ATTACHMENT #A1

Change is in the Air
Toronto's Commitment to an Environmentally Sustainable Future

Moving from a Framework to Action
The Climate Change and Clean Air Action Plan, Phase I

Staff Background Report

June 13, 2007

TABLE OF CONTENTS

NOTE TO READER:

The numbering of the recommendations in this report coincides with the numbering of the recommendations in the covering staff report. For a discussion about the recommendations not presented in this report, please see Attachment #B of the staff report.

INTRODUCTION

Our activities – how we live, how we move about, the resources we use and the waste we create, cause many of the stresses on the natural environment that have a negative affect on our health and contribute to climate change. The Medical Officer of Health for Toronto has identified that air pollutants are a key factor in an estimated 1,700 premature deaths every year and an estimated 6,000 hospitalizations (www.toronto.ca/health/hpde). Poor air quality also has a significant economic effect and the Ontario Medical Association in 2005 estimated the cost of air pollution to the economy of Ontario at $16 billion a year, primarily as a result of lost employee productivity due to illness or illness of children affected by poor air quality.

The international Intergovernmental Panel on Climate Change in its report, entitled "*Climate Change 2007: The Physical Science Basis*" (http://www.ipcc.ch/index.html) concluded that:

> "*Warming of the climate system is unequivocal, as is now evident from observations of increase in global average air and ocean temperatures, widespread melting of snow and ice and rising global mean sea level*".

The climate is changing and it can be seen in recent events in Ontario and Toronto, such as ice storms, floods and increased number of smog days. The Intergovernmental Panel on Climate Change has concluded that climate change is occurring primarily as a result of human activities, in particular the burning of fossil fuels to heat, cool and light our homes and businesses and power our motor vehicles.

The scientific evidence is strong and the public is growing increasingly concerned about air quality and climate change. The most recent opinion poll done by the Environics Research Group found that air quality is the number one issue of concern for over 50% of Ontarians and Torontonians (http://erg.environics.net/media_room/default.asp?aID=636). That same survey also found that over 50% of Torontonians were aware of the City's '*Change is in the Air*' initiative and the results suggested to the Environics Research Group that:

> "*people recognize that air pollution and climate change are problems . . ., this survey indicates that Toronto residents are ready for their municipal government to step up and demonstrate leadership in addressing these issues at the local level with a plan that many think can be achieved*".

While the City of Toronto, as a corporation and as a community, on its own will not eliminate air pollution or stop climate change, it can make a significant contribution to cleaner air and reduced greenhouse gas emissions. Climate change and clean air strategies prepared by municipal governments around the world have shown that cities have a leadership role to play in the fight against climate change and improving air quality.

THE COMMUNITY GETS ENGAGED

With the release on March 27, 2007 of the "*Change is in the Air*", a Framework for Public Review and Engagement, City Council initiated a process for engaging the community in how governments, residents and businesses can work together to address this pressing issue. The start of the process of engaging the community was a large community forum held on April 29 at Exhibition Place, attended by over 225 residents. At that forum, participants provided their thoughts and ideas for how the community can reduce and eliminate air pollution and greenhouse gas emissions.

In addition, to the April 29 forum, residents were able to provide their comments via an on-line comment card, in writing or telephone. As of May 31, 2007 close to 200 written comments were received from individuals and a large number of community groups and agencies.

As a start for reaching out to communities and individuals, some different methods were piloted to reach out to various target groups. These included:

- an evening event for the residents of Ward 31 organized by Councillor Davis;
- an evening event held at Eastview Community Centre and organized with the assistance of the staff at the Toronto Community Housing Corporation;
- two workshops held for members of the business community;
- questionnaires distributed by staff in the Parks, Forestry and Recreation Division to various sports and recreation clubs and by staff in the Social Development, Finance and Administration Division to residents of priority neighbourhoods through the City's Neighbourhood Action Teams; and
- a special session with the Toronto Environmental Volunteers.

Not all these actions resulted in significant attendance but they served as pilots for determining what might be the best and most appropriate methods for future actions to fully engage the community in addressing climate change and improving air quality.

A full report discussing the results of the public consultations undertaken between April 29 and June 5 is available at http://www.toronto.ca/changeisintheair/index.htm. The dominant ideas that emerged from the public engagement are highlighted in the following table.

Table One: Summary of Major Themes Emerging in the Public Engagement	
Transportation	Torontonians want to embrace sustainable modes of transportation, but the City needs to provide the necessary infrastructure (e.g. improved public transit, bike lanes) to help them do so. A large number of participants also stressed that actions are required to make the private automobile less attractive whether through tools like roads tolls or parking taxes or by reducing road space and reallocating it to transit, cyclists, pedestrians and trees.
Urban Form and Spaces	Torontonians want to see a City that grows and changes in a manner that revives public spaces, moves away from parking lot-style retail developments, sees increased car-free zones, increased tree cover and actions to foster community gardens and encourage the consumption of locally grown produce.
Green Homes	Torontonians recognize the value of undertaking actions to retrofit their homes for energy efficiency, water efficiency and potentially install renewable energy systems. Participants expressed desires for easier and greater access to information on how to retrofit their homes, development of financial incentives and that the City move towards implementing an mandatory green building code.

Table One: Summary of Major Themes Emerging in the Public Engagement	
Green Retail and Industry	Torontonians recommended that programs and regulations be put in place to ensure retail and commercial and industrial operations are more environmentally responsible, with particular concerns raised about turning out lights at night and closing doors to prevent loss of heat and air conditioning. People participating in the business community focus groups however did not like the idea of further regulations but stressed a willingness to work, in partnership to address environmental issues of concern.
Waste Diversion	Torontonians want to see less waste going into landfill and many participants expressed a desire to see less packaging, better recycling programs and expansion of all waste management programs into multi-residential buildings.
Financial Incentives and Disincentives	Torontonians recognized that the City can implement a number of financial tools, which can both serve as an incentive to change behaviour and raise monies necessary to address air quality concerns. Suggestions ranged from levies on plastic bags and fees for the amount of garbage produced to vehicle registration fees or parking taxes pro-rated according to the fuel efficiency of vehicles. While the majority of people participating in the Climate Change and Clean Air public engagement activities expressed support for these ideas, the majority of people attending the public engagement activities for the Revenue Tools report do not support the idea of new taxes.

The majority of Torontonians who participated in the Climate Change and Clean Air public engagement activities were enthusiastic that the City has made the commitment to take action on climate change and air quality. They are expecting bold action and leadership to ensure Toronto's success, with strong regulatory and financial backstops to ensure progress.

THE CLIMATE CHANGE AND CLEAN AIR ACTION PLAN

The following is a detailed discussion of the recommended actions, the rationale behind the recommendations, responsibilities and resources and what might be the possible achievements that will result from implementing these recommendations. While the Climate Change and Clean Air Action Plan provides the context for moving forward and addressing the issues of climate change and air quality, there are a number of associated policies and plans, which also contribute to improving air quality. Of particular interest are the following reports, which will be considered along with this plan by City Council at its meeting of July 15, 2007. These being:

- **The Energy Plan For Toronto** (http://www.toronto.ca/energy/plan.htm), which articulates a series of actions for reducing energy consumption in how we heat, cool and light our homes and buildings and the energy used in industrial / commercial business processes;

- **The Green Economic Development Strategy** (http://www.toronto.ca/legdocs/mmis/2007/ed/agendas/2007-06-07-ed05-ai.htm), which proposes that Toronto become, "*a globally recognized green industry hub that generates sustainable value to the City, local industry and its residents while stimulating the continued growth and sustainability of established businesses"* and proposes 10 priority actions to achieve this vision; and

- **Toronto's Greenhouse Gases and Air Quality Emissions Inventory**, which was prepared by the Toronto Atmospheric Fund and the Toronto Environment Office and identifies the key sources of greenhouse gases and priority air pollutants.

These reports along with the development of a **Sustainable Transportation Implementation Strategy** which is proposed in the Climate Change and Clean Air Action Plan and actions to reduce solid waste and improve water efficiency are key supporting plans that will help, along with the proposals in the Climate Change and Clean Air Action Plan move our community towards its goal of clean air and significantly reduced greenhouse gas emissions.

The recommendations presented in this report are a starting point for working towards the stated targets around reducing greenhouse gases and air pollution. In combination with the actions and activities that are already occurring in the community, they create a foundation but on their own they will not achieve the stated targets for reduced emissions.

In early 2008, the Deputy City Manager will bring forth a Phase II Climate Change and Clean Air Action Plan outlining additional recommendations for action. Those recommendations will be developed through the research and policy work of staff in all relevant City Divisions and ABC&Cs and by actively engaging the community in the discussion and development process.

GREENHOUSE GAS AND SMOG EMISSION REDUCTION TARGETS

In 2004, the community of Toronto emitted approximately 23.4 million tonnes of greenhouse gasses and associated air contaminants – most notably nitrogen dioxide which together with fine particulate matter is the two major pollutants of health concern in Toronto.

There were three main sources of all of these emissions: the "dirty fuel" based power plants that generated the electricity that everyone relied on for lighting, air conditioning and appliances; natural gas that was burnt to provide almost all the City's space heating, building by building across the City; and the gasoline and diesel fuels for powering motor vehicles.

All three sectors: electricity, heating and transportation rely on burning "fossil fuels", all rich in carbon, but with other elements that when burnt are very harmful for human health. Our climate is changing and the air quality in our City and surrounding region is often poor due to the use of fossil fuels including natural gas for heating and cooling, oil for cars and trucks, and coal to produce electricity. How we live, how we move about, the resources we use and the waste we create cause many of the stresses on the natural environment that have a negative affect on our health and contribute to climate change.

The City of Toronto continues to be recognized nationally and internationally as a leader in combating climate change and for its efforts to improve air quality. However, there is much more that needs to be done- both by the government of the City of Toronto and by the residents and businesses in the Toronto urban area. The following recommendation articulates a set of clear targets that must be achieved if we are to make a significant contribution to addressing climate change and improving local air quality to the benefit of all Torontonians. The proposed targets are consistent with the Kyoto Agreement and with targets being set by the European Union and by nations and municipalities leading the fight to address climate change.

Recommendation 1:

City Council adopt the following:

a. reduction targets for greenhouse gas emissions from the 1990 levels of approximately 22 million tonnes per year for the Toronto urban area:

   (i) 6% by 2012 (the "Kyoto target");
   (ii) 30% by 2020; and
   (iii) 80% by 2050; and

b. a 20% reduction target for locally generated smog causing pollutants from 2004 levels by 2012 for the Toronto urban area.

NEIGHBOURHOOD ACTIONS FOR A GREEN TORONTO

Toronto currently has over 943,000 homes of which approximately 50% are ground-related housing (single detached, semi detached, townhouses and detached duplexes) and about 50% of which are multi-residential. About one-half of the housing is owner occupied and the other rented, while approximately 10% of all housing (primarily multi-residential) is public housing. There will be a significant increase in the City's population over the next 30 years and reflecting this is the fact that there are currently approximately 120,000 additional housing units proposed for construction.

During the public engagement process, a number of comments were received that identified that participants want to take action to address their impact on the environment:

- a lot of people said they would like additional incentive programs to help them green their homes;
- people want easy access to information and supports to help them understand what actions to take; and
- people also expressed a desire to work together with their neighbours or within community groups to make the changes necessary.

Within the City of Toronto's ABCs and Divisions there are a number of programs which homeowners, business owners and operators and residents can access to increase energy efficiency; develop renewable energy systems; increase water efficiency; get trees planted on the City right-of-ways; and engage in other environmental ventures.

Non-Governmental Organizations, the private sector and the Provincial and Federal governments also offer a large number of environmental programs, financial incentives and resources, sometimes on similar topics. An opportunity exists to integrate these various environmental programs and resources to help residents take advantage of these offers and thereby reduce their environmental footprint, including a reduction in greenhouse gas and smog emissions.

Facilitating local action in neighbourhoods and community groups will help reduce the environmental impacts of residents in Toronto and also provide additional societal benefits that bring communities closer together and foster a sense of local pride. The following set of recommendations will build on the above existing programs as well as propose new and innovative ways that neighbourhoods can be further involved in leading the way to a more environmentally sustainable Toronto.

Recommendation 4:

City Council help residents and building owners live more environmentally friendly lifestyles and that City Council:

a. direct the Director, Toronto Environment Office to establish in 2007 the **Live Green Toronto** program, to support resident's groups, Business Improvement Areas and other neighbourhood agencies and community groups to green their own neighbourhoods through a range of programs, such as:

    - home energy retrofits;
    - green power generation, including rooftop solar and ground source heat pumps;

- allotment/food gardens in parks and homes;
- water conservation programs available through Toronto Water;
- tree inventory and planting campaigns;
- soft/green surface program;
- identification of green roof projects;
- promoting an efficient appliance purchase drive;
- promoting incandescent free streets;
- downspout disconnection drives; and
- xeriscaping (low water needs ground cover to replace lawns); and

c. direct the Deputy City Manager to report in 2007 on the results of the research completed in partnership with E.R.A. Architects, the University of Toronto and the Canadian Mortgage and Housing Corporation of a step-by-step implementation framework to maximize the potential greenhouse gas reductions, community revitalization, social justice and economic development benefits of the renewal of Toronto's concrete high-rise residential building stock;

e. direct the Chief Building Official on behalf of City Council to immediately seek the required authority from the Province of Ontario that will allow the City in 2007 to:

i.) require in new construction in Toronto the energy efficiency requirements of the Ontario Building Code which do not come into effect until 2012; and

ii) develop a more aggressive package of code changes to require sustainable design in new construction by 2010;

f. direct the Chief Planner in consultation with Chief Building Official to update the Toronto Green Development Standard to reflect the changes in recommendation 4 (d) and, to address elements not covered by the Ontario Building Code, use the authority under the *City of Toronto Act, 2006* to require sustainable design and zoning with conditions, once the Regulations related to these new powers are issued and associated amendments to the City's Official Plan are enacted;

g. direct the Chief Building Official in consultation with the Chief Planner to bring forward new standards to require and regulate green roofs in the City, as a means of making this component of the Green Development Standard mandatory

h. direct the Executive Director of Municipal Licensing and Standards to integrate into any rating systems developed for rental residential units an environmental performance rating based on compliance or non-compliance with the City's Green Development Standard; and

j. direct the Executive Director of Municipal Licensing and Standards, in consultation with the Medical Officer of Health to report back in 2008 on a plan to potentially ban the use of two stroke engines in powering home and garden equipment by 2010.

<table>
<tr><td colspan="3">Recommendation 4a (Live Green Toronto initiative)</td></tr>
<tr><td>Lead Division / ABCC</td><td colspan="2">Roles and Responsibilities</td></tr>
<tr><td rowspan="5">Toronto Environment Office</td><td colspan="2">• coordinate organization of the Live Green Toronto initiative</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>All appropriate City Divisions and ABC&Cs</td><td>• participation in design and delivery</td></tr>
<tr><td>External Partners</td><td>Roles and Responsibilities</td></tr>
<tr><td>A large range of potential partners, which will be identified and invited to join.</td><td>• participation in design and delivery</td></tr>
</table>

Resource Requirements: Re-allocation of staff resources in TEO to organize this initiative.

What will be achieved?
There are 943,000 residential units in the City and the average household generates about 6 tonnes of greenhouse gas emissions every year for heating, cooling and lighting their home. If every household on average reduced their emissions by 30% by 2020 it would total about 2.3 million tonnes. In addition, there could also be significant achievements in the areas of water efficiency, tree plantings, pesticide bylaw compliance, stormwater management, and much more.

<table>
<tr><td colspan="3">Recommendations 4e, 4f & 4g (mandatory green development standards).</td></tr>
<tr><td>Lead Division / ABCC</td><td colspan="2">Roles and Responsibilities</td></tr>
<tr><td rowspan="3">Toronto Building and City Planning</td><td colspan="2">• coordinate with the City Manager’s Office efforts to advocate the Province to implement the new Ontario Building Code prior to 2012.</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>All appropriate City Divisions and ABC&Cs</td><td>• assist as required</td></tr>
</table>

Resource Requirements: Staff time.

What will be achieved?

With 120,000 new housing units currently be proposed for construction, this could have a significant affect on future energy consumption and associated greenhouse gas emissions. Also by 2030 it is estimated that nearly three-quarters of all buildings in the city will be renovated.

Recommendation 4c (Tower Renewal Project)

The Toronto area has the second highest number of high rise buildings in North America (buildings 12 stories and over) with over 1000 serving as residential buildings. Experience in other jurisdictions such as Berlin and Amsterdam has demonstrated approximately 50% savings in energy from cladding the exterior of the building for insulation purposes.

During the late 1950s and throughout the 1960s, Canadian Mortgage and Housing Corporation and the Planners of Metro Toronto promoted large open space around these towers for 'health and recreation'. A typical tower complex contains over 90% open space, mostly consisting of lawn and parking. Today, most of this space is blocked off with chain link fence.

Simple environmental upgrades can cut energy use in half, and are well suited for district geothermal installations and other 'off the grid' sources. Allowing for mixed use around these suburban towers, such as services, markets and retail could drastically reduce auto trips and create self sustaining 'centres' throughout the city.

Many of the concrete towers are currently in need of repair and the cladding would contribute to necessary renewal of built fabric and aging building stock. Investments in energy efficiency can be leveraged to revitalize these communities, particularly in the associated green space. Tower renewal also offers workable models for intensification related to existing patterns of transit and current density clusters.

<table>
<tr><th>Lead Division / ABCC</th><th colspan="2">Roles and Responsibilities</th></tr>
<tr><td rowspan="6">Deputy City Manager, Cluster B</td><td colspan="2">▪ Support Tower Renewal research working group (City of Toronto, ERA, UofT, CMHC).
▪ Align City of Toronto policy and programs with Tower Renewal objectives</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>All appropriate City Divisions and ABC&Cs</td><td>• Assist as appropriate in research, policy analysis</td></tr>
<tr><td>External Partners</td><td>Roles and Responsibilities</td></tr>
<tr><td>ERA Architects, U of T, CMHC and others</td><td>• Research, analysis, program design</td></tr>
<tr><td></td><td></td></tr>
</table>

Resource Requirements: Staff time, with future resource requirements to be identified as part of the research work.

What will be achieved?
Can revitalize communities, meet climate change objectives, and stimulate economic development and local job creation. More detailed achievement will be identified as part of the research work.

<table>
<tr><td colspan="3">Recommendations 4h, 4j (rating system for rental residential apartments and evaluation of the potential to ban 2-stroke engines)</td></tr>
<tr><td>Lead Division / ABCC</td><td colspan="2">Roles and Responsibilities</td></tr>
<tr><td rowspan="3">Municipal Licensing and Standards</td><td colspan="2">• Lead research and consultations and development of proposals.</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>Toronto Public Health</td><td>• Assist in research around potential health implications</td></tr>
</table>

Resource Requirements: Staff time

What will be achieved?
Potential achievements will be identified through this research work and will be documented in the Phase II, Climate Change and Clean Air Action Plan report.

ENVIRONMENTALLY FRIENDLY PUBLIC INSTITUTIONS, INDUSTRIES and COMMERCIAL OPERATIONS

Toronto's ICI sector, in all its diversity, plays an important role in driving our economy, and must play a central role in our efforts to address climate change. The ICI sector consists of our manufacturing industries, our retail shops, our healthcare, government and educational institutions, and other sectors of our service-based economy, including finance, information technology, and consulting.

While Toronto's economy has generally shifted away from its historically industrial base, more that 283 million square feet of industrial space still exists in the city. To feed the industrial processes occurring in these buildings, a vast amount of energy is needed in the form of space heating and cooling and electricity.

The more service-oriented sectors of our economy represent significant value to Toronto in terms of the number of people employed, and the total real estate occupied. The City of Toronto is home to more that 116 million square feet of office space.

Included within the ICI sector are small and medium enterprises (SMEs), which are predominantly geared to serving the local community and generate the vast majority of jobs in the city. In addition to creating jobs, strong local-serving businesses and industries provide the products, services and amenities that help maintain and improve the quality of life that Toronto residents enjoy.

Added together, the commercial and industrial sectors of the economy emit an estimated nine mega tonnes of greenhouse gases annually. This represents approximately one-third of all greenhouse gases emitted in the city. These emissions result from heating, cooling, industrial processes and electricity use in our buildings, factories and offices.

How can we tackle these emissions? Energy efficiency is a big part of the solution. A number of innovative programs are currently working in partnership with many industrial, commercial and institutional buildings to help reduce their energy use and greenhouse gas emissions and the following summarizes just a few of them.

Better Buildings Partnership (BBP)

Established by the City of Toronto, the BBP is an innovative and successful public-private partnership that promotes and implements energy efficiency and building retrofits in industrial, commercial and institutional buildings. Since 1996, more than 600 private and public sector buildings have taken part in the BBP, reducing energy consumption by more that 226 million kilowatt hours and achieved a CO_2 reduction of more than 194,500 tonnes per year. By investing in energy efficiency retrofits, BBP participants have already invested more than $160 million in Toronto's economy. It is estimated that eventually the BBP could have a full-scale economic impact of $3 billion in the city.

The TRCA estimates that achieving a conservation potential of 20 percent at 43 hospital sites in the Toronto region could save more than $20 million in operating costs annually, and reduce greenhouse gas emissions by more than 44,000 tonnes annually.

Greening Healthcare

Initiated by the Toronto Region Conservation Authority, Greening Health Care helps hospitals work together to improve energy and water use efficiency, and lower emissions of solid waste and

pollution. Their actions reduce costs, contribute to the health and well-being of communities, and demonstrate commitment by the health care sector to fiscal and environmental responsibility. Currently, there are 18 healthcare corporations in the GTA participating in the Greening Healthcare program, including the Hospital for Sick Children, University Health Network, and the Mount Sinai, Scarborough, St. Michael's, Sunnybrook, and Toronto East Hospitals. In 2005, they collectively achieved a reduction of more than 11,000 tonnes of greenhouse gases, and 1.5 million kilowatt hours.

Energy Efficiency in the Retail Sector

There are a number of initiatives aimed at greening the retail sector in Toronto. The Toronto Association of Business Improvement Areas (BIAs) developed the **greenTbiz** program to deliver energy and environmental conservation programs that benefit to the environment, while improving the bottom line of the businesses and properties within the BIAs. Through its greenASSIST program, greenTbiz maintains a database of information, products, publications, resources and services to help businesses reduce their environmental impact.

GreenTbiz also offers BIAs assistance in converting conventional incandescent lighting to LED lighting, especially for decorative holiday purposes. The Bloor West Village BIA has gone one step further by installing solar photovoltaic panels to provide electricity for their decorative lighting.

The **Cool Shops** Program from the Clean Air Foundation is a market transformation program targeting street-facing retailers in neighbourhoods across Ontario. The purpose of the program is to identify and implement in-store energy management measures that encourage the small-business commercial sector to save on utility costs and reduce energy consumption. In Toronto, the Clean Air Foundation is working with Toronto Hydro to implement the program, which includes energy auditing, contractor referrals and product discounts for energy-related retrofits. As of October 2006, more than 760 energy audits were conducted as part of this program. In total, 98 kilowatts of peak electricity have been saved.

The Toronto & Regional Conservation Authority has also developed its **Greening Retail** program, which includes a preliminary inventory of retail best practices around the world. In analyzing these practices, TRCA has determined that adopting environmentally responsible policies and actions improves efficiencies, lowers costs, improves productivity, and attracts customers and increases sales. The next steps in the Greening Retail program includes a more detailed analysis of these best practices, and developing programs and partnerships to improve retailers' competitive advantage and improve their environmental performance.

300+ Megawatt Electricity Conservation Program

The City of Toronto, Toronto Hydro and the Building Owners & Managers Association (BOMA) of Toronto are collaborating with the Ontario Power Authority (OPA) to deliver electricity savings of more than 300 megawatts throughout the City of Toronto by the end of 2010. This is electricity-savings program is a response to the real challenge of importing sufficient electricity into Toronto in the near future should electricity demand continue to grow unchecked.

EcoEnergy Initiative

The federal Minister of Natural Resources recently announced the creation of the EcoEnergy Initiative, a $300 million, four-year plan to increase the number of energy efficient homes and small commercial and industrial buildings across the country through retrofits and higher standards for new construction. This is similar to the mandate of the EEO's Better Buildings

Partnership. The length of the program is almost identical to that of the 90 MW program. The City of Toronto will be discussing the possibility of working with Natural Resources Canada on the EcoEnergy Initiative in Toronto, in cooperation with other energy programs, including any that might be offered by Toronto Hydro and Enbridge Gas.

Greening Sacred Spaces

Greening Sacred Spaces is both a spiritual, values-based educational program and a guide to help faith communities make sustainable, energy efficient changes to their churches, gurdwaras, mosques, synagogues, temples, and other 'sacred' places including their own homes. The Toronto Atmospheric Fund provided $60,000 in 2005 to help develop the Greening Sacred Spaces Program.

Enbridge Gas Rebates & Incentives

Enbridge Gas has a number of programs to assist their business customers in reducing their natural gas consumptions, including rebates for converting to an EnergyStar high-efficiency natural gas furnace. Through its Energy Monitoring & Targeting Program, Enbridge Gas provides its commercial and industrial customers with a rebate of up to half of the cost of an Operational Energy Analysis. This is a site–specific study that will determine the costs, benefits and recommended approach for natural gas savings. Energy savings that can be achieved through this program for the commercial sector are between 5–25% and 5–15% for the industrial sector.

Toronto's Green Economic Development Strategy

The City of Toronto is committed to retaining and attracting commercial and industrial investment in a way that maintains Toronto's position as a North American leader both in terms of economic competitiveness and in terms of best environmental and green business practices.

The City of Toronto, through its Official Plan, its Long-Term Employment Land Strategy, and its Green Economic Development Strategy, is pursuing policies to simultaneously enhance economic competitiveness and reduce the environmental impact of Toronto's business and industries.

Therefore, any strategy aimed at reducing greenhouse gas emissions and improving air quality will be fully integrated with economic development opportunities and concerns. For example, as we look for ways to attract new investment and stimulate reinvestment in Toronto's employment districts, an important consideration is that many of them are conveniently located near public transit, unlike many employment districts in the surrounding '905' region. By providing more employment opportunities in Toronto's existing employment areas, we will reduce the overall need to rely on private automobiles for worker commuting.

In order to be competitive, Toronto's employment districts need capital improvement programs that improve their functionality, make them more attractive to higher employment density development, and provide for the most energy and resource efficient infrastructure. By making these improvements, Toronto will be able to ensure future economic growth that does not cost the earth.

In 2005, the Economic Development, Culture and Tourism Division took the lead and initiated the development of a **Green Economic Development Strategy**. That report is the subject of another report to the Economic Development Committee and will be considered by that

Committee on July 5, 2007. The Green Economic Development Strategy presents 10 core recommendations for supporting the development of a green economy. They are:

- Create a one window utility conservation program undertaken jointly with City, Toronto Hydro, Enbridge, and targeted at the existing business community to support best environmental practices and make our companies industry leaders.

- Develop a district energy project in Toronto Discovery District to support the sustainable use of energy, provide stability with respect supply and costs and stimulate new development in the area.

- Formalize a Toronto Environmental Research and Commercialization Initiative to strengthen research partnerships in the fields of sustainable energy and environment; to seek avenues for commercialization of these technologies, and to link local and international environmental research to business opportunities.

- Develop a Sustainable Employment District Pilot project to stimulate industrial ecology, and economic competitiveness as a means of creating competitive advantage for companies in the area.

- Develop a Green Home Innovation Centre to showcase and provide education on environmental products and services to Toronto residents that leverages partnerships and current initiatives.

- Develop a training program with the business, academia and labour communities to assist office operations and manufacturing companies to establish in house expertise with respect running and maintain environmental systems.

- Organize municipal workshops on Green Procurement and methods for stimulating environmental innovation within the City's operations including a trade fair to demonstrate new and emerging environmental products and services to municipalities and the business community.

- Develop a training program with the business, academia and labour communities to improve the skill sets of architects, building and design professionals with respect to incorporating integrated environmental design into building design and construction.

- Support the creation of environmental industry capabilities database and Toronto consumer market prospectus in cooperation with environmental industry association(s) and other levels of government to stimulate local company growth and to attract new companies to the area.

- Organize Workshops with TABIA (Toronto Association of Business Improvements Areas) and the Chambers of Commerce to engage the participation of the small business community in the "Zerofootprint" initiative.

Recommendation 5

City Council recognize the important role the industrial, commercial and institutional sectors play in the city's local economy, the fact that over one-third of the greenhouse gas emissions come from these sectors and the directions of the City's Green Economic Development Strategy and that City Council:

a. establish an **Eco-Roofs Program**, that sets a minimum target of 10% of the total industrial, commercial and institutional roofspace located in Toronto made more environmentally friendly by 2020, and that integrates:

   (i) the City's successful Green Roof Incentive program;
   (ii) incentives and programs to help with the installation of renewable energy systems (e.g. solar); and
   (iii) programs to encourage the installation of alternative roofing technologies which help address the urban heat island issue;

b. direct the General Manager of Economic Development, Culture and Tourism to develop a business plan for a model green-industry business park;

c. establish in 2007 an Enviro-Business Working Group, with appropriate partners, for small businesses to create a comprehensive environmental efficiency and improvement program that offers comprehensive pollution prevention and water / energy efficiency support;

d. establish in 2007 an Enviro-Food Working Group to develop and implement actions to promote local food production, review City procurement policies, increase community gardens and identify ways to remove barriers to the expansion of local markets that sell locally produced food

Recommendation 5a (Eco-roofs Program).

The roofs of the million plus buildings in Toronto, in particular the flat roofs found on many industrial, commercial and institutional buildings offer a significant opportunity to mitigate the effects of climate change, cool the local environment, generate renewable energy and reduce energy costs for heating and cooling.

Lead Division / ABCC	**Roles and Responsibilities**	
Deputy City Manager, Cluster B	Direct and coordinate development of the program	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	Executive Environment Team	Participate as appropriate in development and delivery of the program
	External Partners	**Roles and Responsibilities**
	Utility companies, BOMA, NGOs, etc.	Participate in the design and eventual delivery

Resource Requirements: Staff time with additional resources to be identified as the program is developed.

What will be achieved?
The installation of green roofs on 6% of all rooftops in Toronto could reduce localized summer temperatures by between 1 to 2 degrees Celsius, resulting in a 5% decrease in electricity demand for cooling.

Preliminary results from the Solar PV Potential Study being done by the City, with the assistance of Natural Resources Canada suggests that 6.3 million kWh of electricity could be generated through the installation of solar PV systems on building rooftops and facades. This represents about 25 to 30% of the current electricity demand in Toronto.

Recommendation 5b (Green Business Park).

Lead Division / ABCC	**Roles and Responsibilities**	
Economic Development, Culture and Tourism	Prepare proposed business plan.	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	Appropriate City Divisions & ABCs	Assist in development

Resource Requirements: Staff time with additional resources to be identified as part of the business plan

What will be achieved?
Potential achievements will be identified through this research work and will be documented in a report to Council later this year and in the Phase II, Climate Change and Clean Air Action Plan report.

<table>
<tr><td colspan="3">Recommendations 5c & 5d (Enviro-Business and Enviro-Food Working Groups).</td></tr>
<tr><td>Lead Division / ABCC</td><td colspan="2">Roles and Responsibilities</td></tr>
<tr><td rowspan="5">Toronto Environment Office</td><td colspan="2">Coordinate organization of the working groups</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>Appropriate City Divisions and ABCs</td><td>Participate as appropriate in development and delivery of the program</td></tr>
<tr><td>External Partners</td><td>Roles and Responsibilities</td></tr>
<tr><td>To be identifed</td><td></td></tr>
</table>

Resource Requirements: Staff time with additional resources to be identified as the program is developed.

What will be achieved?
Potential achievements will be identified through this research work and will be documented in a report to Council later this year and in the Phase II, Climate Change and Clean Air Action Plan report.

TORONTO BECOMING THE RENEWABLE ENERGY CAPITAL OF CANADA

Renewable energy sources offer a significant opportunity to generate clean and virtually emission-free energy. With the introduction of the Standard Offer Program for alternative energy systems, the Province of Ontario has created an enormous amount of interest in renewable energy generation.

Renewable Energy Defined

The City of Toronto Renewable Energy Action Plan Working Group has defined renewable energy as energy derived from non-depleting energy sources that are replaced rapidly by natural processes such as solar, wind, geothermal, deep lake cool water, and moving or falling water. Biogas from landfill and waste water are also included in the definition.

Renewable energy generation is encouraged in the City's Official Plan under Chapter 3.4, Policy 18, which states that *Innovative energy producing options, green industry and green building designs and construction practices will be supported and encouraged in building renovation and redevelopment.* The Toronto Green Development Standard encourages the integration of renewable energy generation to self-supply 5 – 10% of on-site energy needs.

While it is recognized that the renewable energy sector is still relatively young and in development, there have been a number of successful undertakings, many of them led by the City of Toronto. These include:

- 100 kW solar PV installation at the Exhibition Place, which is currently the largest solar PV installation in Canada;
- 750 kW wind turbine located on the grounds of Exhibition Place, which was the first urban wind turbine in North America;
- four solar thermal heated swimming pools at three community centers;
- 2 solar domestic hot water systems and two solar PV systems at Toronto Fire halls;
- over 300 solar illuminated transit shelters;;
- a geothermal system at a Toronto Police Station;
- the solar PV installation at the Toronto Hydro Office;
- three solar walls at City garages and a community centre; and
- the development of the deep water lake cooling system operated by Enwave.

In addition, there are across the community many renewable energy installations, such as:

- Bloorview Kids Rehab Hospital Solar PV;
- RISE Residential Solar PV;
- Ontario Electrical Contractors 27 kW combined wind and solar PV; and
- Bloor West BIA solar street lighting.

The potential for renewable energy systems is growing and this is reflected in an increasing number of proposed initiatives. While there are significant challenges, which include potential regulatory barriers, small financial returns, a small pool of qualified and skilled workers and a relatively small local renewable energy industry, there is solid foundation upon which Toronto can build and become Canada's renewable energy capital.

Recommendation 7

City Council support the development of renewable energy systems that will put Toronto on par by 2020 with the cities around the world currently leading the way in generating energy from local renewable energy systems (e.g. Germany's target for 2020 is 27% of energy coming from renewable sources and California's target is 25% by 2017) and as a world leader by 2050 and that City Council:

a. direct Deputy City Manager and Chief Corporate Officer to issue in 2007 a request for an expression of interest to the renewable energy business sector in order to identify potential approaches to develop renewable energy systems (e.g. solar, wind, geothermal and biogas) for approximately 1,500 City buildings and landfill sites;

d. direct the Chief Planner to prepare in 2007 a **Renewable Energy By-law** (Phase I) that will permit renewable energy generation as-of-right on all residential properties, setting appropriate restrictions on height, size and placement of structures;

e. direct the Chief Planner, in consultation with the City Solicitor, Chief Building Official and the Renewable Energy Action Plan Working Group to prepare recommendations on how to address the following issues concerning renewable energy generation:

- standards for the placement, orientation, size and form of renewable energy technologies;
- options to protect access to solar and wind resources from property owners who have installed renewable energy equipment; and
- permissive regulations for district-based energy distribution between multiple properties; and
- provide guidance with respect to potential issues of conflict around tree protection and installation of renewable energy systems;

f. direct the Deputy City Manager to form an interdivisional and inter-agency steering committee to prepare in 2007 an interim report that addresses technical, financial, and service delivery options:

(i) to expand the existing deep lake water cooling capacity by 20 percent; and
(ii) to establish a long-term plan with the goal of doubling the existing capacity of deep lake water cooling;

g. authorize the Deputy City Manager to take all expedient steps, including a modified procurement process involving consideration of a minimum of three candidates, in order to hire a consultant to conduct a technical feasibility study on deep lake water cooling with a budget of approximately $75,000, inclusive of all charges and taxes (funds in the amount of $75,000 have been included in the 2007 Operating Budget of the Toronto Environment Office (WT0038-4100) as approved by City Council), on terms and conditions satisfactory to the Deputy City Manager and in a form satisfactory to the City Solicitor; and

h. direct the Deputy City Manager to include in the scope of the steering committee on expanding deep lake water cooling capacity, the identification of opportunities on an inter-agency basis for the introduction of new renewable energy technologies.

Recommendation 7a (REOI for renewable energy on City property).

With the release of the standard offer program, the City has received a number of unsolicited expressions of interest to explore developing solar and wind energy projects on City property, in particular on closed landfill sites. Given the amount of property the City owns, as do other large public agencies (e.g. school boards), the opportunity may exist to utilize these properties to facilitate the development of renewable energy systems.

The City could explore this opportunity through at request for an expression of interest (REOI) process. The information that is received through the REOI process, in particular, will assist with the education of staff on potential renewable energy opportunities at their facilities and properties. A vendor fair is a potential component of the REOI that could include inviting other municipal governments to learn about opportunities that could be replicated in their communities.

<table>
<tr><th>Lead Division / ABCC</th><th colspan="2">Roles and Responsibilities</th></tr>
<tr><td rowspan="6">Toronto Environment Office and Facilities & Real Estate</td><td colspan="2">• Lead preparation of the REOI</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>Renewable Energy Working Group members</td><td>• Advise on development of the REOI</td></tr>
<tr><td>City Divisions & ABCs responsible for managing City owned property</td><td>• Participate in development and evaluation of the REOI</td></tr>
<tr><td>External Partners</td><td>Roles and Responsibilities</td></tr>
<tr><td>Other public agencies may be interested and will be invited to participated in the REOI</td><td>• Participate in development and evaluation of the REOI</td></tr>
</table>

Resource Requirements: Staff time.

What will be achieved?

Members of the renewable energy sector have shown an interest in establishing facilities, such as solar PV on closed landfill sites. If viable proposals are submitted through the REOI, it has the potential to help stimulate the renewable energy sector, provide energy security for the City, generate local jobs and economic growth, and reduce emissions.

Recommendations 7d & 7e (Renewable Energy Bylaw and regulatory review).

There are three issues relating to as-of-right permission for renewable energy generation in current zoning by-laws:

- The sale back to the grid of excess energy generated on a residential property can be interpreted as a commercial use not permitted in a residential area. This could potentially create a barrier for private property owners who wish to engage in net-metering with their local utility to reduce their energy bills or with the Province of Ontario's Standard Offer financial incentive program.
- Regulations defining the placement, orientation, size and form of renewable energy technologies should be added to the Zoning Bylaws that are consistent with the various land use zone expectations.
- Related issues such as solar and wind access rights and permissions for district energy systems will likely need to be addressed as these technologies become more prevalent.

Lead Division / ABCC	**Roles and Responsibilities**	
City Planning & Toronto Building	• Prepare the by-law	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	Renewable Energy Working Group members	• Advise on content of the bylaw
	Legal Services	• Legal review of any proposals

Resource requirements: Staff time.

What will be achieved?

This will help speed up the installation of renewable energy systems by eliminating one potential regulatory barrier.

Recommendations 7f, 7g, & 7h (Deep Lake Water Cooling expansion).

Deep Lake Water Cooling is an innovative cooling system created by Enwave Corporation and the City of Toronto. Deep Lake Water Cooling provides an alternative to conventional air conditioning by using the cold energy from water 83 metres below the surface of Lake Ontario to cool buildings in downtown Toronto. This naturally cold water provides for a clean, renewable, and price competitive source of energy.

Compared to conventional air conditioning, Deep Lake Water Cooling reduces electricity usage by 90 percent. This frees more than 61 megawatts from Ontario's electricity grid, and prevents annual greenhouse emissions of 79,000 tonnes of carbon dioxide from being released into the atmosphere.

Deep Lake Water Cooling customers include the Toronto Dominion Centre, Royal Bank Plaza, Metro Toronto Convention Centre and the Air Canada Centre. The system has enough capacity to air condition 100 office buildings or 6800 homes.

As of 2007, the existing Deep Lake Water Cooling system is at capacity. Consideration needs to be given to expanding this system to service new development along Toronto's waterfront.

<table>
<tr><th>Lead Division / ABCC</th><th colspan="2">Roles and Responsibilities</th></tr>
<tr><td rowspan="3">Deputy City Manager, Cluster B</td><td colspan="2">• Establish and lead the inter-divisional and inter-agency Steering Committee</td></tr>
<tr><th>Partner Divisions / ABCCs</th><th>Roles and Responsibilities</th></tr>
<tr><td>All appropriate divisions and ABCCs</td><td>• Participate in the steering committee</td></tr>
</table>

Resource requirements: Staff time, $75,000 in 2007 for an external consultant.

What will be achieved?

If the capacity was increased by 20% this could translate into a savings of about 16,000 tonnes of greenhouse gases.

MAKING MORE SUSTAINABLE TRANSPORTATION CHOICES

In 2004, emissions from motor vehicles accounted for 28% of Canada's total greenhouse gas emissions. Motor vehicles also account for more than one-half of all nitrogen oxides, one-quarter of volatile organic compounds and upwards of 17% of fine particulate matter.

Despite the evidence of the effect of these emissions on public health, travel by motor vehicles is increasing and additionally there is a growing use of heavy-duty trucks to move goods. These trends suggest increased greenhouse gas emissions and smog-forming pollutants from motor vehicles.

Between 2004 and 2006 ridership on TTC grew by 27 million rides, from 418 million per year to 445 million per year.

In Toronto, it is estimated that almost one-third of the locally generated greenhouse gas emissions come from the burning of gasoline and diesel for powering cars and trucks.

Recommendation 8

City Council recognize that approximately one-third of the locally generated greenhouse gases and a significant portion of smog causing pollutants come from the operation of motor vehicles and that over one-half of the comments received during the public engagement process expressed a desire to see a more sustainable transportation system, and that City Council:

a. direct the initiation of appropriate environmental and engineering studies for the **Transit City** plan and request the General Manager of the Toronto Transit Commission to submit to Executive Committee in 2007 a schedule for the completion of aforementioned studies and a financial plan including funding sources and revenue tools;

b. direct the General Manager of Transportation Services and General Manager of Parks, Forestry and Recreation to report in 2007 on the actions and resources required to complete the infrastructure elements of the **Bike Plan** by the end of 2012, in particular expanding the existing network of bike lanes and trails from over 300 kilometres to 1,000 kilometres, with a timetable that establishes annual expansion objectives;

c. prepare in 2007 a Sustainable Transportation Implementation Strategy, that draws from and is consistent with existing policies and plans (e.g. the Official Plan; the Bike Plan; Transit City Plan; the TTC Ridership Growth Strategy; and the Walking Strategy) to achieve the greenhouse gas emission and smog emission reduction targets by including:

- the articulation of a long-term vision of a sustainable transportation system which achieves the targeted emission levels while meeting the economic needs of the city;
- the identification and prioritization of short-term transportation projects that will accelerate the achievement of the City's sustainable transportation agenda; and
- the creation of a Strategic Transportation Planning Group, comprised of the Chief Planner, the General Manager of Transportation Services, the Chief General Manager of the TTC, the President of the Toronto Parking Authority, the Managing Director of GO Transit and the Director of the Toronto Environment Office, to establish priorities and oversee the coordination of the planning, implementation and operation of the City's sustainable transportation system;

d. direct the Director of the Toronto Environment Office working with the Director of Fleet Services to create in 2007, a Greening Commercial Fleets Enviro-Action Working Group consisting of representatives of the National Association of Fleet Administrators and operators of large fleets in the areas of phone, cable, utilities, retail and courier providers to work together to identify and implement actions that green these fleets and achieve a reduction in emissions city-wide;

e. direct the Executive Director of Municipal Licensing and Standards to develop a program for shifting all taxis and limousines operating in the City to low emission or hybrid technologies by 2015 or earlier, based on the results of the Green Taxi Pilot;

f. continue to encourage the Provincial and Federal Governments to develop the policies and programs and to provide the funding necessary to help Toronto achieve a sustainable transportation system that will maintain a high quality of life and result in an 80% reduction in greenhouse gas emissions by 2050. Of particular concern to the City are:

- vehicle engine and fuel standards that will reduce emissions;
- financial incentives to utilize public transit;
- stable and secure funding for the operation and expansion of public transit systems; and
- management of urban growth and development in a manner that creates a high quality of life and encourages people to select alternative modes of transportation;

g. work with the Province, the Greater Toronto Transportation Authority and GTA municipalities to investigate a road pricing regime / road toll system for the GTA that will encourage people to utilize alternative modes of transportation and dedicate any funds raised to transit improvements

Recommendation 8a (Implement Transit City).

Prepared by the TTC and released in early 2007, Transit City outlines a system of dedicated surface light rail services that would cover the entire City. That plan articulated that without Provincial or Federal Government investment, its implementation is unlikely. However, there are things that the City can do in preparation for eventual construction when the other orders of government recognize their transit funding commitments.

Lead Division / ABCC	**Roles and Responsibilities**	
TTC	• Lead the preparation of engineering and environmental assessment studies	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	Transportation Services & City Planning	• Assist in preparation of required studies and lead where appropriate.

Resource Requirements: Staff time, with resources required to complete the appropriate studies identified with each proposal.

What will be achieved?
If the Transit City plan were to be fully implemented, it would provide a public transit system that could compete with the speed of the private motor vehicle trips and thereby help significantly reduce motor vehicle usage in the city.

Recommendation 8b (Implement the Bike Plan by 2012).

During the public engagement process, a large number of participants expressed a desire to see the City move quickly on the development of bikeways and make it easier and safer for people to cycle around the City. There are currently 370 km of bikeways (bicycle lanes, signed routes and trails) and a further 630 km of bikeways are required to achieve the Bike plan target. In 2007 the City allocated funding of $3 million towards implementation of the Bike Plan and the planned funding for 2008 is $6 million.

Residents have also expressed a real desire for more off-road bike trails. The Parks, Forestry and Recreation division has estimated that it will need about $24.5 million over a 10 year period to construct an estimated 175 km of additional off-road trails.

<table>
<tr><th>Lead Division / ABCC</th><th colspan="2">Roles and Responsibilities</th></tr>
<tr><td rowspan="3">TTC</td><td colspan="2">• Lead the preparation of engineering and environmental assessment studies</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>Transportation Services & City Planning</td><td>• Assist in preparation of required studies and lead where appropriate.</td></tr>
</table>

Resource Requirements: Staff time to prepare the report.

What will be achieved?
The City's objective is to build 1,000 km and ensure every resident will be within a 5 minute bike ride of a bikeway.

Potential achievements will be identified through this research work and will be documented in the Phase II, Climate Change and Clean Air Action Plan report.

Recommendation 8c (Sustainable Transportation Implementation Strategy)

The City's Official Plan (http://www.toronto.ca/planning/official_plan/introduction.htm) adopted by City Council in 2002, makes it clear that the policy of Council is to reduce auto dependency and achieve sustainable growth. The Official Plan articulates policies for directing future urban growth into areas of the City that support alternative transportation choices and outlines a vision for the expansion of the City's transit systems. Supporting the Official Plan is a number of detailed implementation plans and programs:

- Transit City: http://www.transitcity.ca/
- Toronto Bike Plan: http://www.toronto.ca/cycling/bikeplan/
- TTC Ridership Growth Strategy: http://www.toronto.ca/ttc/ridership_growth_strategy.htm
- Walk 21 Toronto 2007: http://www.toronto.ca/walk21/

While the foundation exists, there is a need to integrate the implementation of these plans and identify how the City can in the short term optimize its existing transportation infrastructure; review and prioritize transportation projects already proposed through the various plans; and articulate a long term vision of the kind of transportation system required to achieve the emission reduction targets and sustain the local economy.

<table>
<tr><th>Lead Division / ABCC</th><th colspan="2">Roles and Responsibilities</th></tr>
<tr><td rowspan="5">City Planning and Transportation Services</td><td colspan="2">• Organize and lead staff team</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>TTC / Toronto Parking Authority / TEO</td><td>• Participate in working group</td></tr>
<tr><td>External Partners</td><td>Roles and Responsibilities</td></tr>
<tr><td>GO Transit</td><td>• Participate in working group</td></tr>
</table>

Resource Requirements: Staff time.

What will be achieved?
Potential achievements will be identified through this research work and will be documented in a report to Council later this year and in the Phase II, Climate Change and Clean Air Action Plan report.

Recommendation 8d (Greening of commercial fleets)

The City of Toronto and many other large fleet operators have shown that emission reductions can be made through use of alternative technologies, both vehicles and fuel. The City, in partnership with the City of Hamilton currently organizes the Green Fleet Expo which is a forum for sharing knowledge about alternative technologies and operating procedures.

Lead Division / ABCC	**Roles and Responsibilities**	
Toronto Environment Office	• Organize and facilitate Action Team	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	Fleet Services Division	• City expert participant on the Action Team
	External Partners	**Roles and Responsibilities**
	National Assoc. of Fleet Administrators and others	• Participate in working group

Resource Requirements: Staff time.

What will be achieved?
Potential achievements will be identified through this research work and will be documented in a report to Council later this year and in the Phase II, Climate Change and Clean Air Action Plan report.

Recommendation 8e (Greening the City's Taxi and Limousine Fleet)

While taxi companies currently have the option to buy hybrid or low-efficient vehicles there are no incentives or mandatory requirements in place to encourage businesses or taxi fleets to choose more environmentally friendly vehicles. There are about 5,000 licensed taxis in the City of which 1,500 operate 12 hours a day and 3,500 operate 24 hours a day. Most taxis are required to be replaced every 5 years. In addition, there are approximately 600 licensed limousines in the City.

The Toronto Atmospheric Fund (TAF) and other funding partners are currently reviewing a proposal by Co-op Cabs to test the feasibility of switching the City's fleet of taxis to hybrid vehicles. The proposal is to develop a pilot project to road test 10 new hybrid Toyota Camry vehicles and compare their performance with 10 regular Toyota Camry vehicles. The resulting data from on-road cab driving will help clarify the real fuel savings and possible maintenance issues associated with the use of hybrid vehicles as taxis. The project will be given final consideration by the TAF Board in June of 2007, and if approved, will begin in the fall of 2007.

Lead Division / ABCC	**Roles and Responsibilities**	
Municipal Licensing and Standards	• Develop a strategy in partnership with the taxi and limo industry based on pilot results	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	TAF	• Provision of pilot results
	External Partners	**Roles and Responsibilities**
	Local taxi and limousine companies	• Participation in pilot

Resource Requirements: Staff time to develop the strategy and participate in the pilot, with additional resources to be determined as part of the strategy.

What will be achieved?
The Toronto Atmospheric Fund has estimated it may be possible to see a reduction of 75,000 tonnes in greenhouse gas emissions by converting the 5,000 taxis to hybrid technologies and create an operational saving of about 5,000 litres of gasoline per year per taxi.

Recommendation 8f (advocating for changes in the Provincial and Federal Governments)		
Lead Division / ABCC	**Roles and Responsibilities**	
Mayor's Office / City Manager's Office	• ongoing	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	All	• assist in identifying key issues and desired outcomes

Resource requirements: staff time.

What will be achieved?
Provincial and Federal support are critical to achieving the transportation systems that create a liveable city and reduce GHG emissions. Only with continued and sustained financial support will Toronto be able to achieve its transportation vision for the future.

Recommendation 8g (Investigate GTA Wide Road Toll / Pricing System).		
Lead Division / ABCC	**Roles and Responsibilities**	
Mayor's Office / City Manager's Office	• participation in the GTTA	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	City Planning / Transportation Services	• research and policy support
	External Partners	**Roles and Responsibilities**
	GTTA / GTA Municipalities / Provincial Government	• agree to and develop a road toll system for the GTA

Resource requirements: staff time.

What will be achieved?
Has the potential to encourage people to consider alternative modes of transportation and generate needed revenue to create a sustainable transportation system for the entire GTA.

SETTING AN EXAMPLE by GREENING CITY OPERATIONS

Although only about 6% of the greenhouse gas emissions in Toronto can be attributed to City operations, the City of Toronto and the Toronto Public Service must set an example of how to achieve our community's emission reduction targets.

Since 1990, City Council and the Toronto Public Service have reduced the greenhouse gas emissions resulting from City operations by more than 30%. Some of the key programs that have contributed to this success include: capturing and using the methane gas generated at landfill sites for energy; reducing emissions from the City's fleet by an estimated 23%; replacing more than one-quarter of the TTC buses to electric hybrids; and retrofitting for energy efficiency more than 200 City-owned buildings through the Energy Retrofit Program.

To be sure that the City is leading by example and doing all that it can to reduce emissions, it is imperative that all City operations be consistent with the Climate Change and Clean Air Action Plan targets. This involves ensuring compliance with existing operating policies and expanding operational changes and developing new procedures and operating activities.

Recommendation 9

City Council build upon its success in reducing greenhouse gas emissions from City operations by over 30% since 1990 and that City Council:

a. direct the General Manager of Transportation Services to include in the 2008 Capital Budget submission an allocation (estimated at $7 million) to move the entire street sweeper fleet to new technology, based upon the success of the **Clean Roads to Clean Air** program, where new street sweepers have been shown to collect over 90% of the particulate matter found on roads and improve street level air quality by as much as 20%;

e. complete in 2007, Phase II of the Green **Fleet Transition Plan**, which will build upon the successful Phase I plan that resulted in an estimated 23% reduction in greenhouse gas emissions from the City's almost 4,000 vehicles;

f. direct the Executive Fleet Steering Committee to develop by mid-2008 a consolidated **Green Fleet Plan** for the TTC, Emergency Medical Services, Toronto Fire, Toronto Police and other Agencies, Boards, and Commissions for fleets not included in the Phase I Green Fleet Transition Plan and include in that plan actions to eliminate unnecessary idling of City vehicles through the City's Anti-Idling Campaign;

g. reduce single occupancy motor vehicle home to work trips made by City employees by ensuring adequate resources are in place to support the Smart Commute program for the Toronto Public Service; and

h. direct the Acting General Manager of Solid Waste Management to report in 2007 on: (i) opportunities for the introduction of additional landfill gas collection systems at closed landfills; (ii) plans to collect and utilize landfill gas at the recently acquired Green Lane Landfill site; and (iii) plans to utilize digestor gas from the City's anaerobic digestion facilities that process organic materials collected through the Green Bin program;

i. direct the General Manager of Parks, Forestry and Recreation and the General Manager of Transportation Services to report back on a proposal to phase out the use of equipment

powered by two stroke engines by 2009, by continuing to develop and establish landscaping and maintenance techniques that eliminate the need for equipment powered by small engines and shifting to the use of equipment powered by alternative technologies; and

k. direct that all future contracts that require a proponent to provide and make extensive use of heavy and light duty vehicles, contain components that outline fuel efficiency and green fleet requirements for those vehicles and that direction is provided concerning no idling.

Recommendations 9a (Clean Roads to Clean Air program expansion)

In 2006, the City purchased 14 new technologically advanced Street Sweepers that have been found to collect from roads over 90% of the fine particulate matter (PM10 and PM 25), which are a priority health concern. Monitoring in 2006 of these street sweepers found that air quality along downtown streets improved by over 20% due to a significantly reduced exposure to fine particulate matter. In the latter part of 2007 another 11 Street Sweepers will be rolled out, which means about 60% of the City's street sweeper fleet will be converted to the new technology.

Lead Division / ABCC	**Roles and Responsibilities**	
Transportation Services	• purchase of 21 more street sweepers	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	Toronto Public Health / Fleet Services Division / TEO	• participate in continued monitoring of effectiveness

Resource Requirements: Staff time and allocation of approximately $7 million to be identified in the 2008 budget proposal of Transportation Services.

What will be achieved?
Over 90% of the particulate matter is collected from roads by the new street sweepers resulting in an estimated 20% improvement in street level air quality.

Recommendations 9e, 9f & 9k (Greening of Fleet Operations)

In 2004, the Fleet Services Division developed the 2004-2007 Green Fleet Transition Plan. Implementation of that plan has resulted in reducing emissions from the approximately 4,000 vehicles by 23% or around 3,000 tonnes per year in eCO2 emissions.

The Toronto Transit Commission (TTC) is in the process of putting on the road over 400 electric hybrid buses, operating its buses using biodeisel and has plans to replace the entire 1,600 bus fleet with hybrids. The TTC will also be purchasing new subway cars and streetcars that are approximately 10% more energy efficient then the most recently purchased streetcar and subway vehicles.

Testing is underway of hybrid motor vehicles and low emission vehicles in the other three major city fleets: Toronto Police, Toronto Fire and Emergency Medical Services. There is a solid foundation to build upon to achieve further reductions in emissions from City owned vehicles.

<table>
<tr><th>Lead Division / ABCC</th><th colspan="2">Roles and Responsibilities</th></tr>
<tr><td rowspan="6">Chair, Executive Fleet Steering Committee</td><td colspan="2">• facilitate and encourage the development of Green Fleet Plans for all ABC&D fleets and involvement in the Anti-Idling Campaign</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>Fleet Services Division</td><td>• complete Phase II of its Green Fleet Transition Plan in 2007
• support the other ABC&Ds
• lead Employee Anti-Idling Campaign</td></tr>
<tr><td>TTC / TPS / TFS / EMS</td><td>• prepare a 3-year Green Fleet Transition Plan</td></tr>
<tr><td>P&MMD</td><td>• assist in development of RFPs and contracts that include requirements for fuel efficiency</td></tr>
<tr><td>Transportation Services / Toronto Water & other appropriate City Divisions</td><td>• include fuel efficiency requirements in RFPs and contracts.</td></tr>
<tr><td>All City Divisions and ABCs</td><td>• support and implement the Employee Anti-Idling Campaign</td></tr>
</table>

Resource Requirements: Staff time and financial implications to be identified in the Green Fleet Transition Plans.

What will be achieved?
Potential achievements will be identified through this research work and will be documented in a report to Council later this year and in the Phase II, Climate Change and Clean Air Action Plan report.

Recommendation 9g (smart commute program for City employees)

In 2006, City Planning and Toronto Public Health initiated the Smart Commute program for City employees with a pilot focused on staff who work at the North York Civic Centre.

Early in 2007 a survey was done of a randomly selected group of 5,000 city employees. That survey found that about one-half of the City's employees make use of a personal motor vehicle for the trip from home to work and back. There are a number of reasons for this, ranging from a requirement to have a car for work related activities to a lack of adequate public transit to get to one's work location.

Over 40,000 people work for the City and its ABCs.

<table>
<tr><th>Lead Division / ABCC</th><th colspan="2">Roles and Responsibilities</th></tr>
<tr><td rowspan="4">Smart Commute Steering Committee</td><td colspan="2">• lead the design, research and implementation of the campaign</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>City Planning / Toronto Public Health / Fleet Services Division / Human Resources / TEO</td><td>• participate in the Steering Committee and allocate resources as appropriate</td></tr>
<tr><td>All City Divisions and ABCs</td><td>• support and implement the Smart Commute Campaign</td></tr>
<tr><td></td><td>TBD (either City Planning or the TEO)</td><td>• provide key resources (staff time and budget) to the campaign</td></tr>
</table>

Resource Requirements: Staff time with resource requirements to be identified in the 2008 budget proposal of either City Planning or the Toronto Environment Office.

What will be achieved?
Sets an example for other large employers and brings about a reduction in emissions associated with motor vehicles.

Recommendations 9h (reducing the release of methane from solid waste decomposition)		
Lead Division / ABCC	**Roles and Responsibilities**	
Solid Waste Management	• lead evaluation of options	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	TEO / TAF / Toronto Hydro	• participate in evaluation

Resource Requirements: Staff time to conduct evaluations with reports to identify resource requirements for implementation.

What will be achieved?
Potential achievements will be identified through this research work and will be documented in a report to Council later this year and in the Phase II, Climate Change and Clean Air Action Plan report.

Recommendations 9i (eliminating use of 2 stroke engines in City operations)		
Lead Division / ABCC	**Roles and Responsibilities**	
Parks, Forestry and Recreation	• lead evaluation of options	
	Partner Divisions / ABCCs	**Roles and Responsibilities**
	Transportation Services / other divisions that use small engine equipment	• participate in evaluation

Resource Requirements: Staff time to conduct evaluations with reports to identify resource requirements for implementation.

What will be achieved?
Potential achievements will be identified through this research work and will be documented in a report to Council later this year and in the Phase II, Climate Change and Clean Air Action Plan report.

DOUBLE THE TREE CANOPY AND PROTECT AND ENHANCE GREENSPACE

The City of Toronto's environmental legacy and its ability to adapt to climate change is predicated not only upon the urban forest but also upon maintaining healthy greenspace assets. It is the ecological combination of healthy trees and healthy parkland – both existing and new plantings – that make a significant contribution to urban environmental quality.

Mature trees and shrubs along with healthy greenspace are key to increasing the resilience of the City against the effects of climate change. Examples of the benefits of healthy trees, plants and greenspace include:

- Reduction of storm water runoff and associated flooding;
- Removal of air pollutants;
- Shading and localized cooling for people up to 2 degrees Celsius;
- Reduce the need for air conditioning and associated use of energy;
- Assist in carbon sequestration; and
- Essential in maintaining biodiversity.

More severe weather such as drought, wind and ice storms are making it harder for trees to survive. Due to increasing intensity of urban development, there is less space for trees to grow, less ground water to maintain health, and more pollution such as salt that contributes to increased drought stress. In addition to parks and residential areas, it is important for trees to be located on streets, where they can have a significant cooling effect and where they benefit the most number of pedestrians. Unfortunately, paved streets are often the most expensive places to plant and maintain trees.

It is clear that increasing the urban tree canopy is an example of a "No Regrets" kind of action that is useful for many purposes in addition to climate change. The sooner that action is taken to plant trees, the sooner they will be mature trees that will have significant benefits. It is very clear however that this involves significant cost and effort.

Municipalities across North America have recognized the importance of integrating trees as part of the urban fabric, as a means of mitigating climate change and to provide for social, environmental and economic benefits. There is a growing body of knowledge that in quantifiable terms, demonstrates the importance of investing in trees.

Existing Activities and Programs

The City's Official Plan recognizes the importance of the urban forest and recommends protection and enhancement of the existing urban forest and increasing the City's tree canopy and diversity through both public and private development**.** A significant portion of the urban forest is located in the natural heritage system identified in the Official Plan. Development of a Natural Heritage Strategy is underway and it will present a framework that will better protect and enhance the natural heritage system.

The implementation of the Ravine Protection By-law in 2002 and the Private Tree By-law in 2004 provide important protection for the existing urban forest and helps safeguard its future. These bylaws are useful for regulating unnecessary removal of trees, for requiring acceptable pruning standards, and for educating the public and construction industry about tree protection requirements.

The strategic plan "*Our Common Grounds*" prepared by the Parks, Forestry and Recreation Division and adopted by City Council in 2004, includes a number of recommendations to protect and enhance the urban forest. This report also identified actions required to reduce the tree service backlog necessary to maintain the existing urban forest and to advance the objective of increasing the tree canopy. Since the 2004 report, Council has approved funding to reduce the tree service backlog, and in 2007 Council also approved a plan phased in over three years for improving maintenance of young trees and natural area plantings. The first year installment of these funds has been added to the 2007 operating budget and Urban Forestry anticipates that the second and third year installments will be approved in 2008 and 2009.

The existing urban forest has an estimated tree canopy of 17.5% and is comprised of approximately 3 million trees on public land and 4 million on private property. There are existing programs to plant and care for trees, however additional funding is needed to counter the effects of storm events, development pressure and increased public use of parks. A significant funding increase is needed to address the concerns of climate change, through increased planting, systematic block pruning, and education of community and industry partners.

What will be achieved?

Doubling the tree canopy will address urban heat island issues, absorb greenhouse gases, and improve the quality of living in the urban area. It is estimated that a large healthy tree can remove air pollution and it can, depending upon the conditions, provide localized cooling of up to 2 degrees Celsius.

The goal to double the canopy will only succeed if we provide better maintenance of the existing urban forest, better protection, increased planting on all city-owned lands, and partnerships with other large landowners that could potentially support additional planting. A Staff Report entitled, "*Achieving Tree Canopy Enhancement*" dated May 16, 2007 recommends a $350,000 study to identify what will be needed to reach canopy increase targets.

While that study is necessary and important the Parks, Forestry and Recreation Division has identified based on prior, unfunded requests that an increase of approximately $10.2 million in the operating budget and $2.8 million in the capital budget of the Urban Forestry Unit would result in the following programs:

- **Tree Planting and Partnerships** program ($4.26 M operating budget and $708,000 capital budget) to work with communities, planning for new areas of tree planting, and to plant and maintain trees in parks and on streets allowance, and on other city owned lands including that of agencies such as Toronto Museums and School Boards; and to develop partnerships with organizations such as CN and CP Railways, Hydro One, Universities etc. to advocate for additional planting of trees and maintenance of forested lands owned by such organizations. This program would also supply funds for additional planting to replace trees in the area of the Asian Longhorned beetle infestation, where trees continue to be cut to prevent the spread of this beetle.
- **Maintenance of Newly Planted Street Trees – Phase 2** ($1.29 M operating budget and $0.97 M capital budget) (see item 26 of September 2006 Economic Development and Parks Committee Meeting);
- **Proactive pruning of street trees** ($2.5 M) on a systematic, more frequent pruning cycle (see item 10 of September 2005 Economic Development and Parks Committee Meeting);

- **Improved Tree Protection** relating to Development and Construction Application ($1.245 M operating budget and $355,000 capital budget) to protect trees in the public and private realm (see item 25 of September 2006 Planning & Transportation Committee Meeting);
- **Implementation of Forest Health Care Program** ($250,000 operating budget) to implement Forest Health Care programs including the gypsy moth and tent caterpillar control programs (see item PE1.4 of January 2007 Parks and Environment Committee Meeting); and
- **Commercial Tree Maintenance** ($721,500 operating budget and $445,000 capital budget) program for replacement of commercial trees pits and trees (see item PE5.3 June 2007 Parks and Environment Committee Meeting).

Recommendation 10

City Council confirm its commitment to double the tree canopy from 17% to 34% and that City Council:

a. establish the **Tree Planting and Partnership Program**, in partnership with community organizations, schools, business improvement areas and volunteers, in order to expand resources for the planting, maintenance and care of trees; and

b. direct the General Manager of Parks, Forestry and Recreation to submit in 2007 a report to the Parks and Environment Committee that addresses:

    - steps that will be taken to increase tree plantings in the short-term;
    - strategic planning steps to achieve the goal of doubling the tree canopy by 2050;
    - the requirements for data collection and management and modelling;
    - projected operating and capital budget requirements; and
    - engagement of stakeholders through a Urban Forest Tree Canopy Steering Committee

<table>
<tr><td colspan="3">Recommendations 10a & 10b (working to double the tree canopy)</td></tr>
<tr><td>Lead Division / ABCC</td><td colspan="2">Roles and Responsibilities</td></tr>
<tr><td rowspan="8">Parks, Forestry and Recreation</td><td colspan="2">• Complete relevant studies and prepare proposals for consideration of City Council</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>City Planning</td><td>• regulatory and bylaw reviews
• lead development of the natural heritage strategy</td></tr>
<tr><td>TRCA</td><td>• key partner with PF&R</td></tr>
<tr><td>Transportation Services</td><td>• allocate $1 million a year for tree planting along streets</td></tr>
<tr><td></td><td></td></tr>
<tr><td>External Partners</td><td>Roles and Responsibilities</td></tr>
<tr><td>NGOs, Provincial and Federal Governments, Businesses</td><td>• Participate in the working groups</td></tr>
</table>

Resource Requirements: Future reports will identify resource requirements.

What will be achieved?
Doubling the tree canopy will address urban heat island issues, absorb greenhouse gases, and improve the quality of living in the urban area. It is estimated that a large healthy tree can remove an estimated 1 kg/year of air pollution and it can, depending upon the conditions, provide localized cooling of up to 2 degrees Celsius.

PARTNERSHIPS FOR CHANGE

Businesses, industries, research institutions, community groups, and residents all have an important role to play in improving air quality. The City can lead by example and build upon existing partnerships and forums to create new dynamic partnerships to fully engage everyone in addressing climate change.

Recommendation 11:

City Council continue to build the partnerships necessary with businesses, industries, research institutions, community groups, resident associations, neighbouring municipalities, other orders of government and international organizations in order to foster mutually beneficial improvements in air quality and climate change and that City Council:

a. direct the Director of the Toronto Environment Office in partnership with other appropriate City Divisions to invite interested stakeholders to join and participate in the following Enviro-Action Working Groups: (including the ones suggested in earlier recommendations) Commercial Fleets; Small Business; Good Neighbours Food Procurement; Trees and Greenspace; and Climate Change Adaptation -- in addition to working groups that already exist (e.g. Greening of Health-Care, Renewable Energy Working Group) and in other relevant sectors, such as social housing and sustainable transportation;

c. direct the City Manager and Deputy City Manager to continue to develop and enhance partnerships with:

- the Greater Toronto Area Clean Air Council;
- the Greater Toronto Transit Authority;
- the Provincial and Federal Governments;
- the Clinton Climate Change Initiative;
- the C40 Large Cities Climate Initiative;
- the International Council for Local Environmental Initiatives;
- the Federation of Canadian Municipalities; and
- other bodies, non-governmental organizations and organizations with a focus on addressing climate change and air quality.

<table>
<tr><td colspan="3">Recommendation 11a (Enviro-Action Working Groups)</td></tr>
<tr><td>Lead Division / ABCC</td><td colspan="2">Roles and Responsibilities</td></tr>
<tr><td rowspan="5">Toronto Environment Office</td><td colspan="2">• Organize, where deemed appropriate sector based or topic based multi-stakeholder working groups.</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>All appropriate City Divisions and ABCs</td><td>• Assist in the development and participate in the working groups.</td></tr>
<tr><td>External Partners</td><td>Roles and Responsibilities</td></tr>
<tr><td>NGOs, Provincial and Federal Governments, Businesses</td><td>• Participate in the working groups</td></tr>
</table>

Resource Requirements: Staff time to organize and coordinate.

What will be achieved?
Increased engagement of the many different business, not for profit and community organizations in the development and implementation of the solutions required to address climate change and smog.

<table>
<tr><td colspan="3">Recommendation 11c (Inter-governmental and international partnerships)</td></tr>
<tr><td>Lead Division / ABCC</td><td colspan="2">Roles and Responsibilities</td></tr>
<tr><td rowspan="3">Office of the Mayor / City Manager’s Office</td><td colspan="2">• Continue to identify and participate in local, national and international organizations and coalitions that will help facilitate solutions to climate change and smog.</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>All appropriate City Divisions and ABCs</td><td>• Assist in the development and participate where appropriate in these partnerships.</td></tr>
</table>

Resource Requirements: Staff time to organize and coordinate.

What will be achieved?
On its own Toronto will not solve its greenhouse gas and smog issues. Partnerships of the like described in this section can help the city find new solutions based on the actions of others and build the necessary momentum to encourage others to make similar changes.

PUBLIC AWARENESS AND KNOWLEDGE

Many of the biggest reductions in emissions will stem from changes in how people operate their homes and businesses, and how we travel about the city. The more people understand why they need to change and know what to change and how, the more likely they will be to adopt the new behaviours and lifestyles needed to produce measurable results.

While there is high awareness and concern about air pollution and climate change, there is a definite need to help people fully understand the causes and sources of air pollutants and greenhouse gases, the related health and economic effects.

Recommendation 12:

City Council acknowledge that the greatest reductions in emissions will occur from changes in how people move about the city and how they operate their homes and businesses and people need to understand why, what and how to change, and that City Council:

a. direct the Deputy City Manager, Cluster B, to organize a charette, to develop in 2008 a three year marketing climate change and air quality marketing campaign which integrates and utilizes existing programs and interactive web-based programs.

<table>
<tr><td colspan="3">Recommendation 12a (marketing and education campaign)</td></tr>
<tr><td>Lead Division / ABCC</td><td colspan="2">Roles and Responsibilities</td></tr>
<tr><td rowspan="3">Deputy City Manager, Cluster B</td><td colspan="2">• Coordinate organization of an inter-divisional and potentially community partners session to design the campaign</td></tr>
<tr><td>Partner Divisions / ABCCs</td><td>Roles and Responsibilities</td></tr>
<tr><td>All appropriate City Divisions and ABCs</td><td>• Participate in design and eventual delivery</td></tr>
</table>

Resource Requirements: Staff time to organize and coordinate with future resource requirements to be identified for the 2008 budget process.

What will be achieved?
Increased awareness and understanding of the issues of climate change and air quality and what is needed by individuals, businesses and governments to address these critical isssues.

PREPARING FOR CLIMATE CHANGE

The most recent reports from the Intergovernmental Panel on Climate Change are unequivocal. Globally, we are beginning to see the impacts in the melting of glaciers, sea level rise and more variable or extreme weather; we are also seeing many impacts in urban environments. In 2006, the Clean Air Partnership prepared a report entitled, "*A Scan of Climate Change Impacts on Toronto*" (http://www.cleanairpartnership.org/index.php) identifying what might be affects on climate change on Toronto. Some examples include:

- Growing numbers of heat waves, smog days and related illness and deaths
- Stress on electrical generation and transmission systems due to the increased use of air conditioning
- Increases in extreme weather events such as heavy rainfall, thunderstorms, high winds, freezing rain, hail, tornadoes, and other events that damage buildings, transmission lines and energy, water, sewer and transportation infrastructure and disrupt business
- Continued rise in weather-related insurance losses
- Decreased snowpack, which reduces spring and summer streamflow
- Declining lake levels, with possible effects on water quality and shipping
- Rise in diseases carried by insect vectors
- Damage to urban trees from insect pests
- Increased stress and damage to vulnerable ecosystems and habitats.

Climate stabilization will not be achieved for a very long time – perhaps centuries. As a result, it is important not only to reduce greenhouse gas emissions to limit the climate change of the future, but also to develop and implement strategies to reduce these impacts and adapt to the changes that are already underway.

This example and the anticipated impacts outlined above indicate the importance of:

a) fully understanding the risks and implications of Climate Change for Toronto; and
b) ensuring that we are prepared in terms of emergency planning as well as in our day to programs and operations.

The City has initiated many actions that will help reduce the impact of climate change and they establish a foundation on which a more comprehensive adaptation strategy can be built. A few examples are:

- Programs to expand and improve the health of the tree canopy (Urban Forestry);
- Integrated Plant Health Care program (Parks) to maintain and facilitate optimal soil and plant health through best practices such as aeration and compost utilization
- Design of culverts to withstand surges of water from heavy downpours (Transportation Services);
- Emergency power systems to reduce vulnerability to power failures (Toronto Water, IT Services and the Zoo);
- Wet Weather Flow Master plan to minimize flooding, erosion, etc. (Toronto Water);
- Emergency planning for severe weather (OEM);
- Heat and Smog Alert systems (TPH);
- Study to identify & assess populations vulnerable to heat related risks (TPH);
- Shade policies for recreation programs (Parks & Recreation);
- Promotion of green roofs/light roofs (Planning); and
- Watershed planning that incorporates climate change impacts (TRCA).

What further resource requirements and recommended allocations for expanding existing actions can only be determined with completion of a climate change vulnerability assessment. Further, the most cost effective adaptation actions responding to the greatest vulnerabilities need to be identified. In some cases, there may be recommendations to expand existing adaptation actions, or it may be most cost effective to pursue new types of adaptation actions.

Recommendation 13:

City Council recognize that climate change is occurring and will have significant affects on City operations and various vulnerable populations and that City Council:

a. direct the Director of the Toronto Environment Office, in consultation with the Medical Officer of Health, to complete in 2007 a process that engages all relevant City Divisions and Agency, Boards, Commissions and Corporations and community partners in order to prepare a report to the Executive Committee that:

   - identifies the components of a climate change adaptation strategy for City operations and the community;
   - includes the actions steps required to develop a climate change adaptation strategy including project budget costs;
   - ensures the strategy will incorporate the response mechanisms required to meet identified environmental changes including health related impacts, such as the heat alert response program;
   - identifies the requirements for data collection and management and modelling; and
   - incorporates stakeholders input;

b. authorize the Deputy City Manager, Cluster B, to retain the Clean Air Partnership to provide assistance and technical expertise in the development of the City's adaptation strategy, on a sole source basis to a maximum of $40,000 inclusive of all charges and taxes (funds in the amount of $40,000 have been included in the 2007 Operating Budget of the Toronto Environment Office (WT0038-4100) as approved by City Council), on terms and conditions satisfactory to the Deputy City Manager and in a form satisfactory to the City Solicitor

REGULAR MONITORING AND REPORTING

Regular monitoring, measurement and reporting will be essential to the success of our efforts to address climate change and air quality.

In addition, our understanding and knowledge of climate change and air pollution and the impacts on our health, the economy and the environment is constantly expanding and changing. As a result, we need to constantly monitor and evaluate our progress to ensure the appropriate policies, programs and actions are undertaken to address the issues of greatest and most significant concern.

Recommendation 14:

City Council will ensure there is ongoing monitoring and evaluation of our progress and reporting on that progress to the community and that City Council:

a. direct the Director of the Toronto Environment Office to continue to coordinate the City's actions to measure, monitor and model greenhouse gases and smog causing emissions to ensure efforts are focused on those that have the greatest effect on human health and the natural environment;

c. direct the Medical Officer of Health to expand the use of the federal Air Quality Benefits Assessment Tool to evaluate health and economic benefits that are associated with policy options that result in lower levels of air pollution in Toronto;

d. request the Board of Health to develop a proposed reporting program for the use and release of toxic air contaminants and to explore reporting of greenhouse gas emissions; and

f. direct the Deputy City Manager, to report on air quality and greenhouse gas emissions, outcomes of policies, programs and activities in connection with the Climate Change and Clean Air Action Plan and recommend changes and new actions as part of regular annual reporting on the state of Toronto's natural environment and outcomes of policies, programs and activities.

REDUCING AND DIVERTING SOLID WASTE REDUCES GREENHOUSE GAS EMISSIONS

One of the major by-products of solid waste is the generation of methane, a greenhouse gas 21 times more potent than carbon dioxide. The City has installed systems in most of its closed landfills to capture the methane and burn it off, usually to generate electricity, so it is not released into the air.

Reducing waste also means fewer trucks on the road to transport the waste, and recycled waste saves large amounts of energy that would otherwise be required to produce goods from raw materials. For example, every 100 tonnes of recycled aluminium saves about 14 million kWh of energy or about 3,500 tonnes of greenhouse gas.

Torontonians expressed a strong desire for the City to expand its waste diversion programs, and in particular many suggested that the City expand its programs to include multi-residential buildings in it recycling programs.

The City is aggressively working to divert as much waste as possible from landfills and is currently working towards a 70% diversion target (http://www.toronto.ca/garbage/seventy/index.htm). We must continue to work together as a community to achieve this goal and derive the improvements in air quality and climate change.

SAVING WATER: SAVES ENERGY AND REDUCES EMISSIONS

A key objective of City's Water Efficiency Plan (http://www.toronto.ca/watereff/index.htm), is to defer the expansion of the water and wastewater infrastructure necessary to accommodate projected population and business growth. Successful implementation of the Water Efficiency Plan will increase capacity in the treatment systems and defer almost $220 million in infrastructure expansions.

Treating and pumping water and wastewater requires a significant amount of energy, and the City utilizes approximately 550 million kWh every year. Water efficiency can reduce energy consumption and reduce emissions. It is estimated that the Water Efficiency Plan will result in a cumulative reduction of 90,000 tonnes of greenhouse gas emissions by 2011, and provide an ongoing annual saving of 14,000 tonnes after 2011.

Toronto Water is also taking action to reduce energy consumption by making changes to its treatment processes and installing new and upgraded energy efficient technology. The five year (2007-2011) $82 million capital plan for Toronto Water includes the following energy efficiency and co-generation initiatives:

- Facility lighting and electrical upgrades at Ashbridges Bay, Humber and R.C. Harris treatment facilities;
- Replacement of pumps & motors with high efficiency units at R.L. Clark , Horgan, Booster Pumping Stations and Humber treatment facilities;
- Implementation of real time energy monitoring at Ashbridges Bay, Humber and Highland Creek treatment facilities;
- Optimization of drinking water transmission system pumping; and
- Wastewater treatment process upgrades including completion of co-generation facility at Humber treatment facility and Fine Bubble Aeration at Ashbridges Bay treatment facility.

We must continue to work together to save water and help reduce greenhouse gas emissions.

NEXT STEPS

The recommendations presented in this document are a starting point for working together towards the emission reduction goals. In combination with the actions and activities that were already occurring in the City and the community, they create a foundation but on their own will not achieve the stated targets.

There are a range of ideas and suggestions that have been identified by the community which require further investigation. In addition, we need to establish the stakeholder and community Enviro-Action Teams presented in the Phase I Action Plan and allow these groups time to develop action plans. Also, time is required to build upon the actions taken to engage the community and reach out to residents, businesses and institutions and more fully engage them in the process and make the Phase II Action Plan truly a community plan for the entire city.

In early 2008, the Deputy City Manager will bring forth a Phase II: Climate Change and Clean Air Action Plan outlining additional recommendations for action.