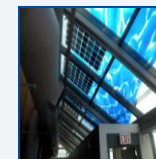


EX17.24



Toronto Green Standard & Toronto Green Roof Bylaw



City School Boards Advisory Committee June 24, 2016
Jane Welsh, Project Manager
Strategic Initiatives, Policy & Analysis
City Planning, City of Toronto

Our city is growing...

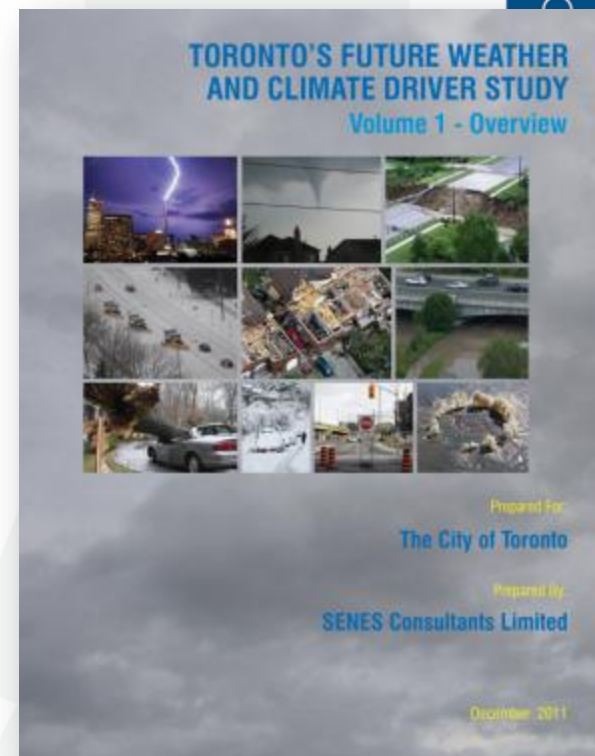


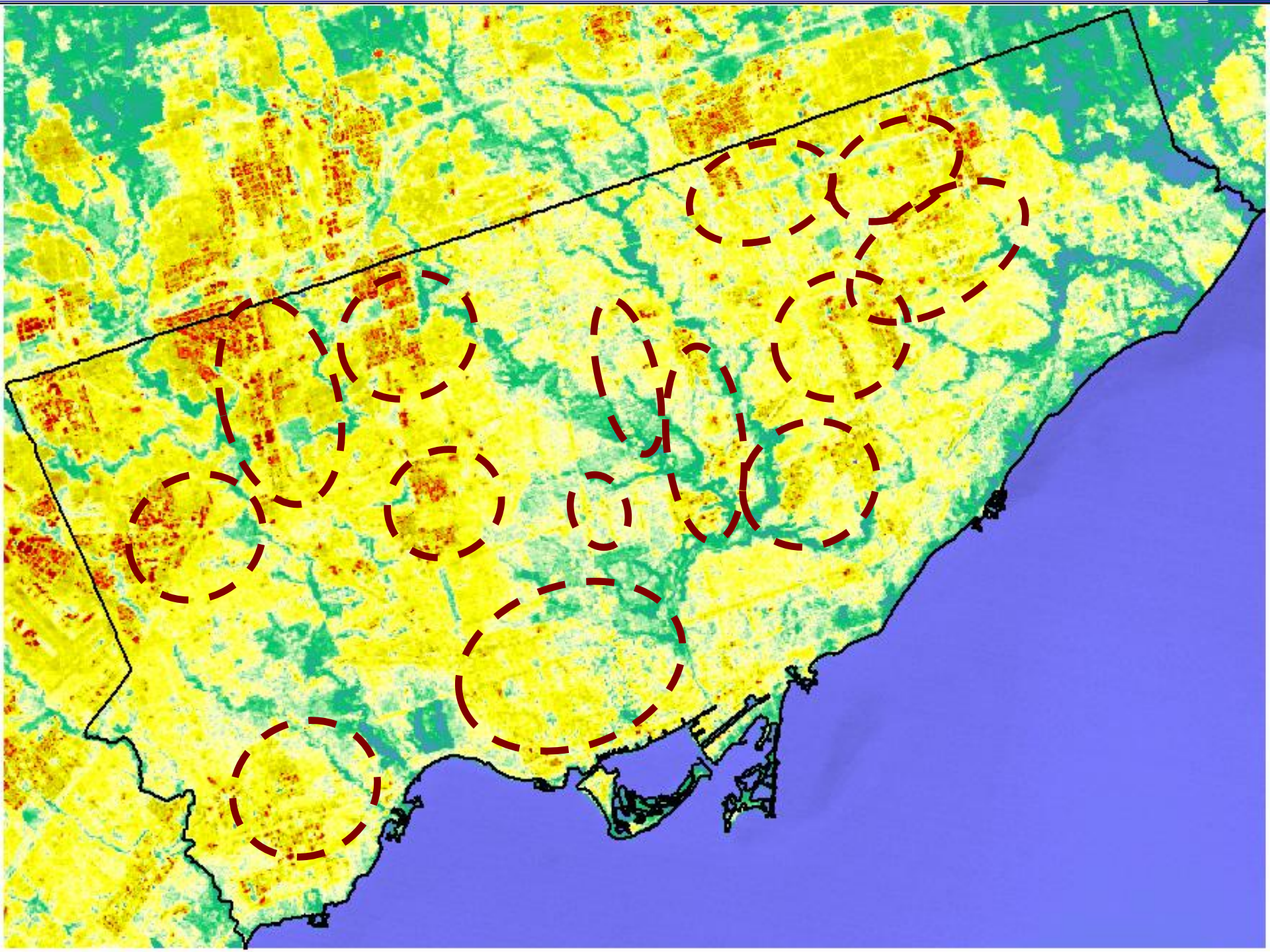
PLANNING A GREAT CITY TOGETHER

Our Weather is Changing

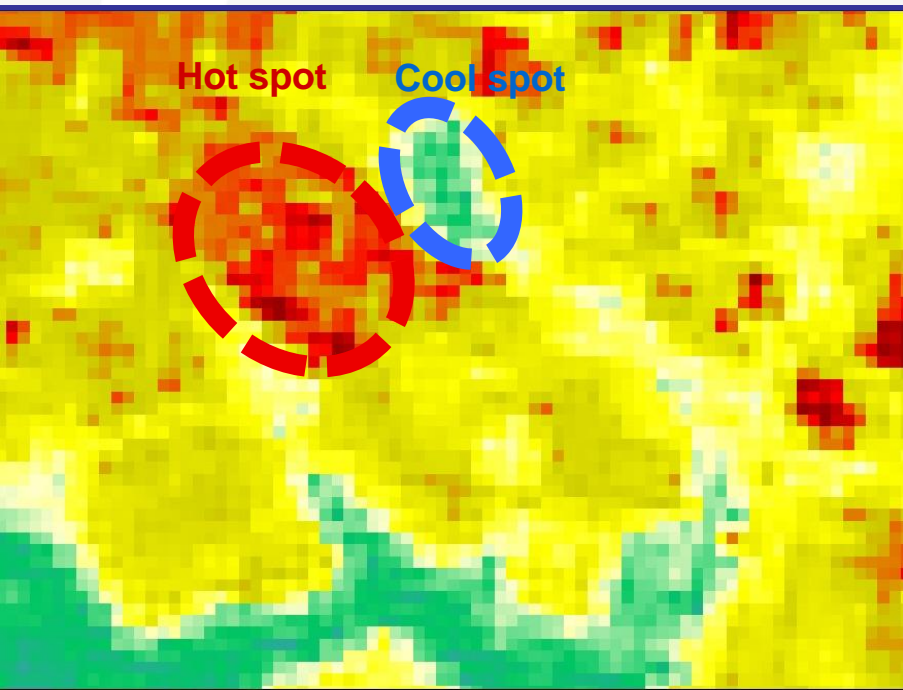


Climate Change and Resiliency:
hotter, drier summers and extreme rainfall events

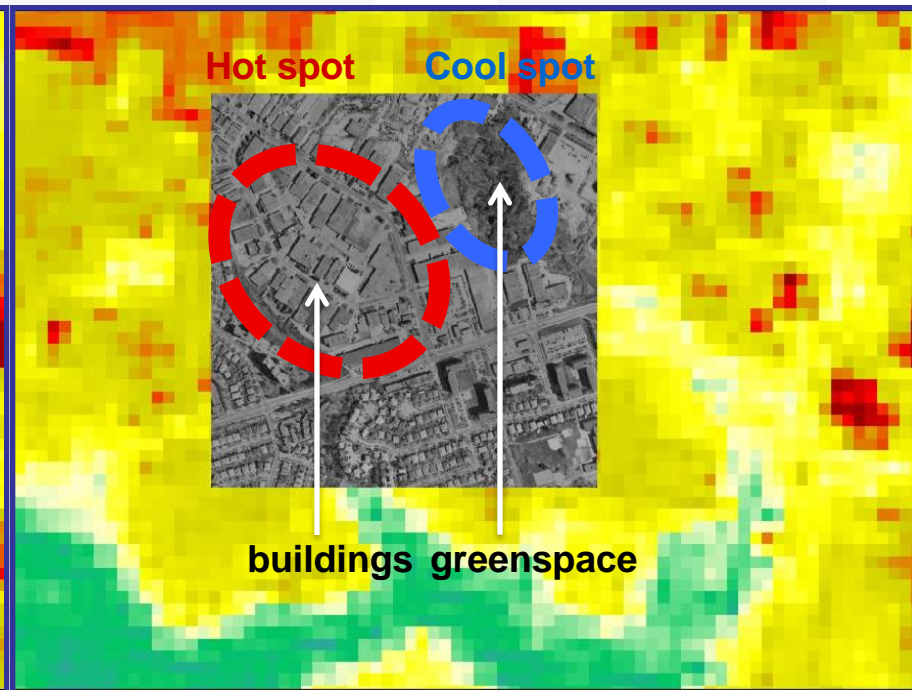


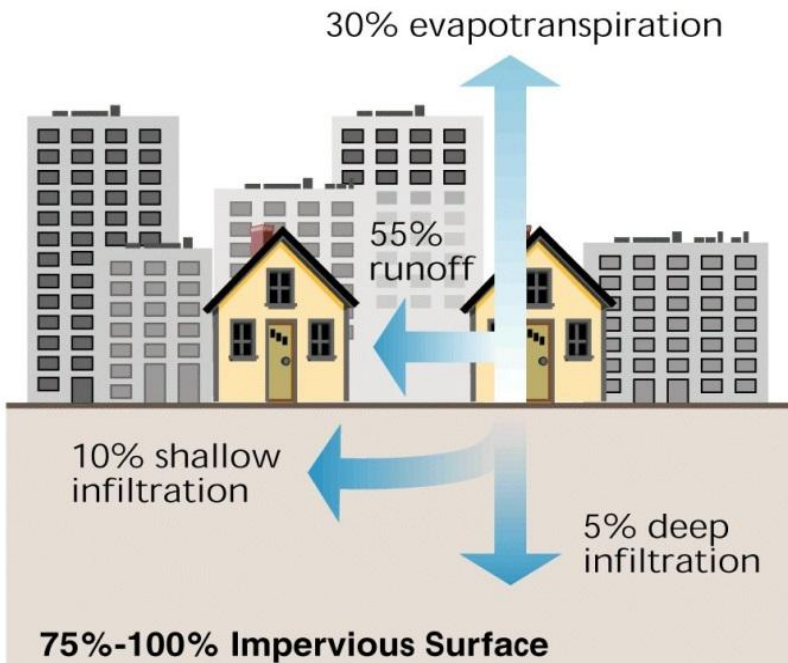
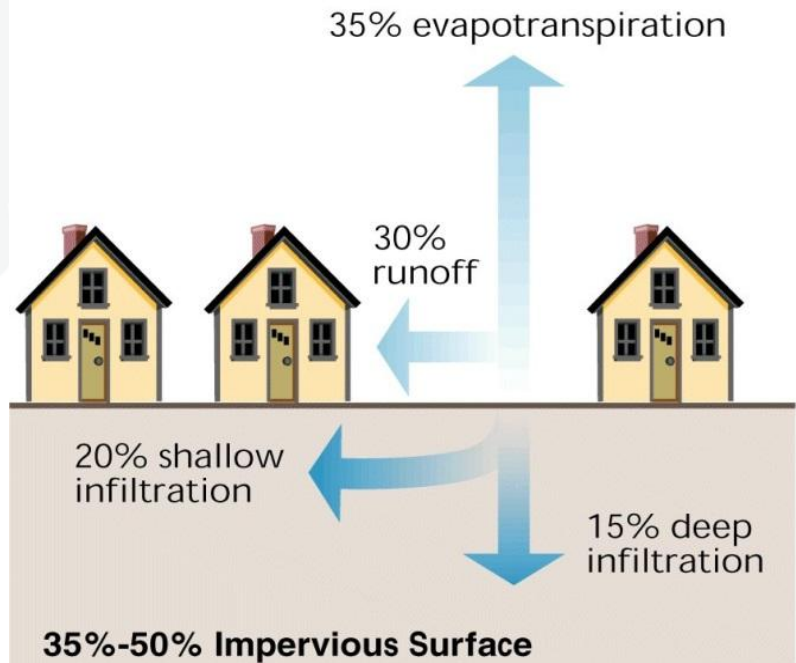
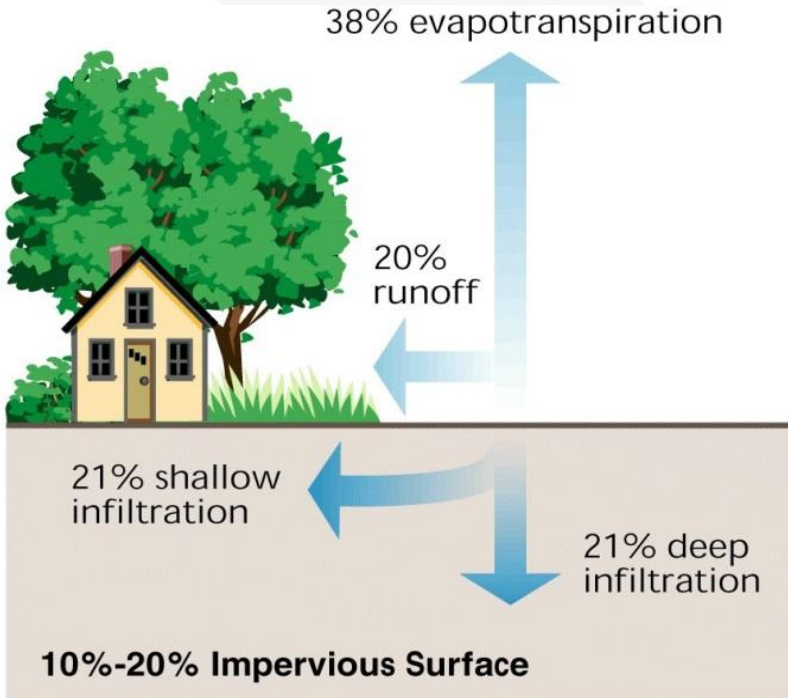
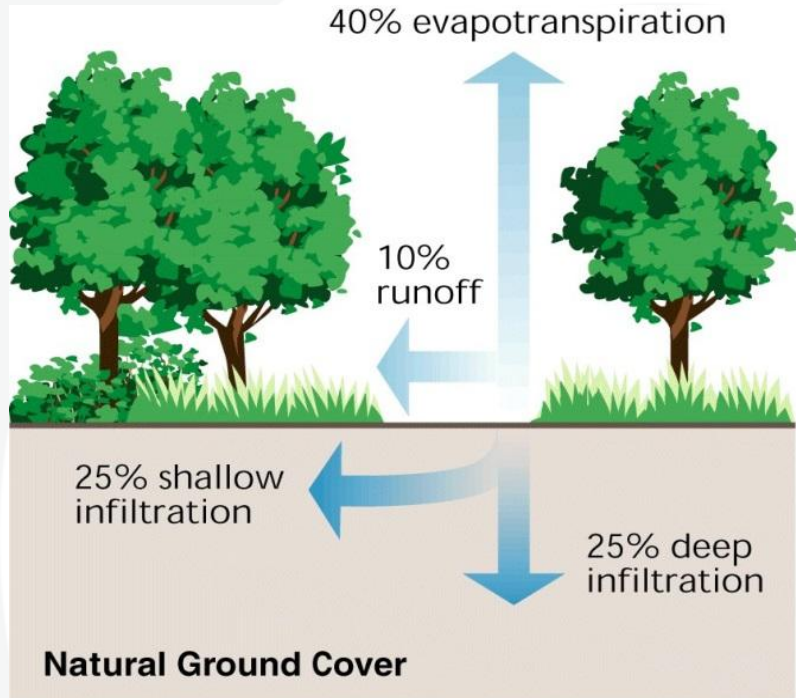


Thermal Mapping



Land Use Mapping





Our approach is shifting...



Regent Park

Environmental Policy & Tools

RAVINE AND NATURAL FEATURE PROTECTION By-Law

"The ravines are to Toronto what canals are to Venice, hills are to San Francisco and the Thames River is to London. They are the heart of the City's emotional geography, and understanding Toronto requires an understanding of the ravines."

Assistant City, Robert Pallard, (1993)

Toronto **Livegreen Toronto**

City of Toronto
GUIDELINES for Biodiverse Green Roofs

Toronto **Livegreen Toronto**

TORONTO OFFICIAL PLAN

Toronto



Toronto Green Standard
Making a Sustainable City Happen

For **Mid to High-Rise Residential and Non-Residential Development**
(Residential apartment buildings 4 stories and higher and all industrial, commercial and institutional (ICI) buildings)

Version 2.0
January 2015

Toronto **Livegreen Toronto**

The Toronto
Green Roof Bylaw

BUTTERFLIES OF TORONTO
A GUIDE TO THEIR REMARKABLE WORLD
• City of Toronto Biodiversity Series •

Toronto **Livegreen Toronto**

BIRD-FRIENDLY DEVELOPMENT GUIDELINES

Toronto **Livegreen Toronto**

INTEGRATION – Green Strategies Framework

Policies and Guidelines

Toronto Green Standard



Climate Change Action Plan



Green Roof Bylaw



Wet Weather Flow Management



Wet Weather Flow Management Guidelines

Municipal Official Plan

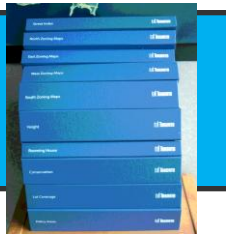


Regulations

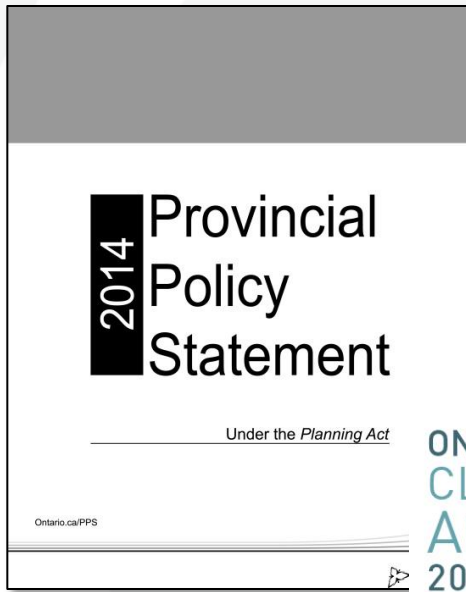


Ontario Building Code

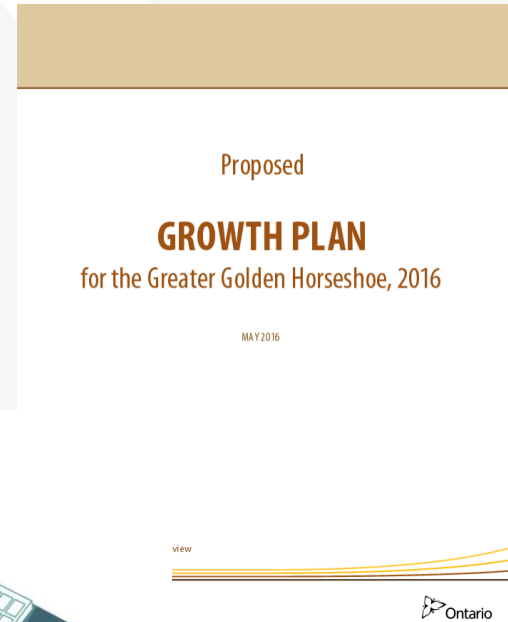
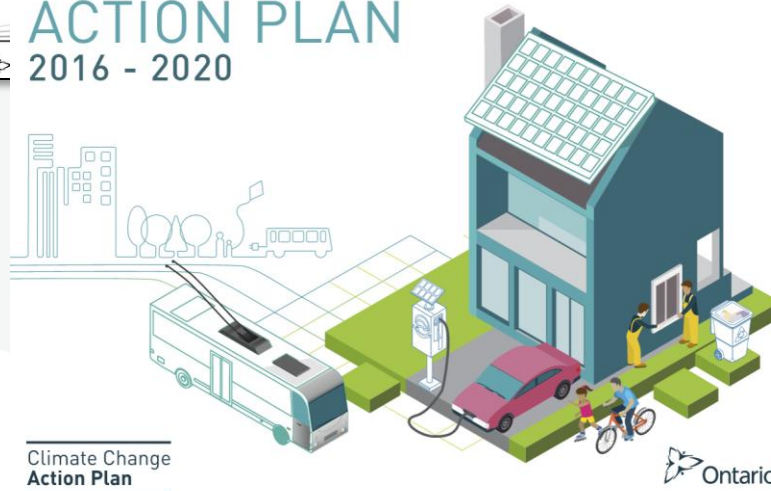
Zoning Bylaw

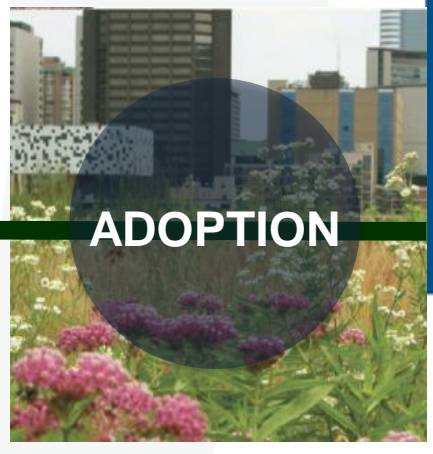


PPS and new Plans



ONTARIO'S FIVE YEAR CLIMATE CHANGE ACTION PLAN 2016 - 2020





Toronto Green Standard

Voluntary Green Standard

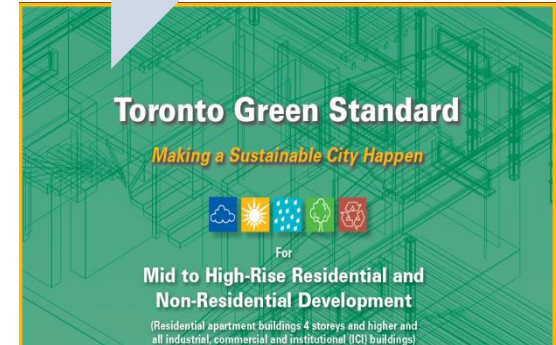
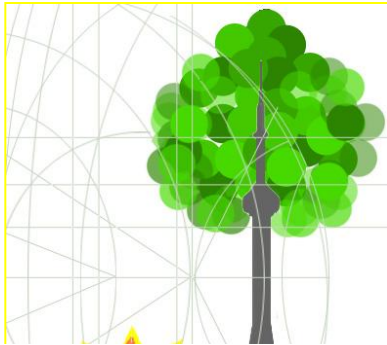
2006

Two tier mandatory/
voluntary

2010

Revised two tier
mandatory/ voluntary

2014



Phase 1

- Sustainable cities/design symposium
- Discussion papers to Council
- Internal & external round tables
- Technical research- City best practises
- Consultant study- green standards around the world
- LEED/BOMA comparison

Phase 2

- How to make it mandatory
- Legal analysis
- Cost Benefit study
- Verification protocol
- Internal development approvals process
- Staff training
- Toronto LEED Supplement
- DC refund/ procedures
- Development review support

Phase 3

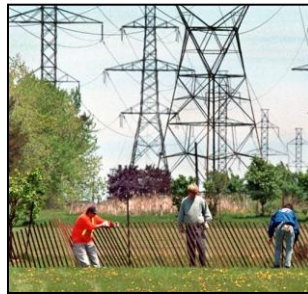
- New Bylaws and OBC
- Revision from development review experience
- Updated City guidelines/references
- Alignment with other systems -LEED '09
- Direct industry involvement – technical advisers
- Studies e.g. bird friendly design, tree planting standards



ENVIRONMENTAL DRIVERS

TGS is patterned to address the City's "Environmental Drivers":

1. Air Quality
2. Green House Gas Emissions, Energy Efficiency and Climate Change
3. Water Quality and Efficiency
4. Urban Ecology
5. Solid Waste



TORONTO GREEN STANDARD

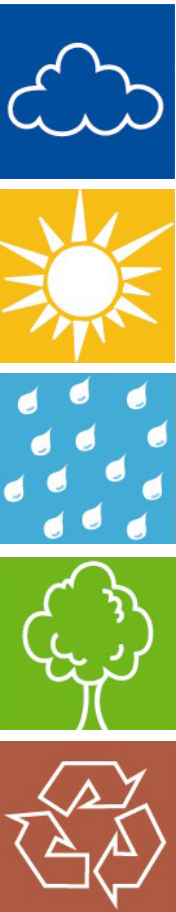
Two Sets of Standards; 3 Types of Development



1. Low-rise residential
 ≤ 4 stories, ≥ 5 units



2. Mid-rise to High-rise ≥ 4 stories and ALL non-residential uses

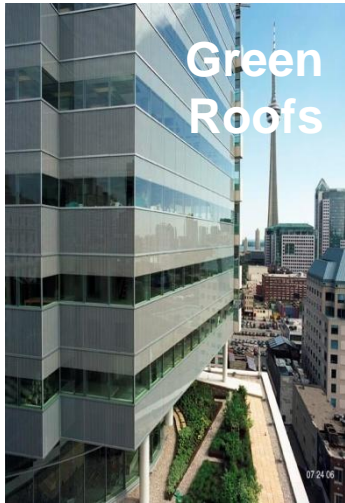


1

TIER 1: MINIMUM REQUIRED STANDARD



+ 15%
Energy
Efficiency
above
OBC



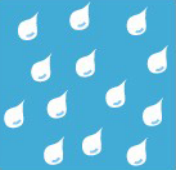
2 TIER 2 PACKAGE

+25% Energy Efficiency above OBC



+30% Water Efficiency

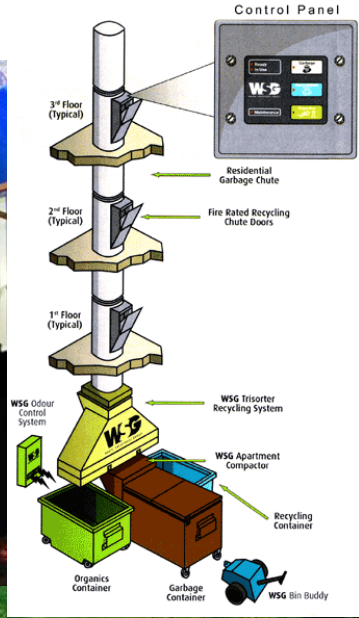
75% construction waste diversion



+75% UHI treatment at-grade



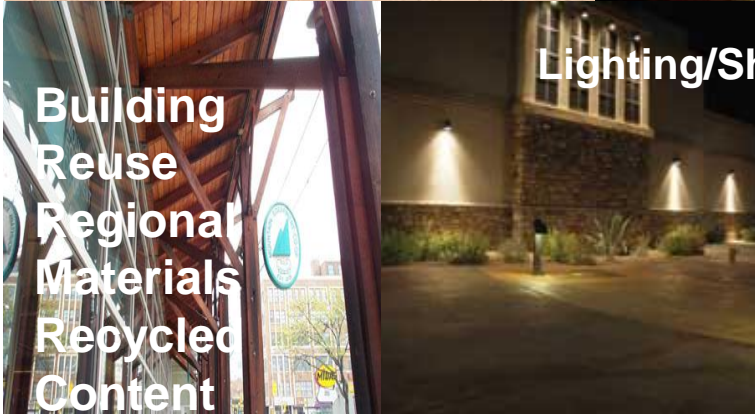
Building Commissioning



10mm Stormwater Retention



1.2/unit Enhanced Bike Parking; Bike Share



Lighting/Shielding

Building Reuse Regional Materials Recycled Content



Natural Restoration



1% renewable energy



Progress...

- > 850 development projects have applied Tier 1
- 15% are Tier 2
- Saved 115,205 tCO₂eq per annum
- 2 million litres of potable water saved (TGS Tier 2 buildings)



Green Roof Bylaw:

Required for all New Large Buildings



Gross Floor Area (Size of Building)	Coverage of Available Roof Space (Size of Green Roof)
2,000 – 4,999 m ²	20%
5,000-9,999 m ²	30%
10,000-14,999 m ²	40%
15,000-19,999 m ²	50%
20,000 m ² or greater	60%

Green Roof Bylaw:

GREEN ROOF CALCULATION: AVAILABLE ROOF SPACE

Total Roof Area excludes:


- areas devoted to renewable energy
- private terraces
- required outdoor amenity areas
- Tower roof area (<750 sq.m floorplate)



Green Roof Bylaw: GREEN ROOF CONSTRUCTION STANDARD

- Contained in Article IV of the Bylaw
- Sets out minimum requirements for the construction and maintenance of green roofs
- Provides certainty and clarity for designing and building green roofs in Toronto





“Combining alternatives that perform well in a few particular areas can improve the overall performance of a roof system, sometimes at lower cost as compared to a green roof.

However, none of the lower cost options perform as well as a green roof overall.”



Our achievements are increasing...

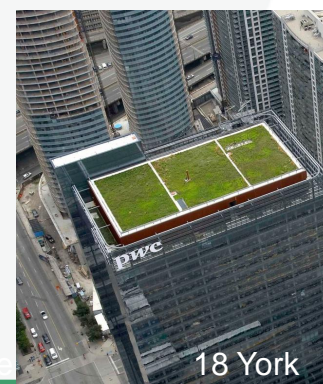


80 Front St. E

Green Roof Bylaw 2016

Between January 2010 – May 2015:

- 265,000 m² built or to be constructed
 - schools: 13000 m²
- 33 Cash-in-lieu (approved variances or exemptions)
 - schools: 6 exemptions, 2 variances
- 300 building permits issued for green roofs (includes required and voluntary)
- Green Roofs saving 95,000 m³/yr Storm Water retention



ECO-ROOF INCENTIVE PROGRAM

- To reduce energy use and the emissions that contribute to climate change

Green roofs: eligible for up to \$100,000

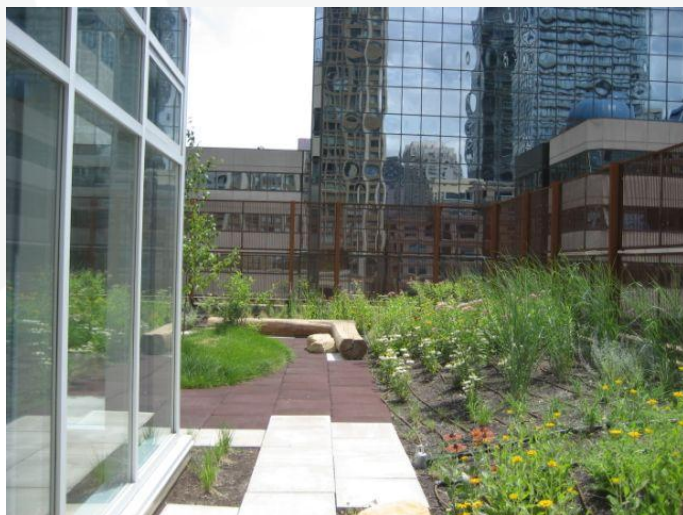
- \$75/m²

Cool roofs: eligible for up to \$50,000

- \$2/m² for a coating over an existing roof; \$5/m² for a new membrane
- applies to existing residential, commercial, industrial and institutional buildings and **new schools** and development less than 2,000/m²

Results:

44 green roofs
132 cool roofs





“Perhaps it will be the City that reawakens our understanding and appreciation of nature, in all its teeming, unpredictable complexity.” Jane Jacobs

Toronto City Hall Green Roof Photo Credit: Antoine Belaieff (<http://creativecommons.org/licenses/by-nc-nd/2.0/deed.en>)



PLANNING A GREAT CITY
TOGETHER