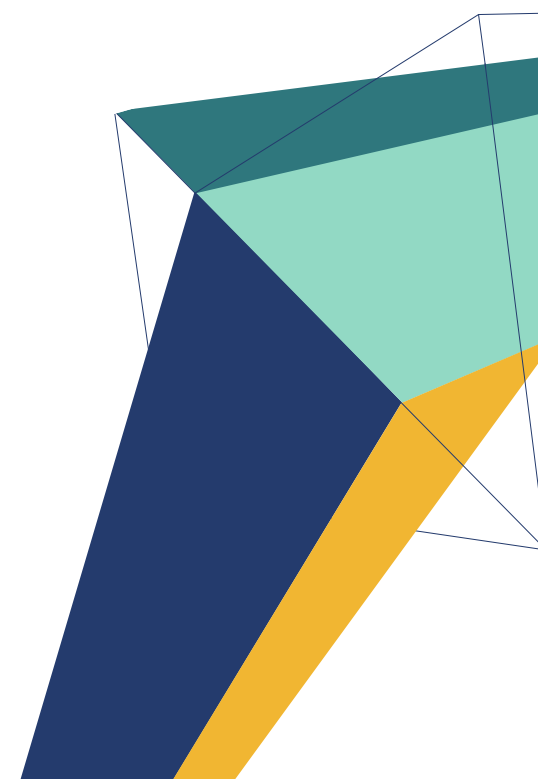# Climate Action for a Healthy, Equitable and Prosperous Toronto

GTA Clean Air Council
June 23, 2017

TransformTO

1. Project Origin & Purpose

2. Community Engagement

3. Technical Modelling

4. Co-Benefit Analysis

5. Recommendations to Council

6. Q&A

PROJECT ORIGINS

2007: Council unanimously adopts climate plan and 80 x 50 goal
80% of adopted actions completed or in place

2014: TAF adopts 5-year strategic plan prioritizing long-term planning with emphasis on connecting low-carbon solutions to broader co-benefits
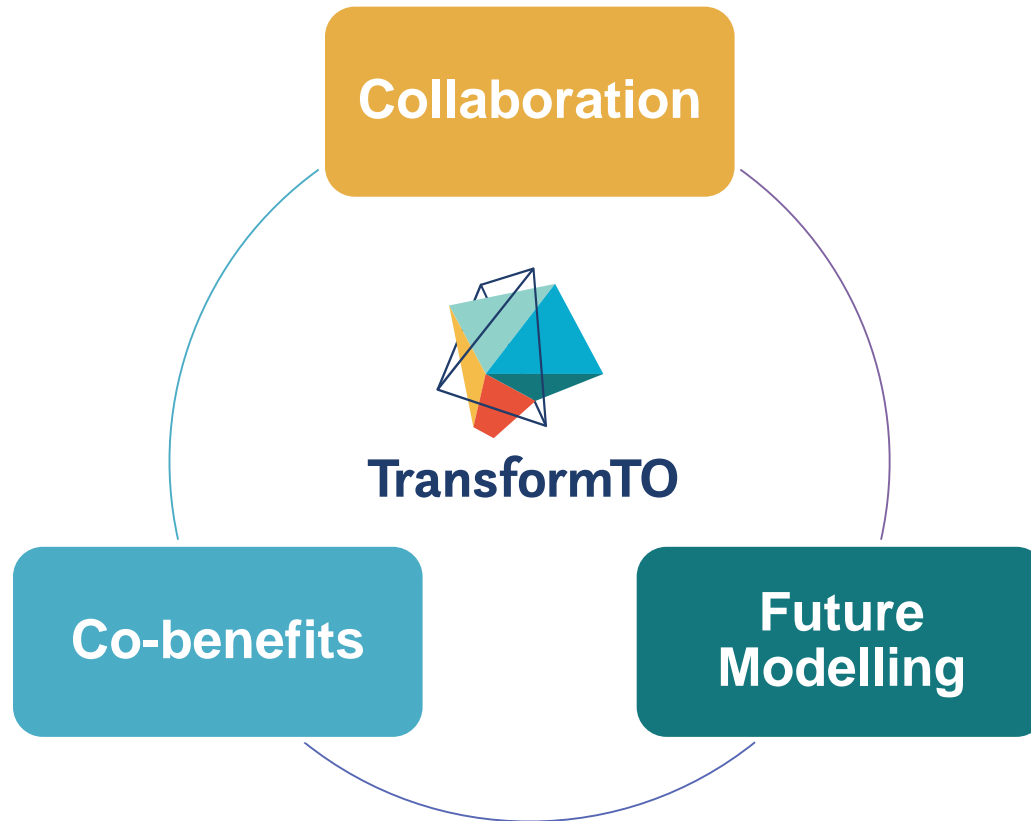
2014: Council requests information on how to achieve 80 x 50

2015: Council decides to renew 2007 Climate Plan through TransformTO initiative

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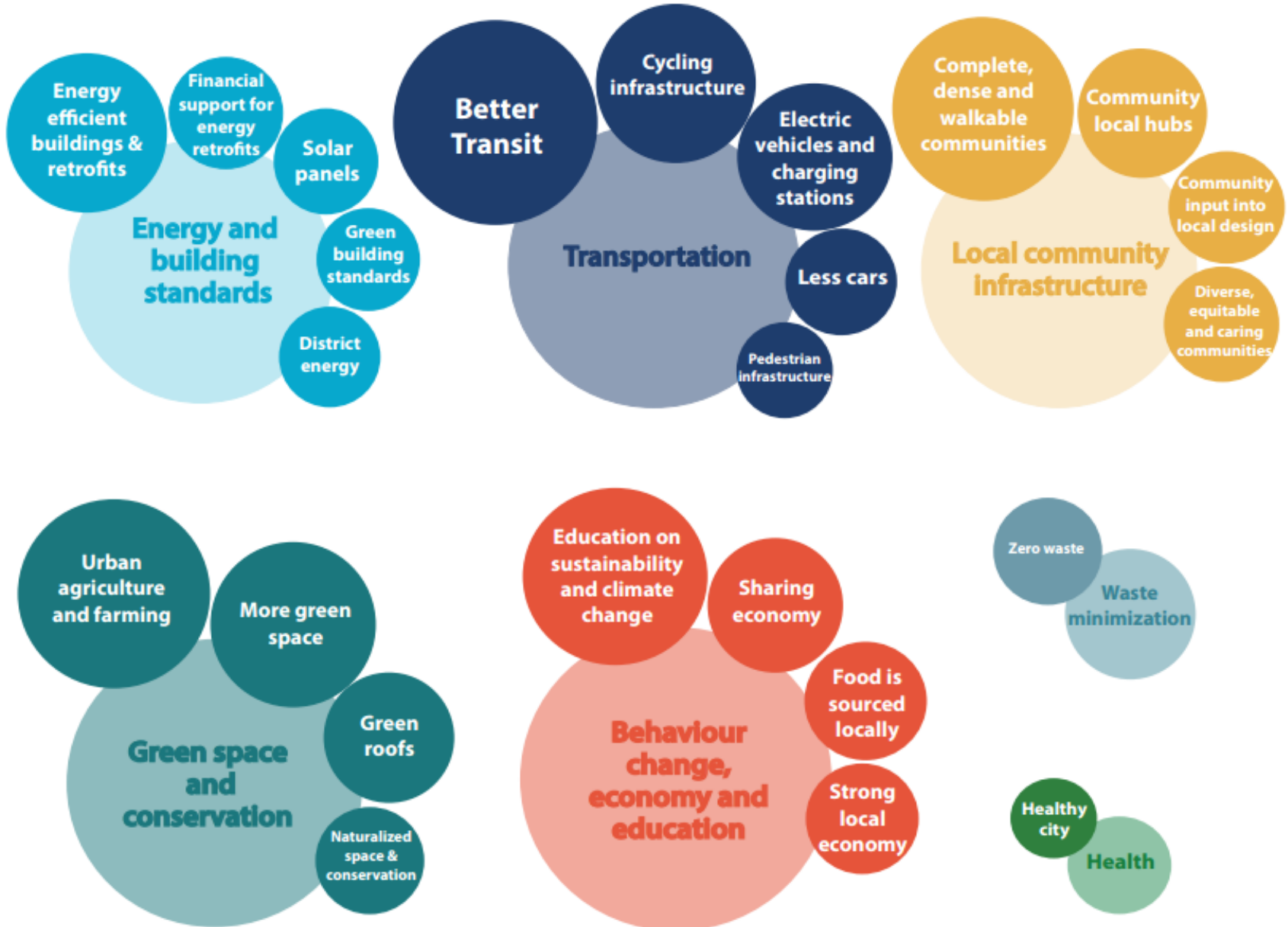Identify a path Toronto can follow to become a low-carbon city by 2050:

Collaboration

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Co-benefits

Future Modelling

Community Engagement

# BROAD RESIDENT ENGAGEMENT

Activities	Timing
Online survey	Aug 2015-Feb 2016
Talk Transformation Expert Panels	Sept-Nov 2015
Centre for Social Innovation: The Six in 2050	April 2016
TransformTO Community Conversations (City-hosted)	April-May 2016
TransformTO Conversations (community/Councillor-hosted)	April-June 2016
Youth engagement	May 2016
Webinars	April-May 2017
Communication through website, e-newsletter, social media, presentations & other forums	Ongoing

COMMUNITY PRIORITIES

Energy and building standards
- Energy efficient buildings & retrofits
- Financial support for energy retrofits
- Solar panels
- Green building standards
- District energy

Transportation
- Better Transit
- Cycling infrastructure
- Electric vehicles and charging stations
- Less cars
- Pedestrian infrastructure

Local community infrastructure
- Complete, dense and walkable communities
- Community local hubs
- Community input into local design
- Diverse, equitable and caring communities

Green space and conservation
- Urban agriculture and farming
- More green space
- Green roofs
- Naturalized space & conservation

Behaviour change, economy and education
- Education on sustainability and climate change
- Sharing economy
- Food is sourced locally
- Strong local economy

- Zero waste
- Waste minimization

- Healthy city
- Health

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EVALUATION OF BROAD COMMUNITY ENGAGEMENT

- Very strong positive response from engaged community members

- Community members undertook independent outreach activity

- Strong desire from residents for neighbourhood-level led action

- Continued community engagement & discussion critical

- Time & resources limited scale & scope of broad community engagement

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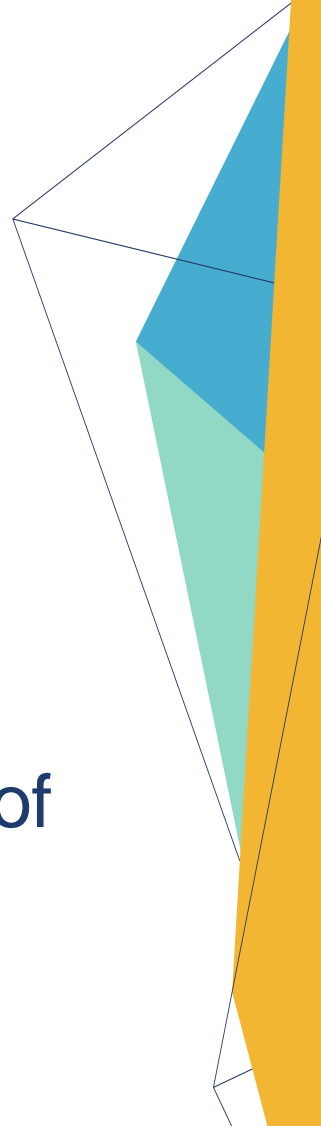
Modelling

- What changes to the urban systems are needed to achieve 80x50?

- How far do our planned actions go towards achieving 80 x 50?

- Is there a feasible scenario that would allow us to reach 80 x 50?

- What are the co-benefits and co-harms of this scenario?

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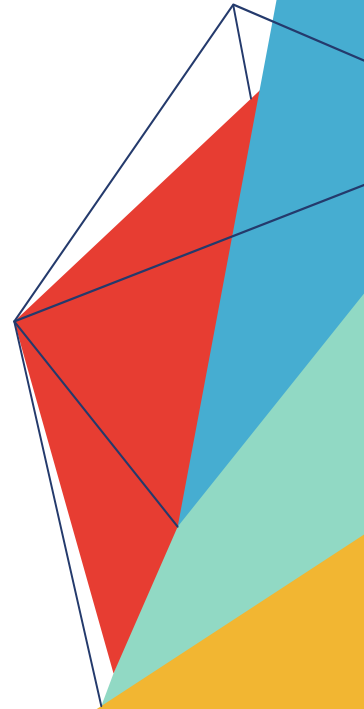
1. 2011 Baseline Calibration

2. Business-as-Planned Scenario

3. Low-Carbon Scenario

Utilized CityInSight model

- Existing City-developed forecasts and models, e.g. population forecasts to 2040

- Existing Council-endorsed future plans, e.g. Official Plan; funded transit investments

- Data from 10 City Divisions/Agencies and various external sources

- Known & forecast outcomes of existing programs & policies (all orders of govt.)

- Assumptions about factors like stocks & flows and change in heating & cooling days

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- Resident engagement findings

- Review of practices of other municipalities

- Steering Committee formed from 12 City divisions/agencies
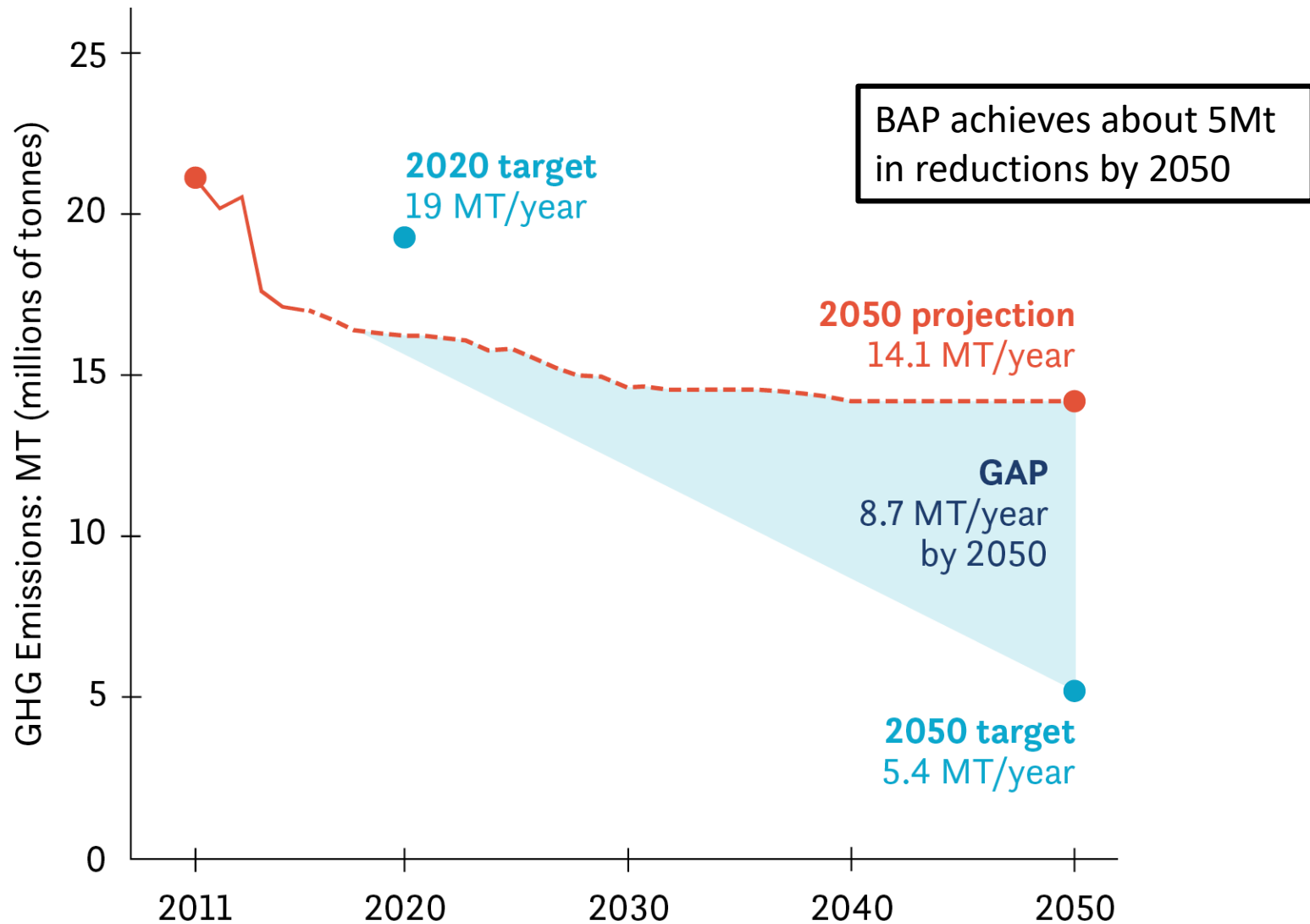
- Cross-sectoral 35-member Modelling Advisory Group

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- Data access – quality, volume, compatibility, and gaps

- Assumptions – using existing City model assumptions vs. new assumptions

- Many cooks – external and internal as well as peer review

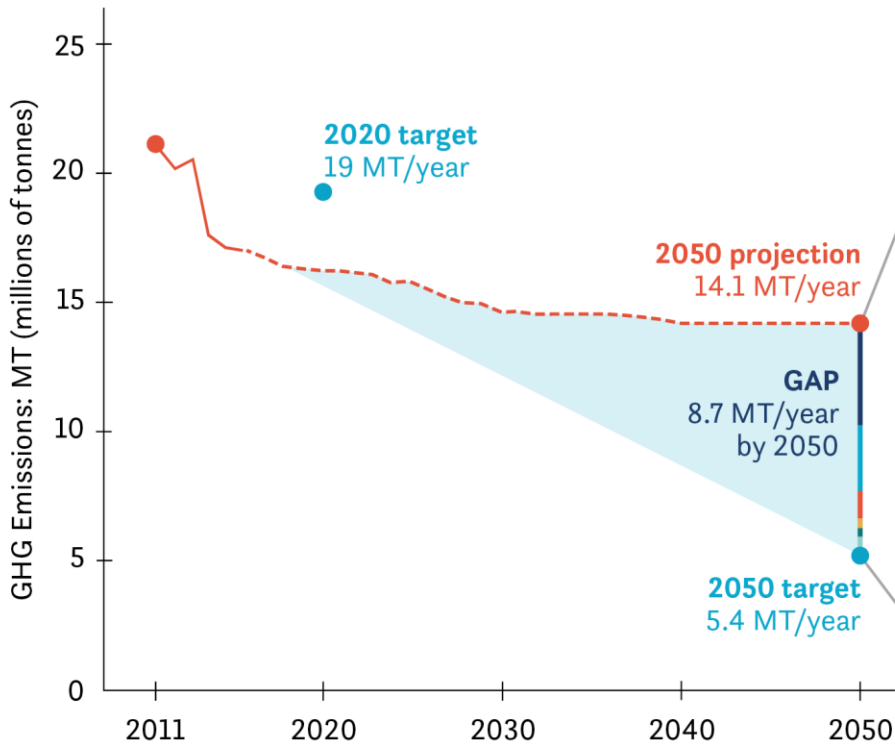- Limited scenarios – one long-term pathway/scenario vs. developing multiple pathways/scenarios

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MODEL FINDINGS

SCENARIO 1: BUSINESS-AS-PLANNED WILL MISS 2050 TARGET

GHG Emissions: MT (millions of tonnes)

2020 target
19 MT/year

BAP achieves about 5Mt in reductions by 2050

2050 projection
14.1 MT/year

GAP
8.7 MT/year
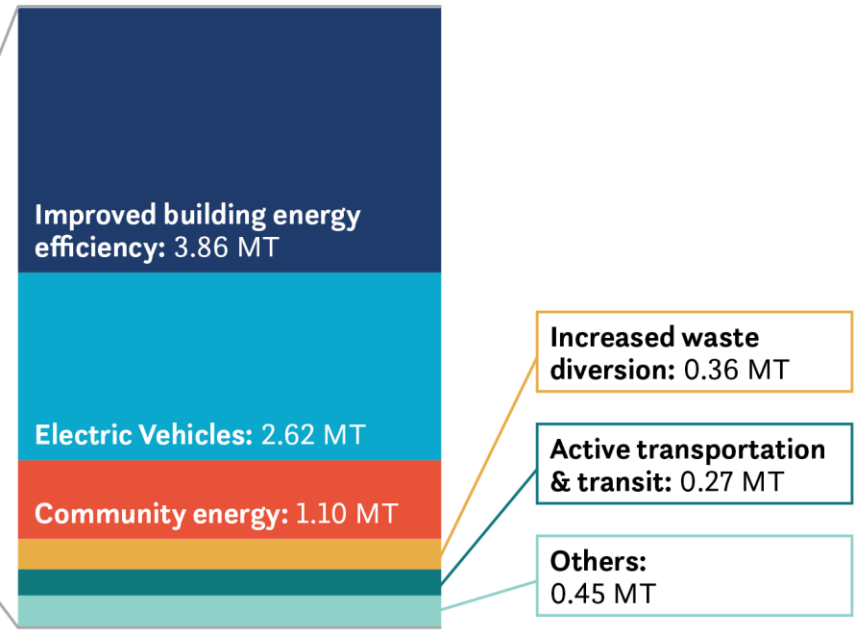by 2050

2050 target
5.4 MT/year

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SCENARIO 2: LOW-CARBON FUTURE

Modelled 36 actions which show that it is possible to achieve the 80x50 goal.

Low-carbon actions can close the 8.7 MT gap

- **2020 target** 19 MT/year
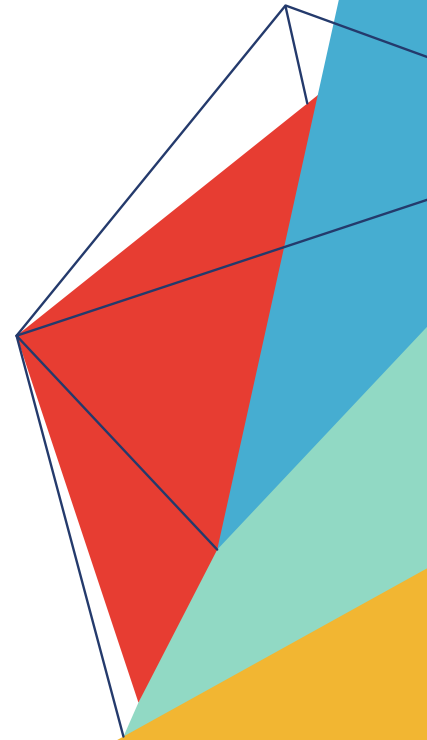- **2050 projection** 14.1 MT/year
- **GAP** 8.7 MT/year by 2050
- **2050 target** 5.4 MT/year

Y-axis: GHG Emissions: MT (millions of tonnes)

X-axis: 2011, 2020, 2030, 2040, 2050

TransformTO Low-Carbon Scenario

- Improved building energy efficiency: 3.86 MT
- Electric Vehicles: 2.62 MT
- Community energy: 1.10 MT
- Increased waste diversion: 0.36 MT
- Active transportation & transit: 0.27 MT
- Others: 0.45 MT

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- 8.7 MT gap can be addressed with known technology

- Electric mobility, energy efficiency and low-carbon distributed energy are top drivers

- Inbound and outbound trips (+10 km) remain "stubbornly vehicular"

- Transit on its own is a not key carbon driver but underpins success in other modeled strategies

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Co-Benefits Analysis

2050 Low-Carbon Pathway

Local Economy

Social Equity

Public Health

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- 25 community members & 10 City staff, with expertise in four areas:

  - Public health, local economy, social equity, and GHG analysis

- Undertook multi-criteria analysis

- Engaged between July 2016 and March 2017

- Professional facilitator designed meetings and recorded outcomes

POTENTIAL CO-BENEFITS OF LOW-CARBON ACTIONS

Prioritization Outputs

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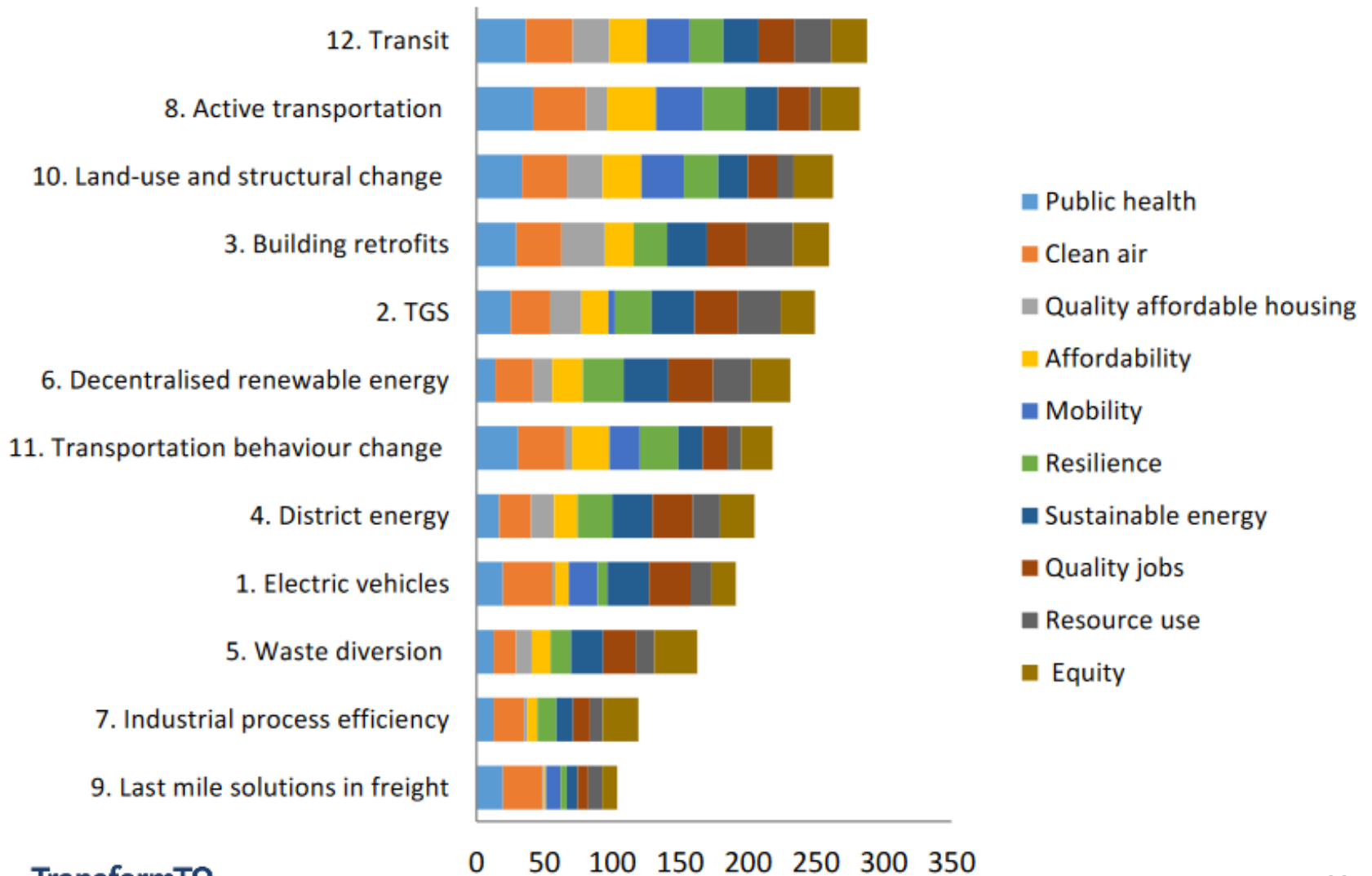
LOW-CARBON ACTIONS CREATE VALUABLE COMMUNITY BENEFITS

- Increased public health and community resilience

- Major energy cost savings (average of 50% per household)

- Higher productivity, innovation and competitiveness

- New local jobs, investment opportunities (estimated 327,000 person years of employment)

- More accessible transportation

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Recommendations to Council

ACCELERATED BUILDING PERFORMANCE

100%
of new buildings are near zero GHG emissions by 2030

100%
of existing buildings are retrofitted by 2050 where technically feasible

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NEW ENERGY MIX

75%
of energy use from renewable or low-carbon sources by 2050

30%
of total floor space connected to low-carbon thermal energy by 2050

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LOW-CARBON TRANSPORTATION

100% of transportation uses low or zero-carbon energy by 2050

75% of trips under 5 km city-wide walked or biked by 2050

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95%

of waste is diverted in all sectors by 2050

- Advance **social equity**

- Improve **affordability** particularly for vulnerable populations

- Contribute to **poverty reduction** and protect low-income residents and Enhance and strengthen the **local economy**

- Maintain, create **good quality local jobs**

- Improve **public health**

- Create **resilient** communities and infrastructure

LOW-CARBON CITY LEADERSHIP GOALS

All new City-owned facilities to be near zero greenhouse gas emissions by 2026

Retrofit all City-owned buildings where technically feasible by 2040

24 MW of renewable energy capacity on City-owned property by 2020

Transition 45% of City-owned fleet to low-carbon vehicles by 2030

Achieve net zero waste at all City-owned facilities by 2030

Generate 1.5 Gigajoules of energy annually from biogas by 2030

Become a Canada Top 100 Greenest Employer by 2020

REPORTING AND IMPLEMENTATION PLANS

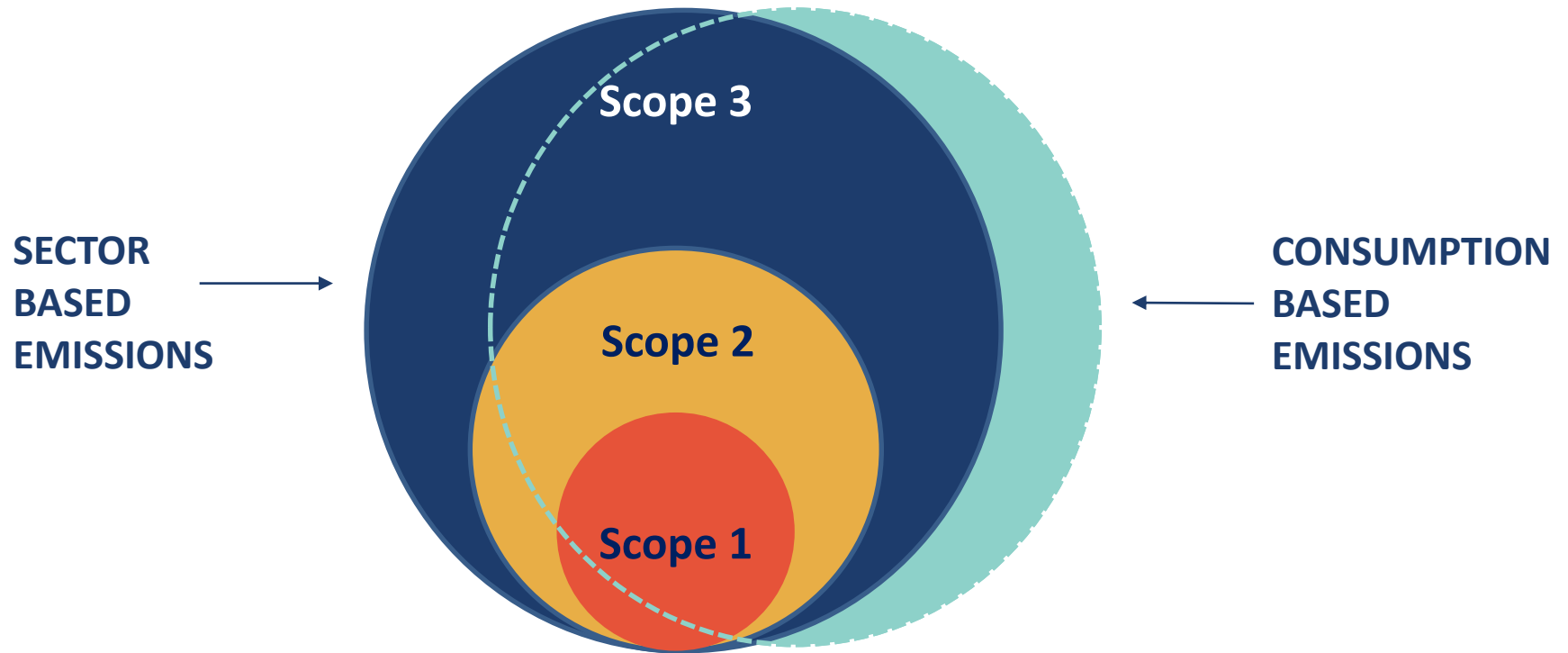Every 2 years: update on TransformTO key performance indicators

Every new term of Council: Progress towards City of Toronto low-carbon leadership goals, and KPIs

Every new term of Council: Revisions and additions to implementation plan for that term

EXPLORING TORONTO'S CONSUMPTION GHG EMISSIONS

**SECTOR BASED EMISSIONS**

Scope 3

Scope 2

Scope 1

CONSUMPTION BASED EMISSIONS

1. Continued implementation of existing policies, plans and programs that contribute to the BAP

2. Accelerate action by funding & initiating a set of immediate strategies

3. Initiate three acceleration campaigns that embrace a multi-benefits approach

1. Mobilize Low-Carbon Neighbourhoods

- Advance best practices in neighbourhood-based engagement;

- Cultivate local leaders who can support climate actions;

- Identify how TransformTO initiatives could improve affordability and support the City's poverty reduction and social development strategies;

- Explore how neighbourhood-scale TransformTO initiatives could enhance community resilience;

- Take action with 3 to 5 quick start projects.
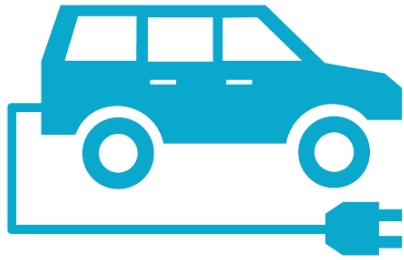
2. Prepare for Electric Mobility

- Co-develop an electric vehicle (EV) transition strategy for Toronto;

- Develop an electric vehicle charging infrastructure strategy;

- Identify best practices in EV preparedness to ensure equitable outcomes for all residents;

- Prioritize EV approaches that maximize community benefit;

- Launch quick start projects to test implications of EV use for local grid;

- Explore how EVs could enhance community resilience.

3. Develop the Workforce for High-Performance Buildings

- Create an existing buildings energy performance strategy;

- Identify priority approaches to drive community benefits, including an early focus social housing renewal;

- Co-develop a workforce strategy to support high-performance buildings and create opportunities for people who face barriers to employment;

- Improve resilience of building stock

SUMMARY & NEXT STEPS

- Confirmed GHG reduction success to date supports case for further action

- Modelling demonstrates necessary pace and scale to reach the target

- Research identifies significant co-benefits of key low-carbon actions

- Long-term goal requires sustained, integrated, community-wide approach

- Full funding of four-year implementation plan crucial

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TIMELINE

TRANSFORMTO CREATED
MAY 2015
Council endorses project
between TAF & City of Toronto
Environment & Energy Division

REPORTS TO CITY COUNCIL
DECEMBER 2016
Report #1: Short-Term
Strategies and 2050
Pathway Building Blocks

**RECOMMENDATIONS
TO CITY COUNCIL**
MAY 2017
Report #2: Long-Term
2050 Roadmap

2015	2016	2017	2020	2050

SUBCOMMITTEE FORMATION
APRIL 2015
Parks & Environment
Subcommittee on Climate
Change Mitigation
& Adaptation

**COMMUNITY
ENGAGEMENT
PHASE 1
MARCH 2015 - JULY 2016**
Over 2000 Toronto residents
provide views on low-carbon
priorities

**COMMUNITY
ENGAGEMENT
PHASE 2
AUGUST 2016 - MAY 2017**
Continued stakeholder and
community engagement

**TECHNICAL SCENARIO
MODELLING**
JUNE 2016 - MARCH 2017
Scenario developed showing
how to meet City's 2050
target

JUNE 2017 - 2020
Implementation of
short-term strategies

2017 - 2050
Implementation
of 2050 road map

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@LiveGreenTO @AtmosphericFund

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Appendix