is able to achieve a high turnover rate of its collection through:

- Variant loan periods reflecting format and use to maximize availability
- Annual collection development plans that respond to users’ needs
- Current collections that balance in branch browsing for materials and the popularity of the holds system

What Has the Toronto Public Library Been Doing to Further Improve its Efficiency and Effectiveness?

The following initiatives have been implemented by the TPL to further improve the efficiency and effectiveness of their operations:

- Extensive growth in virtual branch and technology based services
- Development of a service delivery model that allocates resources appropriately to neighbourhood, district and reference and research branches
- Scheduling practices and use of self serve technology to optimize open hours
- An ordering system for library materials that minimizes duplication and allows for economies of scale
- A delivery system and customized circulation software to manage a 156 % increase in holds service

Guided by its mission statement and vision, the TPL excels in public service performance by providing free and equitable access to public library services which meet the changing needs of Torontonians. The result is high use and satisfaction rates. Based on results of a survey conducted in 2006, 73% of the Toronto population report that they have used a public library in the past year and nearly 90% of new immigrants (living in Canada 10 years or less) visit the library at least once a year.

The TPL offers:

- A strong commitment to strategic planning based on model of extensive public consultation that is responsive to Toronto’s community needs and diverse populations
- Collections with depth and breadth with levels that range from popular to research and are available in many languages, formats, and reading levels
- Staff who are professional and well trained in delivering customer service
- Access to technology and high quality online services accessible both in the library and externally

What are Other Key Factors Contributing to the Toronto Public Library’s Success?

Volunteers

The residents of Toronto are engaged. Close to 3,000 volunteers, many of them youth, donate over 94,000 hours each year to the TPL. They enrich reading and literacy programs for children and adults, offer advice on youth programs and services and volunteer in the Library’s Book Ends bookstores.

Key Partnerships

The TPL is committed to outreach and partnerships. The Strategic Plan provides a framework for the ongoing development of city and community partnerships, and the City of Toronto is a key partner in shaping library service in the city. By aligning the Library’s strategic priorities with those of the City’s, the Library has the opportunity to participate in community development initiatives such as neighbourhood action in 13 priority areas, and in forging new partnerships for the provision of library service.

In addition, the TPL has created key partnerships with school boards to support early literacy, reach at risk youth and deliver ESL programs. Another key partnership involves reaching out to the immigrant community and helping newcomers integrate and adapt to a new country and city. The *Toronto Library Settlement Partnerships* (LSP) is an innovative service delivery partnership between Toronto Public Library, Citizenship and Immigration Canada and local settlement service agencies that provides settlement services to newcomers at library locations throughout the city. This partnership was developed in Toronto, and based on its success, has been extended to other cities throughout Ontario.

What is the Toronto Public Library Planning for the Future to Further Improve its Efficiency and Effectiveness?

The TPL continues to actively investigate ways to improve service. Plans for cost-effective methods for the delivery of high quality and enhanced library services to the residents of Toronto include:

- Improving access to public space through increased open hours resulting from the City’s capital investment in the expansion of self serve technologies
- Redesigning the Library website for ease of use, increased functionality and visibility
- Opening the Toronto Reference Library’s new event space. The venue will enhance civic engagement and cultural programming using in part, funds raised by the TPL Foundation for programming.
- Expanding access to wireless service to all 99 branches, improving bandwidth for multimedia and introducing laptop lending
- Expanding access to wireless service to all 99 branches, improving bandwidth for multimedia and introducing laptop lending
- Developing a staff diversity plan, and strengthening staff training and development
- Developing a comprehensive green strategy focusing on buildings and systems, energy consumption, waste diversion, reduction and recycling
- Supporting the Toronto Public Library Foundation in raising funds to enhance library service
- Continuing to develop partnership opportunities and removing barriers for at risk populations

Appendix 2 – Supplementary Review of Toronto’s Library Services

Strategic Directions

The Toronto Public Library promotes and enriches the democratic, cultural, educational, and economic life of the city. To accommodate the diverse and evolving needs of the people of Toronto, the Library sets strategic goals every four years as a framework for service delivery. The themes and goals of the 2008-2011 Strategic Plan; *Our Shared Stories: Writing the Future of Toronto’s Libraries* were derived from an environmental scan and guided by extensive public consultation.

The priorities for the 2008-2011 Strategic Plan are:

- Engaging Toronto’s diverse communities
- Addressing the growing income gap
- Expanding access to technology and online services
- Supporting creativity and culture
- Supporting a sustainable library

To meet these goals TPL is working to working to:

- Promote greater participation in library services and programs through the expansion of open hours, preschool reading programs, and services for youth and older adults
- Expand access to literacy and employment collections, programs and services, and be a strong partner in city and local neighbourhood initiatives
- Improve access to the internet, computers, laptops and wireless service in library branches as well as offer enriched online content and self service technology
- Build the Library’s role in providing original and accessible cultural programming, expand access to cultural venues in the city and preserve community memory
- Promote environmentally sustainable practices and ensure the sustainability of the budget, staff resources and infrastructure

Summary

On the North American and international front, statistics show the Toronto Public Library to be the busiest urban public library system in the world. This has been achieved through a combination of high service levels, through its branches, collections, programs and electronic services, and managing its costs by maintaining existing staff levels, while also expanding particularly its electronic services. Toronto residents continue to use TPL’s services at a very high rate confirming these services are both accessible and relevant to them.