

**Highlights of the Presentations to the Parks and Environment  
Committee by the City of Toronto Agencies, Boards,  
Commissions, Corporations and Divisions and Associated  
Green Initiatives Reporting Templates**

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## **Introduction**

This appendix represents highlights of some of the many exciting environmental initiatives that have taken place across the Corporation. Appendix B provides the details of some of the innovative projects and programs from 2001 to 2011 and beyond. The City of Toronto is poised to reach its aggressive GHG emission reduction targets and is well on its way to encouraging the community to follow suit. With continuous Council support and with the all important support from individual residents helping to improve Toronto's environment, the City will continue on its course as an international low-carbon leader.

## **Background**

Toronto is pursuing an aggressive environmental agenda which is largely led by the Climate Change, Clean Air and Sustainable Energy Action Plan which was adopted by Council in July 2007. The plan sets the following aggressive targets to reduce greenhouse gas (GHG) emissions from 1990 levels by:

- 6% by 2012;
- 30% by 2020; and
- 80% by 2050.

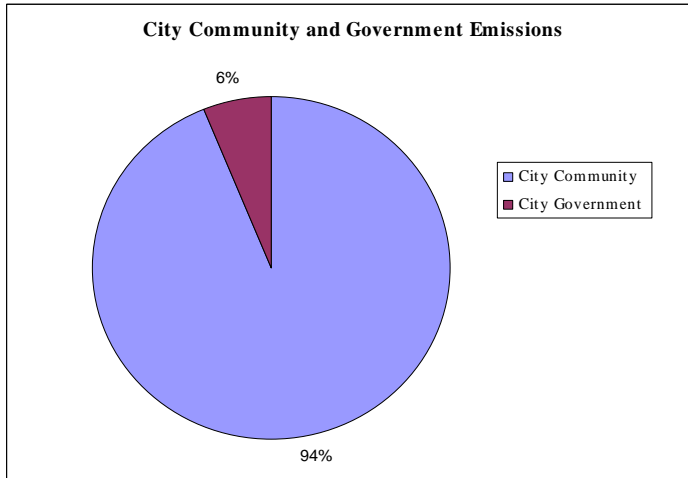
The City also set aggressive air quality targets that aim to reduce the release of locally created smog causing pollutants by 20% by 2012 from a base year of 2004 (air quality emissions data was too unreliable from 1990) for the Toronto urban area.

The City of Toronto corporation is responsible for only 6% (see Figure 1 and 2 below) of the total emissions produced by the city. Most of the data presented by the Agencies, Boards, Commissions, Corporations and Divisions (ABCCDs) is representative of efforts to reduce that 6%. However, there are also many programs that reach out to the community to help reduce the other 94% (see Figure 3 and 4) of the emissions. These activities are highlighted at the end of this appendix.

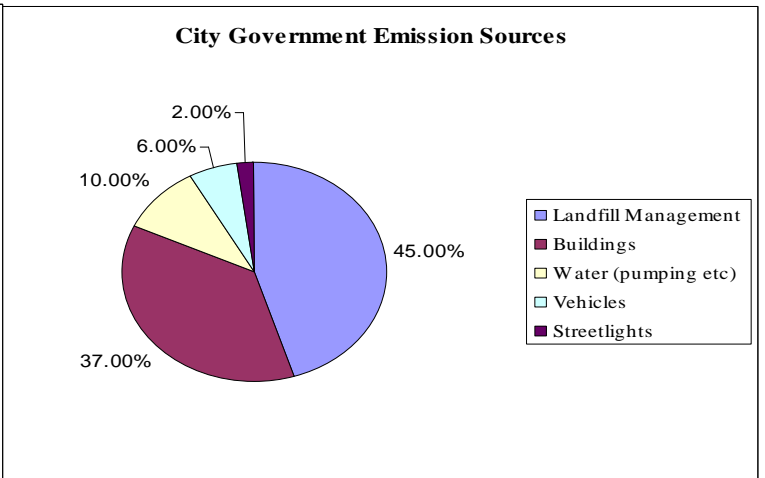
It is also important to note that achieving the GHG emission reduction targets as noted above is not solely in the City's own hands. For example, the Province of Ontario determines the mix of energy sources used in producing electricity that is consumed in Toronto. The present provincial electricity mix includes nuclear, hydro, coal, and natural gas, as well as some renewable sources. As such, the imminent phase-out of coal (in 2014) from the provincial electricity grid will both improve the City's (government and community) achievement towards the targets but will also partially negate the future value of many electricity conservation projects undertaken by the City government and its ABCCDs because of a reduction in the fossil fuel component of the mix of energy sources. The phase-out of coal will lower the relative significance of the electricity component of the City's GHG emissions, and the percentage contribution of other

components will rise accordingly in the future (see Figure 3 for present relative emission components).

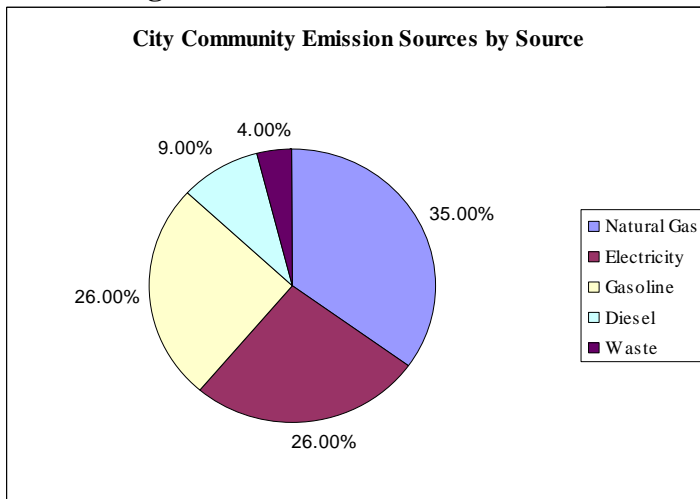
**Figure 1.**



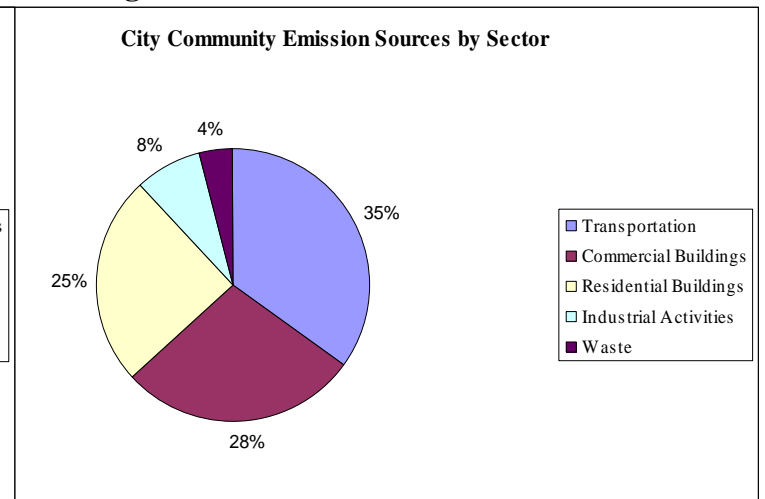
**Figure 2.**



**Figure 3.**



**Figure 4.**



As indicated from the pie charts above, the phase-out of coal will lower the relative significance of electricity and others will rise accordingly.

To better articulate what environmental projects are being undertaken by the City, the ABCCDs were asked to give presentations to the Parks and Environment Committee of City Council. The ABCCDs giving presentations were also requested to report via the Toronto Environment Office on the quantifiable environmental benefits, specifically the air emissions reductions, as a result of their green initiatives and activities to which they presented. This was achieved through the Green Initiatives Reporting Templates developed by the Toronto Environment Office.

The information presented in this report only represents a sampling of the activities that were discussed in the presentations and in the Green Initiative Reporting Templates to the Parks and Environment Committee. More details about divisional and ABCCD activities can be found in the complete set of presentations available on the Toronto Environment Office website accessible here:

[http://www.toronto.ca/environment/initiatives/presentations\\_pe\\_committee.htm](http://www.toronto.ca/environment/initiatives/presentations_pe_committee.htm)

The quantifiable environmental benefits provided are based only on the green initiatives and activities that the ABCCDs presented on and is not a reflection of the total environmentally beneficial activities being conducted across the corporation. That information will be presented through an update of the Greenhouse Gas Inventory previously published in June 2007 (<http://www.toronto.ca/teo/pdf/ghg-aq-inventory-june2007.pdf>).

# 1.0 Electricity and Heating

## 1.1 Overview

One of the largest sources of greenhouse gas (GHG) emissions attributable to the City is from electricity used in buildings and homes for lighting and heating. Electricity and natural gas use in buildings account for 52% of GHG emissions in Toronto. The City has instituted a number of programs in its buildings that are working to both conserve energy and generate energy using renewable energy systems. Despite a growing population and thus, an increasing need for energy, residents and businesses have been able to conserve energy and reduce peak-time energy loads through incentives and rebates offered by Toronto Hydro.

## 1.2 Corporate Operations

### 1.2.1 Low Rise Residential Buildings

Toronto Community Housing Corporation (TCHC) has implemented a number of programs including 800 energy audits resulting in retrofits in 20% of the homes and a 40% reduction in space heating requirements. They also undertook an appliance replacement program working to remove 70,000 inefficient fridges and stoves since 2003 and replacing them with more efficient ones. These efforts saved 13,500 tonnes of GHGs and resulted in \$5.7 million in savings. They are also exploring community energy systems and rooftop wind turbines for power generation.

### 1.2.2 High Rise Residential Buildings

Toronto Community Housing Corporation has instituted conservation programs for energy and water which have been driven by their Green Plan that was drafted in 2003. Some of the programs implemented by the TCHC include:

- the Building Renewal Program which delivered energy savings in 19 buildings/complexes at a cost of \$32 million and resulting in annual savings of \$3.36 million.
- LEED Development in Regent Park which will result in 25-40% reductions in energy as compared to conventional buildings
- Appliance Replacement Program and Low Flow Program which reduced emissions 13,700 tonnes and saved the City \$6.6 million.
- pilot technology including a wind turbine prototype for rooftops and the feasibility of community energy systems
- various education and outreach programs including a light bulb replacement program

As of 2007, TCHC has saved over 19,000 tonnes of GHG emissions per year as a result of their energy saving programs.

### 1.2.3 ABCCD Buildings

The City's internal Energy and Waste Management Office with the Facilities and Real Estate division has instituted two programs. The Energy Purchase and Monitoring program tracks, monitors and reports on the City's electricity, natural gas and district heating and cooling monthly. They are also working to increase the use of 'green' energy in buildings to 25% of total consumption by 2012. The Energy Retrofit Program has spent \$40 million in retrofits to City buildings and has an 8 year payback for the projects.

The City expects to realize huge savings as a result of these retrofits. Completed projects include Fire Hall boiler replacements, building retrofits, and retrofits to Toronto Water water treatment plants. Toronto Water has also implemented a Real Time Energy Monitoring and Water Pumping Strategy. Some retrofit projects underway include the Nathan Phillips Square Revitalization, the St. Lawrence Market North and Waterfront Revitalization buildings that will be serviced by district energy. The Toronto Zoo also recently installed a geothermal energy system at the lion-tailed macaques exhibit.

## ***1.3 Supporting the Community***

### 1.3.1 Small Businesses <25,000 sq. ft.

Many programs stem from the Toronto Association for Business Improvement Areas' (TABIA) work to reduce energy use in small businesses. So far, the programs have reported a reduction of 93,948 kW of energy and 96.73 tonnes of GHGs. Some of the programs include the LED Pedestrian, Street and Decorative Lighting program, the PV Solar Panel Project in the Bloor West Village and an assistance program such as the Smart Mentoring program for businesses to implement energy efficiency.

### 1.3.2 Medium to Large Businesses >25,000 sq. ft

The City's Energy Efficiency Office, as part of the Facilities and Real Estate Division, provides a number of services to the community to encourage energy conservation and renewable energy generation including the Better Buildings Partnership for existing buildings and new constructions. As a result of retrofits to existing buildings operating costs for businesses have decreased by \$19 million per year with a total economic impact of \$176 million. Currently 100 new constructions are on board to improve the energy efficiency of their buildings. Financial support is also available for energy modeling and efficient construction. In addition, the Toronto Economic Development Corporation created a LEED industrial facility that is being used by CANPAR in South Etobicoke.

### 1.3.3 Institutional

The Energy Efficiency Office is also offering funds through a program called the Sustainable Energy Funds for the MASH (Municipal, Academic, Social Service and Healthcare) sector to engage in energy efficiency and renewable energy projects. Under this program \$70 million in low interest loan funding is available (\$42 million for the Toronto Energy Conservation Fund, \$20 million for the Toronto Green Energy Fund and \$8 million for the Better Buildings Partnership loan fund).

1.3.4 Other  
Economic Development, Culture and Tourism

In addition to these activities, the Economic Development, Culture and Tourism division has numerous other programs as detailed in the table below:

**Table 1:** Environmental Programs Related to Economic Development, Culture and Tourism

Green Economic Sector Development Strategy	Toronto Environmental Research and Commercialization Initiative - to strengthen research partnerships in the fields of sustainable energy and environment, seek avenues for commercialization of technologies, and link to local and international environmental research and business opportunities
Green Manufacturing Action Team	Training Program for Building Owners and Managers, Designers and Construction trades - representatives from the manufacturing and environmental sectors to identify manufacturing opportunities for Toronto businesses in the booming area of bringing green products to market
Eco Industrial Project	Green Trade Fair to Demonstrate New and Emerging Environmental Products and Services
Environmental industry capabilities database and market prospectus	Environmental Workshops for Small Business
One Window Utility Conservation Program for Industry (which encompasses the Discovery District Energy Plan)	Façade Improvement Program (BIA-member property owners improve the energy efficiency of their buildings)

LEED

A number of cultural buildings across Toronto have been upgraded including the Sony Centre (a candidate for LEED Gold in 2010 and 2011) and the Toronto Centre for the Arts (who installed two 340-ton chillers as part of a retrofit to reduce energy consumption).

Toronto Atmospheric Fund

The Toronto Atmospheric Fund implemented a Solar Vision program which includes the development of a district hot water system pilot for 150 homes and the Toronto Solar Neighbourhoods Initiative which is installing solar hot water heaters in homes of



residents of Riverdale. The Light Savers program which accelerates LED and intelligent outdoor lighting control has spent \$200,000 supporting community projects and the Towerwise program has approved \$10 million for a Green Loan Credit Enhancement Facility for energy efficient condos. Toronto Atmospheric Fund (TAF) is implementing a Toronto Plug-in Hybrid Electric Vehicle Pilot Project, known as EV300.

#### ***1.4 Highlights of 2007 Initiatives from Green Initiative Reporting Templates***

##### **Energy Conservation**

- The largest reductions for the City were achieved through Toronto Hydro with approximately 35,000 tonnes of eCO<sub>2</sub> (equivalent carbon dioxide; a common unit of measure for greenhouse gases releases or reductions) reduced from two programs -- Summer Challenge for Business (21,248 tonnes) and Summer Savings Programs (13,939 tonnes)
- The next largest initiative achieved by the City was through Enwave Corporation's Deep Lake Water Cooling Program which reduced eCO<sub>2</sub> by 13,794 tonnes
- Several smaller programs initiated by the City also had emissions benefits including tenant programs through the Toronto Community Housing Corporation: Energy Star Refrigerator Replacement Program and the In-Suite Compact Fluorescent Lightbulb Initiative. These two program achieved combined reductions of eCO<sub>2</sub> totalling 5,581 tonnes
- The City initiated an Arena Retrofit Project which is a comprehensive retrofit project covering 88 City owned arenas where building automation systems are being installed along with lighting retrofits, heat recovery systems, building air sealing, insulation, power factor correction equipment, and solar water heating – this project has reduced eCO<sub>2</sub> by 4,639 tonnes already
- Of the 55 projects reported dealing with electricity conservation reported in the templates, 23 projects were underway and quantified for 2007

##### **Alternative Energy Generation**

- Projects ranged widely from larger initiatives such as the THESI/TREC Wind Turbine at Exhibition Place which has produced 4 million kWh since the project's implementation in 2003 (amounting to a reduction of 968 tonnes of eCO<sub>2</sub>) to the smaller scaled 1.5 kWh generation through the PV Solar Panel Project in Bloor West Village
- In 2008, the City through Enwave Energy Corporation installed two 5.5 MWh steam turbine generators for use in the event of a grid outage
- Of the 14 renewable/alternative energy production projects reported in the templates, 8 projects were underway and quantified for 2007

##### **Electricity Load Capacity Reduction**

- Primarily through Toronto Hydro, the City has lead programs focussing on load capacity reduction. Of the approximately 92 MW load capacity reduction

achieved by Toronto Hydro, the *peaksaver* program alone accounts for 40 MW. *Peaksaver* is a cycling time initiative which encourages residents to use their air conditioners on off-peak periods during the year. It should be noted that City of Toronto, as a corporation, holds an electricity conservation pledge of 90 MW in meeting the OPA's 300 MW Toronto Directive. The City of Toronto is well poised to meet this target<sup>1</sup>

- In addition, again through Toronto Hydro, the City has completed its "Distributed Generation - Deep Lake Water Cooling System" project in 2007 which reduces the energy load by 27 MW through on-site generation and deep lake water cooling
- Of the 18 load capacity reduction projects reported, 12 are underway in 2007

### ***1.5 Summary***

Bold efforts are being made on many fronts to help achieve aggressive energy use reduction targets and help promote renewable energy in Toronto. With continued support and funding, GHG emissions from the energy sector in Toronto will continue to decrease, helping the City meet its aggressive targets.

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<sup>1</sup> For more information, please see "Background Report on the Energy Plan for Toronto" which may be found at <http://www.toronto.ca/legdocs/mmis/2007/ex/bgrd/backgroundfile-5057.pdf>

## **2.0 Transportation**

### ***2.1 Overview***

With more than 35% of the identified greenhouse gas (GHG) emissions, moving two and a half million people around Toronto has been increasingly challenging; Toronto has been trying to find solutions to this problem through a series of initiatives. These initiatives combined with several new plans and policies promise to make the City's transportation system increasingly sustainable.

### ***2.2 Corporate Operations***

By pursuing innovation through technology and building infrastructure that is resilient to climate change, the transportation system supporting the City will be able to effectively mitigate and adapt to changes in the climate. Already, several projects are working to reduce emissions and improve the environment. These projects include traffic intersection infrastructure and parking, reductions in the use of environmentally harmful chemicals in operations, and encouraging behaviour change amongst staff.

#### 2.2.1 Traffic Infrastructure and Parking

The City has undertaken a number of pedestrian enhancements at intersections including pedestrian "scrambles" which encourage and prioritize pedestrian traffic. To further aid a walking culture there are countdowns at the signals to alert pedestrians how much time they have to cross the intersection. Intelligent Transportation Systems have also been installed at intersections to better move traffic, reduce fuel wastage and thus reduce emissions from exhaust. Solar powered pedestrian lights are being explored and LED traffic lights are being installed across the City which will result in almost \$2 million in energy cost savings and almost 19 GWh of energy reductions at the projects completion in 2010. Solar powered transit shelters are expected to result in an almost 13 million KWh reduction in energy use over the 20 year life of the contracts. This translates to around 3,073 tonnes of GHG reductions.

Environmental considerations have also been incorporated into the use of specialty vehicles and parking issues. The Clean Roads to Clean Air program launched in 2003 has been important in improving street sweeper smog emissions. So far, 14 tonnes of PM<sub>10</sub> and PM<sub>2.5</sub> have been removed. The Parking Authority has greened their operations by installing permeable pavement and bio-retention swales in surface car parks; installing solar powered pay and display machines; using photocells in equipment; and installing a solar photovoltaic system in one of the municipal parking lots.

#### 2.2.2 Reductions in Environmentally Harmful Chemicals

The City is reducing its use of salt on roads in the winter which reduces salt levels in run-off and thus, helps to maintain normal salinity levels in Lake Ontario. Since 2001 the average annual salt reductions total 24,000 tonnes. Environmentally preferred pavement markings on roads have further reduced volatile organic carbon use by 102,000 kg annually. Transportation Services is also actively engaged in implementing a Smog

Response Plan that works to reduce energy use and exposure to the outdoors during extreme heat events.

### 2.2.3 Corporate Fleets

The guiding documents to green the City's vehicle fleets are the Green Fleet Transition Plan (2004-2007) and the Green Fleet Plan (2008-2011). ABCCDs such as the TTC, Fire, EMS and Police services are all managed separately and are developing their own green plans based on the success of the Green Fleet Transition Plan and are doing so with the help of Fleet Services. By December 2007, 283<sup>2</sup> of the City's vehicles were green vehicles, an idle-free policy and 10-second rule for staff was in place and four cleaner fuel programs were underway (ethanol, biodiesel, natural gas and on-road diesel for off-road use).

In total, the fleets have reduced GHG emissions by an estimated 5,000<sup>3</sup> tonnes or 4% as compared to non-green vehicles and conventional activities on a lifecycle basis. From 2008-2011 the City expects to reduce GHG emissions by 15,000<sup>4</sup> tonnes or 11% as compared to non-green vehicles and conventional activities on a lifecycle basis. The estimated cost savings total \$2.032 million over four years including fuel savings. In addition, 108 more green vehicles were ordered for 2008 to help realise these emissions and cost reductions. Fleet Services also hosts the annual Green Fleet Expo which showcases the latest green technology and best practices with participants from across Canada. Toronto Atmospheric Fund (TAF) is helping to support the work of Fleet Services by implementing a Toronto Plug-in Hybrid Electric Vehicle Pilot Project.

### 2.2.4 Other Activities

Transportation Services plants over 2,500 trees annually on boulevards and City streets. They are also engaged in the Take Back 13 program which involved teams of seven who designed, undertook and documented activities such as planting and maintaining a community garden, graffiti removal, creation of outdoor art, and area clean-up. Upon completion, each team made a presentation to their peers and then select two projects amongst themselves to receive additional funding towards future projects.

The project was inter-divisional and involved a number of partners including:

- Social Development, Finance and Administration – Community Safety
- Secretariat and Community Resources Toronto Culture
- Toronto Parks, Forestry and Recreation
- Toronto Community Housing Corporation (TCHC)
- Evergreen
- Toronto Police Service (TPS)

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<sup>2</sup> Source: City of Toronto: Green Fleet Plan 2008-2011, Toronto Fleet Services, page 18  
<http://www.toronto.ca/fleet/pdf/gfp.pdf>

<sup>3</sup> *ibid*, page 21

<sup>4</sup> *ibid*, page 31

In addition, appropriate driver behaviour amongst staff is encouraged through driver training courses offered by Fleet Services. Staff are instructed on how to observe the City's idling by-law and other best practices such as how to reduce fuel consumption.

The City is also engaged in an Infrastructure Vulnerability Assessment which will include the development of an environmental management system and climate change risk assessment procedures. The goal is to evaluate operational and environmental impacts and develop adaptive actions to mitigate risk. The Toronto Transit Commission has been working to establish a baseline study of consumption of diesel fuel, gasoline, natural gas and electricity to help take steps in reducing GHGs and smog without reducing transit services. In the residential area, Municipal Licensing and Standards is working with the Toronto Environment Office to work out a way to control the release of emissions from two-stroke engines.

## ***2.3 Supporting the Community***

### 2.3.1 Pedestrians

In addition to environmental changes in pedestrian infrastructure, the City launched the Walking Strategy which includes an annual Walking Festival that encourages residents to take part in a number of walking activities across Toronto. From an enforcement standpoint, Municipal Licensing and Standards has increased its use of foot and bike patrols for inspection and investigation.

### 2.3.2 Bicycles

Transportation Services is involved in implementing the Bike Plan by 2012. This bike plan proposes to implement over 1,000 kms of bike lanes. Furthermore, the City is promoting bike stations and bike parking, a City Bike Share Program, and an East-West Bike Route through the downtown core.

### 2.3.3 Transit

Current ridership on the Toronto Transit Commission (TTC) is 450 million passengers yearly and growing. To accommodate the growing ridership the City launched Transit City which is a light rail plan that will help meet the high demand for transit across Toronto. The bus fleet is being improved through the use of a B5 blend bio-diesel and the conversion to a hybrid bus fleet. Operators are also trained in fuel efficient driving techniques. The TTC is also buying new subway trains and retrofitting old trains with many environmental features including reductions in vehicle weights for new vehicles, and implementing regenerative braking for all subway trains by 2010. The TTC is in the process of setting a goal of 25% Green Energy purchase by 2012. Finally many pollution prevention activities are underway to better manage hazardous materials, reduce waste and encourage recycling. Chemicals are purchased with a view to their environmental impact as well as cost and so far, hazardous materials in products used by the TTC have been reduced by 55%. The TTC has an 80% waste diversion target to be achieved by 2010, and in 2006 the waste diversion had already reached 73%, setting the TTC well on its course to achieving its target.

### 2.3.4 Smart Commute

To help encourage employers and employees to choose more environmentally friendly commuting modes, the City engaged in the Smart Commute program and officially launched a downtown Transportation Management Area in November 2008.

### 2.3.5 Taxi Fleets

Efforts to green Toronto's taxi fleet are being led by the Toronto Environment Office and Municipal Licensing and Standards. The goal is to require all taxis and limousines operating in the City to be low emission vehicles and/or to utilize hybrid technologies by 2015, or earlier, based on the results of a Green Taxi Pilot.

### 2.3.6 Strategic Plans

Many strategic plans place a priority on transit including the City's Official Plan which specifically states that planning should occur in a way that reduces the City's reliance on carbon based fuels. The Waterfront Revitalization Plan outlines how development along the waterfront will include compact urban development that is well serviced by transit and pedestrian routes. In fact, the transit first approach to the revitalization efforts requires transit to be within a 5 minute walk for all residents and there is currently \$260 million in place to invest in transit in the area. The goal is to make the waterfront the spine of regional transit for Toronto including rapid transit from Etobicoke through East Bayfront and the Port Lands.

## ***2.4 Highlights of 2007 Initiatives from Green Initiative Reporting Templates***

### **Transportation**

- The green initiatives in 2007 ranged from 1976 tonnes eCO<sub>2</sub> reduced from Fleet Services' Green Fleet Plan to 28 tonnes eCO<sub>2</sub> reduced from the Efficient Delivery Routing amongst Toronto's Public Libraries (which aims to reduce the number of delivery/pickups at 28 branches to once/day).

### **Air Quality Improvements – Particulates and VOCs**

- 14 tonnes of PM<sub>10</sub> removed as part of the "Clean Roads to Clean Air Program"
- Volatile Organic Compounds (VOC) initiatives to use waterborne and durable pavement markings which have much lower VOC emissions, pose less health risk during application, and require less maintenance of equipment
- CFC emissions reductions are derived from Deep Lake Water Cooling through the replacement of electric chillers thereby reducing the use of CFC's as refrigerants

## ***2.5 Summary***

Sustainable transportation can only work when all City divisions are working towards achieving common environmental goals. The air emission reduction targets have been able to catalyze divisions to take collective action in improving the movement of goods and services across the City. From working on greening the City's own fleets to reaching out to the community and providing smarter commuting options, Toronto's transportation system is well on its way to being world renowned for its sustainability measures.

## 3.0 Waste

### 3.1 Overview

As a leader in managing its waste, the City has made extraordinary efforts to divert waste away from landfills. Whether it is at home, at work, at school or at play, Solid Waste Management Services have found ways to educate and inform Torontonians about the importance of reducing waste. Internally, a Waste Reduction team has been particularly successful at reducing waste and encouraging diversion and reuse within City buildings. All of the waste diversion efforts are moving towards meeting the 70% waste diversion goal that was approved by Council in 2007.

### 3.2 Corporate Operations

Solid Waste Management Services has an aggressive waste diversion goal with hopes of achieving a reduction in GHG emissions of approximately 160,000 tonnes of eCO<sub>2</sub> per year. These efforts are described as also saving 4.5 million trees per year and enough electricity to power 170,000 homes as well as extend the life of the Green Lane Landfill by 10 years to 2034.

One of the most impressive green initiatives is through landfill gas utilization at the three largest closed landfills. Methane gas released at these landfills is collected and utilized to generate energy. Methane gas is a powerful GHG with 21 times more greenhouse warming potential than carbon dioxide (CO<sub>2</sub>). In 2007, the Keele Valley landfill generated 19 MW of electricity, Brock West generated 5 MW, and Beare Road landfill generated 2 MW of electricity. Green Lane, through its own biogas, is expected to produce 8.2 MW<sup>5</sup>. Pending Ministry of Environment regulatory approval, the City will construct a landfill gas well and collection system in the Thackeray landfill which will further the City's efforts to collect and manage landfill gas in order to reduce GHG emissions.

Waste diversion at City facilities has already gone beyond the overall 70% City diversion target and in 2007 stood at 80%. Through audits in major facilities the City was able to not only determine where changes needed to be made but to take corrective actions to divert waste out of landfills.

Efforts are also being made to green all 324 collection vehicles by replacing conventional diesel with B5 bio-diesel. Vehicle replacements also took place in 2007 (33 vehicles) and 2008 (27 vehicles). Mini sweepers and litter vacs are also being upgraded to improve air quality and reduce air pollutants such as PM<sub>10</sub> and PM<sub>2.5</sub>.

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<sup>5</sup> from Staff Report "Ashbridges Bay Treatment Plant Biogas Cogeneration Proposal from Toronto Hydro Energy Services", May 20, 2009



### ***3.3 Supporting the Community***

The City manages over 1 million tonnes of waste and recyclables each year and serves 1 million customers, mostly residential. To help reach the aggressive diversion targets, the City has undertaken a number of public education programs in schools and through public forums to reach out to residents and small businesses. Other agencies, boards and commissions are also doing their part to help reduce waste. The Toronto Zoo is part of the ECO-CELL program which recycles cell phones that contain persistent bioaccumulative and toxic chemicals. The money saved is donated to save wild gorillas. The Zoo is also composting its animal organic waste to use in gardens and for site needs. For example elephant manure is converted into speciality paper and waste-to-energy systems use anaerobic digestion technology to create energy.

The Toronto Community Housing Corporation has its own goal of 26% diversion by 2008 and is installing a recycling system at a cost of \$5.68 million over three years. They are also looking at pilot programs for the collection of organics from multi-residential buildings.

### ***3.4 Highlights of 2007 Initiatives from Green Initiative Reporting Templates***

- A total of 10 waste related projects were reported by ABCCDs over the time period 2006-2009
- Only one ABCCD's waste was reported in eCO<sub>2</sub>; the others did not include enough information in their templates to calculate eCO<sub>2</sub> numbers. Therefore, the number found in Table 4 of the Staff Report is considered incomplete

### ***3.5 Summary***

The many waste diversion and reduction efforts across the City speak to a commitment on the part of all divisions to work collectively to reduce the amount of waste that has to go to landfills. The City is also exploring options for disposing of, or recycling, hazardous substances such as energy efficient fluorescent bulbs. These and other innovative measures are important in keeping the City at the forefront of new environmental technology adoption.

## **4.0 Water (Conservation, Filtration and Treatment)**

### ***4.1 Overview***

Being close to Lake Ontario, Toronto enjoys the benefits of an abundant supply of water but also has the responsibility of ensuring this important resource is available for future generations. Servicing 3.1 million residents in Toronto as well as portions of York and Peel, Toronto Water treats and supplies 514 billion litres of water through 4 water plants per year. These plants also collect and treat 438 billion litres of wastewater. With over 1,670 employees working on water issues, the City has been able to undertake several measures to ensure the health and integrity of Toronto's water resources.

### ***4.2 Corporate Operations***

Two major goals of City Council are implementing the Wet Weather Flow Master Plan and reducing energy demands. The 25 year implementation plan for wet weather flow aims to reduce, and ultimately eliminate, adverse impacts of wet weather (rainfall and snowmelt) on the environment, and incorporate a range of solutions including: at source, conveyance, and end-of-pipe solutions. Some specific projects include environmental stewardship activities such as stream restoration and storm sewer discharge controls. Toronto Water is reducing energy demands at its facilities by implementing recommendations from completed energy audits, such as replacing older pumps and motors with high efficiency units, implementing Real Time Energy Monitoring, and utilizing a time of day based Water Pumping Strategy.

In June 2009, City Council adopted a proposal for Toronto Water to work in partnership with THESI (Toronto Hydro Energy Services Inc.) to design, construct, own and operate a Cogeneration Facility using ABTP biogas within the City's Transportation Services yard on Leslie Street. The wastewater treatment process at ABTP includes a series of digesters used to process and reduce the volume of biosolids generated at the plant. The by-products of the digestion process include biogas which is methane rich digester gas that is scrubbed, dehumidified and used in lieu of natural gas to generate process and building heat within the ABTP. The operation of this cogeneration facility is expected to reduce the City's greenhouse gases by 39,000 tonnes eCO<sub>2</sub> per year and generate approximately 68,000 MWh of renewable electricity per year contributing 12% towards the 550,000 MWh target outline in the City's Climate Change and Sustainable Energy Plan.<sup>6</sup>

### ***4.3 Supporting the Community***

The Water Efficiency Plan is designed to reduce peak day demand as well as to reduce average day demand consumption. The reduced amount of water used, leads to a

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<sup>6</sup> Staff Report: Ashbridges Bay Treatment Plant Biogas Cogeneration Proposal from Toronto Hydro Energy Services

decrease in the amounts of electricity and chemicals used at water treatment plants. Some initiatives in the Water Efficiency Plan include installing water meters and providing incentives to the residential, industrial and commercial sectors. Since the rebate incentive programs were implemented home owners have received rebates for 216,749 low-flow toilets and 28,021 of high-efficiency washing machines. This has saved over 50 million litres of water per day as of the end of 2008.

Other outreach activities include the promotion of rainwater harvesting, as at Community Environment Days across the City. Downspout disconnection has also become mandatory for all homeowners. Finally, Toronto Water is trying to address emerging climate change adaptation issues such as basement flooding that occur due to changes in prevailing weather patterns.

#### ***4.4 Highlights of 2007 Initiatives from Green Initiative Reporting Templates***

- Only 5 ABCCD's reported water conservation initiatives in their templates and only 4 ABCCD initiatives were quantified for 2007, however, there is no doubt that there is activity being undertaken by ABCCD's as part of Toronto Water's Water Efficiency Plan (see the WEP <http://www.toronto.ca/watereff/pdf/appb.pdf>)
- The City's Water Efficiency Plan (WEP) reported water savings of 2,814,359 m<sup>3</sup> which translates to approximately 3,377 MWh of electricity savings<sup>7</sup>

#### ***4.5 Summary***

Both infrastructure renewal and community outreach programs are helping to reduce electricity use and harmful chemical use, thereby preventing pollution at its source. As changes in the climate continue to put pressures on water resources, Toronto is moving in the right direction to help mitigate those changes and adapt to inevitable changes that may occur. As one of the largest divisions in the City, Toronto Water is making extraordinary efforts to protect the environment in a methodical, well structured and efficient manner.

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<sup>7</sup> Using the conversion factor of 1.2 kWh electricity as being used to take 1 m<sup>3</sup> of raw water from the lake, treat it, pump it, plus collecting subsequent wastewater and treating it before discharging it back to the lake

## 5.0 Green Development

### 5.1 Overview

Natural areas across Toronto are expanding as a result of a number of preservation efforts. By working to protect and expand natural areas, the City hopes to reduce the effects of smog and climate change. These areas should also provide additional recreational space for residents, reduce urban heat island effects, and provide more shade in the summer.

In conjunction with protecting natural areas, comes a need to create sustainable built forms that fulfill the function of conventional buildings which at the same time have integrated environmental features that allow them to be more in sync with the functions of natural areas than is the case with more conventional buildings. There are many exciting projects completed and currently underway in a variety of City divisions that address land use patterns in Toronto. New developments and innovations in green building techniques and other areas are being refined and becoming more mainstream and has led to an increasing ability for the City to adopt more sustainable land use policies. By promoting more environmentally friendly built forms, the City hopes to create a culture of sustainable living in Toronto.

### 5.2 Corporate Operations

Several strategies are currently used to manage natural areas and development within Toronto. The Official Plan guides development and the “Our Common Grounds” document provides strategic direction for the parkland and trees within the city. The Shade Strategy, ongoing street tree management, as well as the City Council adopted goal of increasing the tree canopy from 17 to 34% is going to help to capture GHG emissions. The biodiversity strategy will further ensure protection of the City’s natural heritage, parklands and trees. Furthermore, by-laws to protect natural features and private trees and policies to help reduce light pollution, will create more bird friendly development and protect the natural heritage system.

The City’s Green Development Standard sets a high environmental standard that must be met by all new ABCCD developments and will soon be the required building standard in the community as well. Already many ABCCDs have made efforts to retrofit their buildings to be in line with the standard and some examples include:

- Toronto Transit Commission Building retrofits
- Green roofs on Solid Waste Management Services Buildings, Police buildings, Toronto Water buildings and on the polar bear exhibit at the Toronto Zoo
- Tree planting on streets which is also part of the Wet Weather Flow Master Plan with Toronto Water

To help aid the City and the broader community in adopting the standard, City Planning has developed a training course which they administer.

### ***5.3 Supporting the Community***

Several initiatives are underway to support community involvement in environmentally friendly development activities, including a renewable energy by-law and a green roofs by-law. Sustainable development planning is also a corner stone of the revitalization of communities, such as the Lawrence-Allen revitalization.

### ***5.4 Highlights of 2007 Initiatives from Green Initiative Reporting Templates***

- Although not yet quantifiable in terms of eCO<sub>2</sub> reductions, innovative efforts have been undertaken by many ABCCDs including the large greening effort undertaken by Toronto Hydro where 10,000 trees were planted through their E-billing program which promoted customers switching from mail to on-line billing; one tree was planted for each switch to E-billing
- By 2008, the City planted almost 16,000 trees as well as 91,000 small shrub plantings to reduce the urban heat island effect

### ***5.5 Summary***

The City is making numerous efforts to help green City buildings and encourage the community to follow suit. There are still some challenges facing the implementation of these policies and programs especially in the area of tree maintenance. Nonetheless, the City will spend \$4 million in capital and operating funds to plant new trees and \$700,000 on monitoring existing trees to ensure homeowners do not cut them down without permission. Council has recognized that maintaining natural areas and ensuring development is sustainable, is a priority. The City recognizes that the changes we make now in traditional forms of development will not only improve our environment now, but will do so for the benefit of generations to come.

## **6.0 Community Engagement**

### ***6.1 Overview***

Community engagement activities have taken place across the City with respect to a variety of green programs and policies. The City uses educational outreach programs and financial incentives among other means to inform the public and to help the City move forward in implementing its environmental goals. Toronto has heard from citizens and understands that they want to take action and make a difference on the environmental and climate change goals laid out by the City. The City has responded and is giving residents the tools they need to take action.

### ***6.2 Corporate Operations***

The Toronto Zoo is developing the Centre for Sustainable Life and Learning which will provide an auditorium, classrooms, labs and animal exhibits on the themes of: education for sustainable development, biodiversity conservation, and green development standards. The Toronto Region Conservation Authority also has The Living City Campus at the Kortright Centre which inspires people from all over the world to live more sustainably. From renewable energy to green buildings and community design, visitors experience the latest in green living strategies.

The Living City Campus is also working cooperatively with external partners. The World Green Building Council Secretariat operates out of the Earth Rangers LEED Gold building, one of a number of green building showcases on the campus. Research and development within the Corporation is also underway on: a vulnerability assessment as related to climate change adaptation; an Environmental Reporting, Disclosure and Innovation by-law; and the Toronto Food Strategy. The Environmental Reporting Disclosure and Innovation requires the reporting of the use and emission of 25 health-priority chemicals including smog-related NO<sub>x</sub>, particulate matter and volatile organic carbons. This work complements the Province's recently announced Toxic Use Reduction Initiative.

### ***6.3 Supporting the Community***

Through numerous grant programs including the Community Program for Stormwater Management, the Clean and Beautiful Secretariat grants and the Live Green Toronto Community and Capital Investment programs, the City is providing financial incentives to engage the community in their own greening projects. Some of the community outreach programs and policies run by the City include the air quality health index, a 20/20 campaign, and a hot weather response plan. The air quality health index was piloted in 2007 and in 2008 was expanded to include the GTA. The index measures the health risk associated with levels of air pollution. So far, 10,000 20/20 "planners" have been given out to the community to help them reduce their electricity use by 20 percent

and cut their transportation emissions by 20 percent. For industry, the Toronto Region Conservation Authority is working with businesses in the airport region on a project called Partners in Project Green to help green those industries. Finally to encourage greater participation in reducing individual emissions, the City has partnered with Zerofootprint Toronto to encourage individuals to calculate their carbon footprint and then to take action to reduce their footprint.

There are many activities that engage Toronto residents and there are more projects that will become available as programs are enhanced and new programs developed .

#### ***6.4 Highlights of 2007 Initiatives from Green Initiative Reporting Templates***

##### **Community Outreach (Buildings and Energy)**

- There is an expected 209,000 tonnes eCO<sub>2</sub> reduction in 2008 through the “Better Buildings Partnership- New Construction Program” which focuses on energy efficiency of buildings improved by lighting retrofits, HVAC systems and building envelope upgrades. Assuming an on-going program, the City will achieve 836,000 tonnes eCO<sub>2</sub> reduction by 2012, 2,508,000 tonnes eCO<sub>2</sub> reduction by 2020 and 6,270,000 tonnes eCO<sub>2</sub> reduction by 2050.

#### ***6.5 Summary***

Community outreach efforts by the City have already had an enormous impact. There are many people visiting our Live Green Toronto website and taking part in City programs and benefiting from City incentives. There are more opportunities that will be opening up as the City embraces Web 2.0 tools to help facilitate communication between individuals and the City. The City wants to hear what residents have to say and what they need to better be able to live more green, clean and healthy lives in Toronto. The City is committed to greening Toronto and wants all citizens to help the City on its way.

## **7.0 Conclusion**

The above highlights represent some of the many exciting environmental initiatives that have taken place across the Corporation. Detailed in Appendix B are some of the innovative projects and programs from 2001 to 2011 and beyond. The City is poised to reach its aggressive GHG emission reduction targets within the ABCCDs and is well on its way to encouraging the community to follow suit.