



Innovation & Sustainability Strategy

Bem Case
Executive Director, Innovation & Sustainability

September 24, 2024

Board Mandate

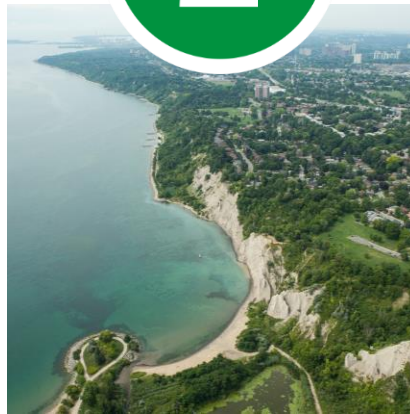
In 2024, the TTC Corporate Plan recognized Innovation and Sustainability as key perspectives to be applied across all we do.

1



Corporate
Innovation

2



Environmental
Sustainability

3



Culture of
Innovation and
Sustainability

1 Corporate Innovation

Corporate Plan: Key Principle



Key principle of the 5-Year Corporate Plan.

Its practice is being integrated into **all aspects of TTC's business.**

Corporate Innovation's goal is to **mitigate risk** to corporate priorities and seek to **maximize** the positive mobility and socio-economic **benefits of investment in public transit.**

Benefits of Transit

Economic Benefits

$$\$1 = \$1.08 + \$1 = \$6.06 = \$1 = \$7.14$$

\$1 invested creates \$1.08 in Economic and Regional Development Benefits

\$1 invested creates \$6.06 in Quality of Life Benefits

= \$1 = \$7.14 in total benefits

15 jobs created for every \$1 million invested



Affordability Benefits

\$5.78 in transit rider and driver benefits for every \$1 invested, including savings from reduced travel expense and a reduction in car ownership cost.

Value for Money Benefits

3:1

SOGI investments yield a benefit/cost ratio of 3:1, same as expansion.



Livability Benefits

Line 1 carries the equivalent of 26 lanes of traffic or 8-9 Gardiner Expressways, while Line 2 carries the equivalent of 3 Gardiner Expressways.

*2019- estimated based on comparing emissions from a personal vehicle to taking the TTC for the same distance over one year.

11 | TTC Corporate Plan

1 Approach to Corporate Innovation

A Communicate the purpose

Maximize the benefits of transit for our customers, the public, and the global environment, and mitigate risk to corporate priorities.

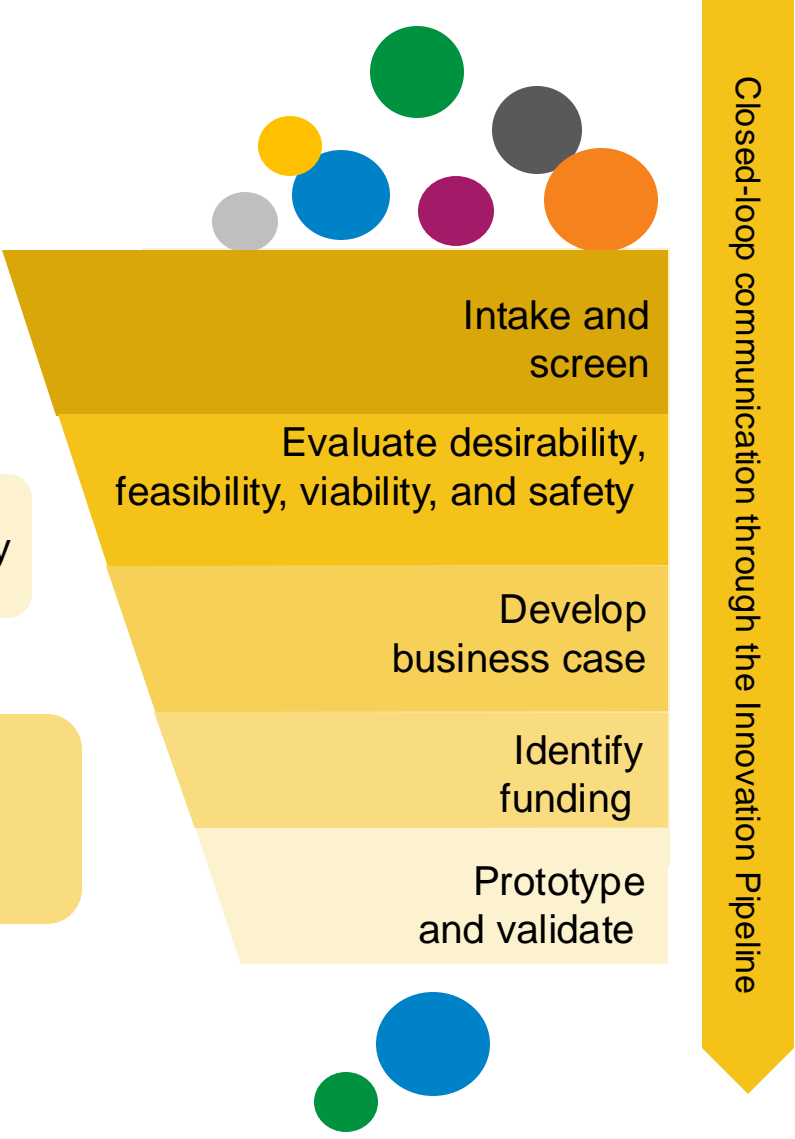
B Engage innovators

Employees Customers and Public Private and Nonprofits Academia and Industry Leaders

C Generate ideas

Innovation Challenges Emerging Technology and Solutions Open Intake Process

D Capture and evaluate ideas through the Innovation Pipeline



1 Actions Complete/In-Progress

1. Facilitated **hackathon** with Centennial College to reimagine the bus of the future.
2. Hosted internal innovation workshops.
3. Completed 2nd **Youth Innovation Challenge**.
4. Launched emerging technology lunch and learn series.
5. Exploring robotics technology to remotely **monitor track condition and worker safety**.
6. Piloting operator assistance technology.
7. Establishing a **global transit innovation forum**.
8. Exploring second life battery pilot.
9. Developing advanced **operator barriers to improve safety**.



2 Environmental Sustainability

Corporate Plan: Key Principle



Key principle of the draft 5-Year Corporate Plan.

The goals, as driven by the City of Toronto's TransformTO Net Zero Strategy, is for TTC to:

- 1) Grow ridership to **avoid community-wide emissions**; and both
- 2) **Mitigate its own impact** on environment and **build resilience** to climate change.



2 Approach to Environmental Sustainability

A Take immediate action

Support the City of Toronto's TransformTO Net Zero Strategy
Transition to a zero-emissions fleet and fossil-fuel-free assets

B Conduct portfolio-wide studies

Assess baseline environmental performance across all asset types and major operational processes, and set performance targets.

C Prioritize and Implement Opportunities

Eliminate
GHG
Emissions

Reduce
Consumption

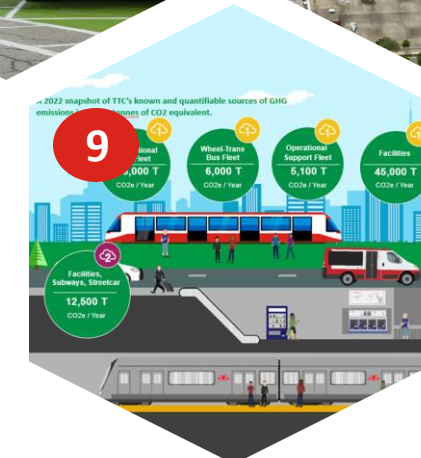
Protect our
Natural
Environment

Build Climate
Resilience

Ensure
Climate and
Fiscal
Responsibility

2 Actions Complete/In-Progress

1. Developed a **new 5-Year Service and Customer Experience Action Plan**
2. Delivered over 300 new hybrid-electric buses
3. Fully **modernized the Wheel-Trans fleet**
4. Implemented green bus transit zones
5. Continue to **expand zero-emission fleet**
6. Initiated portfolio climate resilience, net zero, and sustainable landscaping studies
7. Applying climate lens to **capital programs**
8. Procuring the first all-electric Wheel-Trans
9. Developed TTC's first **GHG Inventory**



2 Today's Environmental Performance



7 of 10

Customer boardings are on a low-zero emissions vehicle



Subway Trains

Operated ~83M km in 2023 with zero tailpipe emissions



Streetcars

Operated ~9M kms in 2023 with zero tailpipe emissions



Conventional Bus

Operated ~136M kms in 2023 with emissions intensity reduction of 16% since 2017



Wheel-Trans

Operated ~12M kms in 2023 with emissions intensity reduction of 26% since 2017



2 Benefits Delivered To-Date

84,000,000 L
fossil fuel avoided
since 2017



34
olympic pools of
diesel/gasoline`



221,000 T CO2e
fleet-wide GHG emissions
saved since 2017



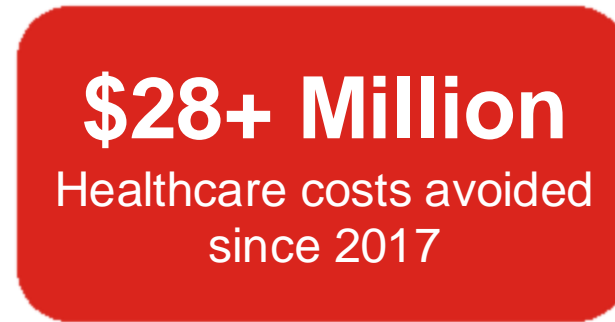
67,000 cars
fewer gasoline-powered cars
on the road for one year



19%
reduction in fleet-wide
tailpipe emissions
since 2017



2 Estimated benefits projected to 2040



2 Estimated benefits projected to 2040


1,100,000,000 L
fossil fuel avoided
since 2017



440
olympic pools of
diesel/gasoline



2,500,000 T CO2e
Fleet-wide GHG emissions saved
since 2017



760,000 cars
fewer gasoline-powered cars
on the road for one year



Target
100%
reduction in fleet-wide
tailpipe emissions
since 2017

3 Approach to Culture of Innovation and Sustainability



Foster a Culture of Innovation

Foster a Culture of Innovation and Crowdsource Customer Ideas

Foster a Culture of Sustainability

Make Every TTC Job a Sustainable Job
Integrate Climate Action into the Organization

Commit to Ongoing Consultation

Ensure the work of Innovation and sustainability at the TTC is informed by customers and through lenses that consider accessibility, diversity, equity, and inclusion

Drive Performance, Transparency and Accountability

Annual Progress Reporting
Disclose Sustainability Performance



Development of the Framework

- ✔ Consulted with:
 - Staff from various divisions of the City of Toronto
 - Industry and academia experts
 - TTCriders
 - ATU International
- ✔ Aligned and informed related policies and plans:
 - Toronto's TransformTO Net Zero Strategy
 - Corporate Plan (2024-2028)
 - Benefits of Transit study
 - 5-Year Service and Customer Experience Action Plan
 - Capital Investment Plan
 - Real Estate Investment Plan
- ✔ Identified leading practices from organizations worldwide
- ✔ Employee and Public consultation



