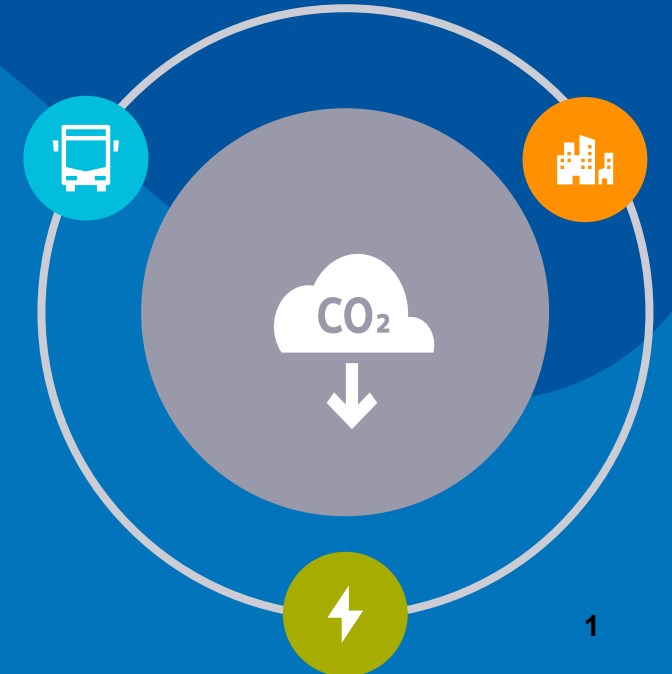


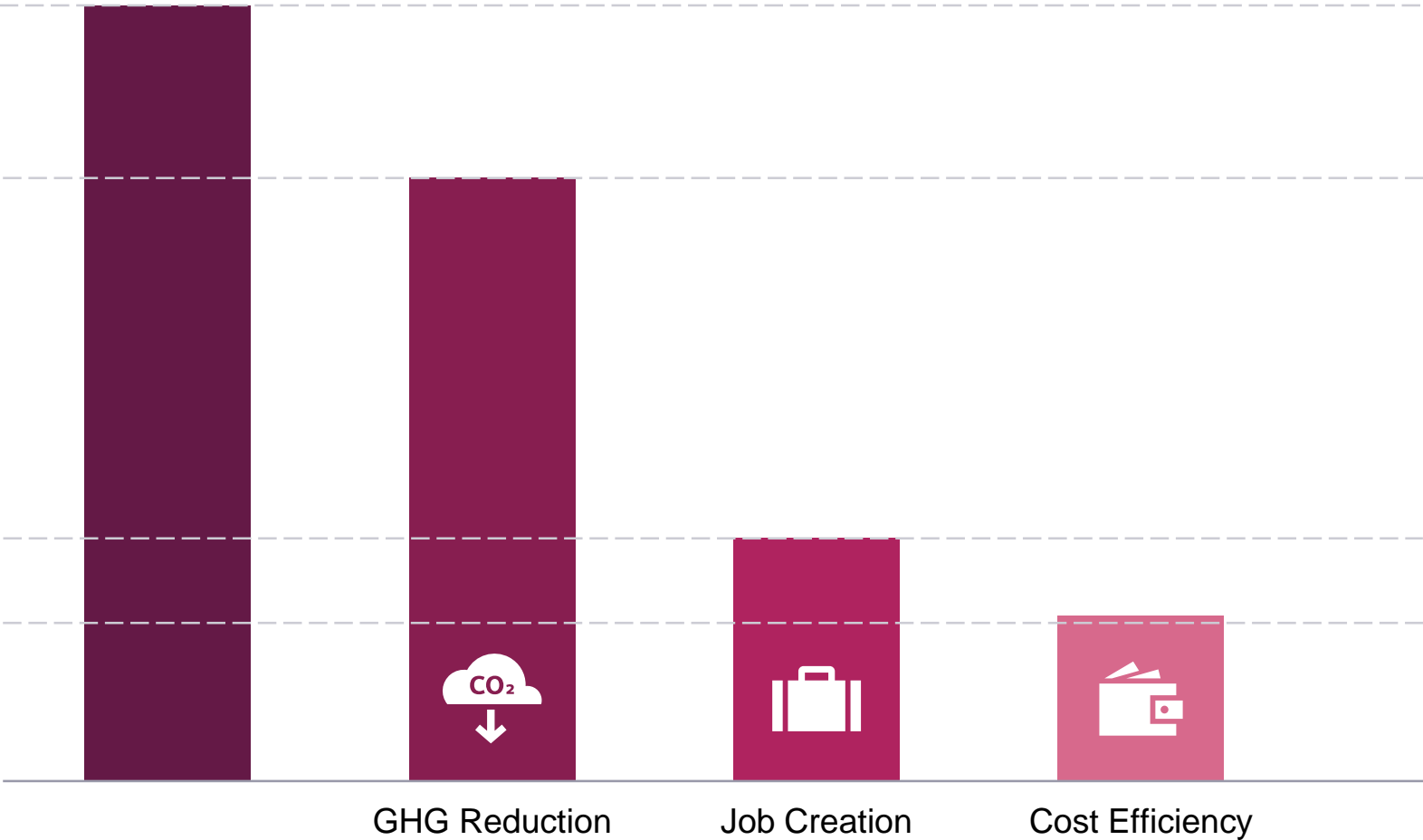
Technology Pathway to 2050

Environmental Action Committee
December 5, 2023

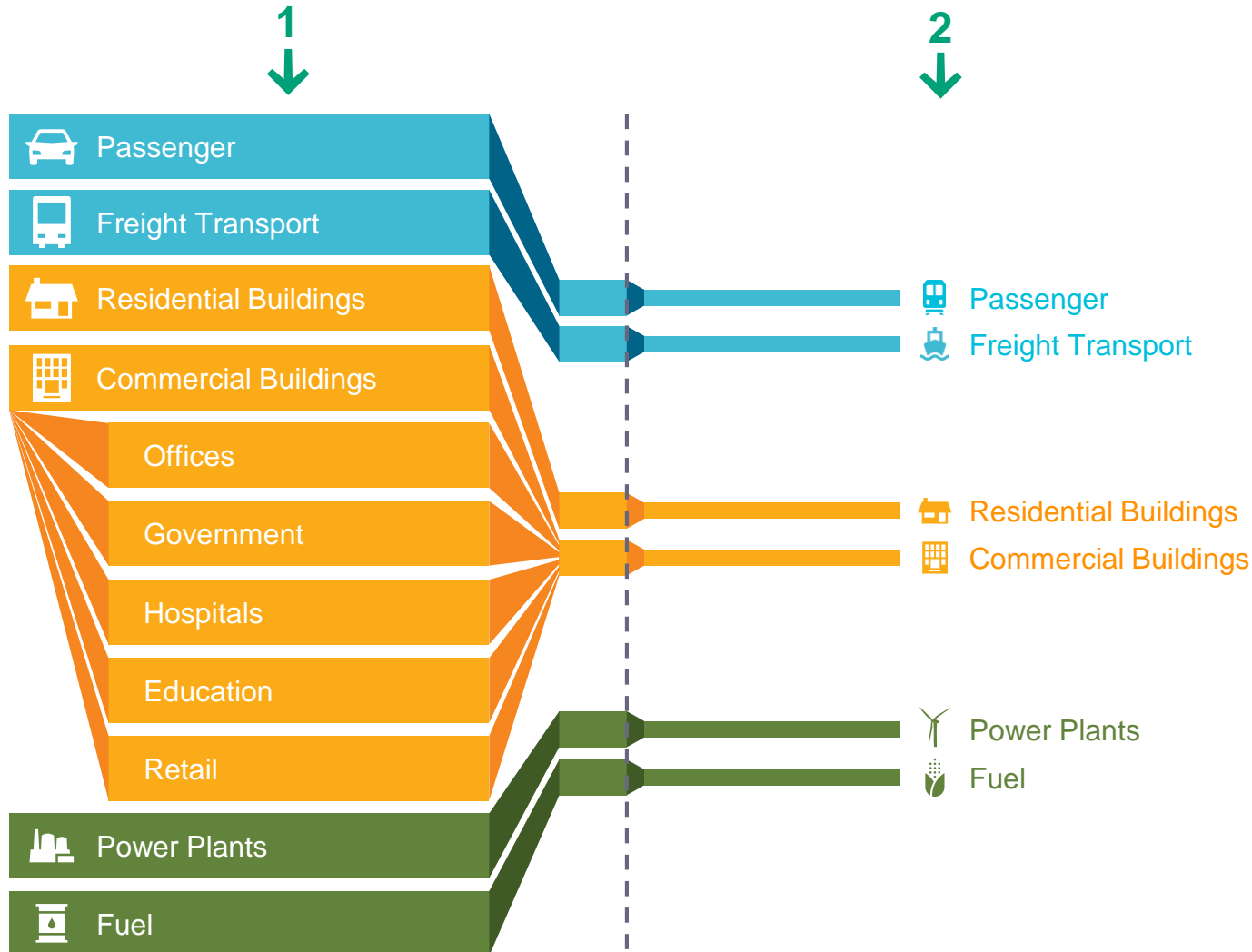


The challenge

How can the City of Mississauga use technology to attain short- and long-term GHG emissions reduction targets, while improving quality of life?



The City Performance Tool Works in Two Steps



Step 1: Energy Mix Analysis

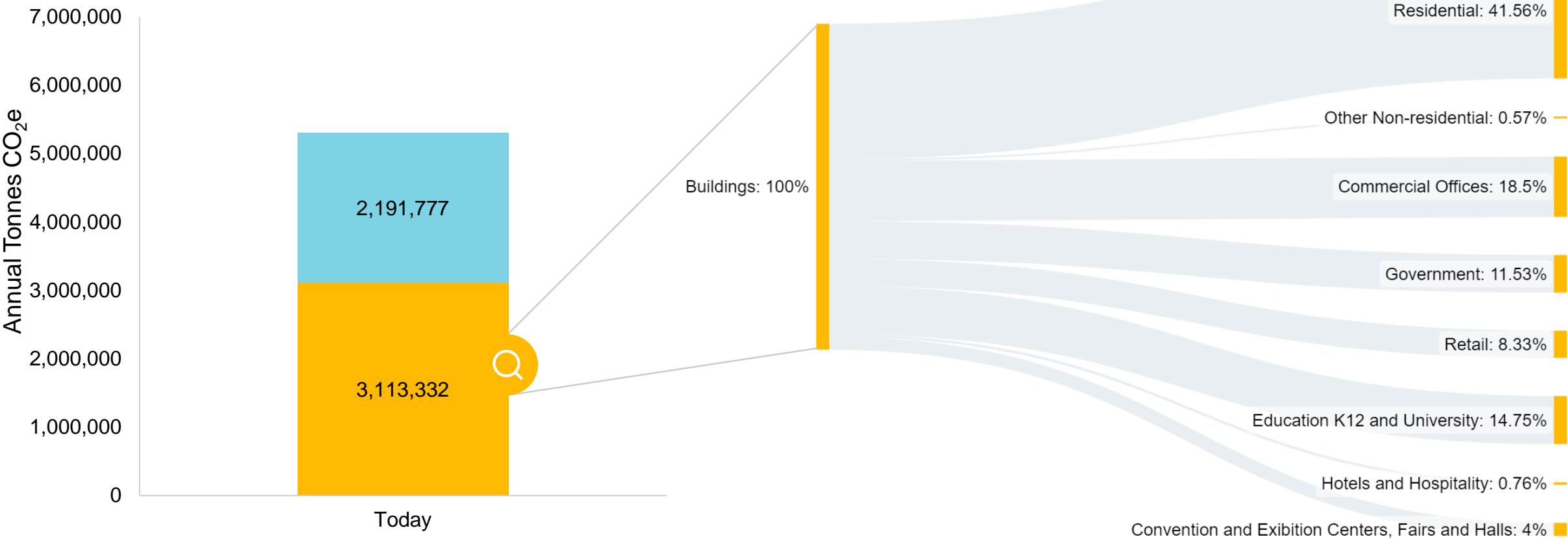
- 350 data inputs
- Residential and commercial buildings, passenger and freight Transportation

Step 2: CyPT Results

- 73 technologies, each with customizable implementation rates
- Technologies:
 - Clean underlying energy mix
 - Improve energy efficiency in buildings and transportation
 - Induce modal shift

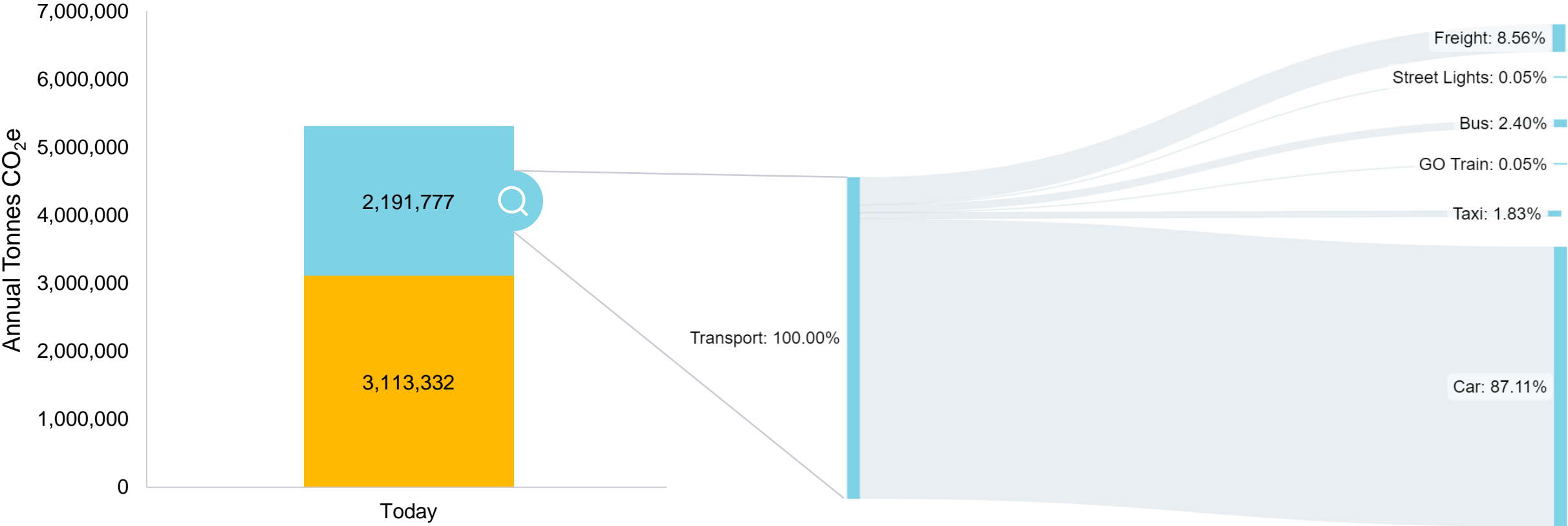
2018 GHG Emissions Buildings

Annual Metric Tonnes of CO₂ Equivalent Emissions

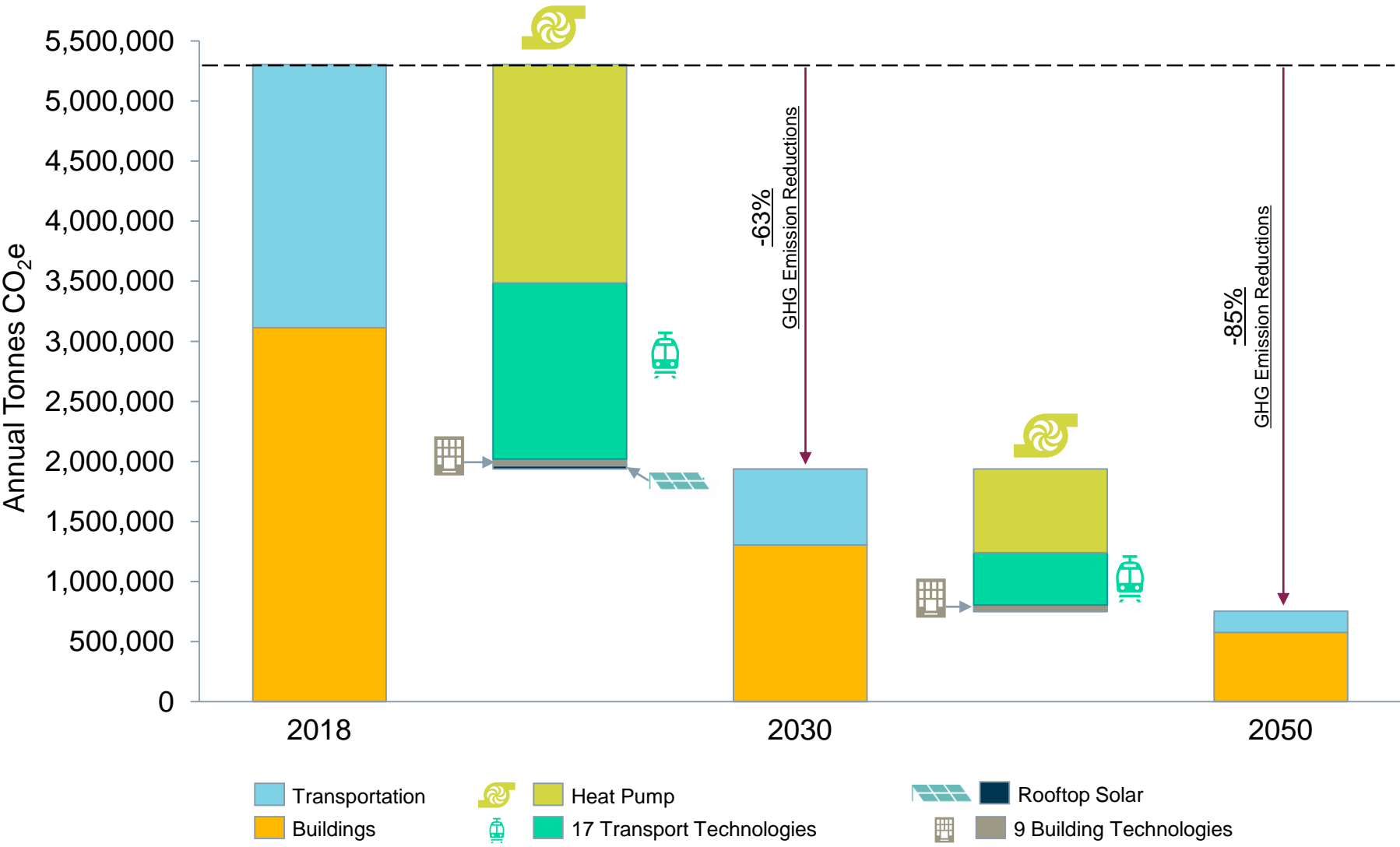


2018 GHG Emissions Transportation

Annual Metric Tonnes of CO₂ Equivalent Emissions




63x2030 and Net Zero Scenario



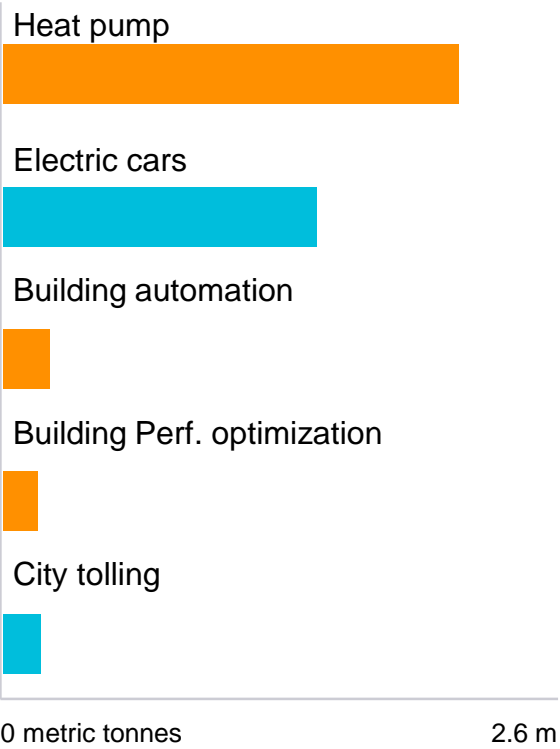
Key Insights


- 27% population increase in 2050 leads to 15% increase in GHG in business as usual
- The City will have to rely on 100% low carbon heating to achieve 85% GHG reductions
- 100% electrification of private and public fleet is essential for achieving target
- Residual = 750,486 metric tonnes GHG

High Performing Technologies

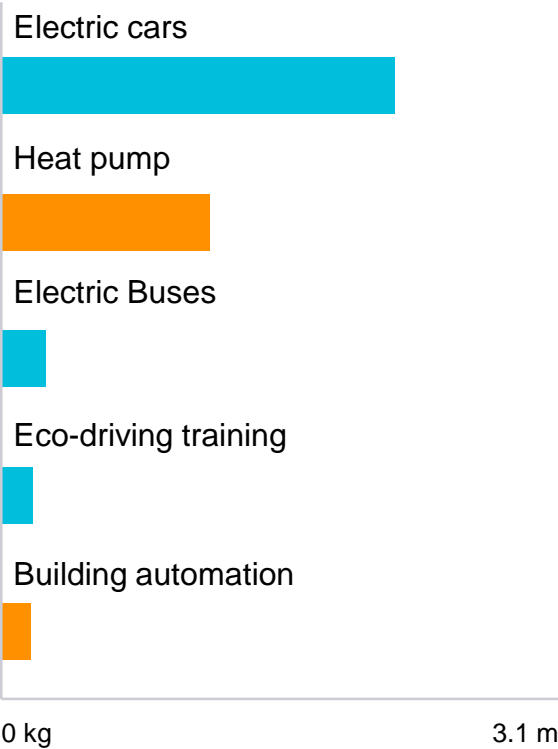



GHG Reduction
Reduction in Annual CO₂e Emissions from 2050 BAU



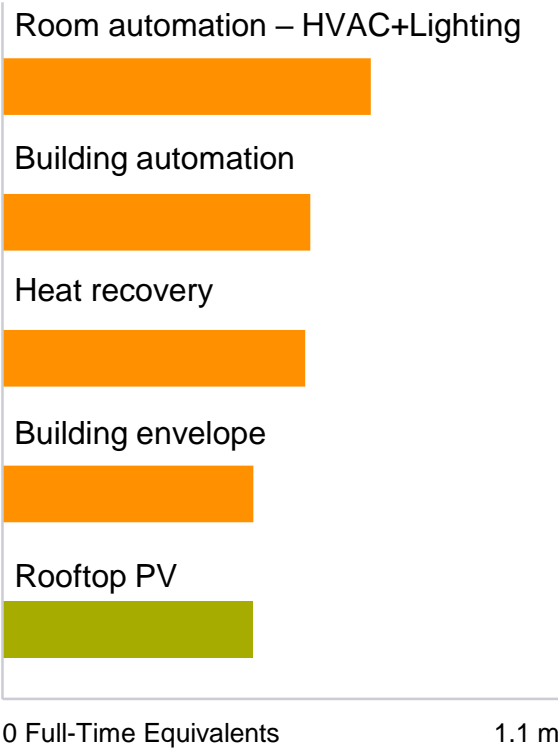



Air Quality Improvement
Reduction in Annual NO_x Emissions from 2050 BAU



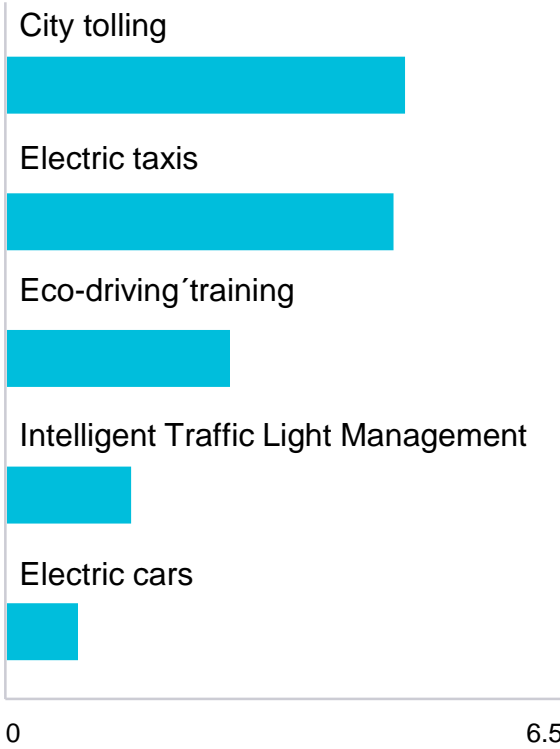


Job Creation
Direct, Indirect, and Induced FTEs between Today and 2050





Cost Efficiency
kgCO₂e savings/ CapEx + OpEx



Top Performing Technologies



1.8M

tonnes

Potential CO₂e
Reduction from:
85% adoption of low
carbon heating from
heat pumps and 15%
adoption of district
energy in 2050



1.9M

tonnes

Potential CO₂e
Reduction from:
100% adoption of
electric cars and 16
other transportation
technologies adopted
at varied rates in 2050



0.06M

tonnes

Potential CO₂e
Reduction from:
9 building energy
efficiency
technologies adopted
at varied rates in
2050

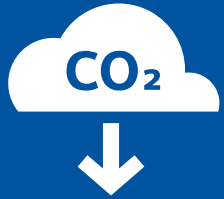


0.03M

tonnes

Potential CO₂e
Reduction from:
23% adoption of utility
scale and rooftop
solar in 2050

Getting to Net Zero



3.8M

tonnes

Potential reduction in
metric tonnes CO₂e
from 2018



750K

tonnes

Residual metric tonnes
CO₂e required to
achieve net zero

Additional reductions
can be achieved
through removals or
technology
advancement



61B

dollars

Capital and operating
expenditures across
the community
between today and
2050



305K

jobs

Full-time equivalent
jobs generated
between today and
2050

NEXT STEPS



7.1

- 1 Through the update of the Climate Change Action Plan staff will evaluate policies and programs the City can develop to influence the uptake of this technology
- 2 Program delivery is already underway
- 3 Need to ensure federal and provincial policies are aligned