



GREENING GREATER TORONTO



An initiative of the Toronto City Summit Alliance – June 2008

Stepping Up for a Greener, Greater Toronto

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Introducing the Greening Greater Toronto Initiative

Since its inception in 2002, the Toronto City Summit Alliance (TCSA) has been convening leaders from business, labour, the non-profit sector, and government to address major challenges facing the Greater Toronto Area (GTA). Clearly, the environment is one of the most pressing of these challenges. At the TCSA's 2007 Toronto City Summit, over 600 leaders from across the GTA called for a regional environmental vision that could build on existing efforts and leadership.

Greening Greater Toronto is the result. This ambitious initiative, six months in the making, defines a regional vision for a greener, Greater Toronto and charts a path toward achieving it.

Collective Wisdom: Greening Greater Toronto started as a unique partnership of almost 110 regional leaders representing environmental organizations, businesses, governments, and other groups. Their collective knowledge and capabilities provided a powerful beginning to this initiative. We look forward to adding hundreds more individuals and organizations as partners in Greening Greater Toronto.

Build on Successes: We have deliberately designed Greening Greater Toronto to complement and leverage the many excellent initiatives already launched by GTA environmental organizations, governments, businesses and others.

Environmental Measures: Our vision for green focuses on five clear outcomes: reduced greenhouse gas (GHG) emissions; better air quality; improved quality of water; improved waste reduction and management; and more sustainable land use. We are proposing tangible measures that can be used across the GTA. We have set a baseline, compared ourselves to other urban regions, and will track the GTA's progress.

Key Contributors: We have assessed the contributors to each measure in detail and described the best opportunities for real improvements. This comprehensive analysis is a first and provides some startling insights. Most importantly, it directs us to areas that need the most attention.

Specific Action: We have developed a set of immediate actions that build on initiatives already underway in the GTA. We begin with four initial green steps and will announce more over the next two years.

Greening Greater Toronto represents an open partnership of individuals and organizations across the GTA who are committed to making our collective vision of a greener GTA a reality. When we say our partnership is open, we mean it. We hope that you and many more individuals and organizations will join us. Making the GTA a green leader is achievable but will require the participation of all of us: non profits; businesses; trade unions; governments; and individual citizens.



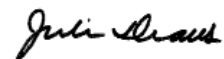
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Julia Deans
CEO, Toronto City
Summit Alliance

June 24, 2008

Our Vision

Imagine a GTA where the air is always clean and healthy. People can quickly get from Oshawa to Oakville – and everywhere in between – on a transit system that has dramatically reduced the number of car trips per person. Imagine that we recycle almost all of our waste. Beaches are always open and rivers are clean and teeming with aquatic life. All of this is within sight, if GTA residents join community and government leaders in deciding that they will act now.

Our vision is ambitious:

“To make the GTA the Greenest City Region in North America”

A green GTA will not only benefit the environment but can become a primary engine of the economy. A green GTA will generate strong green companies and skilled workers who can serve all of Ontario and Canada, while exporting innovative products and services around the world. Residents will be healthier and no longer face illness and even death caused by pollution. This GTA will provide a better quality of life; citizens will spend less time commuting and more time enjoying an abundance of green space and beautifully designed parks. Our GTA will stand proudly alongside the world’s leading environmental regions.

A green GTA will also be a magnet for talent, further enhancing the Toronto region’s reputation as being one of the best places to live and work in the world. Individuals and companies able to be based anywhere will want to locate in healthy environments and will increasingly flee those city regions which are unhealthy.

The GTA is home to the City of Toronto and the Regional Municipalities of Durham, Halton, Peel and York, together comprising a further six cities, 13 towns, four townships and one municipality.

The challenges all around us seem daunting. Urban sprawl and traffic congestion are increasing. Our current population of well over five million people – half of them in the City of Toronto – will grow to 7.3 million people by 2020.¹ Investment in public transit has not kept up with population growth. Our building stock is aging and energy inefficient. Our rivers and lakes are under assault from pollutants and contaminants washed into storm drains during wet weather. Every summer beaches are closed for days because they aren’t safe. And the human toll is significant. According to Ontario Medical Association estimates, smog contributed to over 2,600 premature deaths in the GTA in 2007 and resulted in over 7,600 hospital admissions.²

¹ Sources: Statistics Canada estimates, 2007, and projections of Ontario Ministry of Finance (<http://www.fin.gov.on.ca/english/economy/demographics/projections/demogo8tgta.html>)

² Source: Ontario Medical Association, Illness Costs of Air Pollution study, 2007.

In some areas we are making progress; innovative environmental programs dot the region. The Greenbelt is a world-leading example of protected land in an urban region. Properly implemented and maintained it can have an enormous impact on greenhouse gas emissions, green space, and air and water quality. Our municipalities have also developed substantive programs to divert more and more residential waste and many have announced ambitious goals for the future. We have a diverse and talented population that is ready for action on the environment,³ and we are fortunate to have strong and skilled environmental organizations that are passionate about solving problems ranging from climate change to smog. We also have in the Greater Golden Horseshoe one of the most powerful collections of scientists and researchers in the world; they can drive innovation across a wide swath of green technologies. In short, we are starting from a position of strength.

Our destination is a Greener Greater Toronto. This document represents a roadmap that can build on existing initiatives and help harness our strengths to get us there.

³ Participation levels in the March 29, 2008, Earth Hour event initiated by World Wildlife Fund demonstrated the growing environmental awareness of Ontarians. Of the about 300 cities and municipalities that officially participated worldwide, 85 were in Ontario. From 2005 to 2007, Ontario's per capita energy consumption dropped 4.6 per cent (Conservation Bureau Annual Report 2007, Supplementary Results, June 2008).

Where we are and where we're going

Setting Our Goals: We have set five environmental goals that will help us grow a Greener GTA.

 **reduced carbon/greenhouse gas emissions⁴**

 **clean air**

 **clean water**

 **reduction and effective management of waste**

 **sustainable land use and expanded greenspace**

Without measurement, you can't tell if you've achieved your goals. So in the spirit of continuous improvement, each of these five goals comes with its own indicators that will enable us to measure and assess our environmental quality. Data on the GTA's current performance against these and other potential indicators will allow us to benchmark ourselves against other cities and regions, set targets for the GTA, and measure progress over time. Going forward, we will partner with appropriate organizations in the region to ensure continuous measurement and monitoring of these indicators.

We plan to work with the Province and municipalities (some of which have already created targets for several of these measures) to develop specific GTA-wide targets for each measure and indicator.

To help chart our course, we set out to identify the factors that contribute to one or more of our measures at a very detailed level (see Appendix 3). We now have a more comprehensive understanding of the key drivers of our region's environmental footprint and are able to quantify how specific sectors and activities affect the environment.

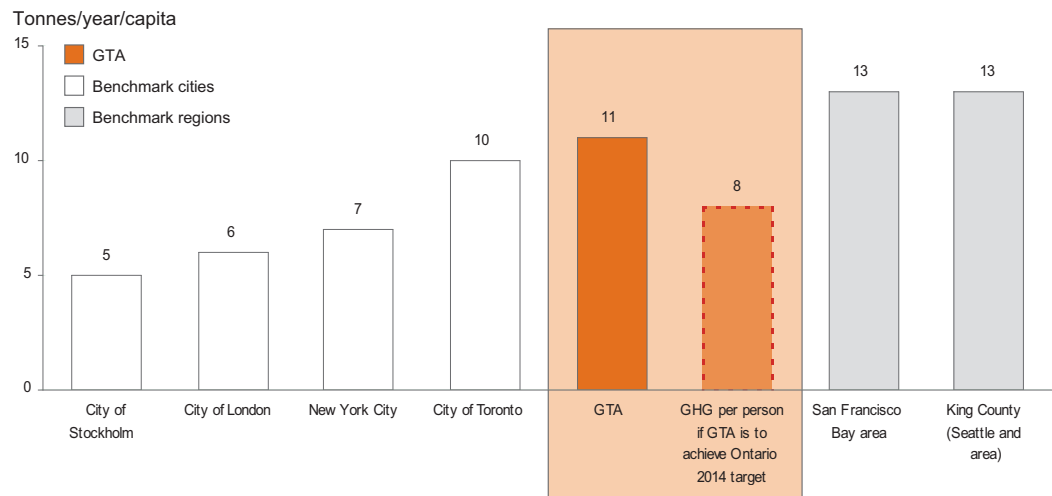
It can be difficult to develop a comprehensive set of benchmarks spanning all our indicators because individual cities and regions may use different methodologies and timetables for measuring environmental indicators. Despite this we have been able to compare the GTA against its peer cities/regions on a number of indicators that will serve as signals of our environmental performance. Over time we hope that more cities will follow a similar approach and methodology to track environmental progress in their regions and make benchmarking easier and more effective.

⁴ Greenhouse gas emissions is a term used to indicate emissions of gases such as carbon dioxide (CO₂) and methane. For measurements in this document, we have expressed greenhouse gases in terms of CO₂ equivalents (CO₂e), or carbon. For the purposes of this report, we use GHGs and CO₂e interchangeably.



Carbon Reaching the GTA’s share of the Province of Ontario’s targets for Canadian GHG emissions (a six per cent reduction from 1990 levels by 2014) will require dramatic action.⁵ Turning to the Kyoto Protocol, which Canada ratified, we estimate that achieving the target set for average annual GHG emissions during 2008–2012 will require an immediate and sustained 21 per cent reduction in GHG emissions from 2007 levels of 59.8 million tonnes.⁶ This is the equivalent of taking 2.5 million cars off the road and would bring the GTA closer to international leaders in emissions per capita such as the cities of New York and London, both of which benefit from greater population density.⁷

Greenhouse Gas Emissions (CO₂e) per capita⁷



Source: The Boston Consulting Group analysis based on multiple sources. See Appendix 3.

To accomplish this reduction, Greening Greater Toronto will seek to address the key drivers of GHG emissions:⁸

- Personal and commercial vehicles, which contribute 36 per cent of the region’s GHG emissions
- Non-residential buildings, which contribute 31 per cent of the GTA’s GHG emissions
- Home energy use, which contributes approximately 23 per cent of the region’s GHG emissions, more than personal vehicle use (21 per cent)
- Peak electricity use, which occurs only one per cent of the time but contributes four per cent of GHG emissions⁹

⁵ As reported in the Government of Ontario’s ‘Go Green’ action plan

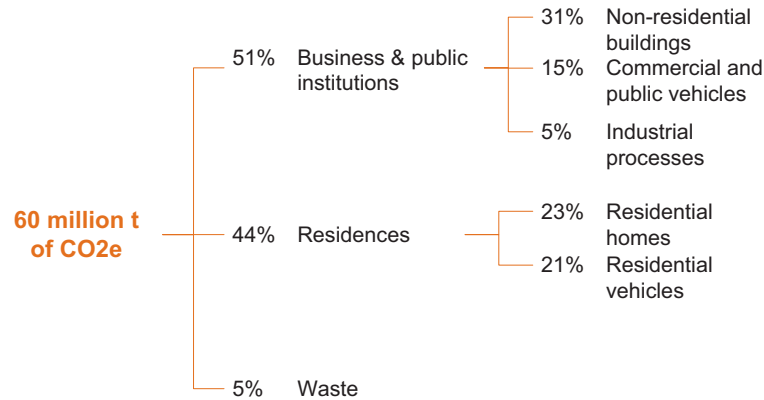
⁶ Our Kyoto target is six per cent below the 1990 level for 2008–2012 (source: The David Suzuki Foundation, http://www.davidsuzuki.org/climate_Change/Kyoto/). 21 per cent reduction estimate based on assumed compound annual growth rate (CAGR) in GHG emissions in Ontario of one per cent from 1990–2007 (CAGR is based on Ontario Power Authority Conservation Bureau’s estimate of GHG growth from 1990–2004) (source: <http://www.conservationbureau.on.ca/Page.asp?PageID=122&ContentID=1592>). Assumptions are that CAGR continued at same rate from 2004 to 2007, and that GHG growth in GTA has been at same rate as GHG growth in Ontario.

⁷ New York City and City of London estimates sourced from New York City’s 2007 PlaNYC report. San Francisco Bay Area calculated using weighted average of GHG emissions per capita from websites of municipalities in the Bay Area. GTA GHG emissions per capita calculated based on population of 5.6 million and using Greening Greater Toronto estimates for GTA GHG emissions (see Appendix 3 for more details). GHG per capita for GTA to achieve Ontario targets based on Greening Greater Toronto estimates using 2014 estimated population of 6.3 million and emissions target of 47 million t. Other cities and regions are as reported on the municipal website of each city or region listed.

⁸ Source: The Boston Consulting Group analysis based on multiple sources (see Appendix 3)

⁹ IPSP: Determining Resource Requirements

Key contributors to GTA Greenhouse Gas emissions (CO₂e)



Source: The Boston Consulting Group analysis based on multiple sources. See Appendix 3.

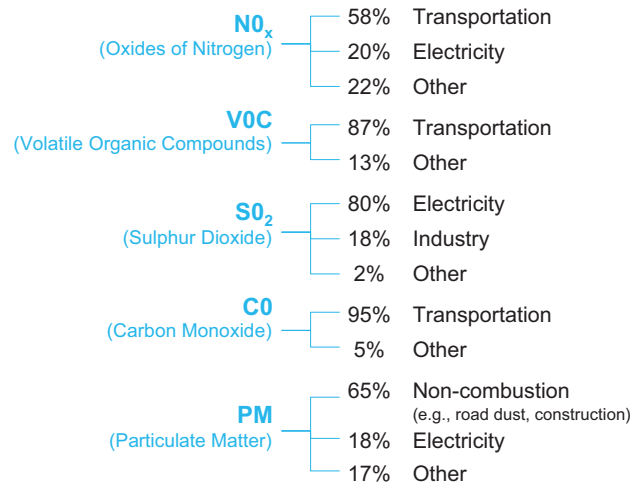


air We have become accustomed to days when our air quality reaches unacceptable levels.¹⁰ While our smog problems are often made worse by factors beyond our control (e.g. trans-boundary emissions from the United States), 45 per cent of smog-forming pollutants originate in our area. Our current use of coal for electricity generation (scheduled to end in 2014) is a major source of sulphur dioxide, nitrogen oxides and particulate matter in our air.

2,610

Number of premature deaths in the GTA contributed to by smog¹¹

Causes of smog-forming pollutants originating in the GTA



Source: The Boston Consulting Group analysis based on multiple sources. See Appendix 3.

¹⁰ According to Environment Canada, there were 29 days with smog alerts in 2007 in the City of Toronto.

¹¹ According to estimates by the Ontario Medical Association



water Over the past decade, the number of days beaches in the Toronto area are posted each year has seen little to no improvement.¹² A truly green GTA will not tolerate days when it is not safe to swim at our beaches.

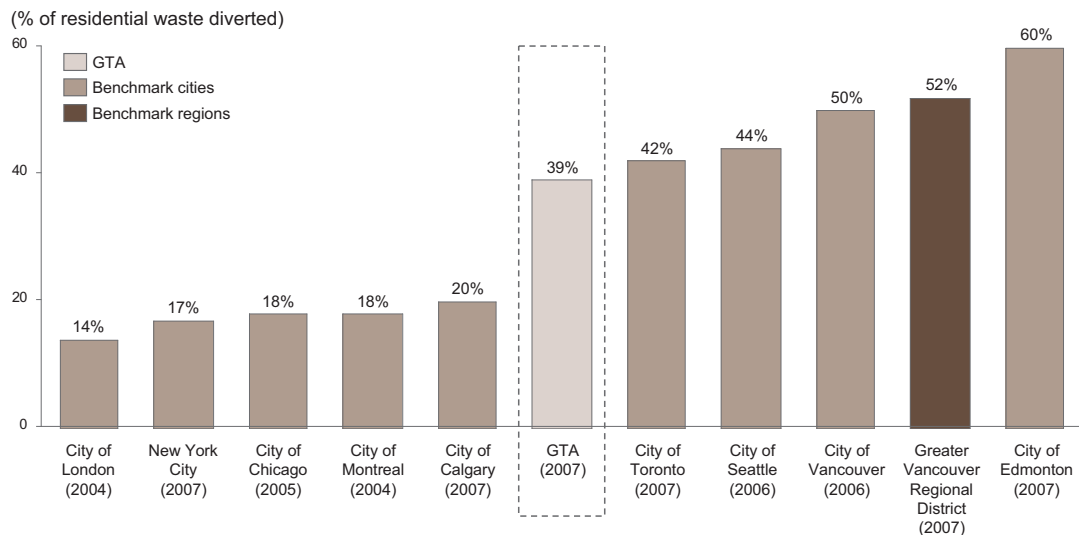
The single biggest driver of contaminated waterfronts and watersheds is urbanization. While progress has been made in developing plans and initiating retrofits to treat urban storm water drainage in many of the GTA municipalities, 62 per cent of developed land in the region remains without some form of storm water controls. This means that there is continued contamination of rivers and lakes by pollutants such as e-coli, phosphorous, and metals.¹⁴ This does not affect the quality of our drinking water.

34
The average number of days each year swimming is restricted at our beaches¹³



waste The City of Toronto, the Town of Markham and other GTA municipalities have made significant improvements to increase waste diversion in recent years. Markham has achieved a 70 per cent residential waste diversion rate, and has a target of 75 per cent in 2008.¹⁵ The City of Toronto has achieved 42 per cent residential diversion and has a target of 70 per cent by 2010.¹⁶

Residential waste diversion¹⁷



Source: The Boston Consulting Group analysis based on multiple sources. See Appendix 3.

¹² Toronto and Region Conservation Authority

¹³ Toronto and Region Conservation Authority. Rolling five-year average for 2003–2007 across 10 beaches

¹⁴ Toronto and Region Conservation Authority

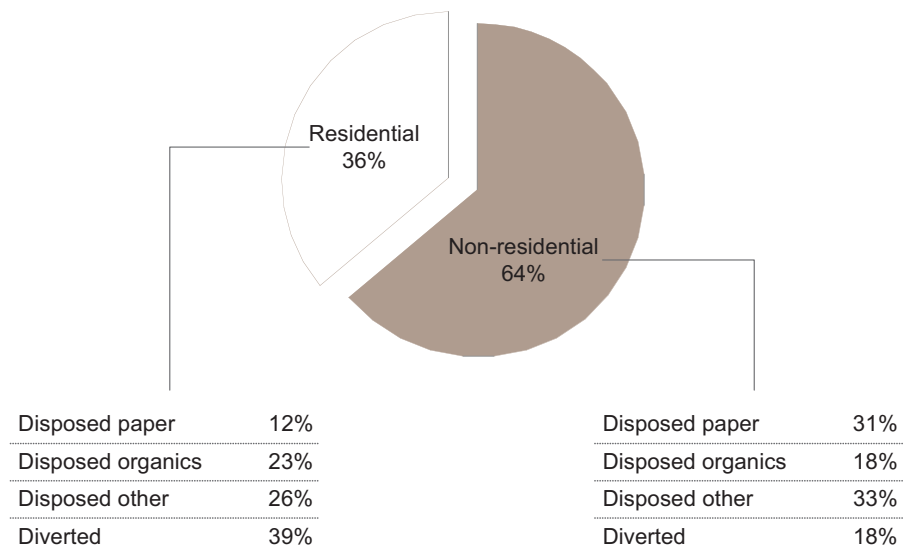
¹⁵ Town of Markham news release, “Markham First Municipality in Canada to Adopt Local Food Plus (LFP) Practices”, June 4, 2008.

¹⁶ City of Toronto website (<http://www.toronto.ca/target70/index.htm>)

¹⁷ Calgary and Edmonton figures: Chris Turner, “Edmonton Wastes No Time Reaching No. 1”, The Globe and Mail, May 31, 2008. Chicago figure: Peter Gorrie, “Blueprint green; David Miller says this will be North America’s greenest city. Chicago’s goal is exactly the same. Here’s how Toronto can triumph”, Toronto Star; February 17, 2007, pg. A.1. Other figures as reported on the municipal website of each city or region listed

On residential waste diversion, the GTA is well ahead of many U.S. and Canadian cities and is continuing to progress. But while public discussions about waste management typically focus on residential waste, it's actually non-residential waste that makes up the lion's share of the GTA's total. We estimate that non-residential waste represented 64 per cent of overall waste volume in 2007.¹⁸ For every five tonnes of waste generated by business and public institutions, four tonnes end up in a landfill. A full 30 per cent of non-residential waste comprises paper that can and should be recycled. Commercial recycling is not regulated by municipalities and the fragmented industry of commercial waste removal has made only fitful progress – likely because clients are not exercising pressure and sorting costs for recycled materials have been too high to justify it.

Sources of waste in the GTA



Source: The Boston Consulting Group analysis based on multiple sources. See Appendix 3.

¹⁸ Source: The Boston Consulting Group analysis based on multiple sources (see Appendix 3)

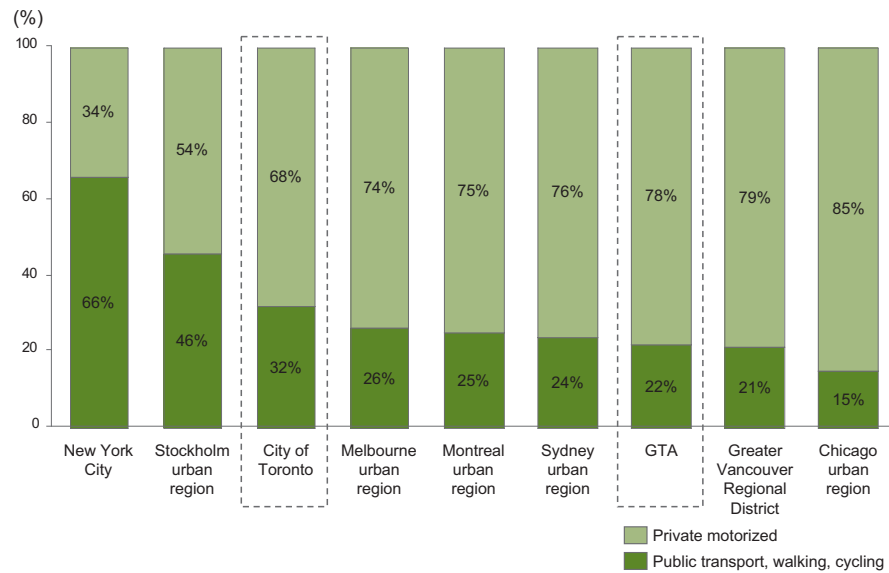


land use Finally, if the GTA is to become the greenest region in North America, we will need to develop more compact and livable communities in which people can live, work and play. A greener GTA will catalyze the growth of new communities and reshape existing ones through integrated planning of transportation, energy systems and infrastructure.

Parts of the GTA have average percentages of green space much lower than other major North American cities and city regions. We need to accelerate efforts to increase tree canopy and green space in our urban areas. We must also support legislation for the continued protection of our one million acre Greenbelt, a significant proportion of which is in the GTA.

Our level of dependence on personal vehicles for transportation acts as a gauge of how efficiently we are designing our communities, urban surroundings and public transit system. It also affects other environmental measures such as GHG emissions and air quality. Residents of the GTA are more reliant on personal vehicles than their peers in many other regions which have greater density of population. This reflects both behavioural choice as well as public transit limitations inherent in our current land use.¹⁹ The GTA faces rapid population growth; we must act today to increase public transit use and other alternatives to personal motorized vehicles such as walking and cycling.

Transportation mode share 2007



Source: The Boston Consulting Group analysis based on multiple sources. See Appendix 3.

¹⁹ Source: Neptis Foundation, www.neptis.org

Opportunities for Greening Greater Toronto

Many people in the GTA are passionate stewards of the environment, and their work is having tangible environmental impact. The Greening Greater Toronto initiative is focused on stepping up their efforts by developing concrete actions that will extend across the region and make the GTA a leader in North America. In identifying opportunities to augment current activities, we are mindful of the need to address several barriers:

Awareness is wide but not deep: Many people are not fully aware of the environmental damage caused by their own behaviour. This is compounded by a lack of tools and incentives that will allow them to translate awareness into action. For example, decision makers and consumers may not be aware of the compelling financial and environmental benefits of installing more energy efficient appliances as soon as possible.

Market inefficiencies: Large commercial building owners often structure leases to pass along all energy costs to tenants, so they don't have an economic incentive to install new systems that save energy, even though most retrofits can pay for themselves over time. Similarly, the process for retrofitting individuals' homes is often cumbersome and complex, requiring multiple steps – from hiring energy auditors and contractors to arranging financing providers and accessing government rebates.

In some cases regulation may be required to ensure that appropriate rewards and penalties motivate change. For example, 2007 commercial waste diversion rates are less than half that of residential rates, even though commercial waste accounts for 64 per cent of overall waste volume.²⁰ Unless an industry-led solution is developed, this will require regulatory intervention.

Limited regional coordination: While individual municipalities and their residents are developing cutting-edge environmental strategies and best practices, there are few mechanisms to ensure these are shared across GTA households, organizations and governments.

The challenge is daunting. The good news is that we understand the problem, we have the tools and resources to solve it and, most importantly, we have the leadership to drive change. Greening Greater Toronto is focused on working with key leaders and our partners in the GTA to achieve our goals. In this section, we focus on the opportunities currently in development.

Greening Households

An increasing number of people are stepping up to green their homes. There has been much work done to encourage residents to make changes in their homes and lives to reduce their environmental impact, including through the environmental initiatives of GTA municipalities, such as the GTA Public Health Units' 20/20 The Way to Clean Air (a region-wide energy conservation campaign), Mississauga's Living Green campaign, and the City of Toronto's Live Green Toronto campaign.

However, accelerated change is still needed. The complex interdependencies of our activities and their environmental impacts are not easily grasped, especially by busy people. We will work with partners to further engage all GTA residents – from youth to

²⁰ Source: The Boston Consulting Group analysis based on multiple sources (see Appendix 3)

seniors – in environmental actions that will affect all five measures through an exciting campaign focused on rewarding green behaviours. Our focus will be on helping GTA residents to better understand the environmental and economic impact of choices available to them, and to make it easier to make those choices. Greening Greater Toronto will:

- Increase our ability to see and experience environmental best practices in action by creating a highly-visible network of demonstration centres and projects across the region, together with easy-to-access web-based information about what is possible and how to do it
- Promote awareness and simplify access of ways to accelerate improved energy efficiency of residential buildings, homes and household equipment
- Support increased waste diversion in apartment buildings and condominiums, as well as highlighting major opportunities in residential waste diversion in general
- Raise awareness to increase demand for greener homes in more compact, liveable and transit-supported communities
- Make sure that residents can make informed choices about electricity use, through innovative use of tools such as smart meters and time of use pricing, and have greater access to renewable energy
- Ensure that residents understand both the ‘why’ and the ‘how’ for making changes on their property to reduce rainwater runoff
- Ensure that residents can make informed food choices that support environmental responsibility
- Strengthen community capacity through outreach and coordination with publicly-sponsored programs, community groups and local networks, and collaborative campaigns to make it easier for individuals to adopt green practices
- Encourage environmental awareness and action amongst children and youth, building on the recommendations of the provincial Working Group on Environmental Education led by Dr. Roberta Bondar²¹

Greening Businesses

The potential for business to create positive environmental impact is often underestimated. A greener corporate sector is essential to achieving our environmental goals: 64 per cent of waste and almost 45 per cent of GHG emissions in the GTA in 2007 were generated by business.²² Many businesses in the GTA have become leaders in reducing environmental impact – the Greening Greater Toronto initiative strives to move them further and faster. We will:

- Educate business in partnership with organizations already promoting green procurement practices and other partners on the opportunities to green their operations and procurement activities and the many financial and reputational reasons for doing so now (e.g. increased efficiency and competitiveness, new market opportunities, staff attraction and retention, and reduced absenteeism)
- Address the opportunities to create a dramatic increase in energy efficiency retrofits of commercial buildings and green building practices in order to reduce greenhouse gas emissions and improve air quality

²¹ Shaping Our Schools, Shaping Our Future, Report of the Working Group on Environmental Education, June 2007, Ministry of Education. See <http://www.edu.gov.on.ca/curriculumcouncil/shapingSchools.pdf>

²² See Appendix 3 for more details

- Ensure GTA businesses that are already working to reduce their carbon footprint internally have an opportunity to go even further by creating a fund to invest in domestic public and non-profit projects to reduce greenhouse gas emissions and improve air quality
- Highlight the significant opportunity to improve commercial waste diversion and work with businesses and government to achieve results quickly
- Assist business in considering implications of land use and urban sprawl when choosing office, retail and logistics centre locations, and designing employee programs that encourage greener practices (e.g. Smart Commute²³)
- Encourage commercial building owners and managers to work with tenants to adopt green best practices, from recycling to bicycle parking and other activities
- Support small and medium businesses as they extend and promote their green practices, products and services, and help green their communities through local networks and other activities

Greening Public Institutions

Many of the opportunities for public institutions are similar to those for business. However, the context is different, and so we will:

- Encourage and assist governments to play a leading role in adopting green technology,²⁴ retrofit existing buildings and implement planning decisions and best practices that will positively impact all of our environmental measures through partnerships with existing networks
- Develop additional ways for public buildings such as hospitals, schools, and public housing to access financing for environmental investments
- Promote environmental audits and, where needed, energy efficiency upgrades for all eligible public buildings

Greening Government Policy Tools

Bold government leadership at a municipal, provincial and federal level is essential to mitigate our environmental impact within and across the GTA municipalities. In recent years our governments have demonstrated their capacity to lead in environmental policy and act as stewards of the environment. Their continued leadership role is critical for success in greening the GTA going forward.

Greening Greater Toronto will continue to raise the awareness of leaders at all levels of government about key environmental opportunities, to facilitate multi-sector dialogues with key stakeholders, and to garner support for bold political actions that protect and enhance the environment and benefit GTA residents. We will call on all elected representatives to step up, champion a regional strategy to make the GTA the greenest city region in North America, and take action, through regulation if necessary, to address

²³ The Smart Commute Initiative operated from May 2004 to March 2007 as a partnership of the towns, cities and regions of the Greater Toronto Area and Hamilton, with partial funding from Transport Canada and private sector partners. The Initiative continued and became a program of Metrolinx, in partnership with local municipalities, as of January 1, 2008. Metrolinx is an agency of the Government of Ontario.

²⁴ Green technology, environmental technology, and clean technology (also referred to as cleantech) are often used interchangeably. These can be defined as “technologies that present practical solutions to the large-scale challenges of climate change, clean air, water quality and soil” (Source: Sustainable Technologies Development Canada website: <http://www.sdte.ca/en/cleantech.htm>). Greening Greater Toronto uses the term “green technology”.

areas where market failures exist. We also invite residents to join Greening Greater Toronto in encouraging bold political leadership on key environmental issues.

Greening Greater Toronto challenges municipalities to take the following immediate actions:

- Set GTA-wide targets across the five measures and embed these into municipal strategic plans to measure and track the quality of the environment and progress in environmental leadership
- Continue working with key stakeholders to support the continued development of region-wide guidelines and incentives to protect and retrofit existing buildings and to accelerate the construction of new green buildings, incorporating life-cycle accounting
- Promote the region-wide expansion of green procurement strategies that consider the economic and environmental (life-cycle) performance of products and technologies and the purchasing of local sustainable foods²⁵
- Identify additional opportunities to implement green technology in urban design, such as district heating, deep water cooling and roof gardens
- Evaluate the impact of real cost pricing of municipal services and utilities
- Accelerate awareness about the link between urban runoff and contaminated watersheds through measures such as the City of Toronto's Wet Weather Flow Management Master Plan, which promotes downspout disconnection and increased permeable surfaces

In its Growth Plan for the Greater Golden Horseshoe (Places to Grow), Greenbelt legislation and Metrolinx (the newly-created Greater Toronto Transportation Authority), the Province of Ontario has provided us with a new framework to manage our projected growth and protect our environment. This framework will succeed only if we make dramatic changes in our behaviour and land use – doing things that will improve our long-term environmental, economic and social sustainability and making sure that we don't make long-lasting decisions that will hinder it.

We share a sense of urgency in the need to make dramatic changes.

We support the regional and municipal politicians charged with implementing them, and encourage the Province to continue working to ensure that municipalities and agencies such as Metrolinx have adequate revenue tools and a strong fiscal framework capable of supporting a future GTA that is environmentally sound, prosperous, and socially just.

The following are other recommended focus areas for the provincial government to complement or supplement existing policies:

- Champion a procurement initiative to increase the supply and purchase of green products, technologies and local sustainable food
- Establish a Greater Toronto Area Fund modelled on the Toronto Atmospheric Fund
- Continue to support the installation of sub-metering of electricity usage in all commercial buildings and appropriate multi-unit residential buildings

²⁵ Local sustainable food procurement can have spin-off benefits in the revitalization of rural communities in the GTA and beyond by making farming a viable occupation. See, for example, Town of Markham's local food policy (www.markham.ca/markham/departments/newscentre/news/080604_lfp.htm) and the City of Toronto's Food Charter (www.toronto.ca/food_hunger/pdf/food_charter.pdf).

- Support innovation and attract investment in environmentally sustainable technologies and energy sources
- Ensure the timely move to time-of-use pricing for electricity use and other energy-consuming activities, with appropriate information tools for consumers
- Increase awareness of the highly subsidized nature of Ontario electricity, which results in electricity prices half those of New York, Boston, Germany and Japan²⁶
- Support the gradual and selective removal of electricity subsidies (while protecting those economically at risk who may become vulnerable due to higher prices)

Although much of the focus of our initiative to date has been at the provincial and municipal levels, it is fundamental that the federal government address the protection of the environment. In the next phase of Greening Greater Toronto, we will focus on defining a clear role for the federal government and advocate that it take concrete actions to address the environmental challenges in the GTA and cities across Canada, including:

- Establishing clear guidelines on GHG emissions, including exploring caps and a national market-based price for carbon²⁷
- Advocating producer responsibility and stewardship for consumer goods
- Developing a national transit plan
- Expanding infrastructure investment for transit

Building A Green Economy

Jane Jacobs recognized long ago that cities are the key drivers of economic development and success. Her theory that strong local markets will lead to stronger export markets is also relevant as we transition to a more energy efficient and environmentally sustainable economy. By developing a local market for leading green goods and services – from energy retrofits to water quality management tools to geothermal installations, we can leverage the infrastructure, skills, and production capacity we require to supply our own demand and be in a position to export these goods and services to other cities.

Being Canada’s largest city region gives us many areas in which to innovate. Our strong and varied corporate and industrial base can drive demand, scale, and affordability. Our world-class research and commercialization infrastructure, including our universities, colleges and innovation centres, gives us the bench-strength to enable large-scale technological innovation.

The GTA’s uniquely diverse population is also an asset we can leverage in taking advantage of and contributing to the best technologies and practices being developed around the world. A greener GTA will increase our attractiveness to skilled talent. We can draw on the knowledge and international networks that new GTA residents bring to the GTA to tackle challenges here and to expand exports of GTA-made solutions to markets worldwide.

²⁶ Source: http://www.ontario.com/welcome/0out_506.asp, Ontario Clean Air Alliance, “Tax Shift: Eliminating Subsidies and Moving to Full Cost Electricity Pricing”, March 3, 2008.

²⁷ Note: Ontario and Quebec have unveiled a joint carbon cap-and-trade plan. Source: www.cbc.ca/canada/story/2008/06/02/ont-que.html

The green technology industry has the potential not only to generate efficiency savings, but to become a powerhouse of wealth and job creation. As far back as 2002, the environmental technology industry generated total revenues of \$6.6 billion.²⁸ A greener, innovation-oriented economy will generate new and better jobs. The Province of Ontario has recognized this in creating its \$1.15 billion Next Generation of Jobs Fund, designed to help innovative companies and secure new knowledge-based jobs and investments in Ontario.

The GTA has quietly become one of the major technology hubs in North America,²⁹ and our green technology sector has already produced world-leading environmental research and technologies in high-growth areas such as waste management and climate change technologies,³⁰ including smart meter and control systems and new systems for heating and cooling. We have a time-limited opportunity to build on these early wins and become a market leader in green goods and services. If we do not step up and seize it, we will quickly be surpassed by other city regions and have to resign ourselves to branch plant status.

Four Initial Green Steps

Greening Greater Toronto is developing ways to address the opportunities for green households, businesses, and government practices and policies described above. We are working together and with additional partners to step up existing efforts, and to launch new programs, all designed to attack the key contributors to the five measures. Over the next two years, we will announce additional efforts and programs as they are ready to move ahead.

For more information on each of these programs see Appendix 2.

The first four programs Greening Greater Toronto is launching are:

1. **A region-wide plan to accelerate retrofits of GTA buildings.** Buildings are the greatest consumers of energy in the GTA, and can be retrofitted to dramatically reduce their GHG emissions, often at no net cost.³¹ Greening Greater Toronto will help to drive large-scale uptake of building retrofits in conjunction with efforts underway such as those of the Ontario Power Authority, the Building Owners and Managers Association (BOMA), the Canada Green Building Council, the City of Toronto's Better Buildings Partnership and other municipal retrofitting projects. Activities will include: launching a "Corporate Greening Challenge" awareness campaign; creating a region-wide effort to promote the use of innovative retrofit financing mechanisms; convening key commercial tenants to work with building owners to undertake retrofits; advocating for the region-wide expansion of effective localized retrofit programs; and building a task force dedicated to tackling the barriers to retrofitting buildings.

²⁸ Statistics Canada Environmental Revenues, www.statcan.ca/english/research/16-001/MIE/2005002/tables/table3.htm.

Note: includes environmental goods related to water, air, waste, technologies to reduce GHGs, recyclable materials and other

²⁹ The Toronto region has the 3rd largest biotechnology industry and the 3rd largest ICT (Information and Communications Technology) industry in North America Source: TRRA Fact Sheet, 2008.

³⁰ OCETA (September 2006) Strategic Assessment of Ontario's Environmental Technology Sector; Prepared for the Ontario Ministry of Research and Innovation Commercialization Branch, p. 3

³¹ Cost of the retrofits can often be paid through the savings from reduced energy use. Source: Driver tree analysis. Reductions based on estimates from Clinton Climate Initiative, Honeywell, Ameresco Canada, and case studies from National Resources Canada's Office of Energy Efficiency, City of Toronto.

2. **A Network of Education and Demonstration Centres and Projects.** Awareness campaigns have informed GTA residents why they need to “go green”; people now need practical advice and demonstrations about how to accomplish this goal or step up their existing efforts. In response, Greening Greater Toronto, together with Evergreen, the Toronto and Region Conservation Authority and other partners, will create a highly-visible network of demonstration centres and projects (fixed-site and mobile) where people will be able to see and experience environmental best practices in action. This will be complemented by easy-to-access web-based information about how to reduce one’s environmental footprint. These “how-to” sources will draw experience and inspiration from GTA and other regions’ efforts to provide practical advice to homeowners and businesses, such as Chicago’s Center for Green Technology and the popular ‘Green by Design Workshops’ in Austin, Texas.³²
3. **A fund through which businesses will contribute to the “greening” of NGOs and the public sector.** Leading businesses are greening their operations, and seeking additional opportunities to positively impact the environment and their local communities. We will establish a multi-million-dollar Domestic Emissions Reduction Fund, allowing corporations that are already reducing their GHG emissions internally to contribute to additional emission reductions by funding non-profit and public sector projects to reduce greenhouse gases. Greening Greater Toronto’s Fund will build on best practices found in other regions and contribute to innovation around the world in establishing trusted, local emissions reduction funds.
4. **A corporate green procurement program.** Businesses and other organizations including public and non-profit institutions drive the majority of our waste and GHG emissions. They also contribute to issues in land use, as well as air quality and water quality.³³ Successful procurement programs such as those developed by Richmond, B.C., and the City of London, U.K., have demonstrated the power of procurement in contributing to market growth and environmental improvement. Greening Greater Toronto will promote a region-wide transformation of business operations through the implementation of a major Green Procurement Initiative focused on accelerating the adoption of green products (including local sustainable food), services, technologies, and business practices.

³² Austin Energy runs the Green by Design Workshops, and has been recognized by The Clinton Foundation C40 and others as one of the United States’ most successful sustainable building programs.

³³ Source: The Boston Consulting Group analysis based on multiple sources (see Appendix 3)

How You Can Step Up

Greening Greater Toronto offers a plan and metrics to help ensure that our vision of being the greenest city region in North America becomes a reality. Our specific initiatives seek to build on policies and programs and not duplicate existing activities. The hallmarks of this plan are:

1. **Partnership:** We have established the Greening Greater Toronto Partnership and we invite individuals and organizations to work together to drive change and achieve our shared goals by supporting the overall initiative and participating in individual projects. With our Partners, we will harness our collective enthusiasm, resources and capabilities to support and advance existing and new programs.
2. **Implementation groups:** We have introduced, and will continue to develop, program- and topic-specific groups to drive programs to action. These groups will continue to develop ideas, identify partners, stakeholders and owners for the programs, develop implementation plans, and create financing mechanisms for existing and new programs.
3. **New programs:** Although Greening Greater Toronto is launching today with four initial programs, many others are under development. Greening Greater Toronto's process is open and collaborative, and we welcome additional ideas and opportunities to support and collaborate on current and new activities.
4. **Measurement:** A key to achieving our vision is to understand our progress against our goals. Greening Greater Toronto will work with municipalities to develop individual targets, and track progress against their goals along the five key measures. We will refocus our attention as needed if goals are not being met and will celebrate as milestones are reached.

Greening Greater Toronto has created partnerships and an action plan to make significant progress toward the vision of becoming the greenest big city region in North America. Over the next two years, we will help to bring about needed changes and scale up promising initiatives already underway. We are eager to work alongside and support other people and organizations already leading complementary initiatives in the region.

A strong consensus has been formed that action must be taken quickly to address environmental issues at the global and local levels. Greening Greater Toronto is bringing people together to multiply their impact, accelerate progress and measure the results. The outcome will be a healthier and more enjoyable place to live, a stronger economy and the knowledge that we have contributed genuine, lasting solutions to a global crisis. We thank you in advance for joining us in helping the GTA become the greenest big city region in North America.

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Appendix 2 – Initial Greening Greater Toronto Initiatives

Initiative 1: Retrofitting Commercial Buildings

The stationary energy used by buildings (heating, cooling, lighting, etc.) accounts for 23 million tonnes – one third of the total – greenhouse gas (GHG) emissions in the GTA.¹ Buildings that have been retrofitted with today’s technology – including higher efficiency and renewable technologies – use 10 per cent to 50 per cent less energy than non-retrofitted buildings.²

Energy service companies (ESCOs) will guarantee the energy savings from retrofit projects, and are paid through the energy savings that these projects create. This ensures that building owners can, in effect, increase the energy efficiency of their buildings for free. Yet too few of the region’s buildings have been retrofitted – commercial buildings in the region continue to waste energy and contribute to global warming and poor air quality. A major reason is that most leases are structured to pull all energy costs through to tenants, diminishing the incentive for landlords to implement retrofits. There is also a scale issue – bundling multiple smaller projects can dramatically reduce the costs of retrofits.

The City of Oshawa made energy improvements to its City Hall and other municipal buildings which will reduce GHG emissions by 3,900 tonnes and reduce energy costs by about 50 per cent, saving Oshawa approximately \$500,000 annually.³

To help remedy this, Greening Greater Toronto will work to accelerate retrofits undertaken in the GTA, by:

- Hosting a Tenant Summit, inviting the tenants of the largest GTA buildings to use their influence with building owners to audit their buildings and implement all energy efficiency projects that can be performed in a cost-effective manner
- Launching an effort to promote retrofits by: acting as a central resource for retrofit data in the GTA (in coordination with the Greening Greater Toronto procurement website); working with existing programs in the GTA including the Ontario Power Authority, the Building Owners and Managers Association (BOMA), and the City of Toronto’s Better Buildings Partnership to promote retrofits; and, based on Berlin’s success, preparing tenders for retrofitting groups of buildings in the GTA to realize available economies of scale
- Working with the Province and municipalities to enable innovative financing packages, like those offered by the Toronto Atmospheric Fund, to multi-unit residential buildings (MURBs) to increase energy efficiency in municipalities in the GTA which the Toronto Atmospheric Fund does not serve

¹ Source: The Boston Consulting Group analysis based on multiple sources (see Appendix 3)

² Source: Estimates from Clinton Climate Initiative and case studies from Natural Resources Canada’s Office of Energy Efficiency and the City of Toronto’s Energy Efficiency Office.

³ Source: City of Oshawa, Inside Oshawa Annual Report to Residents, 5th Edition, 2007. Available online: http://www.oshawa.ca/whatsnew/Inside_Oshawa_2007_FINAL.pdf

- Creating a Retrofit Working Group of major tenants, building owners, financing companies, and retrofit contractors to create easy-to-use, cost-effective financing products for building owners and link major tenants with building owners to ensure that tenant-owner “split incentive” issues are addressed on an ongoing basis
- Developing a high profile media campaign to highlight local organizations that successfully undertake large scale retrofits. This campaign may take the form of a “corporate challenge”, which would call for a CEO-level commitment to green company operations

The City of Toronto’s Toronto Atmospheric Fund (TAF) has pioneered the creation of a series of innovative loans to finance energy-efficiency investments in new and existing residential buildings. These loans are used to increase the energy efficiency of Toronto residential buildings by up to 35 per cent. The TAF model is being duplicated throughout North America.

Through the Working Group, the Green GTA will continue to support and advance initiatives to retrofit the Toronto region’s building stock, such as:

- A mass roll-out of sub-meters so that building tenants are individually metered for energy use
- Publishing available energy intensity data on buildings in the GTA
- Creating a local advocacy group made up of GTA-based ESCOs to market the benefits of retrofits and renewable energies
- Working with financial service firms, ESCOs, and governments to ensure that effective loan mechanisms are in place, as well as the ESCO model
- Coordination with and support for efforts to retrofit multi-unit residential buildings

The City of Berlin launched the Berlin Energy Agency (BEA) in 1996. The BEA project manages the retrofit of public and private buildings, preparing tenders for work that will guarantee reductions in emissions. The 1,400 buildings that have been retrofitted through this organization have averaged energy reductions of 26 per cent, all at NO COST to the building owners.⁴

We estimate that the average building undergoing a retrofit could achieve energy reductions of approximately 10-50 per cent.⁵ Retrofitting one-half of the GTA’s building stock (in terms of square footage) over the next 10 years would reduce the amount of GHGs created in the GTA by up to five million tonnes.⁶ This is the equivalent of taking up to a million cars off the road.⁷

⁴ Source: Clinton Climate Initiative.

⁵ Source: Reductions based on estimates from Clinton Climate Initiative, Honeywell, Ameresco Canada, and case studies from National Resources Canada’s Office of Energy Efficiency, City of Toronto.

⁶ Source: The Boston Consulting Group analysis based on multiple sources (see Appendix 3)

⁷ Based on Environment Canada’s conversion rate of five tonnes of GHG per car (typical mid-sized car driven 20,000 km per year). www.environmentandresources.ca/default.asp?lang=En&n=843A8EEB-1

Initiative 2: Domestic Emissions Reduction Fund

Canadians are increasingly demanding that the business community take responsibility for protecting the environment.⁸ The business community is realizing it must demonstrate leadership and prepare for a time when a price on carbon that takes account of all its environmental costs becomes a reality. Already, GTA business leaders are assessing and working toward reducing the environmental footprint of their organizations. But many would like to be able to support additional reductions through carbon credits,⁹ and would prefer to see the benefits of these credits realized locally. Therefore, Greening Greater Toronto will create an Emissions Reduction Fund directed toward domestic public and not-for-profit emission reductions projects. Businesses wishing to reduce their carbon footprints beyond what they are achieving on their own will be able to support additional reductions and also transform local infrastructure.

Greening Greater Toronto will work with Canadian businesses to build a pool of funds dedicated to furnishing domestic non-profit and public organizations with capital to invest in projects to reduce greenhouse gas emissions (“GHG”) in the GTA and the rest of Canada. This pool of funds will represent the cost of adhering to a voluntary carbon cap or limit. The fund will focus on funding projects with positive environmental impact but an uncertain economic payback, and thus unlikely to attract conventional market financing. An independent organization will verify the impact of GHG reductions, and will ensure that the carbon credits generated from funded projects are retired.

The Domestic Emissions Reduction Fund is expected to generate up to \$25–50 million annually for distribution by 2011. Over time we expect the amount could increase significantly. This money will be used to fund the emissions reduction projects of non-profit organizations and public institutions across Canada.

Domestic Emissions Reduction Fund projects will include a range of projects which may not have an economic return and would not otherwise be driven by market forces. Potential projects could include installing a geothermal heating and cooling system in a hospital, which otherwise could not finance such a project given the lengthy payback period (e.g. 15–20 years). Geothermal systems reduce GHG emissions, as well as heating and other costs.

Greening Greater Toronto, through its secretariat at the Toronto City Summit Alliance (TCSA), will develop a non-profit structure to pool funds from businesses and operate the Fund, working with existing offset providers and other organizations as appropriate. The Fund organization will identify eligible domestic projects to credit and ensure that credits generated are properly verified by an independent auditing organization. By setting high standards for the types of projects to be funded, the Fund organization will create a trusted brand for organizations currently unaware or skeptical about the use of carbon credits. This will help to significantly enhance the funds available for local projects in the GTA, and, over time, in the rest of Canada.

⁸ Marketing Magazine April 28, 2008 issue cites that 79% of Canadians think companies should be held completely responsible for protecting the environment.

⁹ A “carbon credit” is an emission reduction credit from another organization’s project that results in less carbon dioxide or other greenhouse gases in the atmosphere than would otherwise occur. (source: David Suzuki Foundation, www.davidsuzuki.org)

The Fund is expected to reduce Canada’s annual GHG emissions by approximately 500,000 to two million tonnes.¹⁰ Investing in domestic emission reductions projects will also develop our green technology expertise and position us to participate in future carbon trading regimes.

Success for this fund will be determined along several key parameters:

- Achieving targets for money raised and distributed (\$25–50 million annually)
- Generating and consistently retiring high-quality, independently-audited carbon credits
- Facilitating a community of corporations that are committed to making significant efforts to reduce their emissions through reductions, adopting renewable energies where practical and, finally, through contributions to the emission-reducing projects of other organizations

Initiative 3: Accelerating Green Procurement

Procurement of green products and services – particularly newly emerging technologies – has the potential to transform our region. Superior buying practices will allow us to meet goals such as improved waste management, reduced greenhouse gas emissions, and improved water quality and conservation.

Buying green on a larger scale by aggregating business purchasing could also lead to market transformation. Significantly increased demand for green technologies and other products, for example, can stimulate supply and bring down costs. Many green technologies have rapid pay-backs.

Green procurement is also the most powerful way to accelerate the development of green companies in the GTA to the point where they have the scale and capability to enter export markets. Especially helpful are opportunities to sell early versions of new products and services to major users, many of whom can actually become partners in development.

To improve the efficiency of its Mississauga steam plant operations, Unilever installed a reverse osmosis system from GE. This system has helped Unilever reduce its water usage by 50 million gallons, cut the amount of chemicals entering the sanitary sewer by 240,000 pounds, and decreased natural gas costs by 8 per cent. The system will pay for itself within 16 months.¹¹

¹⁰ Based on current market prices for carbon credit purchases of \$20 to \$50 per tonne of GHG emissions. The goal of the Domestic Emissions Reduction Fund is to attract 25 organizations contributing \$1–2 million per year, until such time as they achieve carbon neutrality and will no longer need to rely on external emission reductions.

¹¹ Natural Resources Canada, Office of Energy Efficiency, “Heads Up” newsletter.

Over the past two years the Ontario government has purchased nearly 500 Multi-Functional Devices (MFDs), which consolidate the functions of printing, copying, faxing and scanning. MFDs offer significant potential opportunities to reduce costs and energy consumption. For example, by consolidating a portion of its printers and fax machines, the average Ontario government office could reduce its equipment energy consumption by 50 per cent. By making two-sided copying a default setting for all print imaging, government offices can reduce their paper consumption by approximately 40 per cent.

While many organizations are interested in green procurement, barriers exist. These include high information and search costs, a perceived low return on investment, and performance risk, particularly if the technology is new to market.

Greening Greater Toronto will help to break down the barriers preventing private and public organizations from accelerating the procurement of greener technologies. We will recruit a leadership group of CEOs who will promote green procurement policies. These policies will encourage organizations to create formal accountability for higher levels of green procurement, commit to lifecycle costing, establish green criteria, train workers, and work with suppliers to find innovative solutions. They may also set formal targets for purchasing green products and form buying groups to establish procurement priorities and capitalize on bulk purchasing opportunities.

To support these CEOs and leaders as they green procurement, Greening Greater Toronto and its partner organizations will:

- **Develop a Green Technology Availability and Return on Investment (ROI) Information Portal:** This online easy-to-access portal will potentially include a supplier database, economic and performance data, incentives and eligibility, and technical guidelines and specifications. It will leverage and add to the economic and performance data that a number of organizations have already made significant progress in developing.
- **Present a Toronto Region Green Technology Symposium** to showcase green technology available in the region. Targeted at chief procurement officers, the symposium will feature real world examples of how green technologies have been used as well as information about suppliers and economic and performance data.
- **Advocate More Customer-Focused Piloting:** Green technology developers often hit the “commercialization paradox”. They need funding to commercialize their products, but cannot get funding until customers are secured – customers won’t purchase the technology until it is proven by existing buyers. Governments can address this problem in two ways: by increasing their own purchases of green technologies, and providing incentives and support for other customers to pilot green technologies.

The Sustainable Technologies Evaluation Program monitors and evaluates sustainable technologies and publicizes study results and recommendations, while the Canadian Standards Association provides detailed guidelines on technology specifications. The Canada Green Building Council will soon launch a website offering ‘green build’ information, including technology.

Greening Greater Toronto will launch and manage a drive to recruit procurement champions from a wide range of businesses, governments, and not-for-profit organizations. Working with other Greening Greater Toronto partners, the Toronto Region Research Alliance (TRRA) will develop and host the green technology information portal. TRRA is a neutral body that collaborates with the private, public, and not-for-profit sector to strengthen the region's research and development market. TRRA is already building a comprehensive fact base and has identified the energy and environment sector as a key priority. This effort will build on and support the existing efforts of leaders with expertise and leadership in this space, including the Toronto and Region Conservation Authority, the Toronto Atmospheric Fund, the Ministry of Research and Innovation, and the Ontario Centres of Excellence.

Initiative 4: Network of Education and Demonstration Centres and Projects

Across the GTA, many residents are aware of the environmental challenges we face regionally and globally. And many have a general idea of how to do their part, thanks to education from government, NGOs and businesses. Efforts to allow GTA residents to see energy efficiency in action, such as solar hot water and community-based solar panel installations at Mississauga's Hershey Centre and in the City of Toronto, have been well received. The public's desire to see how they can make environmentally-conscious changes in their homes and lifestyles calls for comprehensive and publicly accessible practical demonstrations showing the average resident how to make these changes.

Greening Greater Toronto and its partners will work to establish a Network of Education and Demonstration Centres and Projects. The Network will include: a small number of fixed locations across the GTA where green technologies can be seen in action; mobile facilities able to travel to convenient locations where large numbers of GTA residents are likely to be found (e.g. shopping malls, schools, sports venues); demonstration projects which highlight applied innovative practices; and a shared web portal about what is possible linked to other web-based resources.

The Network will provide practical "how-to" information and demonstrations designed to inspire residents and equip them with the knowledge and tools they need to reduce their environmental impact at home, at work, and in the community. Programming will be developed in close coordination with municipal, provincial and federal governments, as well as community partners, to complement and augment work already underway.

The Network Centres and Projects will be designed to draw in GTA residents and allow them to learn about, experience, and witness practical demonstrations. They will also receive expert advice on the best products and services to suit their needs. Specific features of the Network will include:

- Practical showcases: how-to information on do-it-yourself and turnkey green improvements; purchasing, installing, financing of green products; and conservation practices
- Innovation and design exhibitions and real-life examples: showcasing excellence in green urban design, water management, and technological innovation from the region and around the world. The Network will help people to see and experience buildings where green technology is being used
- Seminars educating visitors on various topics, including best practices for pesticide-free gardening and community gardening
- Local food programming with a focus on supporting local sustainable food

Greening Greater Toronto is working with two partners initially – Evergreen and the Toronto and Region Conservation Authority (TRCA) – to develop plans for the Network.

The two initial fixed-location Centres will be based at the TRCA's Living City Campus at the Kortright Centre for Conservation and at Evergreen's Brick Works site on Bayview Avenue near Bloor Street in Toronto (expected to soon be TTC-accessible).

The Kortright Centre works with individuals and communities to accelerate the adoption of sustainable technologies and practices. Existing programs include the 'Power Trip Trail', a 1.6km trail linking demonstrations in renewable energy and other environmental practices. The Kortright Centre also hosts the state-of-the-art Earth Rangers Centre, which is one of the most energy efficient buildings in Canada.

Evergreen is transforming Toronto's historic Don Valley Brick Works factory into an environmentally-based and innovative community centre. The site is already home to a thriving local and sustainable food farmers' market, and regularly hosts programming and events. Further projects in 2009 will include demonstration gardens and a trail centre serving as a gateway to the Toronto ravine system.

Mobile centres will be developed to visit popular venues. The Network will also identify and facilitate access to demonstration projects throughout the GTA. These will be residential, commercial and other buildings and locations that show innovative technologies in practice. Examples include the University of Ontario's Institute of Technology in Oshawa, which has Canada's largest geothermal heating and cooling system, green roofs, rainwater capturing technology, and metal-oxide coated windows for insulation,¹² and the RISE again solar panel project in Riverdale.

Over time, additional fixed and mobile Centres will be developed in other parts of the GTA to extend audience reach and accessibility. Additional partners, including those from the corporate and academic sectors, will be sought and encouraged to join to ensure that the Network takes advantage of and satisfies the broadest possible range of perspectives and needs. Partners will include businesses in the energy efficiency and home improvement sectors, as well as colleges and universities.

¹² Available online: http://www.cleanairpartnership.org/greendoorsopen/display.php?building_id=10

Appendix 3 – Driver Tree Analysis of Key Environmental Measures

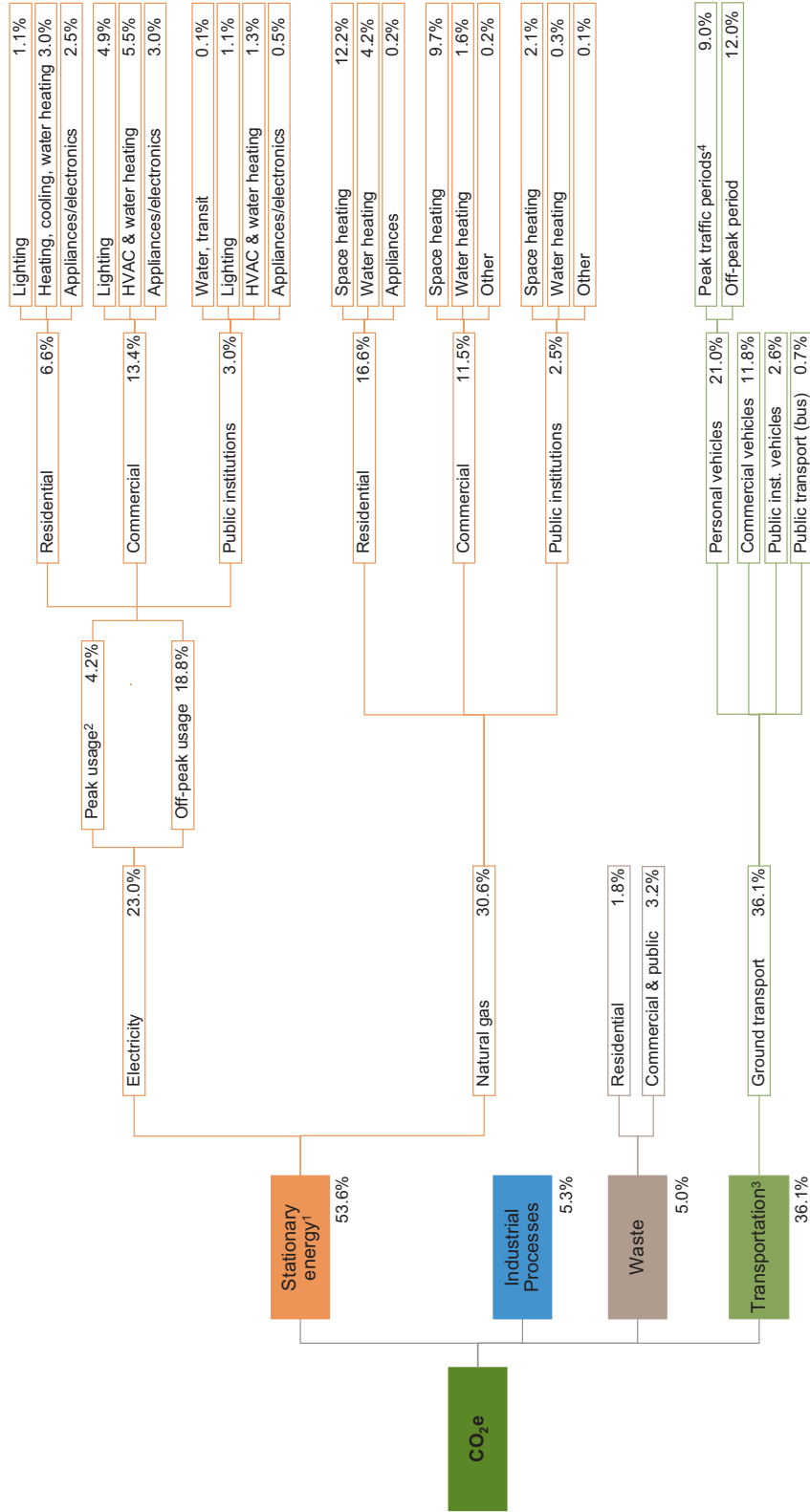
As part of work with the Greening Greater Toronto initiative, The Boston Consulting Group has conducted a comprehensive analysis to assess the contributors to five environmental measures – carbon dioxide equivalents (greenhouse gases), air quality, water quality and consumption, waste, and land use.

The purpose of this analysis is to provide a set of facts to shape environmental actions in the GTA. Some of the findings were quite intuitive – others were surprising ... for example, home electricity and natural gas use in the GTA contribute more to greenhouse gases than do personal vehicles.

The analysis was compiled using a large amount of data from a wide array of sources. The figures provided are estimates, and are supported by several relevant experts in each field.

For more information, including a detailed source list and a methodology for calculating each figure, please contact Scott Belton or Mladen Švigir at The Boston Consulting Group or visit www.greeninggreatertoronto.ca.

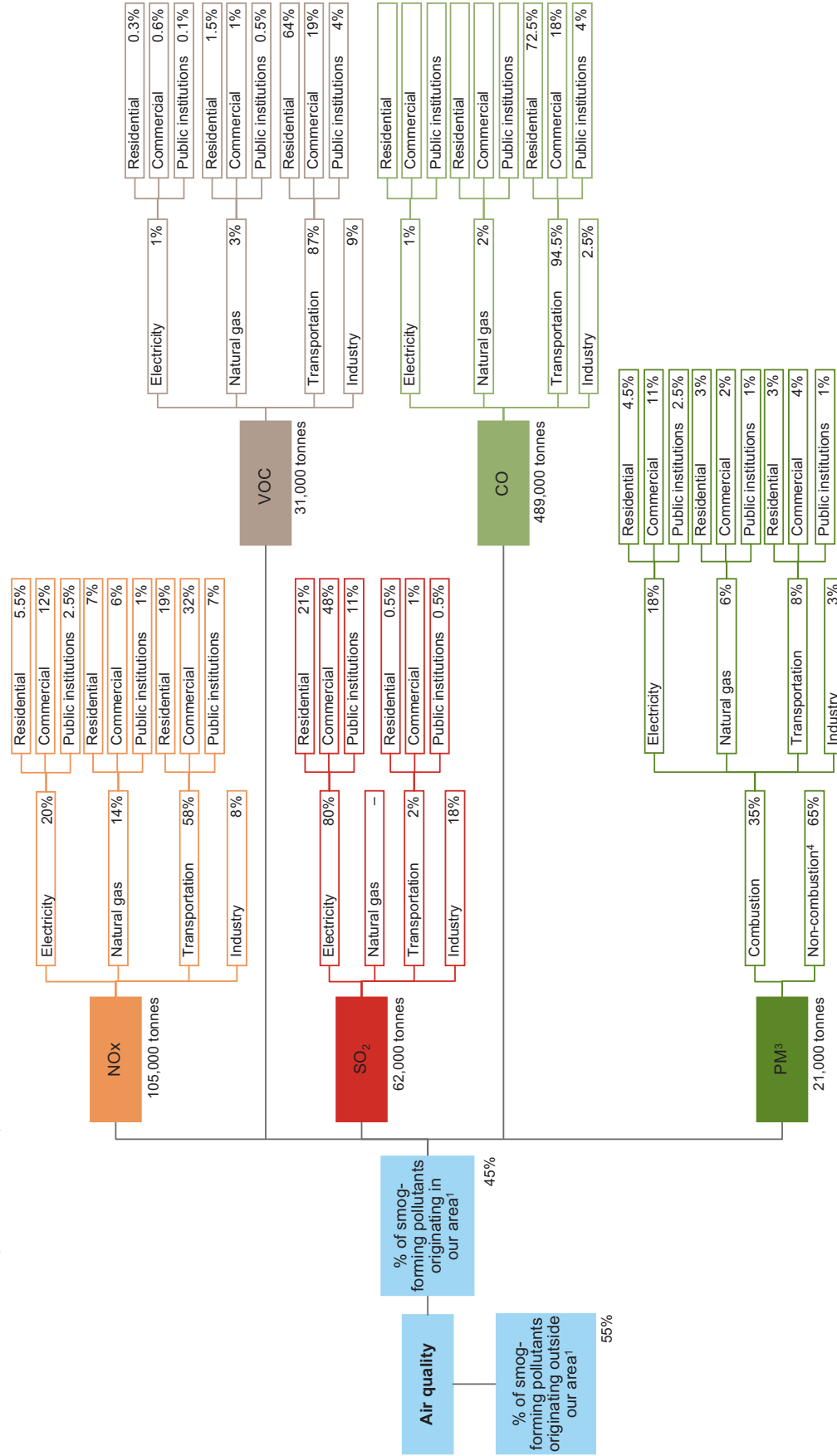
CO₂e analysis



1. Heating oil, wood burning, and other combustion processes emitting greenhouse gases not considered material for GTA-level analysis. 2. 1.2% of peak demand attributed to residential sector, 3.0% of peak demand attributed to commercial and public institutions. 3. Does not include marine or air travel; air travel estimated to contribute over 5M tonnes of CO₂e per year (based on Toronto Pearson Airport jet fuel consumption). 4. Refers to morning and evening peak traffic periods resulting from large number of trips to and from work.

Note: CO₂e is carbon dioxide equivalents; 2007 data
 Sources: Ontario Ministry of Energy, Ministry of Environment, Environment Canada, Natural Resources Canada (Comprehensive Energy Use Database), Transport Canada, Kent Marketing, Toronto Pearson Airport, Toronto Island Airport, Buttonville Airport, Toronto Landfill, Toronto Water, University of Toronto (Professor Chris Kennedy), ICF International, Toronto Atmospheric Fund, Toronto Environment Office, Ontario's Integrated Power System Plan, Bullfrog Power, Independent Electricity System Operator, Transportation Tomorrow Survey, Environmental Defence, Canadian Environmental Law Association, BCG analysis

Air quality analysis

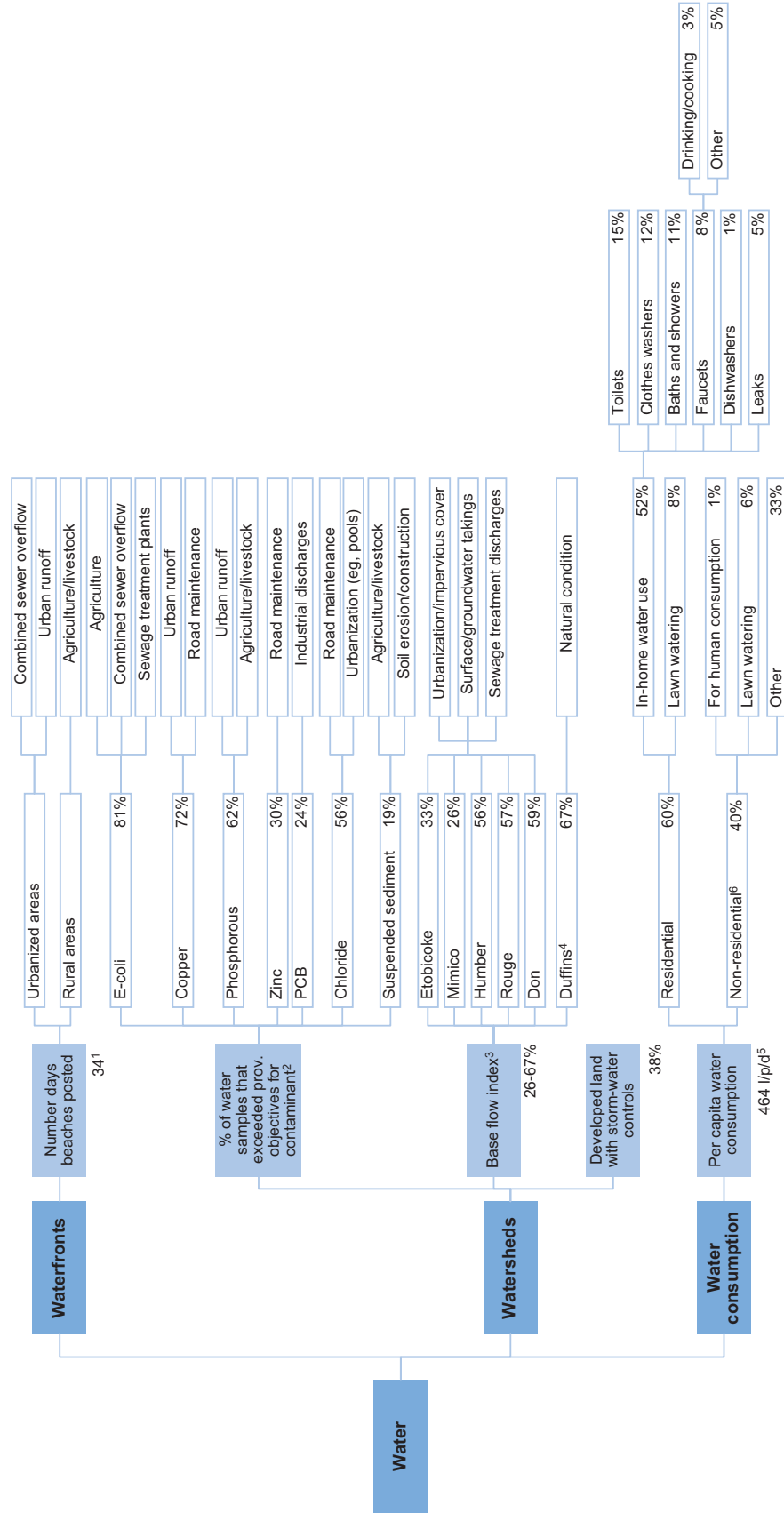


1. Overall figure; not necessarily the same for each pollutant listed. 2. Volatile Organic Compounds (chemical compounds that enter atmosphere). 3. Represents Total Particulate Matter. 4. eg, road dust, track out from building sites.

Note: 2004/2005 data

Sources: Ministry of Environment, ICF International, Toronto Atmospheric Fund, Toronto Environment Office, Statistics Canada, BCG analysis

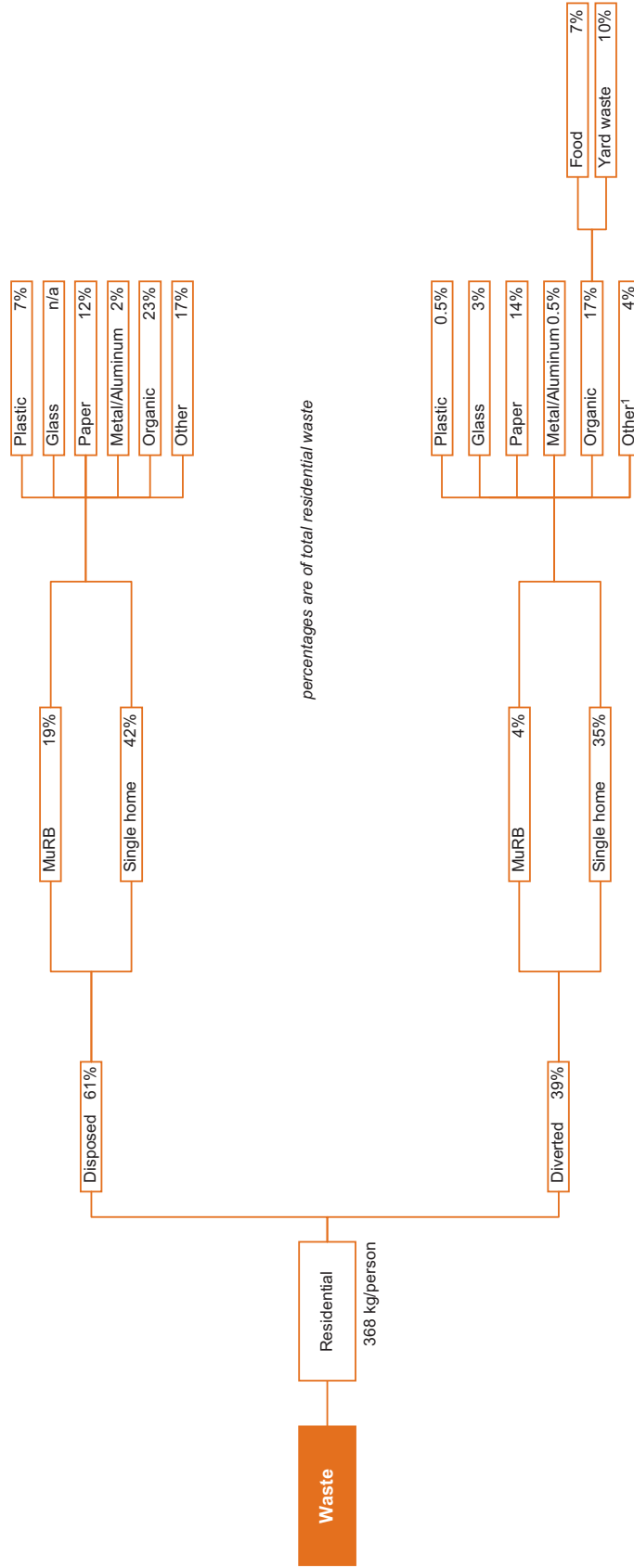
Water quality and consumption analysis



1. Rolling 5-year average for 2003-2007 across 10 beaches; "beaches posted" indicates days when not safe for swimming. 2. Average across 6 TRCA watersheds (Etobicoke, Mimico, Humber, Rouge, Don, Highlands). Assumed wet weather 25% of the time, dry weather 75% of the time. % exceedence of contaminants is based on average dry weather and wet weather data from an Ontario Ministry of the Environment Toronto area waterfront study. 3. % that base flow represents of total flow. If base flow is high, the proportion that is contributed by a steady flowing source is greater. When the main contributor to base flow is groundwater (vs. eg. waste from sewage treatment plant), then the river is slower in responding to rain events, and has more steady flows, which is desirable. If flows are increasing over time with urbanization, base flow may become a smaller part of the flow. 4. Duffins base flow index can be used as target condition for other watersheds. 5. Litres/day/person. 6. Estimate of non-residential water consumption based on avg. between sample school and printing facility. Sources: Toronto and Region Conservation Authority, Environment Canada, Toronto Water, Regional Municipality of Durham. E-coli, copper, phosphorous, zinc and PCB data from Ontario Ministry of Environment May 1999 report. Chloride and suspended sediment data is from Regional Watershed Monitoring Network. Time period is 2002-2005. Note: Numbers are to be used for comparative purposes; BCG analysis

Residential waste analysis

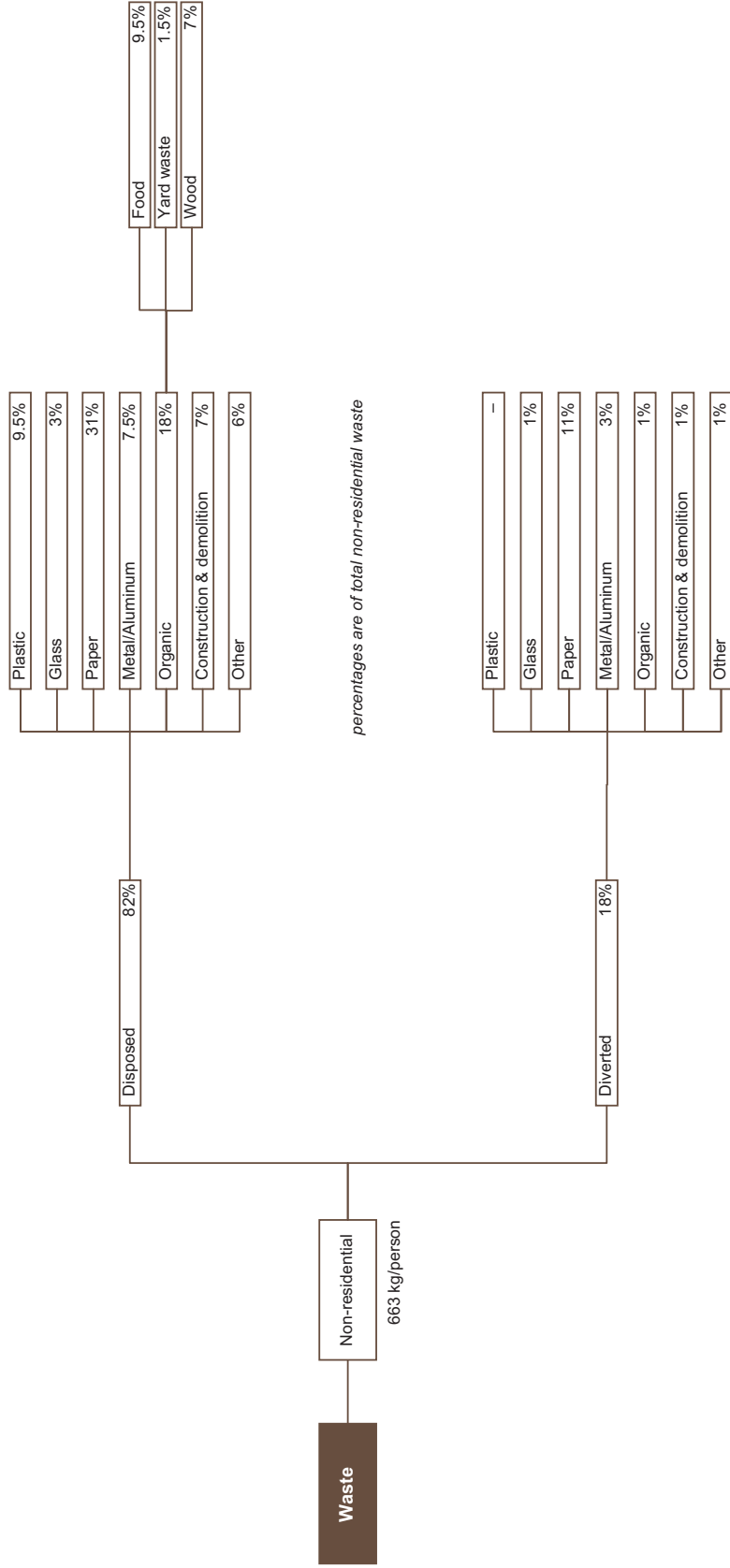
Residential waste represents ~36% of total waste



1. Hazardous waste (e.g., paint, car batteries, oil filters, etc.) is included as one component in the "Other" category
 Note: 2006 data
 Source: Waste Diversion Ontario, City of Toronto Waste Management Services, University of Toronto, Stewardship Ontario

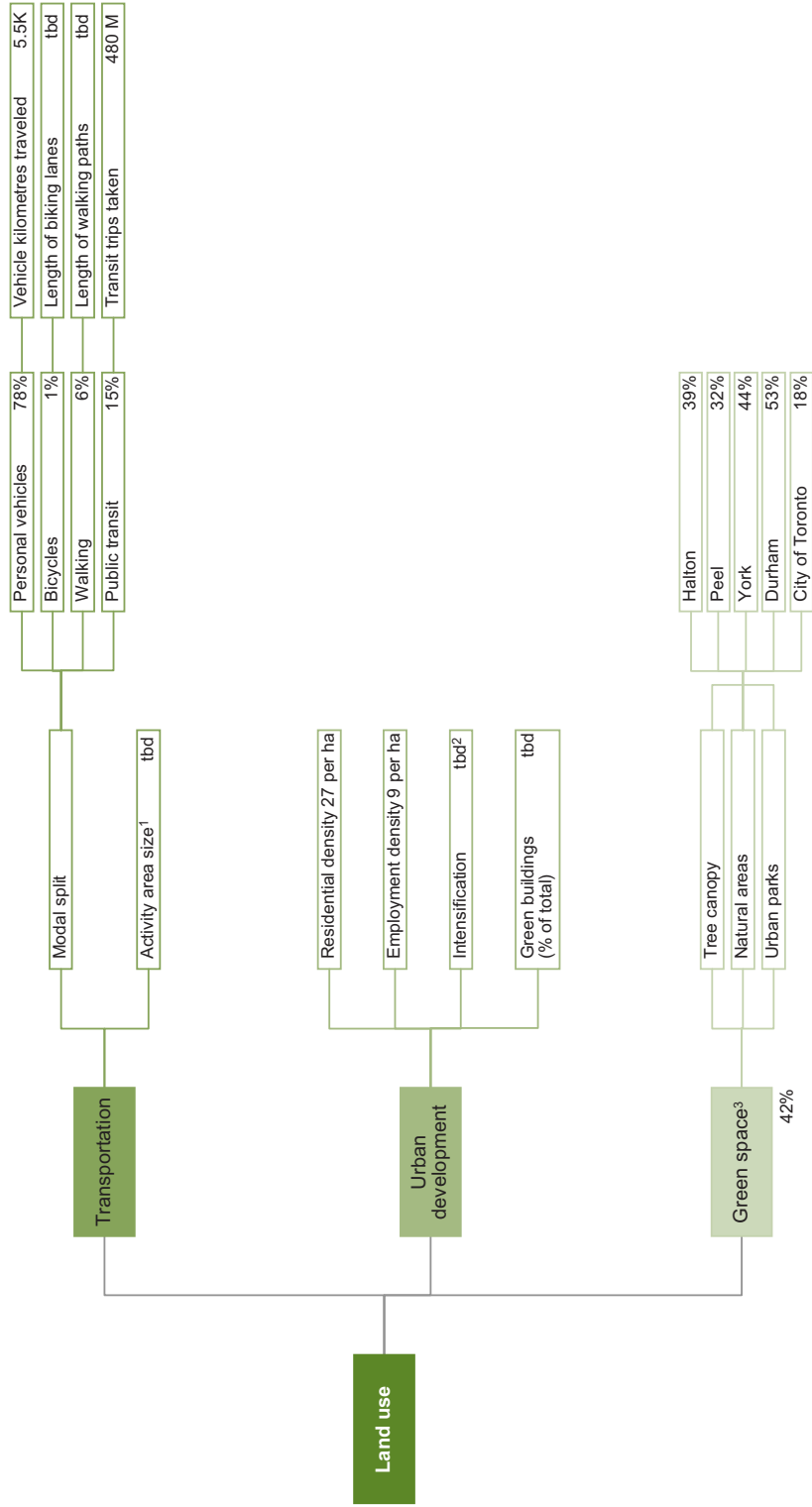
Non-residential waste analysis

Non-residential waste represents ~64% of total waste



Note: Figures do not include hazardous and nuclear waste. Based on 2002 data
Sources: Ontario Waste Management Association, RIS International Ltd.

Land use analysis



1. Activity area size is an indicator currently being measured in Montreal to show average activity area for a family (eg, where they live, where they work, where they shop, where they engage in recreational activities). 2. Intensification analysis currently being performed with results expected by late 2008. 3. % of GTA municipal land areas covered by green space.

Sources: Transportation Tomorrow Survey, Neptis Foundation, City of Toronto Transportation, TTC 2006 Annual Report, YRT Ridership Summary, Region of Durham 2005 Transit Plan, Brampton Transit Ridership, Statistics Canada, BCG analysis

Greening Greater Toronto indicators



Total tonnes of CO ₂ e	59.8 M
Tonnes of CO ₂ e /capita	11
kg of CO ₂ e /\$GDP	0.23

Number of days Air Quality Index threshold exceeded ¹	6
Number of smog alerts	29
Number of days Air Quality Health Index exceeded	tbd

Total waste quantity (tonnes)	5.7M
Residential waste/capita	368 kg
Non-residential waste/capita	663 kg
Non-residential waste/\$GDP	0.02 kg
Overall diversion rate	26% ²



# of beach postings	34	Base flow index ⁴	26-67%
Percent exceedence ³ :		% developed land with storm-water controls	38% ⁵
• E-coli	81%	Total water consumption	941 ML
• Copper	72%	Water consumption/capita (serviced)	464 l/p/d
• Phosphorous	62%		
• Zinc	30%		
• PCB	24%		
• Chloride	56%		
• Suspended sediment	19%		

Transportation modal split	78/1/6/15 ⁶
Total VKT ⁷	30.5B
VKT/capita	5,500
Green space/capita	0.05 hectares
Density (people+ jobs/hectare)	36

Other land use indicators we are planning on measuring in the future, for which data is currently unavailable, are:

- Activity area size
- Intensification
- Green buildings as percent of building stock

1. Average number of days that AQI was rated poor or worse for the following GTA municipalities: Toronto, Brampton, Mississauga, Newmarket, Oakville, Burlington, Oshawa (2007).
 2. 39% for residential and 18% for commercial
 3. Average across 6 TRCA watersheds (Etobicoke, Mimico, Humber, Rouge, Don, Highlands). Assumed wet weather 25% of the time, dry weather 75% of the time. % exceedence of contaminants is based on average dry weather and wet weather data from an Ontario Ministry of the Environment Toronto area waterfront study.
 4. Range across 6 watersheds for period between 1994 and 2004; Represents % that base flow represents of total flow. If base flow is high, then the proportion that is contributed by a steady flowing source is greater. This is desirable when the source of high base flow is a natural one, but less desirable when it is a result of urbanization (eg. waste from sewage treatment plant).
 5. % of developed land with collectors to treat run-off before release.
 6. Car/bicycle/walking/transit
 7. vehicle kilometres traveled.

Appendix 4 – Greening Greater Toronto – Identified Best Practices

During the first phase of the Greening Greater Toronto initiative, a Best Practices Working Group was dedicated to identifying initiatives which, if implemented, could improve the city region’s performance against the five key measures. This group comprised environmental experts from across sectors – environmental NGOs, municipal government, utilities and industry. Together, they identified ideas with the potential to be implemented in the city region and the barriers to adoption. They also examined best practices which had been implemented in other regions around the world and by our own municipalities with the potential to be scaled across the GTA. The best practices identified were a mix of: implementation programs which could directly impact upon the one or more of the five key measures; ideas to improve public awareness and motivation; and areas where government intervention is needed for significant change against the measures. The financial cost and benefit of ideas were also evaluated whenever possible. The full list of items is outlined below, assessed by which measure(s) they could potentially impact.

Best Practice Description	Carbon	Air	Waste	Water	Land Use
Decrease electricity demand peak	x	x			
Increase efficiency of fleet vehicles	x	x			
Replace old furnaces and ACs with more efficient models	x	x			
Install peak saver on air conditioners	x	x			
Install solar thermal water heaters	x	x			
Install insulation on all hot water heaters and piping	x	x			
Provide incentives for energy efficient appliances	x	x			
Unplug appliances when not in use (e.g. use power bars)	x	x			
Increase overall use of renewable energy (geothermal, solar, wind, etc.)	x	x			
Expanded use of Deep Lake Water Cooling	x	x			
Retrofit commercial and residential buildings	x	x			
Clear and check heating ducts regularly	x	x			
Replace old personal and commercial vehicles with more efficient models	x	x			
Provide parking incentives for high efficiency vehicles	x	x			
Introduce intelligent freight clearinghouse program	x	x			
Reduce use of drive-throughs	x	x			
Reduce lighting use in residential, commercial, and MASH sectors	x	x			
Commercial electricity load shifting	x	x			
Introduce road pricing	x	x			x
Increase efficiency of city infrastructure (e.g. street and traffic lights)	x	x			
Increase use of HOV lanes	x	x			
Decrease vehicle idling	x	x			
Expand car share/car pooling programs	x	x			
Introduce bike-share programs	x	x			
Introduce car-free days	x	x			
Increase supply of/demand for local food	x	x			
Restore Lake Ontario fisheries (to decrease dependency on non-local food)	x	x			
Increase use of teleworking/flexible work hour options	x	x			
Increase use of green roofs/green walls	x	x			
Introduce flow batteries pilot project	x	x			
Introduce universal metropass for public transit	x	x			x
Provide incentives for increased use of public transit	x	x			x
Decrease use of outdoor power tools	x	x			
Expand collection of storm/rainwater (e.g. provide collection containers)				x	
Encourage decrease in water consumption (e.g. low flush toilets, decreased shower time)				x	
Simplify/standardize diversion of non-residential waste			x		
Simplify/standardize diversion of organic waste			x		
Increase waste diversion in multi-unit residential buildings (MURBs)			x		
Provide producer incentives to reduce packaging			x		
Increase diversion of e-waste			x		
Encourage electronics companies to reduce e-waste and handle responsibly			x		
Enforce Extended Producer Responsibility (EPR)			x		
Reduce/eliminate single-use products			x		
Use waste for energy generation	x	x	x		
Introduce styrofoam recycling bins			x		
Create services to better enable diversion of construction and demolition materials			x		

General best practices

Best Practice Description	Carbon	Air	Waste	Water	Land Use	
General best practices	Recycle appliances and electronics		x			
	Encourage adoption of lot level controls			x		
	Develop lot level, conveyance, and end-of-pipe treatment approaches			x		
	Separate sanitary sewage and treatment			x		
	Introduce treatment of bacteria at beaches			x		
	Introduce alternatives for salt use on roads for maintenance			x		
	Launch waterfront initiative to use plants to clean stormwater runoff			x		
	Introduce new testing methods, guidelines, and enforcement for construction sediment			x		
	Standardize downspout disconnection programs			x		
	Perform cross-connections trackdown			x		
	Locate businesses around rapid transit stations				x	
	Develop larger units in MURBs (to enable families to live in MURBs)				x	
	Plant non-invasive trees in residential gardens				x	
	Encourage xeriscaping				x	
	Increase permeable surfaces (e.g. develop community gardens)				x	
Increase small-plot intensive land farming (SPIN)				x		
Communication/awareness best practices	Create environmental certification for communities and neighbourhoods	x	x	x	x	x
	Establish Environmental Ambassadors program	x	x	x	x	x
	Establish Environmental Youth Corps	x	x	x	x	x
	Introduce compulsory environmental education course in school curriculum	x	x	x	x	x
	Identify local foods/introduce carbon footprint labeling on food products	x	x			
	Establish mobility index	x	x			x
	Complete transportation impact studies	x	x			x
	Educate/increase awareness of complete communities					x
	Organize campaigns to maintain green space (e.g. community clean-ups)					x
	Homes for Change cooperative to provide examples of mixed use development					x
	Engage in social marketing to change overall attitude to waste			x		
	Encourage community waste collection days			x		x
	Create program to develop waste life-cycle analysis for small/medium-sized businesses			x		
	Discourage consumption of bottled water (e.g. tax on bottled water)			x		
	Provide education on factors impacting water quality				x	
Government policy/regulation best practices	Increase enforcement of anti-idling by-law	x	x			
	Increase investment in public transit	x	x			x
	Create by-laws to streamline urban development process					x
	Increase use of combined heat and power (CHP) generation	x	x			
	Introduce changes to energy pricing regime	x	x			
	Introduce light pollution by-law	x	x			
	Implement policies for commercial and multi-unit tenants to pay for own energy consumption	x	x			
	Enforce requirements for methane capture at landfills	x	x			
	Legislate to increase supply of local food	x	x			
	Allow small-scale livestock production (to decrease dependency on non-local food)	x	x			x
	Limit free parking options	x	x			
	Implement additional parking surcharge to support investment in public transit	x	x			x
	Introduce carbon taxes (e.g. registration fees based on vehicle kilometers traveled)	x	x			
	Align taxes and fees to incent development of complete communities					x
	Introduce mixed-use zoning laws					x
	Remove insurance barriers for green roofs					x
	Enforce Toronto Green Development Standard/LEED standards	x	x	x	x	
	Preserve and protect at-risk current green space					x
	Establish development guidelines regarding green space					x
	Eliminate pesticides and disincent retailers from carrying environmentally unfriendly products					x
	Introduce pay-per-use garbage fees			x		
	Use only biodegradable bags in green bins			x		
	Introduce legislation to regulate packaging			x		
	Extend hazardous waste collection and standardize process			x		
	Introduce storm water fees				x	
Enforce by-laws and penalties for spills				x		

Appendix 5 – Background on the Toronto City Summit Alliance

Since 2003 the TCSA has developed and supported initiatives addressing issues critical to the future health and wealth of the Toronto region. The TCSA convenes leaders from the non profit, business, labour, education, and government sectors, to work together in a spirit of consensus to tackle specific social and economic challenges. Examples include:

- **Toronto Region Immigrant Employment Council** – Developed in partnership with The Maytree Foundation, TRIEC helps integrate skilled immigrants into our economy (Career Bridge has created 740 internships while The Mentoring Partnership has linked 2700 skilled immigrants with mentors)
- **Toronto Region Research Alliance** – Combines efforts of governments, hospitals, colleges and universities and the private sector to attract investment and promote research in the Golden Horseshoe
- **Toronto3 Alliance** – Raised and invested over \$11 million in post-SARS tourism recovery, generating \$80 million in economic benefits for Ontario
- **Strong Neighbourhoods Task Force** – Initiated in partnership with the City of Toronto and the United Way of Greater Toronto, the SNTF identified 13 neighbourhoods for urgent community investment and created a plan to address them
- **Modernizing Income Security for Working-Age Adults Task Force** – Initiated by the TCSA and St. Christopher House, MISWAA developed reforms to ensure the full economic participation of working-age adults, including recommendations leading to the new federal Working Income Tax Benefit and Ontario Child Benefit and dental plan
- **Emerging Leaders Network** – Connects and supports 120+ city-building leaders through monthly events and other opportunities to get advice and resources for their work and to develop collective projects
- **Luminato** – Supported the launch of Toronto’s new international Festival of Arts and Creativity, which attracted over 1 million participants in its 2007 debut
- **Canada’s first Social Entrepreneurship Summit** – This joint effort of the TCSA, The Boston Consulting Group, the Centre for Social Innovation and MaRS brought together over 150 Canadians to celebrate and support social entrepreneurship and award the Schwab Foundation’s first Canadian Social Entrepreneur of the Year award

Over its five years the TCSA’s initiatives have demonstrated the value of engaging Toronto region residents in advancing a regional agenda. To date, more than 6000 people have volunteered as participants in TCSA-initiated projects. For more information, see: www.torontoalliance.ca.

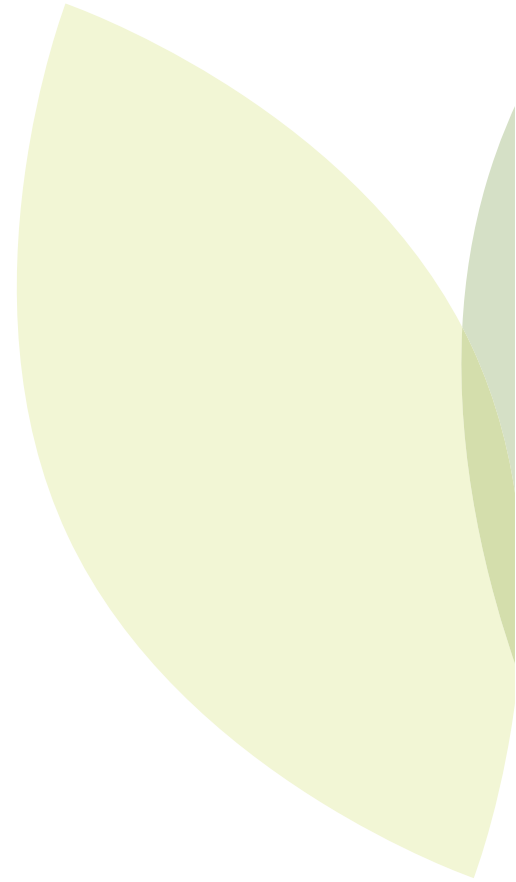
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