Toronto Environmental Progress Report 2015

TORONTO

Livegreen Toronto

Contents

Introduction..... 2
Reduce GHG Emissions..... 4
Clean Air..... 9
Energy..... 13
Green Space & Urban Agriculture..... 18
Sustainable Transportation..... 24
Clean Water..... 35
Greening City Operations..... 40

Message from City Manager

It's my pleasure to share with you the *2015 Toronto Environmental Progress Report*. This report documents the many achievements the City has made in partnership with communities and stakeholders across Toronto to advance Council's environmental objectives and priorities.

Supporting environmental sustainability was identified in the Council-endorsed *City of Toronto Strategic Actions 2013 – 2018*, and is an objective reflected across the programs and policies of the City of Toronto. Investing in our environment supports community health and quality of life, and creates economic opportunities in the green economy.

This report demonstrates that together, as a community, Toronto is moving towards the environmental targets set by City Council, including reducing greenhouse gas emissions, increasing the urban tree canopy, building infrastructure to support sustainable transportation choices, sending less waste to landfill, and ensuring beaches and a waterfront of high-quality.

While we are making progress, as Toronto continues to grow in size and prosperity, additional efforts will be needed to achieve our shared vision of a green, sustainable and livable city. Thank you to all Toronto residents for the critical role you play moving our city towards environmental sustainability.

Peter Wallace, *City Manager*

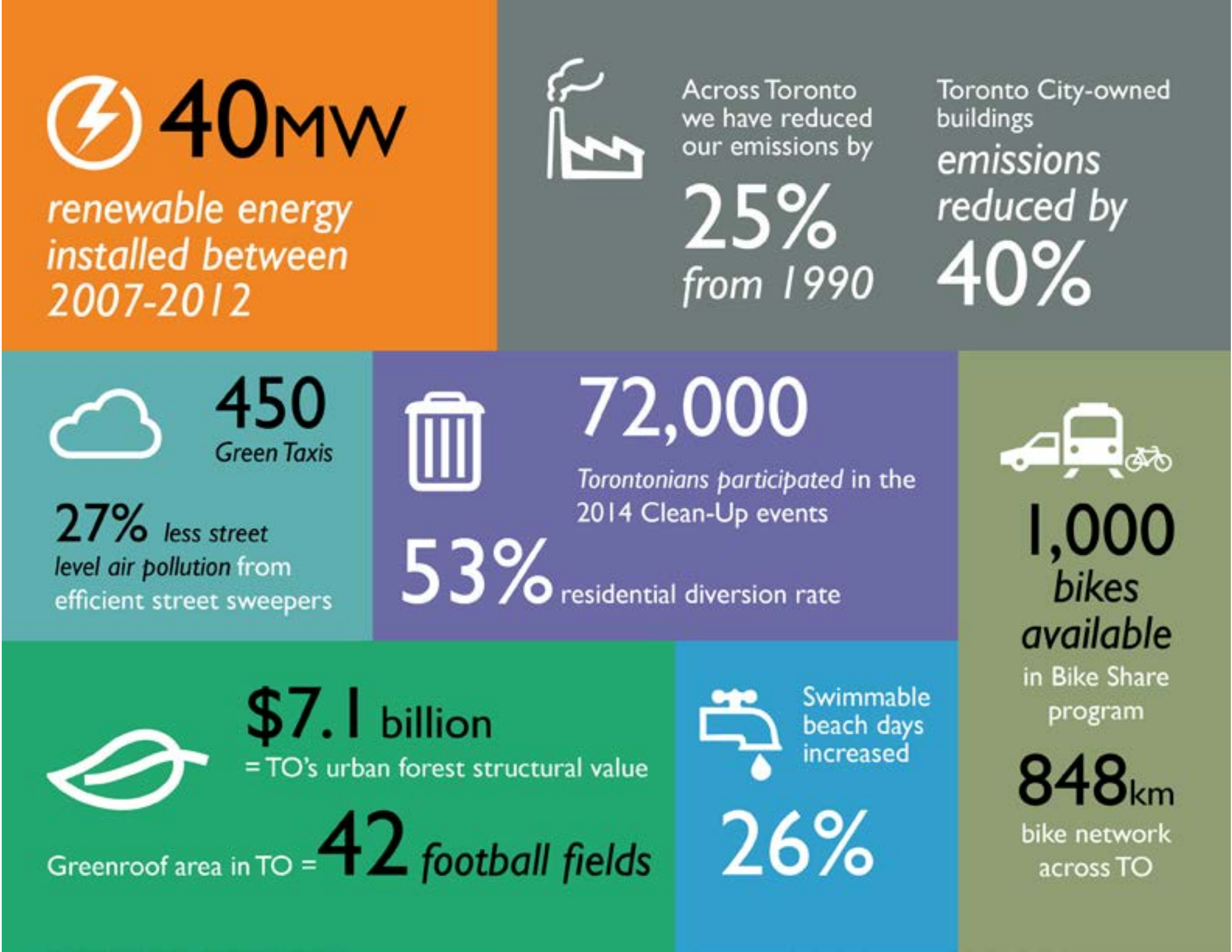
Awards

2015 Best Overall City To Live
- Economist Intelligence Unit

2015 Most Sustainable City In North America
- Arcadis Sustainable Cities Index

2014 Most Resilient City In The World
- Grosvenor Group

2014 Platinum Sustainable Communities ISO 37120
- ISO/World Council on Cities Data


40MW
renewable energy installed between 2007-2012
Across Toronto we have reduced our emissions by
25%
from 1990
Toronto City-owned buildings
emissions reduced by
40%
450
Green Taxis
27% less street level air pollution from efficient street sweepers
72,000
Torontonians participated in the 2014 Clean-Up events
53% residential diversion rate
1,000
bikes available
in Bike Share program
848km
bike network across TO
$7.1 billion
= TO's urban forest structural value
Greenroof area in TO = 42 football fields
Swimmable beach days increased
26%

Introduction

The City of Toronto is committed both to reducing the environmental footprint of City operations, and to delivering programs and policies that build a green and sustainable community that benefits everyone.

A vision of Toronto as a "clean, green and sustainable" city is enshrined in City Council's *Strategic Actions 2013 – 2018*, and Toronto's Official Plan, which governs city-building activities. City programs and policies work to enhance water and air quality, reduce greenhouse gas emissions and solid waste generation, develop sustainable energy and transportation systems, and establish vibrant green spaces across Toronto.

This report identifies the environmental objectives that Toronto City Council has set, and measures the cross-corporate progress that programs across all City Divisions, Agencies and Corporations have contributed towards them. We are advancing towards our vision of a green city, but there is still much work to be done. In addition to measuring our progress, this report also highlights the initiatives that are moving us towards our goals and the effects they are having.


Toronto downtown skyline

Overarching Strategies

- City of Toronto Strategic Actions 2013 – 2018
- Toronto Official Plan – Strategy, Plans, Vision

Plans, Strategies and Policies

- Change is in the Air: Climate Change, Clean Air and Sustainable Energy Action Plan (2007)
- Climate Change Adaptation Strategies – Ahead of the Storm (2008) & Resilient City (2014)
- Consolidated Green Fleet Plan (2014)
- Green Roof Bylaw
- GrowTO: An Urban Agriculture Action Plan for Toronto (2012)
- Long Term Waste Management Strategy
- Parks Plan 2013 – 2017
- The Power to Live Green - Toronto's Sustainable Energy Strategy (2009)
- Sustaining and Expanding the Urban Forest: Toronto's Strategic Forest Management Plan 2012 – 2022
- Toronto Bike Plan (2001)
- Toronto Green Standard
- Toronto Transit Commission Five-Year Corporate Plan 2013 – 2017
- Toronto Walking Strategy (2007)
- Tower Renewal / Tower & Neighbourhood Revitalization (2007)
- Wet Weather Flow Master Plan (2003)

Reduce GHG Emissions

Together we have lowered our emissions by 25% from 1990 levels as of 2012, well exceeding our goal of a 6% emissions reduction.

By reducing greenhouse gas (GHG) emissions[1] in Toronto, we reduce our contribution to climate change and can advance complementary objectives at the same time. Greenhouse gas emissions in Toronto are generated mostly by motorized vehicles, and how we heat our buildings.

Toronto has an ambitious target to emit 80% fewer greenhouse gases in 2050 than in 1990, as our city continues to grow in population and productivity. *The Climate Change, Clean Air and Sustainable Energy* ("*Climate Change Action Plan*") (2007) and *The Power to Live Green: Sustainable Energy Strategy* (2009) established our strategies to reach this long-term goal.

We have made great strides – many of the recommendations in the two documents have been implemented and initiated, and together we have lowered our emissions by 25% from 1990 levels as of 2012, well exceeding our goal of a 6% emissions reduction. A major factor was the closing of Ontario's coal fired power plants, the single largest climate change initiative in North America. More transformative action will be required to reach our 2050 target.

[1] Unless otherwise stated, greenhouse gases are reported in tonnes of carbon dioxide equivalent (eCO_2), a standard practice by which greenhouse gases are calculated in terms of the global warming potential of carbon dioxide.

Objective: Significantly reduce our release of greenhouse gas emissions into the atmosphere.

Goal	Measure	Progress
1. Achieve greenhouse gas (GHG) emissions 30% below 1990 levels for the urban area by 2020 and 80% by 2050[2]	GHG emissions community-wide	25% lower (2012)[3]
	GHG corporate (City operations)	49% lower (2012)[3]

[2] City of Toronto (2007). *Climate Change, Clean Air and Sustainable Energy Action Plan: Moving From Framework to Action*.
[3] City of Toronto (2014). *Toronto 2012 Greenhouse Gas and Air Quality Pollutant Emissions Inventory*.

Green roof at Toronto Central YMCA Centre

Toronto Greenhouse Gas Emissions (City Operations and Community-wide)

Source: City of Toronto (2014). *Toronto 2012 Greenhouse Gas and Air Quality Pollutant Emissions Inventory*

Achievements

Landfill Gas Capture and Utilization

Landfill gas has been captured at the former Keele Valley and Brock West landfill sites since 1988 and 1986 respectively. Landfill gas capture reduces greenhouse gases directly by avoiding atmospheric release, and indirectly by using captured gas to produce energy, which displaces the use of greenhouse gas emitting non-renewable sources. Between 2004 and 2014, the two sites captured almost 11 million tonnes of greenhouse gases. In 2014 alone, 665,000 tonnes of greenhouse gas were captured. Gas captured at Keele Valley produced approximately 80,000 megawatt hours (MWh) of electricity in 2014.

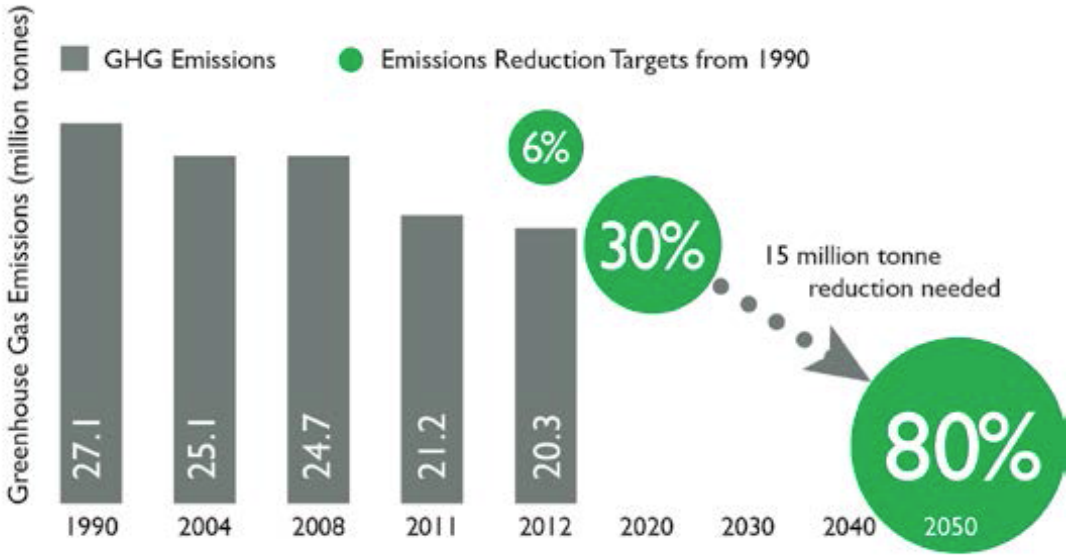
Better Buildings Partnership

The Better Buildings Partnership (BBP) helps building owners, managers and developers of new and existing buildings achieve their energy efficiency goals and reduce their emissions. Since 1996, the BBP has completed more than 2,400 projects in Toronto, resulting in 50 million square metres of floor area retrofitted, three million MWh in energy saved, $30 million in energy costs reduced, and the equivalent of 600,000 tonnes of greenhouse gas emissions eliminated. In 2014 alone, 237 projects were completed through BBP, resulting in the reduction of the equivalent of 5,800 tonnes of greenhouse gas emissions per year.


City of Toronto downtown

Official Plan Review - Environmental Policies

As part of the five year review, the City of Toronto has updated the Official Plan, the statutory document guiding all city building activities in Toronto, to strengthen, refine and clarify existing policies and address Council direction on climate change. The updated Official Plan explicitly acknowledges the need to reduce greenhouse gas emissions, manage the impacts of climate change and improve air quality. The amendments enhance the policies related to energy, biodiversity, natural environment, environmentally significant areas, water, natural hazards, lake filling, green infrastructure and climate change. The Official Plan policies contribute to the reduction of greenhouse gas emissions by ensuring compact, sustainable development, sustainable transportation, and protection of natural heritage and green spaces. To ensure these objectives are continuously implemented, the Toronto Green Standard, a set of performance measures for sustainable new construction, is in place.



Toronto's Greenhouse Gas Emissions and Targets

Source: City of Toronto (2009). *The Power to Live Green: Sustainable Energy Strategy*.
City of Toronto (2014). *Toronto 2012 Greenhouse Gas and Air Quality Pollutant Emissions Inventory*.

Toronto apartment towers

Smart Commute Program

In partnership with Metrolinx, the City of Toronto delivers Smart Commute, a program that engages businesses to promote sustainable commuting options such as carpooling, cycling, and transit to their employees. In 2014, 96 major businesses and property managers in Toronto, representing 331,000 commuters, participated in the program. By reducing single occupant vehicle trips, promoting more sustainable modes and educating about re-timing and telecommuting, Smart Commute helps improve air quality, avoid greenhouse gas emissions and reduce congestion across modes overall and particularly at peak periods. University Health Network (UHN) was recognized as the 2014 Smart Commute Employer of the Year in Toronto for its excellence in providing healthy and sustainable transportation choices. In 2014, staff bicycle parking infrastructure expanded by over 300 spots to a total of 1,721 spots. As of 2013, 82% of surveyed employees commute by sustainable modes of transportation.

Live Green Toronto

The Live Green Toronto Program is a multi-faceted program that provides Toronto residents and businesses with information, programs and events to help them live a greener life. The Live Green Toronto Grants support projects benefitting 12 different wards, and four city-wide projects, and are estimated to reduce over 300 kilograms of greenhouse gas emissions a year. Live Green Toronto Volunteers engage and educate thousands of residents each year on the City's environmental programs and services. Volunteers are trained on a wide range of environmental topics including climate change, waste diversion, water and energy efficiency, air quality, sustainable transportation, green buildings and development, urban forestry and local food issues. Collectively, the volunteers speak over 70 different languages and in 2014, 1,500 volunteers provided outreach at over 150 events in Toronto providing nearly 5,000 hours of service annually.

Clean Air

As of 2014, the number of premature deaths and hospitalizations due to air pollution has been reduced by almost two-thirds compared with 2004.

As of 2014, the number of premature deaths and hospitalizations due to air pollution has been reduced by almost two-thirds compared with 2004 – 1,300 in 2014 vs. 3,550 in 2004[1]. Toronto City Council adopted the *Climate Change, Clean Air and Sustainable Energy Action Plan* in 2007, which has been essential in developing the framework and strategies to improve the air we all breathe.

To better understand local air quality, the City launched a series of studies in 2011 to evaluate the presence of pollutants and the potential cumulative health impacts on communities across Toronto. The findings help set priorities and actions to reduce exposure and improve the health of Toronto residents.

The studies completed to date consistently show the two key sources of emissions affecting local air quality are fuels used in road vehicles, including gasoline and diesel, and fuels used to heat homes and businesses. Road vehicle emissions are especially of concern, considering they account for the majority – 80% – of locally generated air pollutant emissions[1].

[1] City of Toronto (2014). *Path to Healthier Air: Toronto Air Pollution Burden of Illness Update*.

Objective: Make substantive positive changes to our local air quality.

Goal	Measure	Progress
1. Reduce locally generated smog-causing pollutants by 20% from 2004 levels by 2020[2]	Nitrogen oxides (NOx) modelled emissions	2.8% reduction (2004 – 2012)[3] 30,602 tonnes (2004) to 29,739 tonnes (2012)[3]

[2] City of Toronto (2007). *Climate Change, Clean Air and Sustainable Energy Action Plan: Moving From Framework to Action*.
[3] City of Toronto (2014). *Toronto 2012 Greenhouse Gas and Air Quality Pollutant Emissions Inventory*.

Achievements

ChemTRAC

Smog-forming pollutants come from a variety of sources in and around an urban environment like Toronto. ChemTRAC is a program developed by the City to help better understand where priority chemicals come from, and to encourage pollution prevention from industrial and commercial sources.

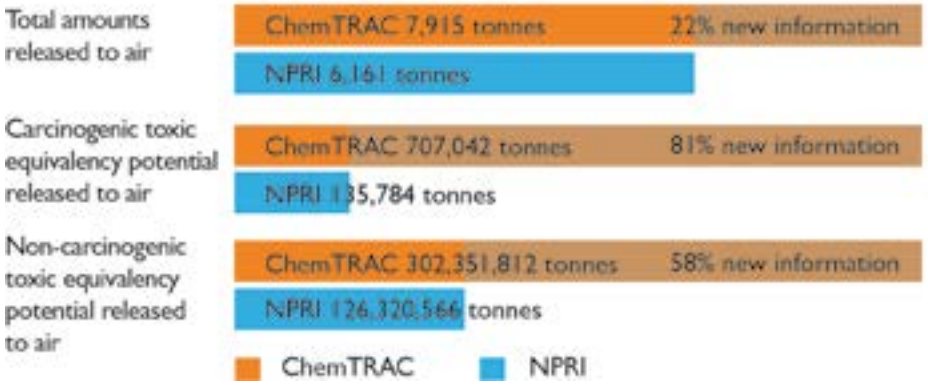
Data are collected each year on 25 priority substances that are commonly used and released into our environment at levels of concern for health. More than 750 facilities reported on their 2013 operations, representing a total of 96,000 tonnes of recorded priority substances, of which about


Sheldon Lookout Park

8,000 tonnes were released into the air. As a part of the program, ChemTRAC grants have been awarded to environmental non-governmental organizations and business associations to promote the ChemTRAC program and also to encourage pollution prevention. Currently the City is developing a pollution prevention program to help five business sectors reduce their emissions of priority substances to the air of Toronto.

Clean Roads to Clean Air Program

The Clean Roads to Clean Air Program promotes environmentally-sustainable street sweeping technologies that improve air and stormwater quality, benefitting human and environmental health. The program also tests Toronto street sweepers to ensure they meet stated efficiency levels, and evaluates how our street sweepers remove fine particulate matter (PM_{10} & $PM_{2.5}$) from our roadways. In 2014, a study was undertaken to assess the effectiveness of the environmentally-sustainable sweepers in improving the ambient air quality through the reduction of PM_{10} and $PM_{2.5}$. The study showed a reduction of airborne fine particulate matter at street level by at least 27% compared to conventional mechanical sweepers.



ChemTRAC, 2013

Until the ChemTRAC program was introduced, Toronto relied on the National Pollutant Release Inventory (NPRI) which captures information from facilities with large emissions. ChemTRAC has lower reporting thresholds than NPRI and, as a result, captures information from a larger number of local facilities.

Green Taxis

Taxicabs run 24 hours a day, seven days a week, so their impact on local air quality is significant – approximately 99,000 tonnes of greenhouse gas emissions in Toronto per year. In May 2014, Toronto became the first municipality in Canada to regulate both taxicabs' greenhouse gas emissions and air quality impacts. City Council directed all Toronto taxicabs to be 'green taxis'. Now when a taxi is scheduled to be replaced, the replacement vehicle must be an alternative fuel vehicle, hybrid vehicle, or vehicle that meets the City's definition of a 'low emission vehicle'. Since the by-law was enacted, more than 450 vehicles now meet the City's standard. It is estimated that 297 taxicabs will be replaced in 2015, and all sedan taxicabs to become 'green' by 2021, which will contribute to a reduction of at least 20,000 tonnes of greenhouse gas emissions.

Congestion Management

The five-year Congestion Management Plan 2014 – 2018 (CMP) helps better manage traffic on Toronto's streets and expressways without major infrastructure expansion or additional physical capacity. The CMP focuses on key strategies including existing and new technologies, operational enhancements, and increased information sharing. Work in these areas will help improve traffic movement, reduce delays and lessen fossil fuel use. The City's Corridor Retiming Program, between 2012 and 2014, achieved an estimated 137 million fewer vehicle stops, 1.8 million hours of travel time saved and 7.9 million fewer litres of fossil fuels consumed. The reduction of fossil fuels used results in the avoidance of 190 tonnes of greenhouse gas emissions over the same period. In 2014 alone the Program avoided nearly 80 tonnes of greenhouse gas emissions.

Energy

It is estimated that Toronto will avoid over 115,000 annual tonnes of GHG emissions from new construction completed between 2010 and 2016 by meeting the energy performance criteria set by the Toronto Green Standard as compared to business as usual.

Toronto's overall electricity demand trend has been relatively flat for the last decade. Electricity conservation and industrial relocations have counter-balanced population growth and new building construction. However, in many areas of the city, electrical demand is on the rise – largely due to higher density residential and commercial developments. This intense development produces both increased demand and also presents opportunities to integrate energy solutions to support social, environmental and economic objectives in earlier planning and development stages.

Energy conservation and renewable generation targets were established by Toronto in the *Climate Change Action Plan* (2007) and *The Power to Live Green* (2009). Under the Toronto Green Standard, new buildings must be designed to achieve at least 15% energy efficiency improvement over the current Ontario Building Code. New buildings on public lands in the waterfront must also meet the Waterfront Toronto Minimum Green Building Requirements.

The updated Official Plan supports advanced energy conservation, efficiency and processes that contribute towards an energy neutral built environment. It requires an Energy Strategy to be submitted for proposed large developments, encourages the completion of Community Energy Plans in growth areas across the city, and encourages the connection to district energy systems where feasible. On an area basis, opportunities to address energy conservation, resilience to power disruptions, and generation of renewable and alternative energy systems are increasingly prioritized.

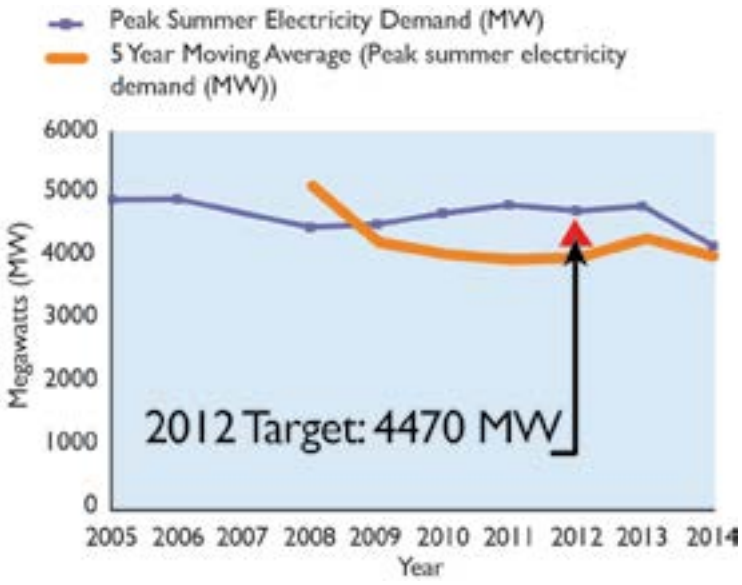
Solar PV panels at City of Toronto King Yard

Objective: Significantly conserve, renew, and smartly distribute electricity and natural gas.

Goal	Measure	Progress
1. Reduce peak electricity demand by 530 Megawatts (MW) by 2012, and 880 MW by 2020 (2007 actual baseline)[1]	Peak summer electricity demand (MW)	Increasing trend of peak summer electricity demand by approximately 40 MW from 2007 to 2012[2]
2. Reduce natural gas consumption by 240 million cubic metres (million m^3) in 2012 and 730 million m^3 in 2020 (2007 actual baseline)[1]	Annual natural gas consumption (million m^3)	Reduction trend of approximately 300 million m^3 from 2007 to 2012[3]
3. Increase renewable energy generation capacity by 120 MW by 2012 (2007 actual baseline)[1]	Installed renewable energy generation capacity (MW)	Installed 40 MW of renewable energy capacity from 2007 to 2012[4] PV FIT only

[1] City of Toronto (2009). *The Power to Live Green: Sustainable Energy Strategy.*
[2] Ontario Energy Board (2005-2014). *Yearbook of Electricity Distributors 2005-2014*. For the City of Toronto, the greatest peak electricity demand occurs in the summer months from the use of air conditioning units. Various factors affect electricity demand, including weather.
[3] Enbridge (2015). Special Request. Actual values reflect natural gas consumption between 2005-2014.
[4] Toronto Hydro (2015). Special Request. Actual values reflect renewable energy capacity from photovoltaic (PV) Feed-in Tariff (FIT) program between 2007-2012.

District Energy pipes at the CNE



Peak Summer Electricity Demand

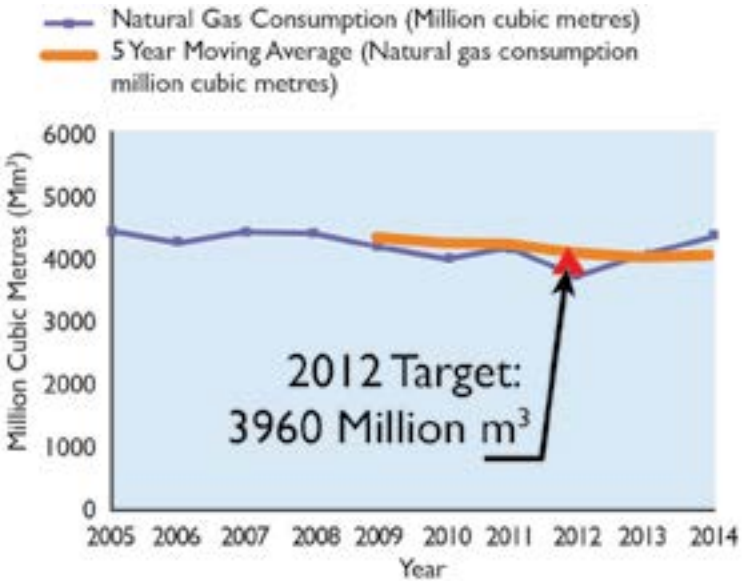
Source: Ontario Energy Board (2005-2014). *Yearbook of Electricity Distributors 2005-2014*. Actual values reflecting summer peak electricity demand.

Achievements

Toronto Green Standard Energy Efficiency Requirements

The Toronto Green Standard (TGS) is a two-tier set of performance measures and guidelines for sustainable site and building design for new development in the city. It integrates requirements to improve air and water quality, reduce greenhouse gas emissions, enhance urban ecology and reduce solid waste into the early stages of planning. Tier 1 is required for all new construction and Tier 2 is a higher, voluntary performance package with a financial incentive. The TGS was updated in 2014 to include improved performance measures for energy efficiency and now requires buildings to be designed to achieve 15% energy efficiency improvement over the current Ontario Building Code for all new developments under Tier 1, and 25% above the Ontario Building Code under Tier 2. Since 2010 when the TGS came into effect, it has been applied to over 850 new developments across the City with 10 projects Tier 2 certified as of 2014. Under the TGS, City-owned buildings and buildings owned by agencies, commissions and corporations larger than 600 metres squared must install renewable energy devices to supply at least 5% of the building's total energy load.

Enwave Deep Lake Water Cooling deployment



Natural Gas Consumption

Source: Toronto Hydro (2015). Special Request. Actual values reflecting natural gas consumption for 2005-2012, and estimated for 2013 and 2014.

Community Energy Planning and District Energy Systems

The updated Official Plan requires an Energy Strategy be submitted for large development proposals and encourages the completion of a Community Energy Plan (CEP) for areas targeted for growth, and encourages developments to connect to district energy systems where feasible. Community Energy Planning (CEP) is an area-based approach to energy planning that models energy needs for existing and future development. CEPs integrate energy considerations, including the energy components of water, solid waste and transportation choices, early into the land use planning process and seize opportunities for conservation and peak demand reduction. District Energy Systems (DES) are centralized heating and cooling systems that connect groups of buildings with networks of thermal pipes and are a more efficient and lower-carbon way to heat and cool multiple buildings at the neighbourhood scale. In 2014, the City began a CEP for the downtown Lower Yonge Precinct, and updated the CEP on City-owned brownfields in Westwood Theatre Lands with DES opportunities. A 1.6 MW district energy system, expected to be

With support from the City of Toronto, Enwave Energy Corporation developed a deep lake water cooling system (above) that draws cold water through pipes extending five kilometres into the lake, and has been cooling high-rise buildings in downtown Toronto since 2004. As of 2013, buildings connected to Toronto's deep lake water cooling use up to 90% less electricity compared to using conventional chillers, and the system reduces overall electricity demand by 61 MW, and on an annual basis, reduces greenhouse gas emissions by 79,000 tonnes.


Home energy retrofit project

completed in late 2015, is being constructed at Exhibition Place to help meet local peak electricity demand needs of the area.

Tower Renewal Sustainable Towers Engaging People (STEP) Program/ High-rise Retrofit Improvement Support (Hi-RIS) Program

Offered through the City of Toronto's Tower Renewal program, Hi-RIS and STEP drive broad environmental, social, economic, and cultural change by improving Toronto's mid-century concrete apartment towers and the neighbourhoods that surround them. Hi-RIS is a three-year, $10 million program offering low-interest financing to multi-unit residential buildings to support energy efficiency and water conservation improvements. In 2014, the first year of the program, $3.6 million of funding was awarded to support investment in retrofit projects. The average awarded project has a value of $1.2 million, delivers an average energy savings of 33% and a reduction of approximately 340 tonnes of greenhouse gas emissions annually. The STEP program is designed to improve the environmental performance of Toronto's apartment towers, such as energy efficiency and use of renewable energies, and the living conditions of building residents. Between January 2013 and December 2014, energy, water and waste benchmark reports were created for 115 buildings and detailed assessments were conducted at 96 buildings, 60% of which resulted in comprehensive enhancements. On average, STEP program participants realized utility consumption savings of 7% (range of 5-20% improvement). Additionally, new criteria developed by Tower Renewal and Enbridge Gas extend eligibility for enhanced utility incentives available to 42 more buildings pursuing natural gas improvements and GHG reductions.

Home Energy Loan Program (HELP)

Launched in 2014, the Home Energy Loan Program (HELP) offers low interest loans to homeowners to improve their home energy efficiency. The homeowner repays the City over time via installments on the property tax bill, making retrofit projects more accessible. By improving home energy performance, homeowners are better protected against energy costs, and the savings realized after completing the retrofit help offset the cost of monthly repayments. On average, home energy retrofit projects are valued at $18,000 and have achieved deep-energy savings by cutting natural gas bills by 30%, saving an average of almost $800 on energy bills per year, and avoiding an estimated 3 tonnes of greenhouse gas emissions annually. This program is the first of its kind in Ontario.

Green Space & Urban Agriculture

Toronto's park system covers 8,000 hectares of parkland, more than 1,500 public parks, and 600 kilometres of trails.

Toronto is often recognized as a city within a park. Toronto's green spaces – our ravine system, natural heritage, parks, gardens, and streetscape – are essential in making Toronto an attractive place to live, work and play. They offer a broad range of outdoor leisure and recreational opportunities, and are places for residents to interact with nature and each other. They provide oxygen and food, encourage healthy lifestyles, remove air pollutants, and hold real economic value.

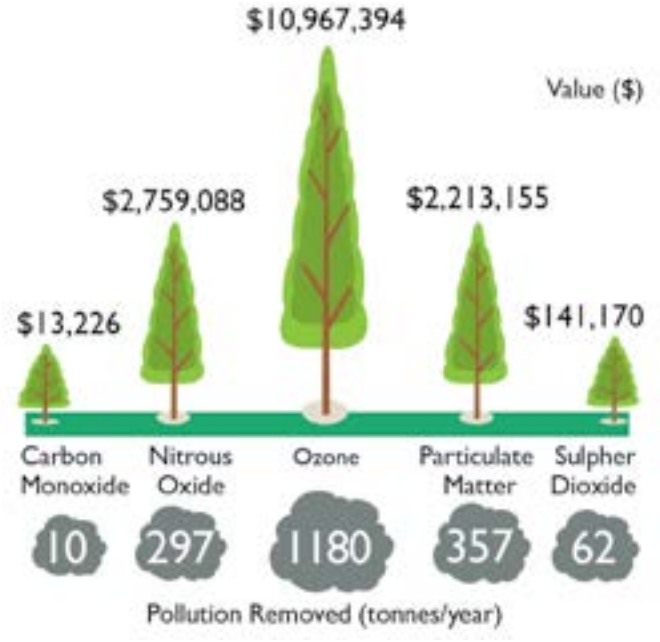
Toronto takes pride in maintaining the city-owned park system, which covers 8,000 hectares of parkland (13% of the city's total land area), more than 1,500 public parks, and 600 kilometres of trails. Most residents live within 500 metres, or a five-to-ten-minute walk to City parkland. It is estimated that trees and shrubs in the City of Toronto remove 1,430 tonnes of air pollution per year with an associated value of $16.1 million. *The Green City: Why Nature Matters to Health* report highlights the significant human health benefits derived from green space.

Tommy Thompson Park (above) is a particularly unique wilderness spot along Toronto's waterfront that extends five kilometres into Lake Ontario and is over 500 hectares in size.


Scarborough Bluffs

In 2013, Toronto City Council approved the first *Strategic Forest Management Plan (2012 – 2022)*, entitled *Sustaining and Expanding the Urban Forest*, which highlights six strategic goals, including increasing canopy cover to 40%, achieving equitable distribution, and increasing biodiversity in Toronto. The Plan focuses on improved protection and maintenance of the existing tree canopy as well as continued tree planting, while recognizing threats to the urban forest. Toronto works to manage impacts of extreme weather events such as the 2013 ice storm, and disease and pests, including the Emerald Ash Borer. Together, the *Strategic Forest Management Plan* and the *Parks Plan (2013 – 2017)* work to advance environmental sustainability, increase awareness, promote stewardship, and connect people with Toronto's green spaces.

The City also values the economic and social development opportunities of urban agriculture. Documents like *GrowTO: An Urban Agriculture Action Plan*, adopted by Council in 2012, and *Cultivating Food Connections: Toward a Healthy and Sustainable Food System* (2010) guide and support urban agriculture in Toronto.



Amount and Value of Air Pollution Removed by Trees and Shrubs

Source: City of Toronto (2012). *Assessing Urban Forest Effects and Values: Toronto's Urban Forest*.

Objective: Sustaining, restoring and enhancing the health and integrity of the natural ecosystem, supporting biodiversity in the city and targeting ecological improvements.

Goal	Measure	Progress
1. 57,000-114,000 trees planted on public land annually[1]	Annual tree planting	94,739 trees planted on public land (2014)[3]
2. > 70% in excellent or good condition[1]	Street tree condition rating	49% in excellent or good condition (2011)[1]
3. Provide growers with greater access to land for urban agriculture production[2]	Community garden in each ward	60 gardens in 28 wards (2014)[4]

[1] City of Toronto (2013). *Sustaining and Expanding the Urban Forest: Toronto's Strategic Forest Management Plan (2012 – 2022)*.
[2] City of Toronto (2012). *GrowTO: An Urban Agriculture Action for Toronto*.
[3] City of Toronto (2015). Special Request.
[4] City of Toronto (2014). *Update on Progress of Community Garden Action Plan*.

Everdale Farm, Live Green Grant recipient

Achievements

Tree Planting Program

Trees play a key role in creating healthy urban environments in cities and provide multiple environmental, social and economic benefits. The *Every Tree Counts: A Portrait of Toronto's Urban Forest* (2013) report estimates that Toronto's urban forest has a total structural value of $7.1 billion, which equals $700 per tree. Each year, the over 10 million trees in Toronto sequester 46,700 tonnes of greenhouse gases; reduce energy use from heating and cooling of residential buildings by 41,200 MWh, saving $10.2 million in utility costs; improve air quality by removing 1,905 tonnes of air pollutants; mitigate stormwater runoff; and, provide ecological services with a combined estimated value of at least $60 million. Toronto has adopted the goal of increasing tree canopy coverage from an estimated 27-28% to 40% across the city by 2050-2060. Toronto aims to plant between 57,000-114,000 new trees on public land annually. Expanding Toronto's canopy cover includes commitment to tree maintenance, and education programs as well as tree planting.

Environmentally Significant Areas in Toronto

Environmentally Significant Areas (ESAs) contain rare and endangered species, habitats of unusually large size or high diversity, rare or unusual landforms, and/or provide important ecological functions such as serving as a stopover for migratory wildlife. Through the Official Plan update, Toronto City Council approved the identification of 68 new sites to be designated as ESAs and the expansion of 14 existing sites. Together these areas account for 2,698 hectares, which is equivalent to 4% of the city land area or 17 High Parks. These areas are home to an extraordinary variety of plants and wildlife including 369 significant plant species, 175 species of birds and 16 species of reptiles and amphibians. Designation of these exceptionally important areas and allows people to experience wilderness in the city.

2014 Federation of Canadian Municipalities (FCM) Sustainable Communities Awards – Neighbourhood Development Project – Corktown Common

The City of Toronto and Waterfront Toronto were awarded the 2014 FCM Sustainable Communities Award for Corktown Common Neighbourhood, which transformed a former brownfield into a 7.3 hectare, year-round use park.

Recipe for Community

Recipe for Community is a Toronto Community Foundation and City of Toronto Tower Renewal program initiative to engage neighbourhood residents young and old to improve the sense of belonging and safety in their communities. It is one way to improve the city from the ground up, one neighbourhood at a time. The initiative brings together donors, sponsors and residents to invest in four key community "ingredients": food, convening, youth engagement and neighbourhood beautification. Program and activity topics include gardening workshops, vegetable planting days, food nutrition training, and food handling certification and employment programs. In 2013-2014, Recipe for Community supported residents in Weston-Mount Dennis with four community garden initiatives and three community green space renewal projects to improve the public realm.

Biodiversity Booklet Series

The City has partnered with expert organizations including Ontario Nature, Toronto Field Naturalists, Biodiversity Institute of Ontario, and the Toronto Wildlife Centre to create the Biodiversity Booklet Series. The result of the passion of citizen scientists, the Biodiversity Booklets cultivate a sense of local stewardship in Toronto residents. The booklets create a biodiversity inventory to inform Toronto's conservation and development policy, and contain a

View of downtown Toronto from Toronto Island

wealth of information specific to Toronto to re-connect people with the natural world, raise awareness of the seriousness that biodiversity loss represents, how it affects us, and how to help mitigate local biodiversity loss. The visually engaging booklets are used by the Toronto District School Board in their science and technology curriculum and the Eco-Schools program. The booklets are also easily accessible and free for residents at Toronto Public Libraries.

Boulevard Naturalization and Transformation Program

The Naturalization and Transformation Program includes the replacement of hard surfaces with vegetation or absorbent material that reduces stormwater run-off and reflects heat while increasing photosynthesis of carbon dioxide and oxygen. Each year the program delivers one project in each of Toronto's 44 wards. The program also recognizes the important role of street trees, which make up approximately 6% of the city's total tree population. Street trees grow under some of the most challenging conditions because they are subject to many stressors, including poor soil conditions, road salt, mechanical damage, and extreme heat and water conditions. However, they provide extended ecological benefits in otherwise highly developed neighbourhoods. In 2013 and 2014, the City planted almost 4,000 street trees through the Naturalization and Boulevard Transformation Program. To ensure better growing conditions, the Toronto Green Standard requires minimum volumes of high quality soil for street trees.

Waterfront Toronto

Supported by the City, provincial and federal governments, the Waterfront Toronto organization was created in 2001 to transform 800 hectares of brownfield lands on the waterfront into beautiful, sustainable mixed-use communities with dynamic public spaces. Approximately 25% of the waterfront revitalization is reserved for parks and open spaces. Since 2004, Waterfront Toronto has opened 24 new or improved parks and public spaces, including the Port Lands Greening project, Sherbourne Common, Martin Goodman Trail, and Mimico Waterfront Park. The waterfront renewal will ultimately deliver more than 300 hectares of improved parkland, improving public access and creating a network of high quality public parks and open space.

Toronto downtown street

Sustainable Transportation

Transportation choices greatly influence human and environmental health. Road vehicles are responsible for approximately 80%[1] of locally-generated air pollutant emissions, and contribute to half of the air quality-related hospitalizations and premature deaths each year in Toronto. Toronto's Official Plan includes mandates to reduce auto dependency, improve air quality, and provide an integrated, accessible transportation system for all users. Toronto coordinates growth around the existing transportation network to make sustainable transportation options, such as public transit, cycling, and walking, readily available. Between 2010 and 2014, 83%[2] of new residential development was proposed in areas targeted for growth by the City's Official Plan, concentrating people and jobs in areas with sustainable transportation options.

The *Climate Change Action Plan*, Secondary Plans, and the Toronto Green Standard all support sustainable transportation options. Respectively, they identify opportunities, provide modal split targets, and require new developments to provide infrastructure for pedestrians and cyclists. In addition, the *Toronto Pedestrian Charter* (2002), *Toronto Walking Strategy* (2009) and the *Toronto Bike Plan* (2001) identify principles and recommendations to improve active commuting, like walking and cycling, obtain the associated human health benefits, and reduce auto use, particularly single occupant vehicles.

As of 2011, nearly half the trips to work made by Torontonians were predominantly by sustainable modes – 46% overall[3]. Over the course of 24 hours, sustainable transportation accounted for 34% of all trips made by Torontonians, 44% of trips to work, And 80% of trips to school in 2011[4]. Active commuting has increased for trips made to work, but has significantly decreased for trips made to school for the period between 2001 and 2011[4].

[1] City of Toronto (2014). *Toronto 2012 Greenhouse Gas and Air Quality Pollutant Emissions Inventory*.
[2] City of Toronto (2015). *2015 How Does the City Grow?*.
[3] Statistics Canada (2001, 2011). Census of Population 2001, and National Household Survey 2011. Data from Census and National Household Survey provide information around mode of transportation taken to work for all household members aged fifteen and over. The breakdown of sustainable transportation modes taken by respondents include Public Transit, Walking, and Bicycling. Trips tabulated account for City of Toronto residents only.
[4] Transportation Tomorrow Survey (2001, 2006, 2011). Transportation Tomorrow Survey data provides information around mode of transportation taken for all-purpose trips, to work, and to school for household members aged eleven and over. The breakdown of sustainable transportation type taken by respondents include the three categories: Active Commuting, Public Transit, and School Bus. Trips tabulated account for City of Toronto residents only.

Objective: A transportation system that meets the needs of all users, including people with mobility needs.

Goal	Measure	Progress
1. Double bicycle trips as percentage of all trips from 2001 by 2011[1]	Percent change in bicycle trips to work	69% increase from 2001 to 2011[2]
2. Completion of the bikeway network, approximately 1,000 kilometres (km) of bikeways by 2011 consisting of: 495 km of bike lanes 249 km of off-road trails 260 km of signed routes[1]	Bike lanes, km	848 km of bikeway network in 2014 (of which 551 km is on-street), consisting of: 249 km of bike lanes 297 km of off-road trails 302 km signed routes[3]

[1] City of Toronto (2001). *Toronto Bike Plan: Shifting Gears*.
[2] Statistics Canada (2001, 2011). *Census of Population 2001, and National Household Survey 2011*.
[3] City of Toronto (2015). *Cycling News, January – 2014 Year in Review*.

Commute to Work Transportation Mode Percent Change, 2001-2011

Source: Statistics Canada (2001, 2011). *Census of Population 2001, and National Household Survey 2011.*

Achievements

Public Transit Ridership

The Toronto Transit Commission (TTC) is Canada's largest, and North America's third largest, transit system. Serving 1.7 million customer journeys every workday, the TTC provides a sustainable transportation option, reducing the production of greenhouse gas emissions, air pollution, and congestion on our roadways. TTC ridership has increased each year for the last 11 years, and set an all-time record of 535 million rides in 2014. Major TTC projects are underway to improve service, reduce journey times, and support the growing transportation demand across the city. These projects include modernization of the bus, streetcar and subway fleets, automatic Train Control, the Toronto-York Spadina Subway Extension, and the Leslie Barns Streetcar Maintenance & Storage Facility. TTC also works with the City of Toronto on traffic control signals, parking restrictions on major streets during rush hours, and efficient re-routing to reduce delays. The projects will improve travel times and help reduce dependency on the automobile. Current and ongoing projects also include station renovations, second entrance/ exit creations, and projects designed to make all subway stations accessible to everyone, regardless of their level of mobility.

Cyclists on a multi-use recreational trail

Bikeway Network Expansion

In 2001, Toronto City Council approved the Toronto Bike Plan, a comprehensive plan for infrastructure, programs and services to increase bicycle use and improve bicycle safety. The City installed more than 22 kilometres of bikeways along streets in 2014. This includes a pilot project of cycle tracks along Adelaide Street, Richmond Street, and Simcoe Street. Cyclists are separated from mixed street traffic with flexi-post bollards and/or planters, to increase cyclists' sense of comfort and safety. The completion of the Martin Goodman Trail, which provides continuous east-west multi-use travel along the city's waterfront, now attracts more than 6,000 cyclists per day. Bicycle counts on the trail have been found to spike during the rush hour peak travel times, proving to be an essential link for commuters travelling to work. To enable year-round cycling, Toronto's network of Cycle Tracks and the Central Waterfront Trail are maintained throughout the four seasons.

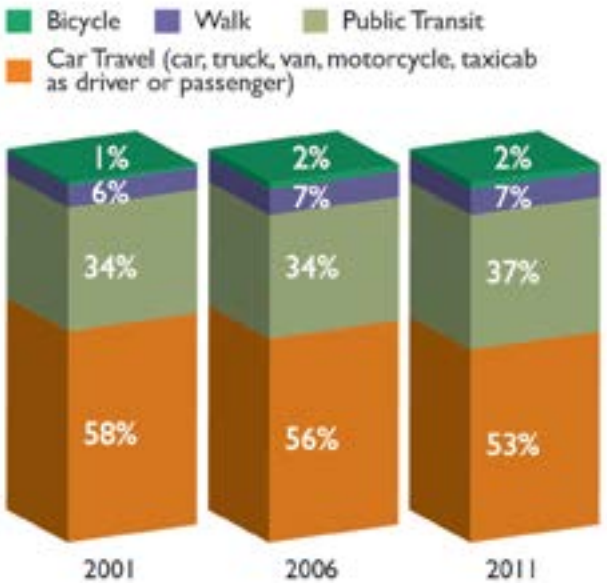
Bike Sharing and Parking

The City of Toronto provides public bicycle sharing and parking facilities at destinations that are regularly frequented by cyclists to facilitate cycling and encourage more people to take up sustainable commuting. The Bike Share Toronto program has 1,000 bicycles and 81 stations throughout the city available for use 24 hours a day, 365 days a year. Over a million trips were taken by bike in the first 18 months of Toronto's bike sharing program. Bike storage and parking are increasing as well. Over 17,000 post and ring bicycle racks are installed across Toronto – more than any other North American city – and Toronto's Union Bicycle Station, a high-security bicycle parking facility, helps transit users travel their final mile into Toronto's core. New zoning by-laws and developer guidelines require all new buildings to provide secure bike storage.

Community Bicycle Hubs

The Community Bicycle Hubs program, part of Tower Renewal, is an economic development and community engagement program that supports sustainable transportation. The Community Bicycle Hubs provides youth in low income apartment neighbourhoods with training in bicycle repair using a train-the-trainer model. The skills developed help to increase opportunities for youth, develop financial resilience through the establishment of youth-run social enterprises, and increase opportunities for active recreation in the neighbourhoods. As of December 2014, there were eight communities

Finch hydro corridor recreational trail



Commute to Work Transportation Mode

Source: Statistics Canada (2001, 2011). *Census of Population 2001, 2006, and National Household Survey 2011. Percentages may not sum to 100 due to rounding.*

hosting bike hubs, including six communities in Neighbourhood Improvement Areas, 30 youth trained to teach bicycle repair skills, and over 300 volunteer participants who have received bicycle repair training.

Pedestrian Projects

Toronto adopted the *Walking Strategy* in 2007 and committed to making our city a great place to walk. Each year new sidewalks are built through the Essential Links program to construct missing sidewalks when roads are reconstructed or resurfaced. Construction of sidewalks ensures that the public realm has a well-connected network of safe and accessible walking routes. In 2014, 6.7 kilometres of new sidewalks were installed across the city. The City is identifying intersections that pose specific risks to pedestrians and implementing enhancements such as giving pedestrians crossing the street a four-second "head start" before drivers get a green light, and giving longer crossing times to support seniors and residents with mobility limitations. Pedestrian crossing times were lengthened at 150 intersections in 2014 to better suit observed pedestrian crossing speeds and provide adequate pedestrian clearance.

Toronto Transit Commission Sustainability

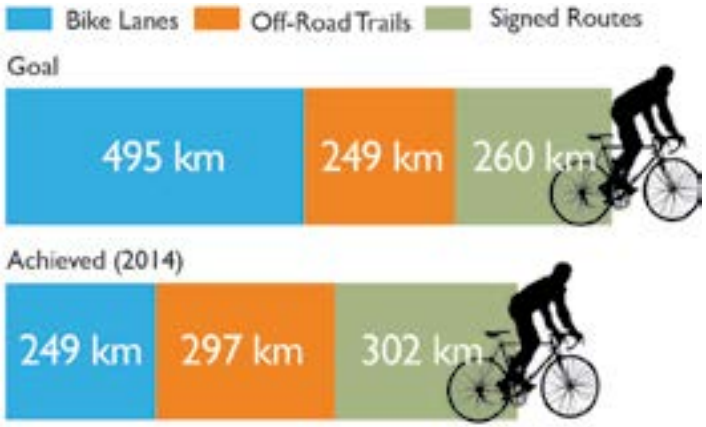
The Toronto Transit Commission's (TTC) 2013 – 2017 Five-Year Corporate Plan sets out the organization's priorities and commitments to support the goal of maximizing mobility in Toronto


Waterfront by Queens Quay

while minimizing the impact on the environment – to air, water and land. Efforts to reduce emissions include annual emission testing, retirement of inefficient engines, and the application of new emission control technologies for the bus fleet, to reduce vehicle emissions from the Toronto region. In 2013, nearly 60%, or 315 million customer-trips, were made by 'choice' users. A 'choice' user has access to a car whenever they need it, but chooses to take transit for at least some of their trips. If these choice users had instead travelled in single-occupancy vehicles, the emissions from those vehicles would add about 693 tonnes of emissions.

TOcore

TOcore is a three-year initiative, launched in 2014, to ensure growth positively contributes to Toronto's Downtown as a great place to live, work, learn, play and invest. Of residents who live Downtown 75% either walk, cycle or take transit to work. The Downtown transportation system, in all its elements, is envisioned to shift towards sustainable travel modes by rethinking how people and goods can move around more easily and efficiently. TOcore will create strategies for: unlocking the full potential of surface transit with a focus on the current busiest routes; growing and renewing the cycling network and expanding bike parking and bike sharing; and creating a more walkable Downtown with a focus on pedestrian safety, comfort, accessibility and connectivity.



Bikeway Network

Source: City of Toronto (2001). *Toronto Bike Plan: Shifting Gears*.
City of Toronto (2015). *Cycling News, January – 2014 Year In Review*.

Reduce Solid Waste

Public event waste diversion bins

Toronto is a leader in providing innovative waste management services that create environmental sustainability, promote diversion, and maintain a clean city. The City of Toronto manages waste from the residential sector from family homes and most apartment and condominium buildings and also collects waste from non-residential customers including some small businesses, schools, charities, and religious institutions. One third of all waste in Toronto is collected by City operations, while two thirds of waste is collected and managed by private operators. Waste diversion provides economic, environmental and social benefits, including reduced landfill maintenance and transportation costs, energy use, and greenhouse gases.

Toronto's goal is to divert 70% of residential solid waste from landfill. The City has gradually increased its residential waste diversion rate, which in 2014 was 53%. In 2014, over 423,800 tonnes[1] of residential waste were diverted from landfill through programs including Blue Bin recycling, Green Bin organics, backyard composting, grass cycling, Community Environment Days and the collection or drop-off of materials like household hazardous waste, scrap metal and electronic waste.

The City is currently developing a Long Term Waste Management Strategy to provide a framework for solid waste management policy decisions over the next 30 to 50 years. The Strategy will recommend policies and programs, including how to manage any leftover garbage remaining after reusing, recycling, and composting. The goal is to find solutions that prioritize reducing, reusing, recycling and recovering before final disposal, and are cost-effective, socially acceptable and environmentally sustainable.

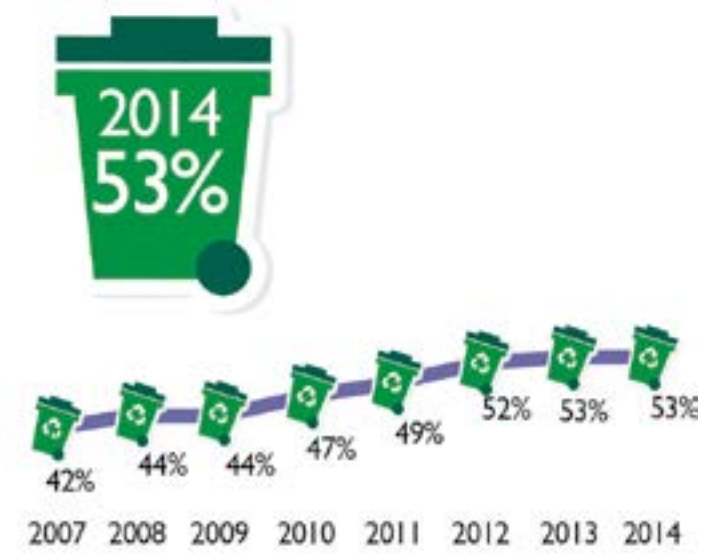
Automated recycling collection

Objective: Provide innovative waste management services to residents, businesses and visitors in Toronto, and promoting diversion and maintaining a clean city.

Goal	Measure	Progress
1. 70% residential waste diversion by 2016[1]	Overall diversion rate	53% (2014)[2]
	Single family diversion rate	66% (2014)[2]
	Multi-residential diversion rate	26% (2014)[2]

[1] City of Toronto (2013), *Long Term Waste Management Strategy - Terms of Reference*
[2] City of Toronto (2015). *Residential Waste Diversion 2014 Rates*.

Residential waste diversion bins



Residential Waste Diversion Rates

Source: City of Toronto (2015). Special Request

Achievements

Multi-residential Waste Diversion Program Expansion

Approximately 60% of Toronto residents live in multi-residential buildings and since the start of Green Bin organics Program implementation in apartments and condominiums in 2009, they have had access to the same waste diversion programs as residents of single-family homes. By the end of 2014, 4,060 multi-residential buildings (out of approximately 4,500) committed to participate in the Green Bin organics program. Organic waste collected from multi-residential buildings increased from 961 tonnes in 2009 to 11,381 tonnes in 2014, and garbage collected has steadily decreased from over 250,000 tonnes to just under 200,000 tonnes. Overall, multi-residential waste diversion rates have doubled from 13% in 2007 to 26% in 2014.

A dedicated staff unit performs outreach and works with property owners and building staff at multi-residential buildings to help improve diversion. The 3Rs Ambassador Volunteer program facilitates residents of multi-residential buildings to volunteer in their own buildings to conduct education and outreach activities to increase waste diversion. In 2014, 250 residents participated in the program, representing 175 individual buildings. In 2014, the Ontario Public Works Association recognized the efforts to implement organics collection in multi-residential buildings and awarded Toronto the Management Innovation Award.

Toronto City Hall green roof

In 2014, work undertaken to implement the Green Bin Organics Program at multi-residential buildings was recognized by the Ontario Public Works Association and received the Management Innovation Award.

Community Environment Days

Community Environment Days are held annually in each of the 44 wards in the city, offering residents convenient opportunities to donate items for reuse, recycle electronics, dispose of household hazardous waste (HHW) safely, and to pick up free compost. Since the program began in 1991 to 2014 year end, over 570,000 people have attended over 900 events, resulting in the diversion of over 12,000 tonnes of waste from landfill, including over 7,000 tonnes of HHW, nearly 3,000 tonnes of electronics and over 1,000 tonnes of items for reuse. In addition, nearly 24,000 tonnes of compost have been picked up by residents and nearly 90,000 backyard composters have been sold at Community Environment Days events. It is estimated that this quantity of composters has resulted in the diversion of 9,000 tonnes of organic waste. Almost 30,000 participants attended Community Environment Days in 2014, bringing 168 tonnes of electronics, 311 tonnes of HHW, 69 tonnes of reusable household goods, and over seven tonnes of arts and craft supplies.

Clean Toronto Together

In 2014, the City's annual spring clean-up, Clean Toronto Together, drew record numbers of Toronto residents to pick up thousands of bags of litter and recyclable material from April 25-27. Torontonians showed their commitment to keep Toronto clean and green in a big way. Corporate participation increased 11% compared to 2013 and 135 corporate clean-ups engaged over


Toronto City Hall green roof

3,544 employees; school clean-ups increased by 48% with a total of 59,569 students and teachers participating; and, over 9,000 residents participated in 262 registered events for Community Clean-up Days. In total, over 72,000 Torontonians participated in nearly 600 events, helping to collect an estimated 3,456 full bags (about 32 tonnes) of litter, and 293 full bags (about 3 tonnes) of recyclable materials.

Public Space Litter & Recycling Bins

Litter and recycling bins on streets and parks help reduce litter and increase recycling in public spaces. As of June 1, 2015 there are approximately 8,500 street litter bins in Toronto – each with one compartment for litter and at least one compartment for recycling, as well as a dedicated receptacle for cigarette butts. The number of street litter bins has increased by 79% since 2011, making proper waste and recycling disposal more accessible to Torontonians. Litter has been reduced in parks where wire basket litter and recycling containers were replaced with carts with lids between 2010 and 2013. The new litter and recycling carts save resources as they are not lined with plastic bags and are much larger than the previous wire baskets, resulting in reduced collection frequency and associated fuel consumption and greenhouse gas emissions. A 2013 audit showed that since 2008, the recycling capture rate increased from 51% to 68% and the diversion rate increased from 14% to 22%, while the contamination rate decreased from 46% to 39%. Today, there are approximately 10,000 recycling and garbage carts in over 1,500 parks across the city.

"More Plastic! We Want It!"

Solid Waste Management Services regularly uses advertising campaigns and various tools to educate residents on its programs and services, with the goal of reducing waste and increasing diversion. The "More Plastic! We Want It!" ad campaign launched in Fall 2012/Spring 2013 to let residents know about the addition of mixed rigid plastics (MRP) to the Blue Bin recycling Program. The initiative resulted in an increase of over three times the tonnage of MRPs collected in Blue Bins in just four months – from 70 tonnes in April 2013 to 315 tonnes in August 2013. Over the course of the campaign, requests to upsize Blue Bins or for additional ones increased by 150%, contributing to an estimated 2,000 tonnes of MRPs diverted from the landfill each year.

Clean Water

Green infrastructure manages precipitation at source, while providing habitat for local species, flood protection, enhanced public spaces, cleaner air and cleaner water.

Toronto City Council adopted the 25-year *Wet Weather Flow Master Plan* (WWFMP) in 2003, a comprehensive strategy to improve the quality of Toronto's rivers, streams, beaches, natural areas and wildlife, while enhancing the management of the quantity of water that flows through the urban watershed.

The WWFMP has made great strides in improving Toronto's waterfront and urban watershed. Toronto prioritizes solutions at the source to better manage precipitation where it falls and eliminate negative effects downstream. As identified in the WWFMP, a key component of solving water pollution is public education and collaboration. Public awareness and community and business partnerships are instrumental in preventing stormwater pollution, improving Toronto's beach water quality, and restoring stream and aquatic habitats.

Toronto is dedicated to providing high quality water to all users. The City works to implement the Toronto Beaches Plan (2009) to ensure safe, swimmable beaches and recreational shorelines, and is proud to deliver clean and affordable tap water, aided in part by Ontario's award-winning drinking water source protection approach. Official Plan policies protect, improve and restore the quality of water and drinking water sources and new development is required to meet TGS performance metrics, including erosions and sediment control, stormwater retention, removal of 80% of the total suspended solids and e. coli reduction.

Objective: Reduce and ultimately eliminate the adverse effects of wet weather flow on the built and natural environment in a timely and sustainable manner, and achieve a measurable improvement in ecosystem health and of the watersheds.

Goal	Measure	Progress
1. Improve water quality in rivers and lakes for body-contact recreation[1]	Increase in percentage of swimmable beach days	26% (2000 – 2014)[2]

[1] City of Toronto (2003). *Wet Weather Flow Master Plan*.
[2] City of Toronto (2015). Special request. Swimmable beach day data is provided by Toronto Public Health through the SwimSafe beaches water quality program, which is verified by the internationally recognized Blue Flag Program. The City of Toronto's eleven supervised beaches are tested for e. coli bacteria levels on a daily basis from June 1st to August 31st of every year to determine water quality and safety conditions for public swimming. Notices are issued for each beach based on testing results, in accordance to the Ministry of Environment and Climate Change's standard for beach water quality in Ontario. The swimmable beach day data represents the number of days a beach is posted as safe for swimming out of the total number of days during the SwimSafe program season, and is calculated as five year averages.

Toronto waterfront and Martin Goodman Trail

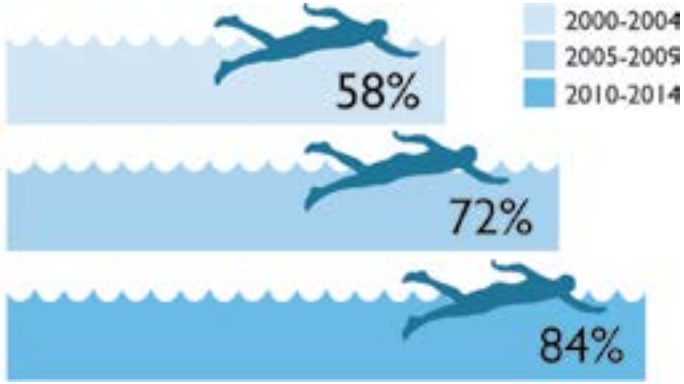
Achievements

Mandatory Downspout Disconnection Program

The Mandatory Downspout Disconnection Program has been recognized as a key measure to help reduce the amount of stormwater runoff entering Toronto's sewer systems. Disconnecting downspouts from the sewer system decreases the water flowing through the sewers during rain events, and reduces the risk of basement flooding and discharges of untreated sewage. Phase 1 required property owners located in the area served by combined sewers (stormwater and sanitary sewage carried in a single pipe) to disconnect their downspouts by November 20, 2011. Phase 2 required properties in the basement flooding study areas to disconnect by December 3, 2013. Phase 3 will require all remaining properties across the City to disconnect by December 3, 2016. As of the summer of 2013, 80% of properties assessed in Phase 1 area had disconnected their downspouts.

Green Streets Demonstration Projects

Stormwater runoff is a major cause of water pollution and flooding in urban areas, particularly after extreme weather events. In October 2013, Council requested the City to develop green infrastructure standards for the public right-of-way, presenting an opportunity to use natural processes to better absorb stormwater close to where it falls. Green infrastructure manages



Swimmable Beach Days

Source: City of Toronto (2015). Special request.

precipitation at source, while providing habitat for local species, flood protection, enhanced public spaces, cleaner air and cleaner water. As part of the Queensway Sustainable Sidewalk Pilot Project in 2008, street trees were planted in soil installed with structural soil cells. A monitoring system was developed in partnership with Ryerson University to measure stormwater quality as it exited the soil 'filter.' Trees growing in the structural soil cells had a larger trunk width, and were visibly taller with a fuller, healthier tree canopy. Building on this success, five new bioretention pilot projects with green infrastructure elements have been constructed between 2008 and 2014. The updated Official Plan explicitly promotes the use of green infrastructure.

Green Roof By-law

The Green Roof By-law came into effect in 2010 and requires green roofs on new residential, commercial and institutional buildings greater than 2,000m^2. Green roofs have many environmental benefits such as reducing the effects of the urban heat island and associated energy use, managing stormwater runoff, and improving air quality. Recognizing the opportunity to create habitat and enhance biodiversity in the urban fabric of the city, the Design Guidelines for Biodiverse Green Roofs were created to provide guidance and illustrate best practices. From 2010 to 2014, 300 green roof permits have been issued for a total of 250,000 m^2 of green roofs (equivalent to 42 Canadian Football League football fields). A total of 444 green roofs currently exist in Toronto.

Eco-Roof Incentive Program

Since 2009, the Eco-Roof Incentive program has diverted over 8.9 million litres of stormwater from the City's sewer system. The program uses fees paid by developers to fund green roofs that, in addition to retaining stormwater, provide multiple environmental benefits. The program has funded 137 projects with developer fees, greening and cooling almost 280,000m^2 of roof space (equivalent to 47 Canadian Football League football fields). In total, energy consumption is reduced by 1,030 MWh, and 121 tonnes of greenhouse gas emissions are avoided annually. In 2014, the Eco-Roof Incentive Program supported 35 projects totaling over 62,450 m^2 of roof space. The projects in 2014 alone have reduced energy consumption by 117 MWh per year, avoided over 22 tonnes of greenhouse gas emissions annually, and diverted 525,000 litres of stormwater.


R.C. Harris
Water Treatment Plant

Water Infrastructure Upgrades

In 2006, Toronto City Council approved an Environmental Assessment (EA) study to look for solutions to improve water quality as part of the Don River and Central Waterfront Project. The City engaged in an extensive consultation process with the public and stakeholders, and drew on the City's *Wet Weather Flow Master Plan* to form recommended solutions. The recommended design includes new underground infrastructure that will capture and treat polluted stormwater and combined sewer overflows before they enter Toronto's waterways. The 4.8 kilometre long Coxwell Sanitary Trunk Sewer (CSTS) was assessed as part of the EA in 2008, and was found to require repairs to a 60-metre section of the structure that was built in the 1950s. The CSTS bypass is now in operation, serving approximately 750,000 residents in Toronto, and carrying 400 million litres of wastewater flows per day to the Ashbridges Bay Treatment Plant. The completion of this part of the Don River and Central Waterfront Project means that one of the most critical sanitary trunk sewers in Toronto is now structurally and operationally sound again.

Toronto Water Meter Program

The City of Toronto is implementing a mandatory water meter program that will install new automated meters in every home and business in the city. The new system will help to better track water consumption across the city, detect water losses more quickly, and eliminate the need for City staff to go to homes to obtain water meter readings. Since the program launched in 2010, over 293,000 water meters have been retrofitted, replaced or upgraded. An additional 9,700 water meters were installed in 2013 and 2014 to properties which previously did not have a water meter. The Water Meter Program will lead to improved conservation, help build public awareness of the importance of our water resources and encourage greater overall stewardship of Toronto's watersheds.

Greening City Operations

Corporate Energy Efficiency Projects

The City of Toronto is always working to maximize the energy efficiency of our own operations. We have implemented energy conservation, demand management and renewable generation projects for more than a decade, and in July 2014 City Council approved a five year Energy Conservation and Demand Management Plan 2014 – 2019 for 528 City buildings. Average energy use intensity in larger corporate facilities has been reduced by approximately 15% since 2004, and analysis shows energy consumption can further be reduced by up to 30%, equivalent to the reduction of over 30 tonnes of greenhouse gas emissions, and a utility cost savings of over $17 million per year. Multiple energy efficiency projects were completed in 2014, including the installation of a new Building Automation System at North York Civic Centre, and lighting retrofit projects at 27 City-owned arenas, creating estimated savings of over $150,000 and $148,000 in utility costs per year respectively.

Green Fleet Plan

The City of Toronto Consolidated Green Fleet Plan 2014 – 2018, recognizes the benefits that come from strategic cooperation, and articulates the collective vision of the City's major fleets. This Consolidated Green Fleet Plan focuses on reducing emissions from the operation of almost 10,000 on-road and off-road vehicles and equipment owned and operated by the City of Toronto, including vehicles operated by City of Toronto staff, and also vehicles operated by Emergency Medical Services, Toronto Fire Services, Toronto Police Service, and Toronto Transit Commission (TTC). The City of Toronto has been a leader in Canada in pilot testing and adopting environmentally preferable vehicles and equipment, including LED lights, auxiliary batteries, anti-idling devices, inverters, and other technologies for vehicles and equipment that reduce fuel consumption and emissions. All City of Toronto employees are expected to follow the 10 second rule: if they're stopped for 10 seconds, turn off the vehicle. Implementing the 10 second rule is the equivalent of reducing greenhouse gas emissions in Toronto by approximately 2,100 tonnes per year. That's like taking 486 passenger cars off the road annually.

Zero Waste Buildings

In 2014, the City diverted 88% of waste from its eight largest buildings, again exceeding the city-wide target of 70%. Zero Waste International awarded Toronto City Hall, with a 90% diversion rate, zero waste status. City facilities promote diversion with dedicated signage and receptacles in our facilities, and diversion has been steadily growing from 71% in 2005. Corporate waste audits showed in 2014 the eight largest buildings also diverted 985 metric tonnes of recyclable materials from landfill, thereby avoiding tipping fees of $98,500 and earning rebates of approximately $30,000 for recyclables.

Water-Based Paint for Roads

In the past, the City has used oil-based paints to indicate traffic lanes and the centrelines of the roadway. But recent studies have shown that oil-based paints contain higher than recommended amounts of volatile organic compounds, or VOCs, that are a major contributor to air pollution. The City has switched to water-based paints that contain significantly less pollutants that cause ground level ozone (smog), and will result in a reduction of more than 100 tonnes of VOCs on our roads per year. VOC emissions will be reduced by as much as 78% by using water-based paint. In addition to using water-based paint, the City is also using more durable markings on the roads. While they cost more, they last three to five times longer than painted markings. The City is also continuing to experiment with new pavement marking products in an effort to improve our commitment to the environment.

Recycling and Road Repair

Toronto is committed to reducing the waste sent to landfill from our road repair operations. The $2 million Cold-in-Place Recycling Asphalt recycled 5,200 tonnes of asphalt and granular material in 2014, diverting waste from landfills and reducing the use of energy by eliminating the need to produce new materials and the transportation of materials (asphalt cement, gravel and sand). The use of recycled products in road repair including Recycled Asphalt Product, Pulverization, and Crusher Recycled Concrete Products reduces the use of virgin aggregates, and in 2014 recycled 767 tonnes of asphalt and 42,175 tonnes of granular materials.

Key Terms

Greenhouse gas: Greenhouse gases are gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths, causing the greenhouse effect. (Environment Canada)

Particulate matter: Particulate matter (PM) are airborne particles in solid or liquid form. The size of PM particles largely determines the extent of environmental and health damage caused. Both PM_{10} and $PM_{2.5}$ are of special concern, as the small sizes of these particles enable them to enter the lungs, causing serious health effects. (Environment Canada)

Electricity demand: Electricity demand is a measure of the rate at which a building, appliance, or area uses energy. Anything that uses electricity quickly creates a larger demand. A less energy efficient appliance creates a larger demand than an efficient one. Electrical demand is often measured in kilowatts (kW).

Natural gas consumption: Natural gas consumption is a measure of how much natural gas in a given building, appliance or even geographic area like the City of Toronto uses to power its operation. In Toronto, most of our thermal energy comes from the consumption of natural gas, which is often measured in cubic metres (m^3).

Large City of Toronto buildings diverted an average of 88% of their waste in 2014.

TORONTO

toronto.ca/environment eed@toronto.ca

Livegreen Toronto