

# City of Toronto

# Electric Mobility Strategy Updates

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**Presentation for: Clean Air Partnership  
Municipal Electric Vehicle Strategies Workshop**  
June 14, 2019

# Content

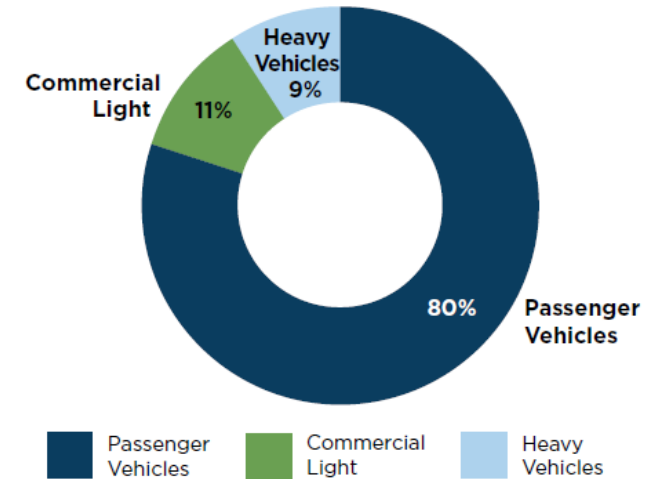
- 01 | Background (TransformTO)
  
- 02 | Strategy Overview:
  - Phase 1 - Assessment Phase (Toronto's Baseline)
  - Phase 2 – Developing Strategy Actions
  
- 03 | Areas for collaboration

# TransformTO

**Toronto's Climate Action Strategy to reduce greenhouse gas (GHG) emissions by 80% by 2050 while creating a low-carbon future for Toronto that is healthy, equitable and prosperous that benefits all**



## 35% GHG Emissions in Toronto



**35%**

of GHG emissions come from transportation

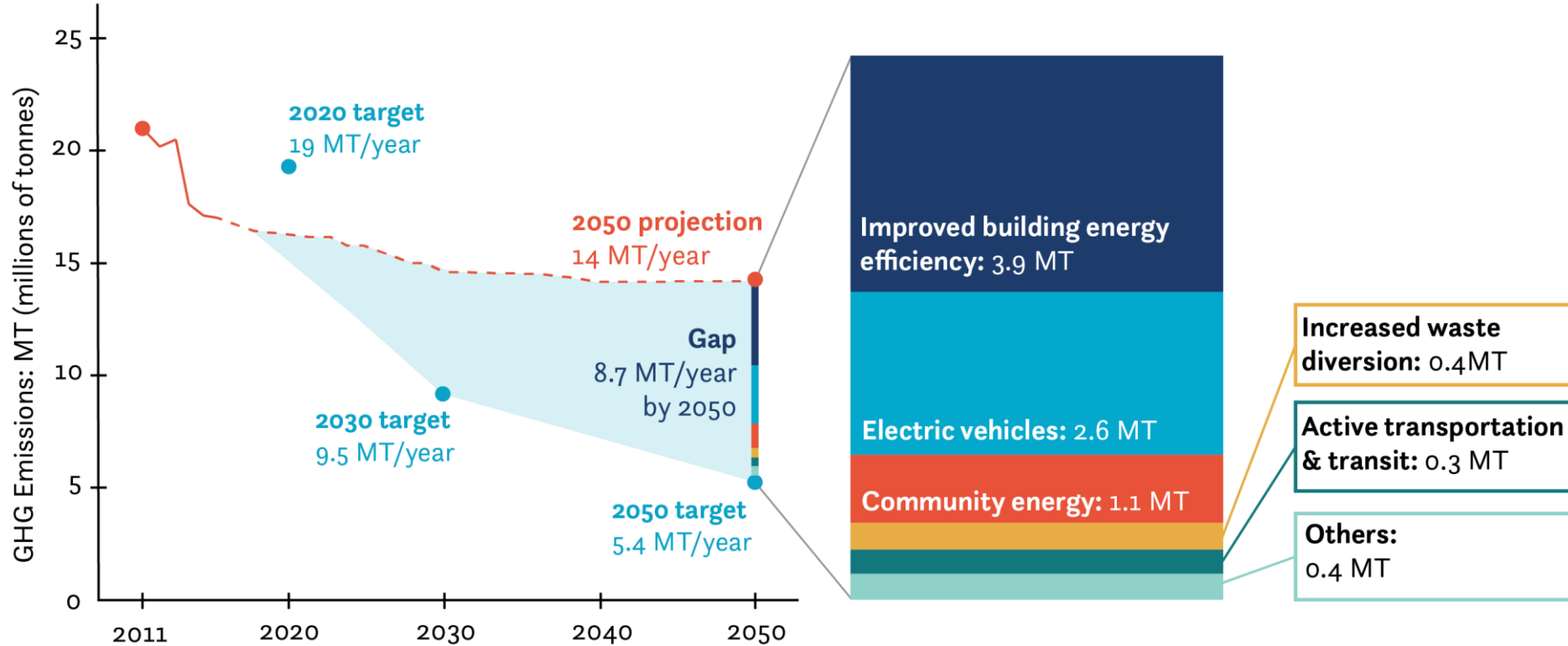
**80%**

of GHG from Transportation comes from passenger vehicles

# Addressing the 8.7 MT Gap – Transformational Action Required

Low-carbon actions can close the 8.7 MT gap

TransformTO Low-Carbon Scenario



# TransformTO's Guiding Principles



Advance social equity



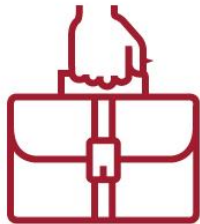
Protect low-income residents



Improve affordability particularly for vulnerable population



Enhance and strengthen the local economy



Maintain and create good quality local jobs



Improve public health



Contribute to poverty reduction



Create resilient communities and infrastructure


# TransformTO's Long-Term Transportation Goals


Toronto's GHG reduction targets, based on 1990 levels:  
↓ 30% by 2020   ↓ 65% 2030   ↓ 80% by 2050


How we'll get there:

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

**100%**   
of existing buildings are  
retrofitted by 2050

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

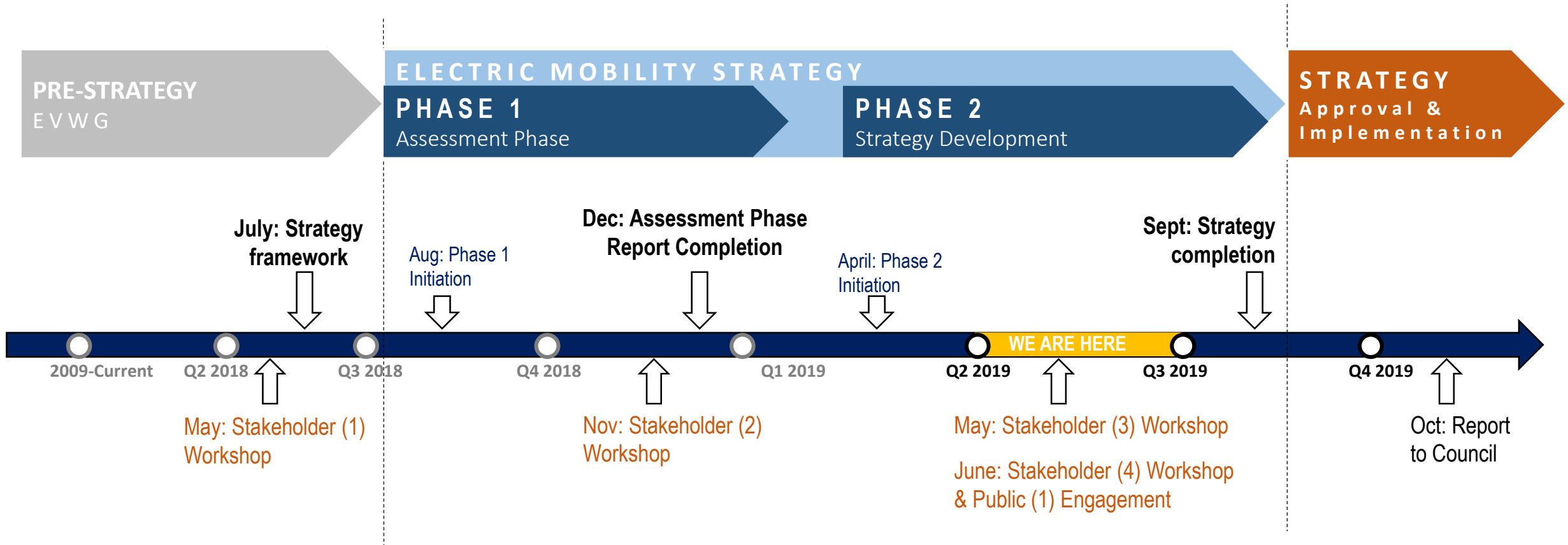
**30%**   
of total floor space uses  
low-carbon thermal energy  
by 2050

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

**75%**   
of trips under 5km are  
walked or biked by 2050

**95%**   
of waste is diverted  
in all sectors by 2050

# Electric Mobility Strategy Timelines & Deliverables





# Strategy Phase 1 Assessment Phase Overview

## PHASE 1 Assessment Phase

Pollution Probe, in partnership with The Delphi Group, contracted to lead work on the Assessment Phase

## Objectives

- Review and document the state of electric mobility in Toronto;
- Identify barriers, opportunities and best practices regarding electric mobility;
- Identify and preliminarily engage key stakeholders to contribute to Strategy development; and,
- Summarize findings in Assessment Phase report.

## Areas of opportunity



Availability of Charging Infrastructure



Policies and Regulations



Financial & Non Financial Incentives



Research, Community Awareness & Behaviour Change



Understanding and Developing the EV Industry, Workforce and Training

# Strategy Phase 1 Existing Electric Mobility Programs and Policies



## Transportation Services & TO Hydro **On-street EV Charging Station Pilots**

- Residential On-street EV Charge Station Pilot
- Downtown On-street EV Charge Station Pilot



## Toronto Hydro **Electric Vehicle Strategy** under development



## Toronto Parking Authority & TO Hydro **Parking Garage Charge Station Project** For the installation of EVSE in over 200 Toronto Parking Authority (TPA) garages.



## Transportation Services **Freight and Goods Movement Strategy** Under development

# Strategy Phase 1 Existing Electric Mobility Programs and Policies



## Fleet Services

### **Consolidated Green Fleet Plan**

- 45% of City fleet low-carbon by 2030
- Strategically deploy EVSE



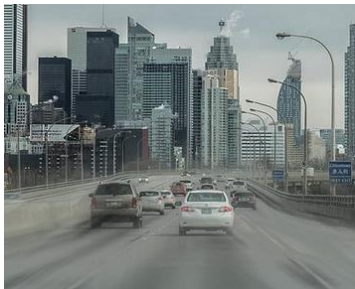
Toronto Green Standard



## City Planning

### **Toronto Green Standard**

Toronto has outlined sustainable design requirements for new private and City-owned developments in the Toronto Green Standard (TGS).



## Transportation Services

### **Transportation Services Automated Vehicle Work Plan**

To direct staff to further investigate the role of automated vehicles within the transportation system.



## Toronto Transit Corporation TTC

**June 3, 2019 TTC's first all-electric bus goes into service on 35 Jane route.**

**TTC's Green Bus Technology Plan:** TTC is targeting procurement of only zero-emission buses starting in 2025, with a goal of a zero-emissions fleet by 2040. Pilot project will put 60 electric buses on the road by 2020

# Strategy Phase 1 Barriers to EV adoption



## Charging infrastructure

- Home
  - No designated parking (garage orphans and MURBs)
- Public
  - Lack of public EVSE
  - Perceived lack of EVSE (reduced visibility)



## Cost

- **Upfront cost** of EVs
- Limited information about:
  - TCO Total cost of ownership
  - Battery costs



## Information

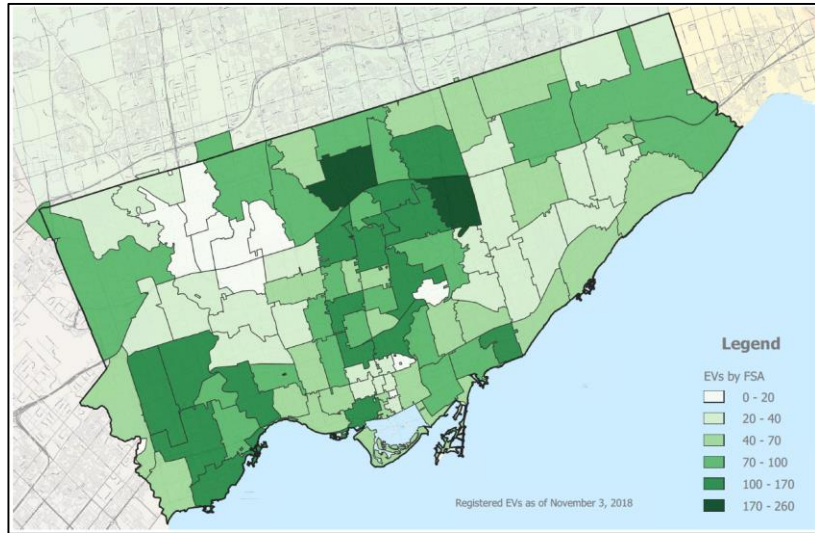
- Customer's lack of knowledge and understanding of EVs
- Limited information about:
  - EVSE availability
  - Home charging options
  - Life cycle costs
  - Range
- Competing with misinformation in the market



## Industry Capacity

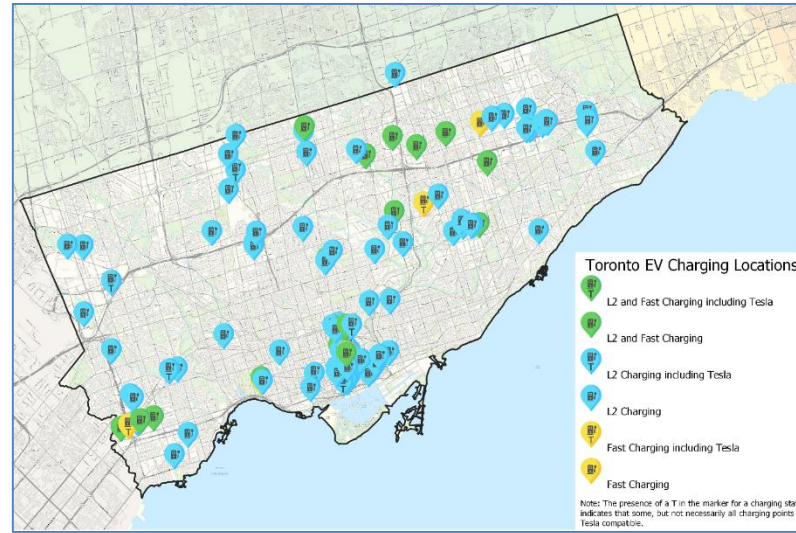
- Limited supply and wait times
- Limited information on EV-related employment and business opportunities
- Lack of training for EV-related jobs
- Lack of incentives to attract EV industry to the region

# Strategy Phase 1 Toronto's Baseline



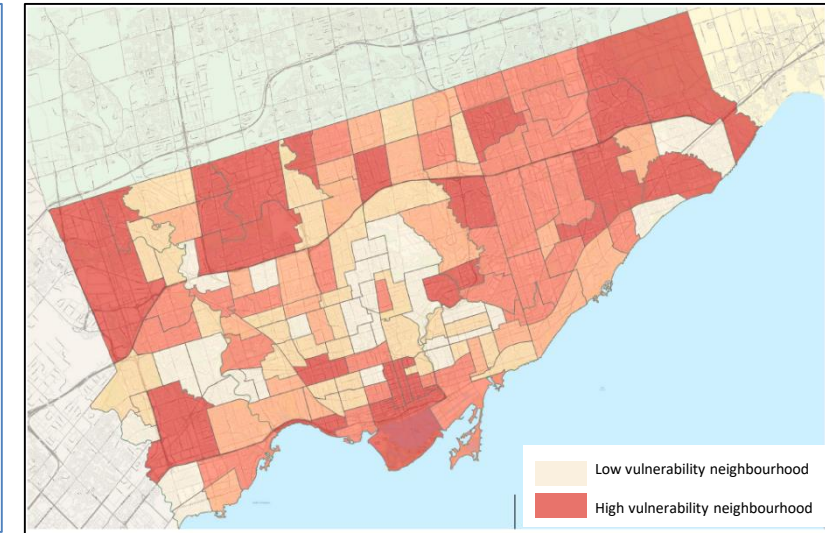
## Levels of EV adoption across the City of Toronto

Over 6,200 registered EVs as of Q3 2018; up from 1,600 at end of 2016  
Midtown, Uptown, North York and south Etobicoke have seen highest levels of adoption.



## Publicly accessible charging infrastructure in the City of Toronto

Public accessible charging stations in Toronto are mainly clustered in the downtown and along major corridors.



## Socio-economically vulnerable neighborhoods

Geospatial social vulnerability analysis was undertaken to determine which Toronto neighbourhoods were at risk of being left behind on electric mobility.

# Strategy Phase 1 Key Takeaways

## **Active transportation and electric mobility**

City policies should be guided by transport priority hierarchy (e.g., active transport → public transit → shared mobility → private electric vehicles → private ICE vehicles)

## **MURBs**

Almost half of Torontonians live in them; consider pilot targeted at facilitating MURB charging

## **Micro-mobility**

City should develop policy on e-bikes and e-scooters, for public and commercial use

## **Car and ride sharing**

Policy needed to encourage electric car/ride share fleets

## **End-of-life impacts**

As EVs start to reach retirement age, a program should be established to repurpose batteries and scrap vehicles

## **Emerging Technologies and trends**

Report describes emerging trends the City should incorporate into Strategy to help future-proof it.

# Phase 2 Strategy Goals

## PHASE 2 Strategy Development

Dunsky contracted to lead work on the Strategy

### Goals

1. Understand and **address the barriers** for EV adoption.
2. Establish a robust network of **EV charging infrastructure**.
3. Identify the right mix of **policy and regulatory** signals.
4. Improve **access and affordability** of electric transportation options.
5. Enhance and **strengthen the local economy**.
6. Support **local innovation**, creating clean economic opportunities.

### Approach



#### Shared Goals

Ensure alignment with complementary City of Toronto low-carbon transportation strategies.



#### Equity & Collective Impact &

Take a multi-stakeholder approach to co-create the Strategy.



#### Adaptive Strategy

Create a flexible and adaptive Strategy that can be molded to align with future technologies.

# Phase 2 Methodology

- Review previous work
- Secondary research (other municipal EV strategies)
- Stakeholder engagement(x2) and public consultation
- Analytics: quantitative and qualitative (EVA, GIS)



## ANALYTICAL TOOLS

### EV: Dunsky's Electric Vehicle Adoption Model

- **Forecasts EV adoption** in client-defined regions
- **Forecasts impacts of policy, program and infrastructure options** on EV demand and electricity needs (incentive programs, charging infrastructure deployment, non-\$\$ incentives (e.g., HOV access)
- **Assesses sensitivity to key exogenous factors** (vehicle availability, EV cost forecasts, energy costs, technology diffusion rates)





- To help prioritize actions, we modeled different levers to assess their impact on the EV market and GHG emission reductions



## Charging Availability

- Public Charging Deployment – Level 2 Infrastructure
- Public Charging Deployment – DCFC Infrastructure
- Home Charging Deployment – EVSE Incentive
- Home Charging Deployment – MURB Retrofits

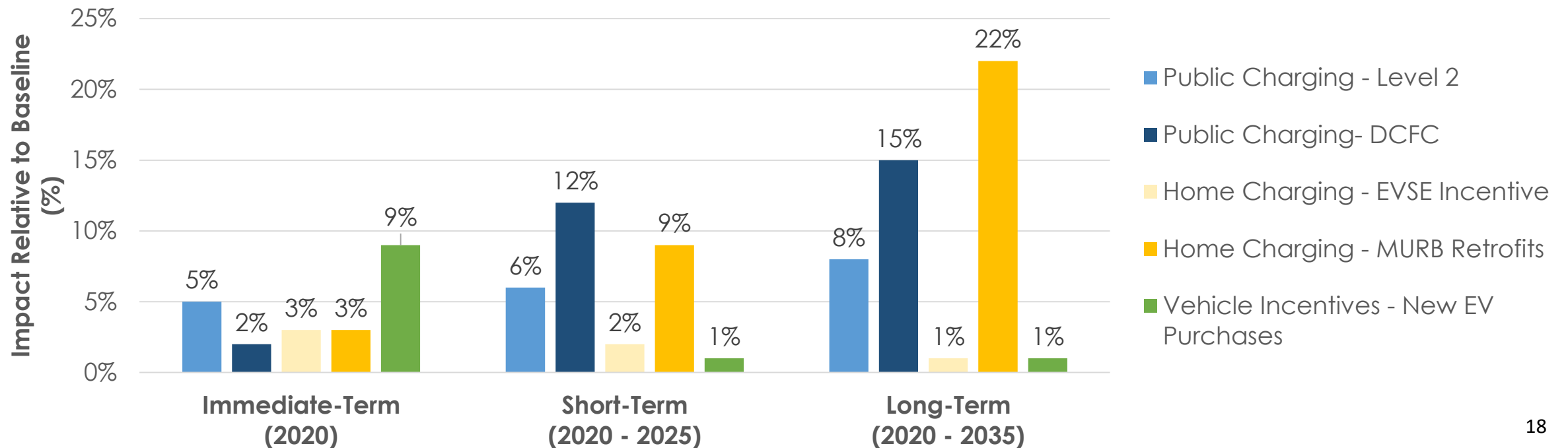


## Consumer Incentives

- Vehicle Incentives – New EV Purchases

## Modeling results highlight the following takeaways:

- **Public Charging Deployment** (L2 and DCFC Deployment) supports both short-term and long-term market growth
- **Home Charging** incentives for single-family is not estimated to be impactful, however focusing on MURB retrofits increases market potential significantly in the long-term
- **Vehicle Incentives** would have an immediate impact on EV adoption, however there would be limited impact on the market in the long-term



# Category 1: Charging Availability

Levers	Actions	Lead	Support	Cost	Timeframe
Home (MURB) Charging	Amend building codes requiring a proportion of parking be EV ready / capable*				

- Prioritize Actions based on **impact** and **feasibility**; and,
- Assess actions from an **equity** perspective, identify **blockers** and **enablers** and **measures** on actions impacts.

**Impact** = EV adoption, GHG reductions, health, noise, equity, resilience and economic development.

**Feasible** = ease of implementation. *Influencing factors include cost, regulations, effort/resources required, controversial (or not), political support, supporting policies/programs, time to implement*

**Equity** = improve affordability for vulnerable populations, reduce poverty, and protect low-income residents

## Sharing Ideas

- Build an internal Working Group – platform for learning and advancing shared goals;
- Engage diverse and inclusive partners - steering group to ensure successful implementation; and,
- Launch pilot projects (on-street pilot projects & workplace EV charging program).

## Areas of Collaboration

- Coordinate Policy Development;
- Region wide network for EV chargers: Expanding the geographic scope to include consideration of public charging infrastructure outside of Toronto, given the importance of enabling regional travel for EV drivers based in Toronto;
- Coordinating purchasing;
- Coordinated advocacy; and,
- Other.

# Thanks

For questions, contact:

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For more information,

visit the City's [Electric Vehicle](https://bit.ly/2ECzs2W) webpage, <https://bit.ly/2ECzs2W>.