

# Sustainable Toronto

Great Lakes & St Lawrence Cities Annual Conference  
Niagara Falls NY - June 16, 2016

GROWTH



CLIMATE CHANGE



RESILIENCE



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**Environment and Energy Division**

# Toronto is Succeeding

2007



## Climate Change Action Plan

Toronto's bold Climate Change, Clean Air and Sustainable Energy Action Plan will see the City and its residents, businesses and communities take action to cut greenhouse gas emissions, clean the air and create a sustainable energy future.

2009



## The Power to Live Green

Toronto's Sustainable Energy Strategy, the Power to Live Green, outlines initiatives to achieve the City's energy conservation, security and demand management goals and targets. These initiatives are also designed to generate financial and economic benefits for the City and its residents and businesses.

2011-2014



## Climate Change Adaptation: Towards a Resilient City

Toronto's climate adaptation strategy, *Ahead of the Storm: Preparing Toronto for Climate Change*, outlines a number of actions that will improve the city's resilience to climate change and extreme weather events.

2015



## Environmental Progress Report

# Toronto is Succeeding

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## 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

# Toronto is Succeeding



**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



**\$7.1 billion**  
= TO's urban forest structural value

Greenroof area in TO = **42** football fields



Swimmable  
beach days  
increased

**26%**

**848km**  
bike network  
across TO

# But . .

- Toronto is one of the ten most *traffic congested* cities in North America.
- Toronto's *income inequality* has grown by 31% in the last 25 years.
- Toronto's *youth unemployment* rate is around 20%.
- Toronto not on track to reduce *GHG emissions* by 80% by 2050
- Toronto's *current fiscal model may be unsustainable*.
- Toronto is *challenged to maintain a state of good repair* for its roads, transit, social housing, parks and water/wastewater systems & other services while also accommodating growth

# Toronto is Changing

Toronto's population is **growing & densifying** at one of the fastest rates in North America, placing demands on services & infrastructure, energy systems & the environment.

About **50% of households** live in multi-residential housing.

Employment in **manufacturing has declined** by about 26% over the last 10 years.

## NATIONAL POST

Downtown Toronto's pace of population growth triples, outpacing suburbs as Echo Boomers flock towards urban centre report

## THE GLOBE AND MAIL

### REAL ESTATE

Toronto leads North American high-rise construction

## » TORONTO STAR «

Manufacturing's grim battle to survive

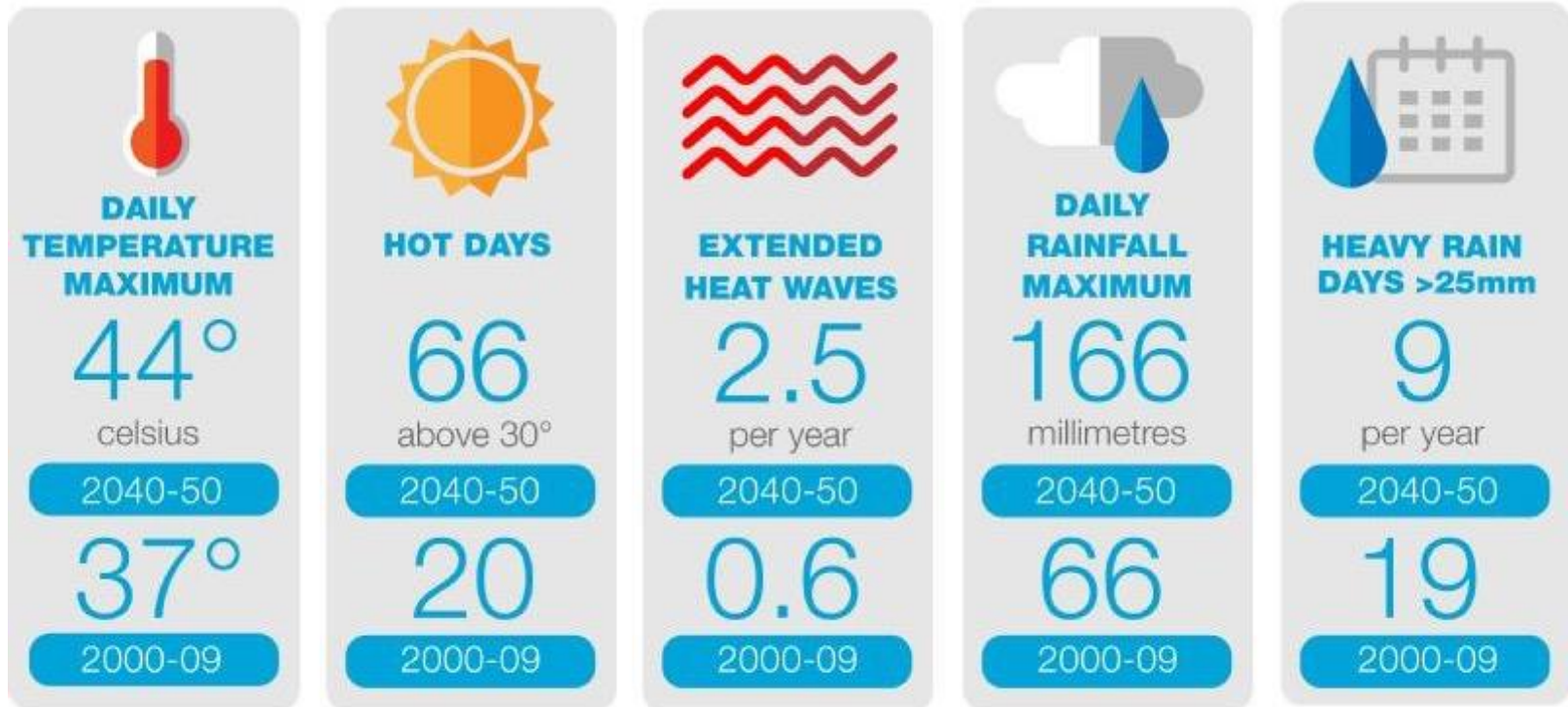
Manufacturing in Ontario is facing a serious skills mismatch, with severe shortages in some areas and surpluses in others. Here's why



# Toronto's Growth: 2000 vs 2014 Skyline



# Toronto's Future Weather: Wetter, Warmer & Wilder.



\*Source: Toronto's Climate Driver Study, 2011



Source: Toronto's Future Weather & Climate Report adopted by City Council in early 2013

## Extreme Rainfall

- higher maximum precipitation in one day
- more days with  $> 25\text{mm}$



Source: Toronto's Future Weather & Climate Report adopted by City Council in early 2013

## Extreme Heat

- higher maximum daily temperatures
- more days with  $> 30^{\circ}\text{C}$
- more heat waves (3 consecutive days  $> 32^{\circ}\text{C}$ )



by 2040 expect 6 times more A/C use (days  $> 24^{\circ}\text{C}$ )



**“no water, no heat”**

**“by the 2<sup>nd</sup> day many residents started leaving”**

**“had to close shop. substantial amount of merchandise spoiled”**

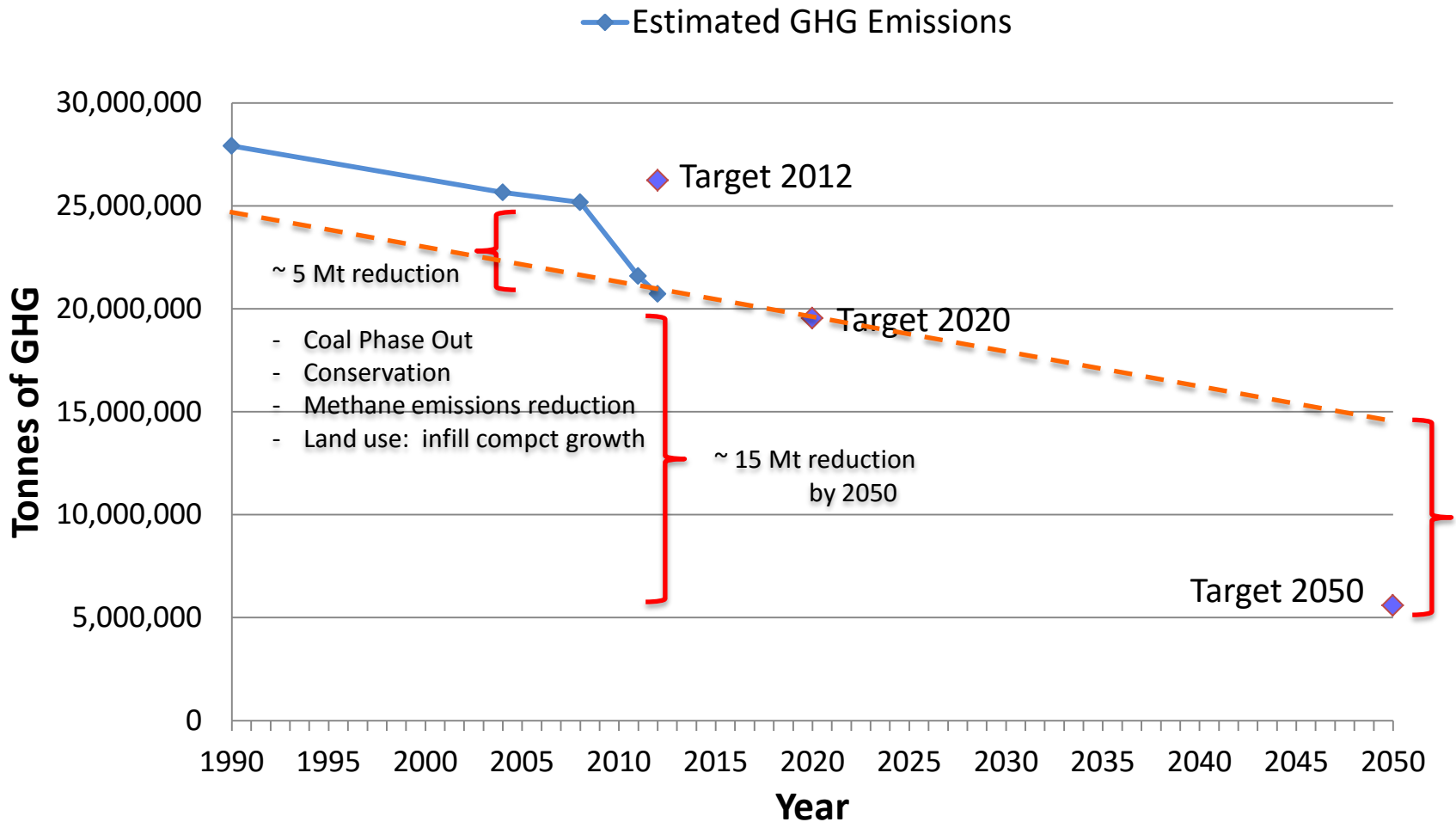


**“emergency generator failed to start”**

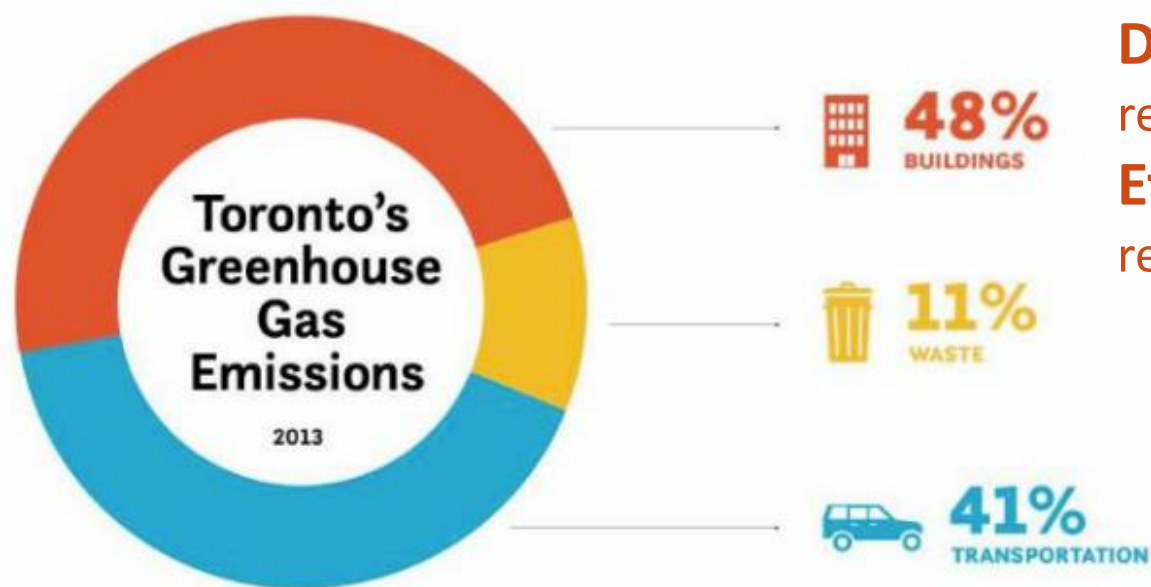
**“could not get diesel fuel in time”**

**“generator repairman couldn’t get to us”**

# Toronto is Reducing its Environmental Footprint, but..



# Toronto's GHG Emissions by Sector 2013 data



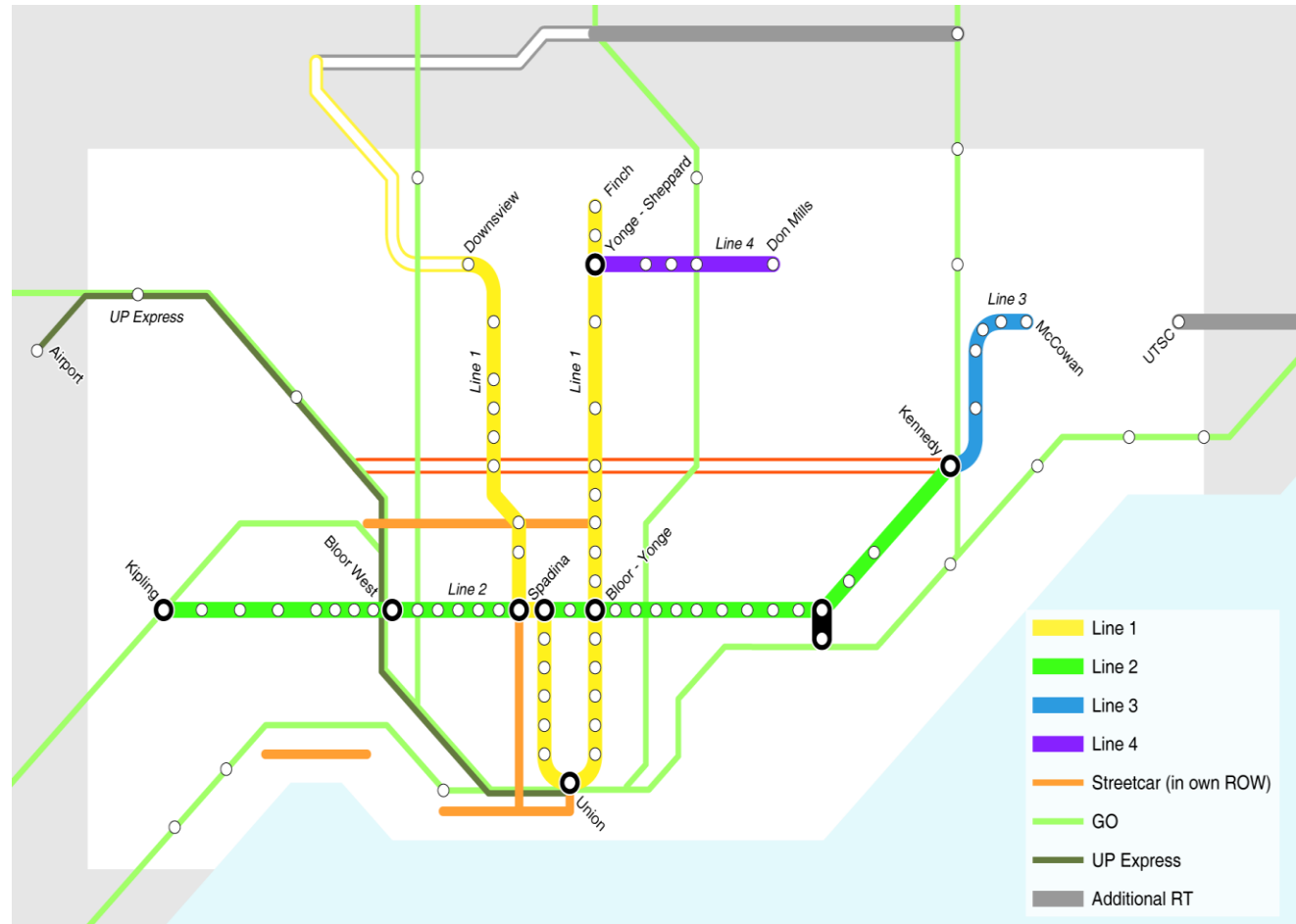
**District Energy** with local renewable energy sources & **Efficient Buildings** to reduce/displace natural gas.

*Electric High-order Transit & EVs* to reduce/displace fossil fuels.



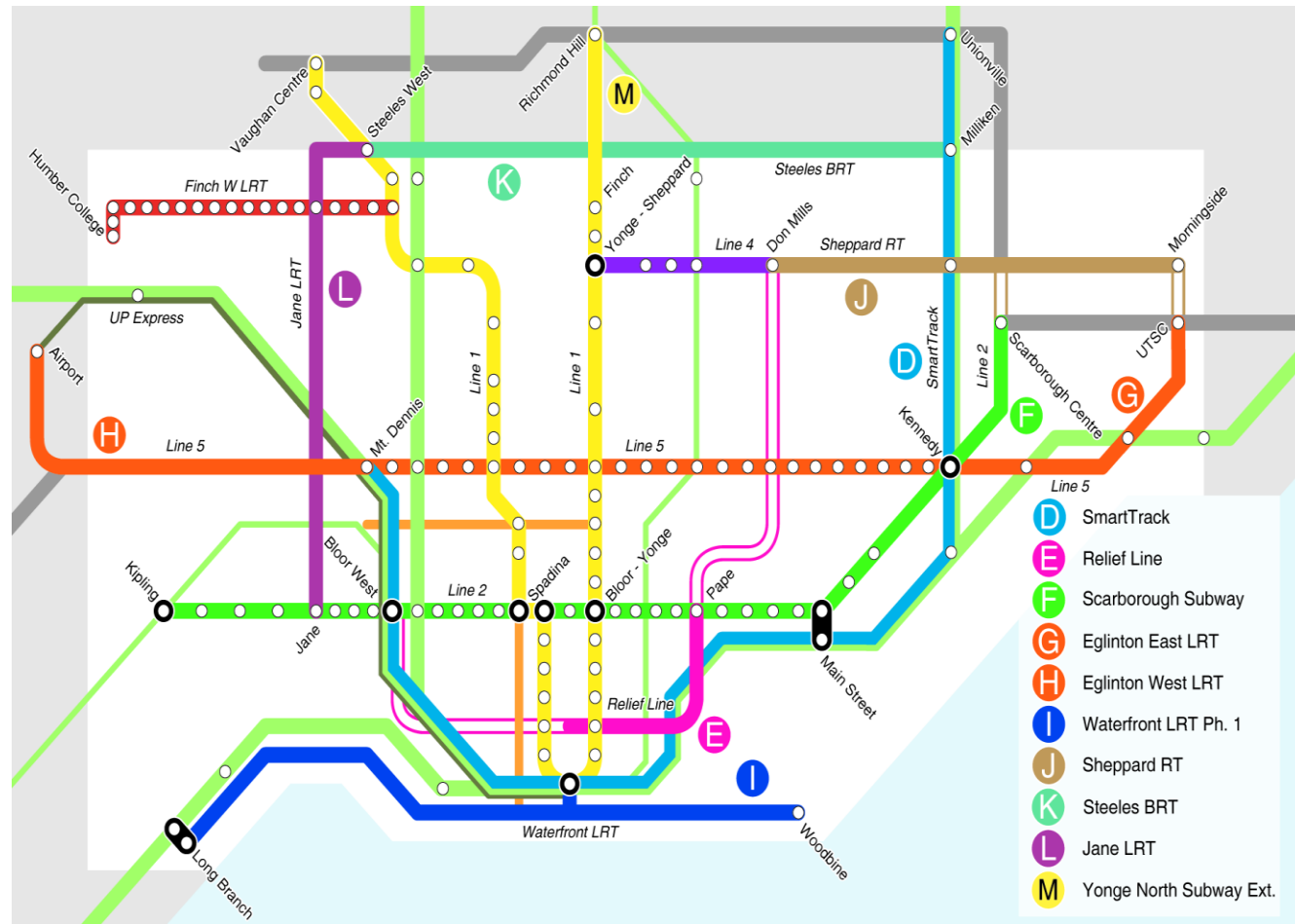
# Developing Toronto's Transit Network

Existing  
&  
Current  
Projects



# Developing Toronto's Transit Network

6 to 15  
years

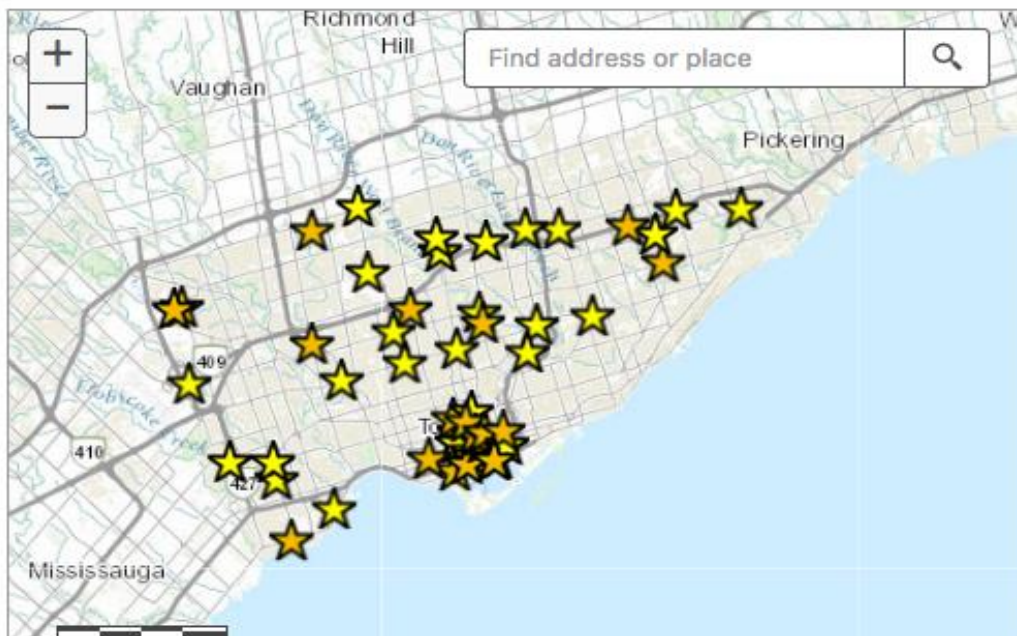


# Developing Toronto's Thermal Networks

## District Energy w/ Large Renewables

★ Potential New District Energy Nodes

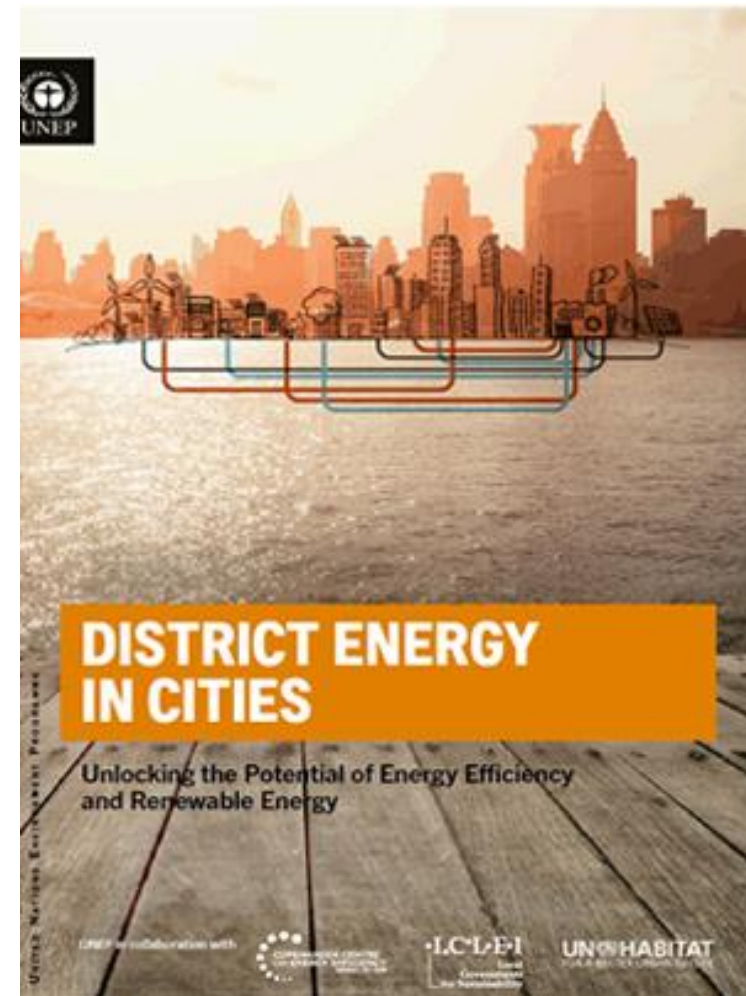
★ Existing DES and Combined Heat and Power



Opportunity for 30+ new  
District Energy systems in Toronto



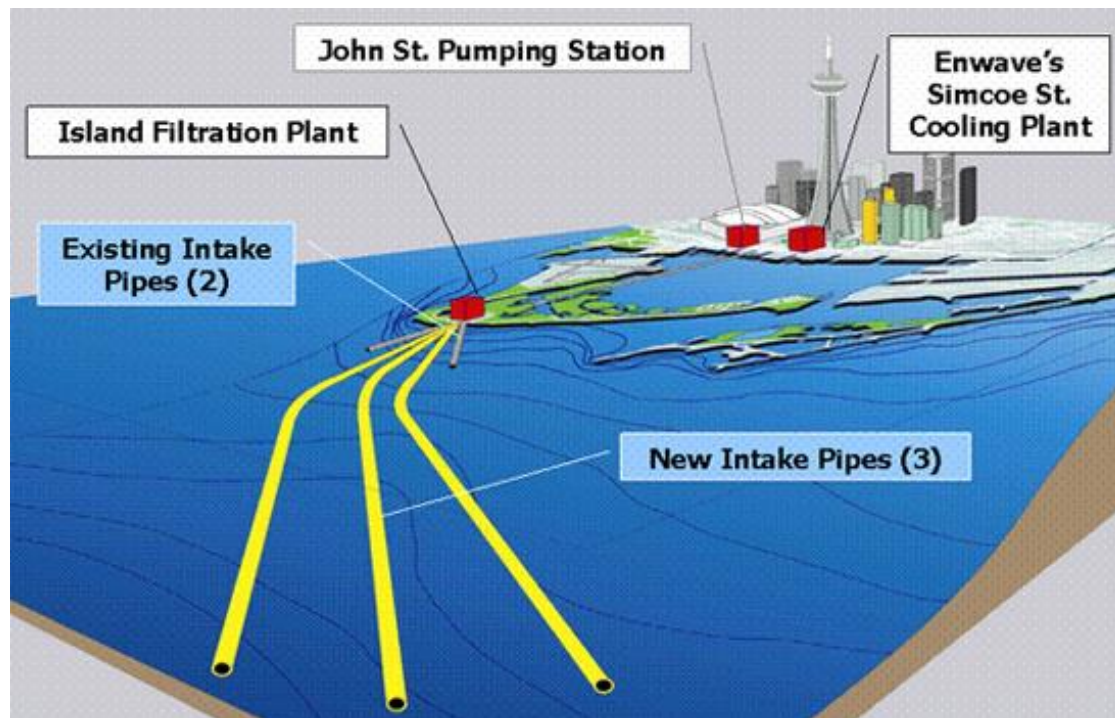
Environment and Energy Division



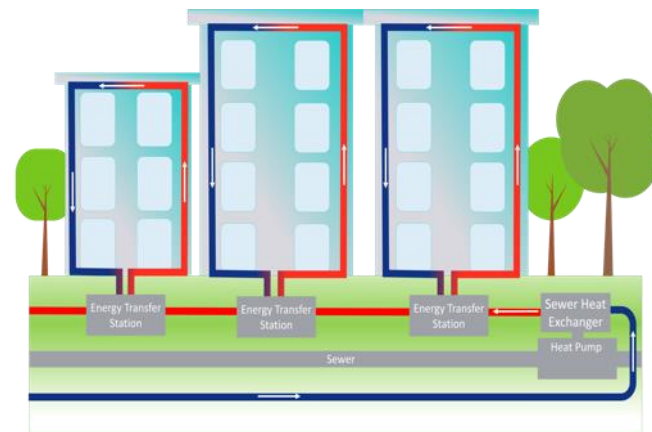
2015 UNEP Report

# Developing Toronto's Thermal Networks

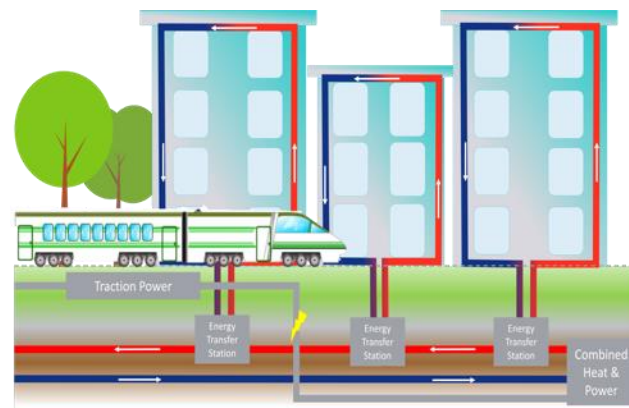
## District Energy w/ Large Renewables



Toronto's Deep Lake Water Cooling ENWAVE System



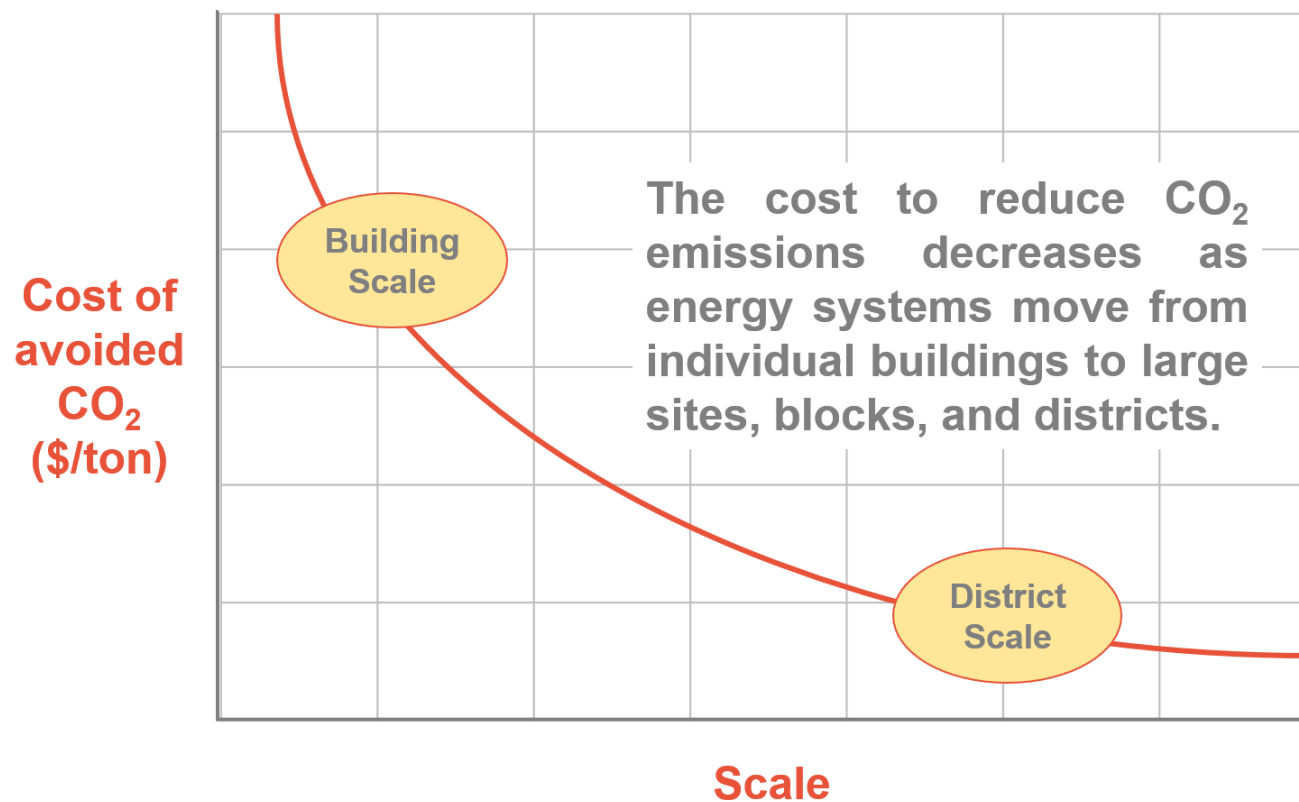
Sewer heat recovery,  
Large geo-exchange fields with  
solar collectors



Heat recovery from electric  
transit combined heat & power

# Developing Toronto's Thermal Networks

## District Energy w/ Large Renewables





**Modelling** is showing that **future Large Scale GHG emission reductions** in Toronto will primarily come from **two strategies**:

1. **District Energy** w/ Large Renewables + Efficient Buildings
2. **Transit** + EVs

*“For Cities to achieve a low-carbon future **District Energy** is to energy in buildings, what **Transit** is to transportation.”*

# ALIGNMENT: LOW CARBON FUTURE



Federal




Province



City



An aerial photograph of Toronto, Canada, showing the city's urban landscape and its proximity to Lake Ontario. The city's grid-like street pattern is visible, along with green spaces and the waterfront. The text is overlaid on a semi-transparent blue rectangle in the upper left portion of the image.

**Climate change  
will be fought in  
cities. Toronto is  
ready to do its part, but  
we can't do it alone –**

**John Tory** #ParisAgreement  
#COP21



# City of Toronto's key current INITIATIVES

**Transform TO – renewed climate action** for a healthy equitable, prosperous Toronto. 30% GHG reduction by 2020, 80% GHG reduction by 2050 vs 1990

[www.Toronto.ca/transformTO](http://www.Toronto.ca/transformTO)

**Resilient City – climate change adaptation** (update)

**TO Core – planning the downtown** (soft & hard infrastructure)

- Energy strategy
- Framework for acceleration of thermal networks w/ large renewables (district energy)
- Back-up power guidelines for Multi-residential buildings

**Toronto Green development Standard – TGS V3** (2017/18 roll-out)

**Toronto's 1<sup>st</sup> Net-Zero District** (energy & emissions)

Port Lands Revitalization Planning Framework

**New Official Plan: energy strategy requirement for large developments**

(plan for Net Zero energy & emission). Includes Guidelines for Net-Zero Opportunities for Large Developments



# The Future Starts Now

**2050** - 80% GHG reduction

**34 years** - not as long as it may seem

**Decisions Now** – determine our future





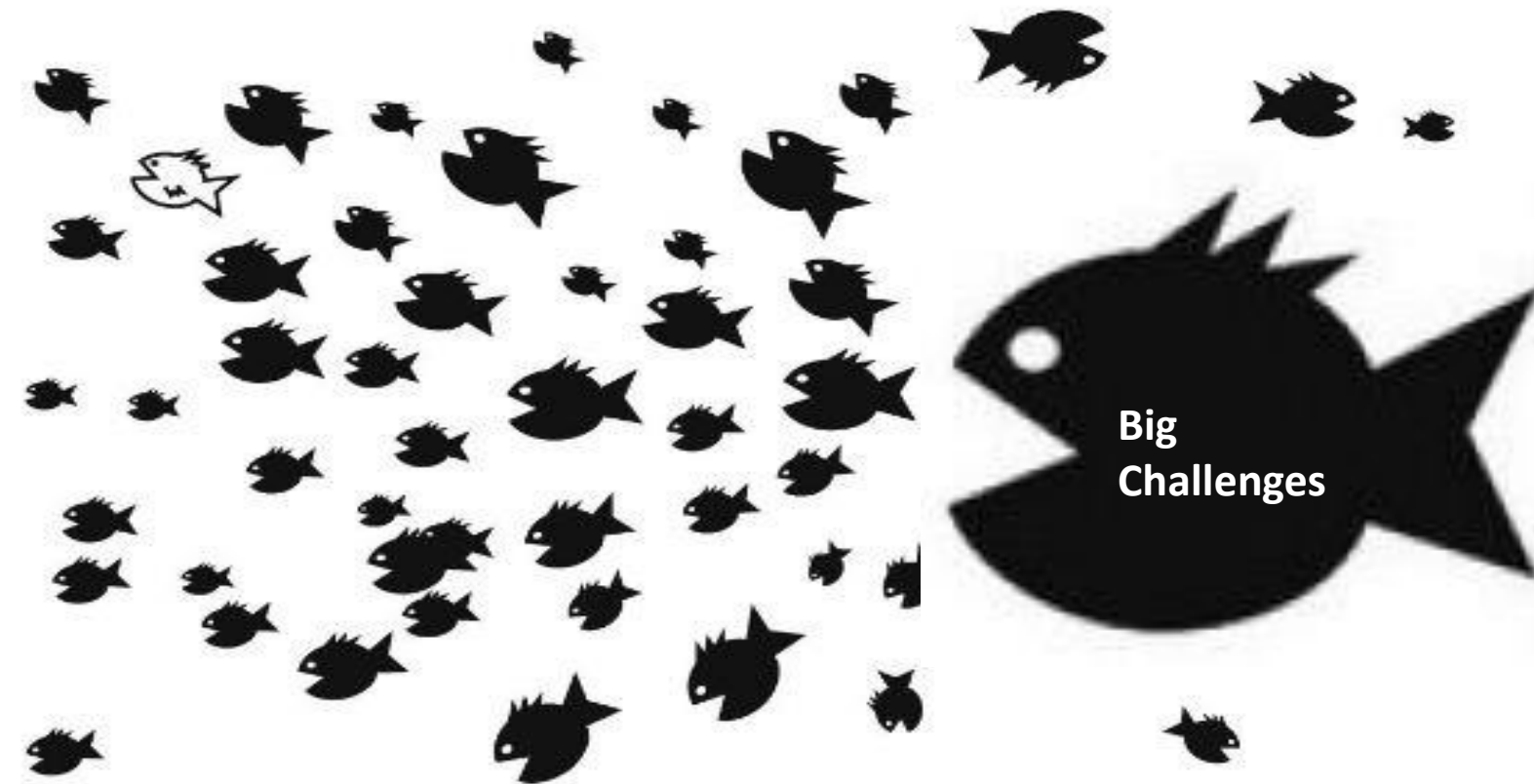
A vibrant city street scene with modern buildings, trees, and people walking and cycling. The scene is bright and sunny, with a clear blue sky. In the foreground, a man and a woman are walking on the sidewalk. In the middle ground, a woman is riding a bicycle on a green-painted bike lane. In the background, there are modern buildings with large windows and balconies. The overall atmosphere is one of a healthy, active, and sustainable urban environment.

How do we support integration and collaboration toward **carbon neutrality & resilience**?

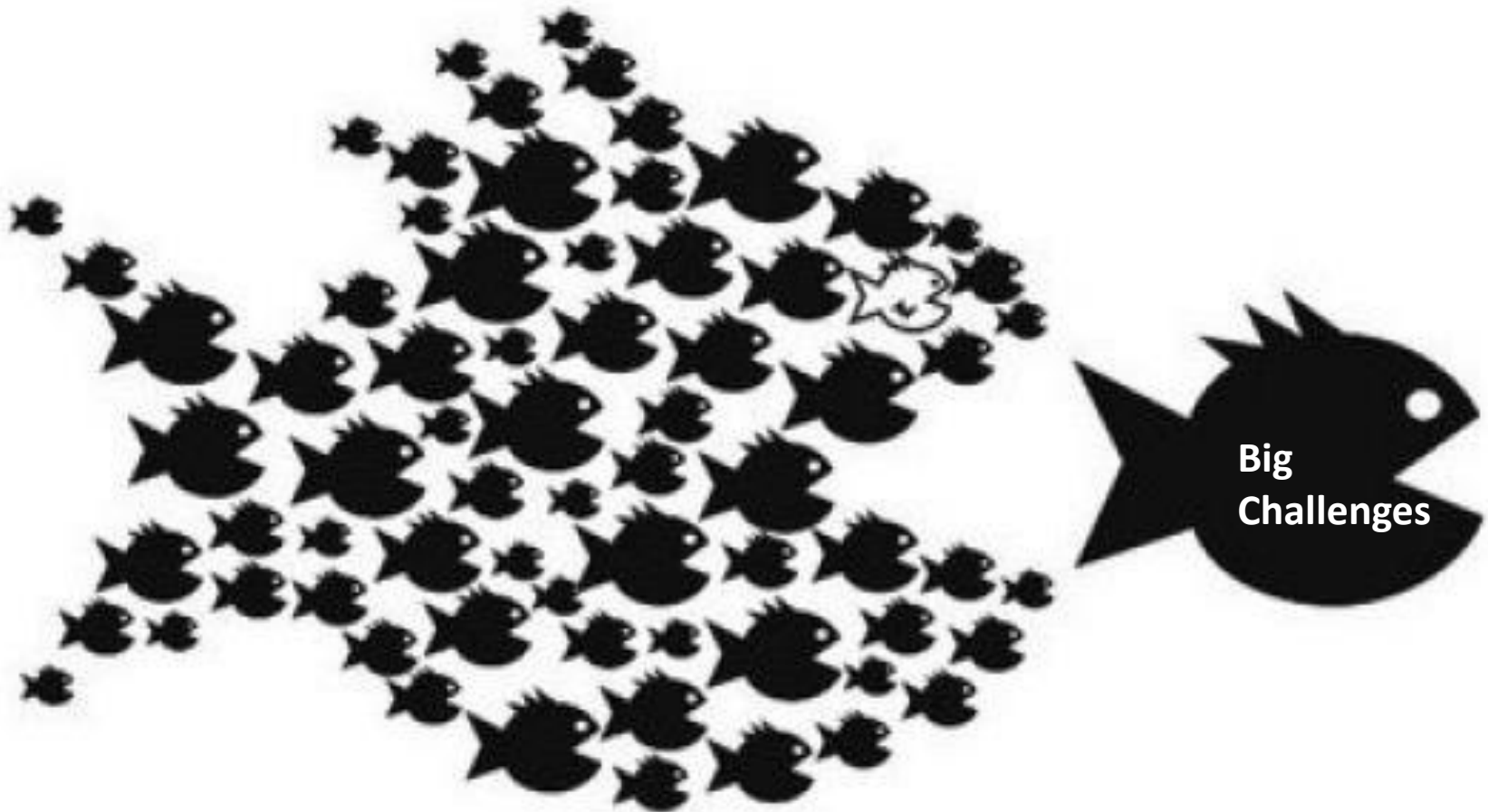
How do we **maintain** and **build** momentum?

How do we **scale** up our efforts?

# Divided / Uncoordinated Action



# United /Coordinated Action





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