

# The Benefits of Transit Investment Phase 2 Final Report

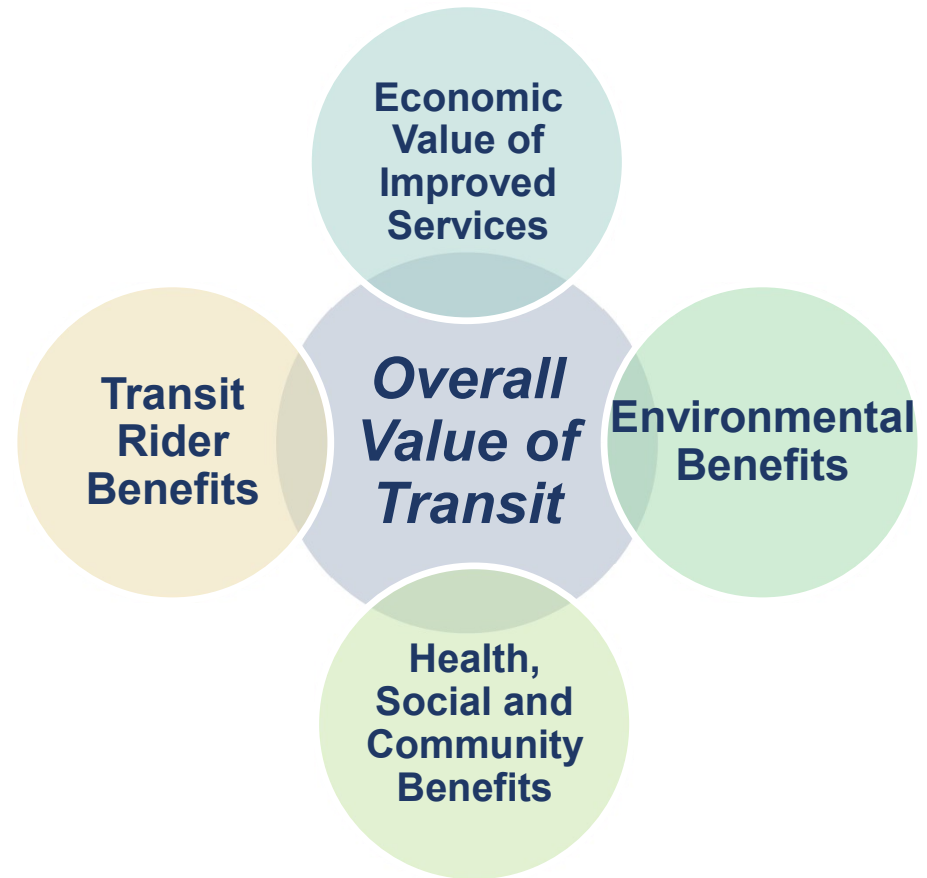
Presentation to the TTC Board  
May 14, 2025

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Steven Farber, Ph.D.  
Marianne Hatzopoulou, Ph.D.  
University of Toronto

**MOBILITY IS A MEANS TO A GREEN, JUST, PROSPEROUS WORLD FUTURE**

# Transit is an investment not an expense

Every **\$1** invested in  
TTC yields approx.  
**\$7** in benefits



# Introductions

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UNIVERSITY OF  
TORONTO



## Eric J. Miller

Professor  
Civil & Mineral  
Engineering

**Role:** Principal Investigator, model the transit demand resulting from scenarios on capital investment

## Richard DiFrancesco

Associate Professor  
Geography & Planning

**Role:** Build the economic input/output model, analyze investment scenarios and present the results

## Marianne Hatzopoulou

Professor  
Civil & Mineral Engineering

**Role:** Research the impacts of road transport emissions on health and the environment.

## Steven Farber

Associate Professor  
Human Geography  
UTSC

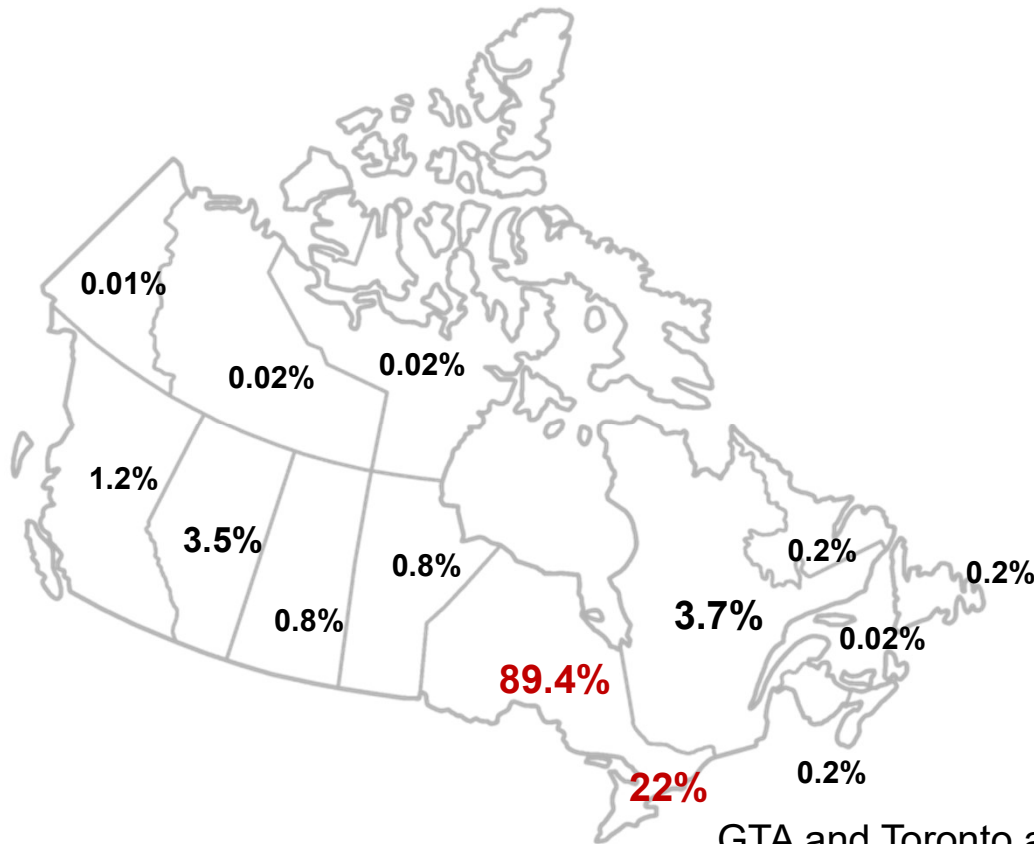
**Role:** Research the social and community benefits.



## Every **\$1** invested in TTC yields approx. **\$7** in benefits

	Operating (Return to 100% Service [2019 Proxy])		Capital (Line 2 Shut Down)		Average Benefit / \$1
	Benefits in \$ (Millions)	Per / \$1	Disbenefits in \$ (Millions)	Per / \$1	
<b>Economic &amp; Regional Development</b>					
GDP (Added Value)	\$17.7	\$0.57	\$415.0	\$1.02	<b>\$0.80</b>
<b>Quality of Life</b>					
Transit Travel Time Savings	\$436.8	\$4.55	\$1,694.4	\$4.16	<b>\$4.36</b>
Auto Operating & Ownership Cost Savings	\$203.2	\$2.12	\$247.2	\$0.61	<b>\$1.36</b>
Auto Travel Time Savings	\$24.0	\$0.25	\$19.2	\$0.05	<b>\$0.15</b>
Road Accident Reductions	\$17.3	\$0.18	\$20.2	\$0.05	<b>\$0.11</b>
Health Outcome Improvements	\$7.4	\$0.08	\$32.5	\$0.08	<b>\$0.08</b>
GHG Reduction	\$2.3	\$0.02	\$7.3	\$0.02	<b>\$0.02</b>
<b>Sub-Total Quality of Life Benefits</b>	<b>\$690.9</b>	<b>\$7.20</b>	<b>\$2,020.8</b>	<b>\$4.97</b>	<b>\$6.08</b>
<b>Total Benefits</b>	<b>\$708.6</b>	<b>\$7.77</b>	<b>\$2,435.8</b>	<b>\$5.99</b>	<b>\$6.88</b>

# Economic Impact of TTC Investment is Canada-Wide



GTA and Toronto amounts estimated based on share of GDP  
Does not include the over 17,000 positions employed to the TTC directly

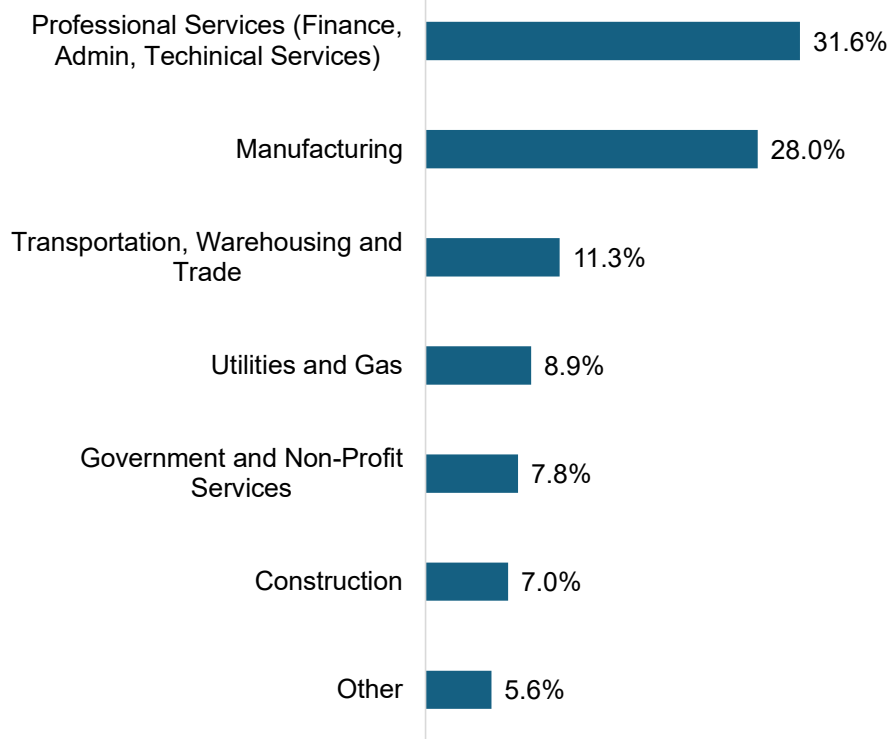
## 2025 TTC Spending (Operating & Capital)

Generates **\$5.0 Billion** in economic activity and creates almost **31,100 jobs** nationally

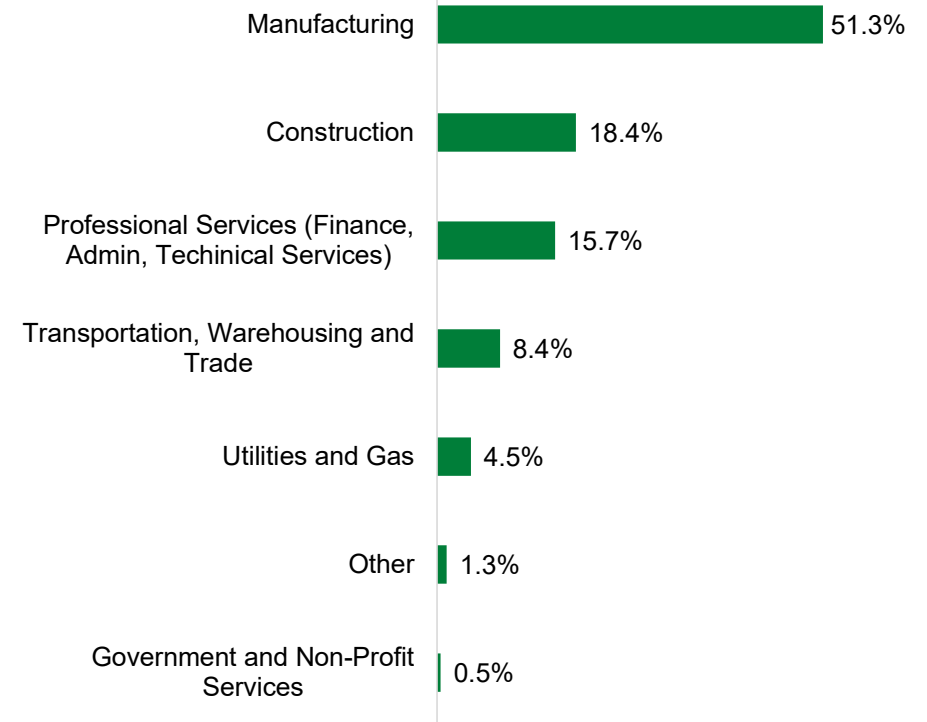
- **89%** accrues in Ontario
  - **\$4.5 billion** in economic output
  - Almost **28,000 jobs**
- **47%** accrues in the GTA
  - **\$2.4 billion** in economic output
  - Almost **15,000 jobs**
- **22%** accrues in the City of Toronto
  - **\$1.1 billion** in economic output
  - Almost **7,000 Jobs**

# Economic Impact by Industry: Canada-Wide

## Operating



## Capital



# Positive Impact of Electrifying the TTC Fleet is Dramatic

## Impact of Increasing Service (2019 Proxy):

**22,700 tonnes**  
Reduction in annual  
GHG emissions

**\$2.3 Million**  
Reduction in  
annual carbon  
costs

**\$7.4 Million**  
Reduction in annual  
health & mortality  
costs

## Consequence of Not Investing (Line 2 Shutdown):

**73,300 tonnes**  
Increase in annual  
GHG emissions

**\$7.3 Million**  
Increase in annual  
carbon costs

**\$33 Million**  
Increase in annual  
health & mortality  
costs

## Impact of Increasing Service (2019 Proxy + Electrification):

**182,400 tonnes**  
Reduction in annual  
GHG emissions

**\$18 Million**  
Reduction in  
annual carbon  
costs

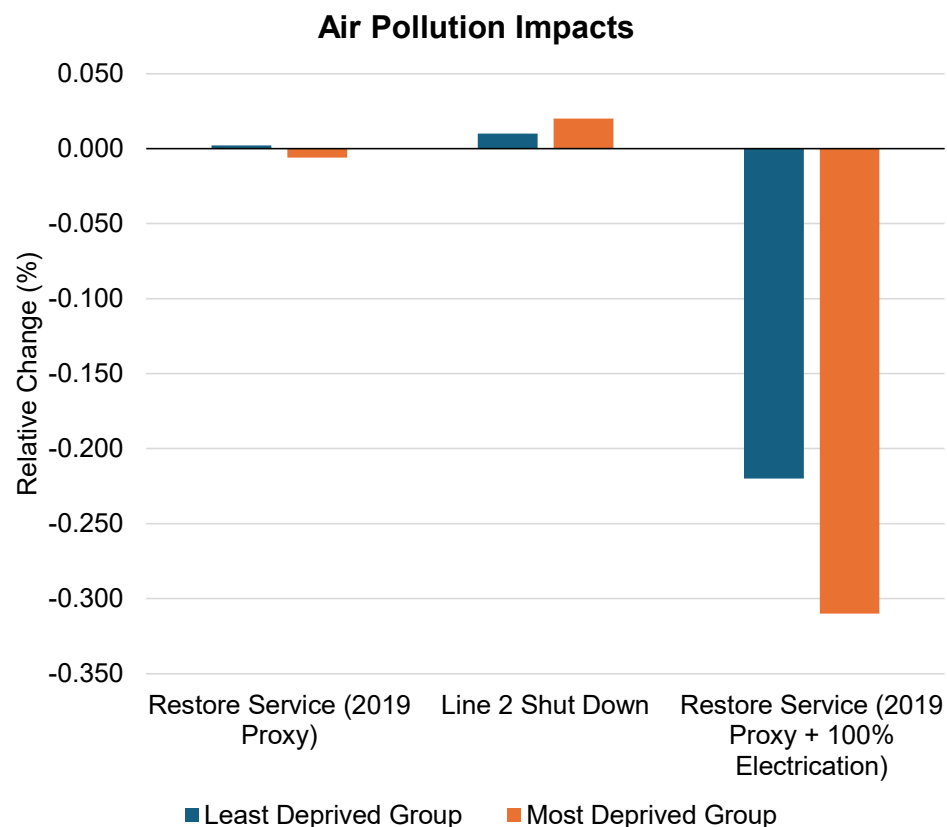
**\$253 Million**  
Reduction in annual  
health & mortality  
costs

# Emissions Have a Larger Impact on Equity-Seeking Groups

TTC investments and disinvestments have a great GHG emissions impact on marginalized groups

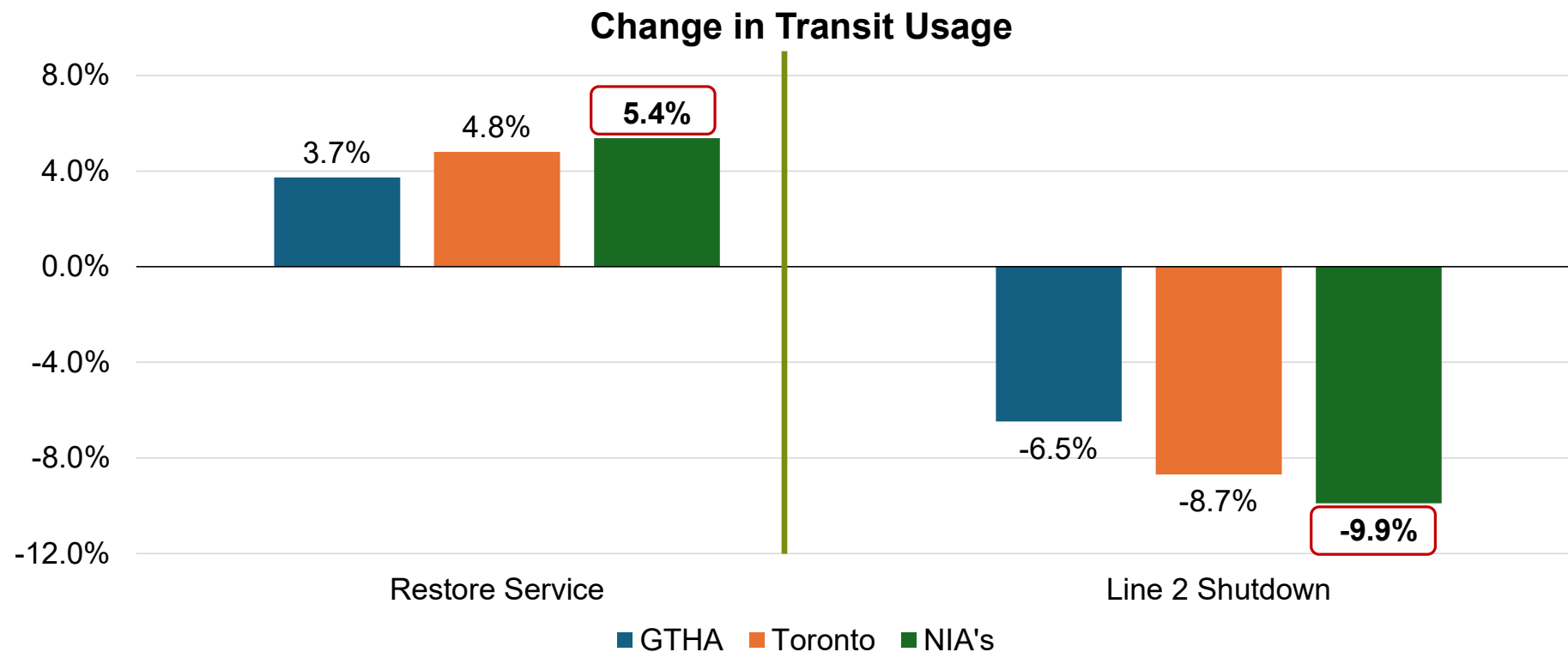
- **Increase to 100% Service:** Most deprived groups see **3 times** the change in air pollution impacts compared to least deprived groups
- **Line 2 Shutdown:** Most deprived groups see **2 times** the change in air pollution impacts compared to least deprived groups
- **Increase to 100% Service + Electrification:** Most deprived groups see **1.4 times** the change in air pollution impacts compared to least deprived groups

“most deprived” and “least deprived” Toronto residents, as defined by the Ontario Marginalization Index for “Material Deprivation”





## Investments / Disinvestments have Larger Impacts on NIAs



# Improving Service Increases Access (double-digit ↑)

## Access to Destinations:

### All Toronto Residents:



10%  
Jobs

31%  
High  
Schools

14%  
Doctor's  
Offices

12%  
Hospitals

12%  
Grocery  
Stores

11%  
Attractions

### All Neighborhood Improvement Area Residents:



15%  
Jobs

19%  
High  
Schools

11%  
Doctor's  
Offices

3%  
Hospitals

30%  
Grocery  
Stores

20%  
Attractions

### Low Income Households:



10%  
Jobs

31%  
High  
Schools

14%  
Doctor's  
Offices

12%  
Hospitals

12%  
Grocery  
Stores

11%  
Attractions

### Recent Immigrants:



7%  
Jobs

41%  
High  
Schools

12%  
Doctor's  
Offices

6%  
Hospitals

6%  
Grocery  
Stores

4%  
Attractions

## **Leveraging the Value of Transit Research**

This research will be leveraged for the following uses:

-  Funding Advocacy and Policy Influence
-  Strategic Planning and Development
-  Service, Capital Planning and Modelling
-  Priority-Setting and Decision-Making
-  Stakeholder Education and Engagement

# Key Messages

Every **\$1** invested in TTC services and capital works yields approx. **\$7** in benefits

The TTC has a **tremendous economic impact** on the City of Toronto, the Province of Ontario and Canada

Transit is an auto-driver's "**best friend**"

Auto usage and ownership cost savings are **\$211.8 million annually**

2025 TTC budgets generate **\$5.0 Billion in economic activity** and creates almost **31,100 jobs nationally**

When service is increased transit and auto users experience **\$423 million and 29 million hours** in annual travel time savings

The positive impact of electrifying the TTC bus fleet is very dramatic; reducing health and mortality costs by **\$253 million annually**

Increasing service significantly **improves access to destinations** (double digit increases)

Service Improvements offer **tremendous benefits to equity-seeking groups.**

The negative impacts of service cuts disproportionately impact those same people.

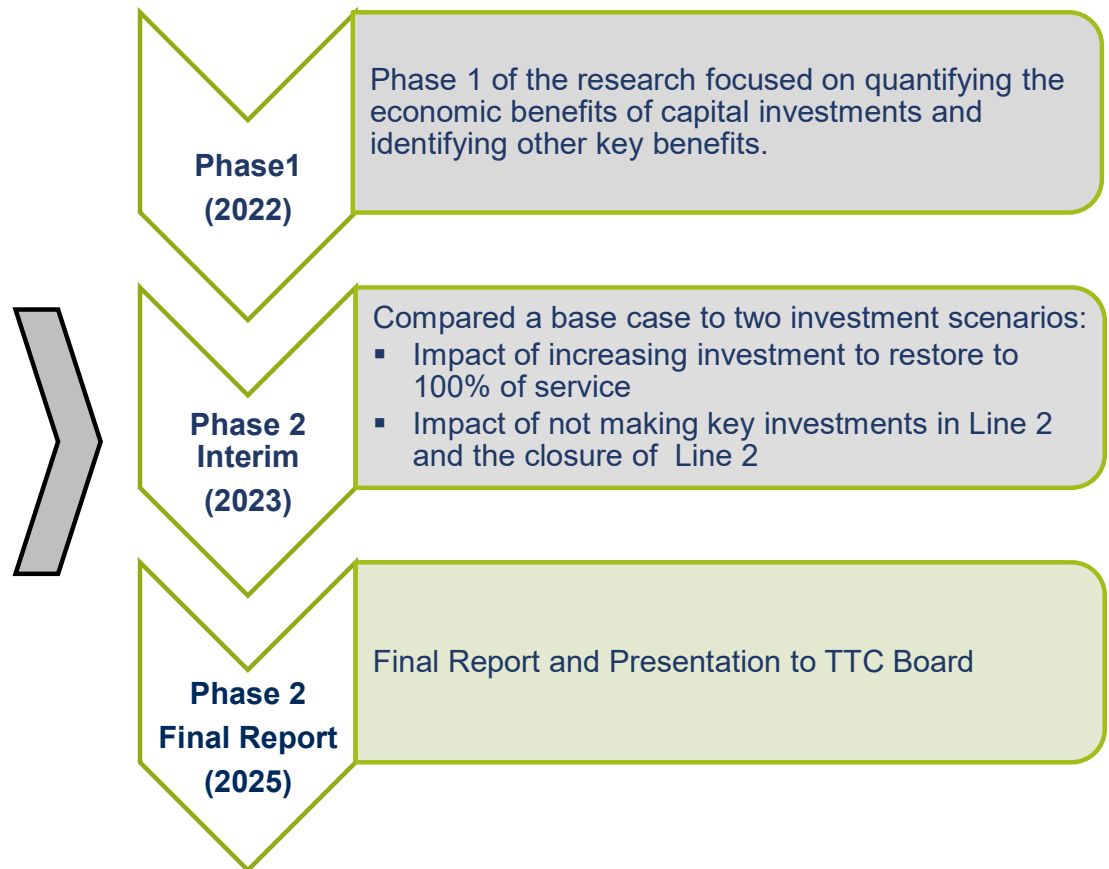
# Thank You! Questions?

# APPENDIX



# Project Background: Benefits of Transit Investment

In 2022, the TTC partnered with the University of Toronto to identify and quantify the economic and other key benefits resulting from investment in transit and the TTC

- Economic benefits realized from investments in transit services and capital works that enhance TTC's existing transit network
- Economic impact of the TTC on the local, regional, provincial and national economy
- Qualitative and quantitative social, equity, health and environmental benefits and the economic spin off benefits derived from these other benefits
- Impacts should the necessary service and capital investments not be made in the TTC



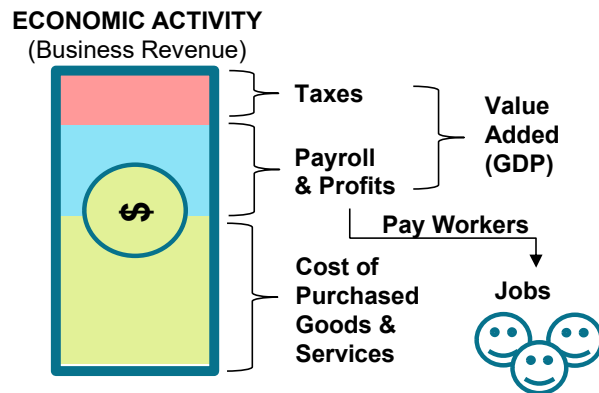
# Research Outcomes and Metrics

Outcome	Benefits	Performance Metrics	Measures
 <b>Economic and Regional Development</b>	Economic Impact and Job Creation	Gross Output	\$
		Value Added	\$
		Job Output	# of Jobs
	Connecting Commuters to Jobs	Travel time for commuters on transit	hours saved and \$
		Number of jobs within access distance of transit	# of Jobs
	Supporting Innovation and Prosperity	Level of connectivity between major employment hubs, academic institutions, and other centers of innovation	Access scores
 <b>Quality of Life</b>	Transit Rider Benefits	Cost Savings associated with Mode Shift to Public Transit	\$ and Mode Shift %
		Cost Savings from Reduction in Auto Ownership	\$
		Travel Time Reductions and Associated Cost Savings	hours saved and \$'s
	Healthier Communities	Road Safety due to reduced vehicles on the road	\$
		Public health benefit due to reduced emissions and air contaminants	\$ and # of cases
	Access to Destinations	Access Scores to Jobs	access scores
		Access Scores to Services	access scores
		Access Scores to Destinations (School, Shopping, Amenties, Recreation)	accees scores
<b>Environmental Sustainability</b>	Reduced Emissions	GHG/Emissions Reduction due to electrification of TTC's fleet	GHG (Tonnes) and \$
	Energy Use and Efficiency	Reduction in auto vehicle trips (reduced GHG/Emission due to mode shift to public transit)	GHG (Tonnes) and \$



# Modelling the Benefits of Transit

## Economic Benefits



- Input /output economic model
- Outputs
  - Economic Activity
  - GDP
  - Jobs
- Scenarios tested (2023 & 2024):
  - Operating Budget
  - Capital Budgets & 10-Year Plan
  - 15 Year Capital Plan

## Transit Rider, Environmental, Public Health & Social Benefits



- Activity-based travel demand forecasting model
- Detailed representation of TTC transit services
- Outputs:
  - Trips and Mode share
  - Travel times and costs
  - GHG and other emissions outputs
  - Health impacts
  - Access scores
  - GTHA – Toronto – NIA views
- Scenarios tested:
  - Base case: 2023 Service Plan (May at 91% of 2019)
  - Increase service: Restore to 100% using 2019 as a proxy
  - Impact of not investing: Line 2 shut down
  - 2024 Service Plan

# Economic Benefits of Operating & Capital Investment

## Operating

**\$0.57**

Additional **GDP** for every dollar invested (Value Added)

**\$1.14**

Additional **economic output** for every dollar invested (Gross Output)

**9**

**New jobs** for every \$1 million dollars invested

## Capital

**\$1.02**

Additional **GDP** for every dollar invested (Value Added)

**\$2.48**

Additional **economic output** for every dollar invested (Gross Output)

**15**

**New jobs** for every \$1 million dollars invested

## Canada-wide benefits:

	Investment	GDP		Economic Activity		Jobs Output	
	\$ Billions	\$ Billions	Output / \$1	\$ Billions	Output / \$1	Jobs	Jobs / \$1 million
<b>Operating*</b>							
2023	\$0.6	\$0.4	0.61	\$0.8	1.21	5,553	9
2024	\$0.8	\$0.4	0.54	\$0.8	1.08	5,992	8
<b>Average</b>	<b>\$0.7</b>	<b>\$0.4</b>	<b>0.57</b>	<b>\$0.8</b>	<b>1.14</b>	<b>5,773</b>	<b>9</b>
<b>Capital Budget</b>							
2023	\$1.5	\$1.5	1.02	\$3.7	2.55	21,375	15
2024	\$1.4	\$1.4	1.01	\$3.5	2.55	19,927	15
<b>Average</b>	<b>\$1.4</b>	<b>\$1.4</b>	<b>1.02</b>	<b>\$3.6</b>	<b>2.55</b>	<b>20,651</b>	<b>15</b>
<b>10-Year Capital Plan</b>							
2023-2032	\$12.9	\$13.1	1.02	\$31.8	2.46	189,002	15
2024-2033	\$12.4	\$12.6	1.01	\$30.4	2.45	180,872	15
<b>Average</b>	<b>\$12.7</b>	<b>\$12.8</b>	<b>1.01</b>	<b>\$31.1</b>	<b>2.45</b>	<b>184,937</b>	<b>15</b>
<b>15-Year Capital Plan</b>							
2023-2032	\$38.1	\$38.9	1.02	\$93.0	2.44	559,836	15
2024-2033	\$47.9	\$48.9	1.02	\$118.3	2.47	705,315	15
<b>Average</b>	<b>\$43.0</b>	<b>\$43.9</b>	<b>1.02</b>	<b>\$105.7</b>	<b>2.46</b>	<b>632,576</b>	<b>15</b>
<b>Unfunded 15 Year Capital Plan</b>							
2023-2032	\$25.7	\$26.3	1.02	\$62.6	2.43	378,964	15
2024-2033	\$35.5	\$36.3	1.03	\$87.9	2.48	524,443	15
<b>Average</b>	<b>\$30.6</b>	<b>\$31.3</b>	<b>1.02</b>	<b>\$75.3</b>	<b>2.46</b>	<b>451,704</b>	<b>15</b>
<b>Capital Average</b>	<b>\$21.9</b>	<b>\$22.4</b>	<b>1.02</b>	<b>\$53.9</b>	<b>2.48</b>	<b>322,467</b>	<b>15</b>

\*Operating spending only includes non-labor expenditures

# Est. Benefits of the 2025 Operating Budget & Capital Plan

## 2025 Benefits (Op & Cap)

**\$2.1 Billion**

In additional GDP

**\$5.0 Billion**

In economic output

**31,800**

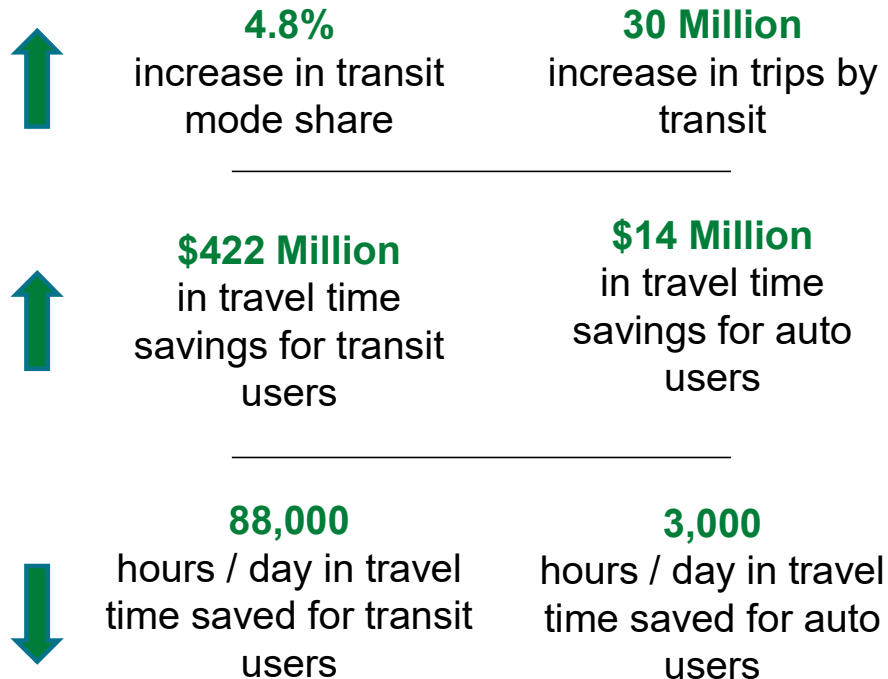
New jobs

## Canada-wide benefits:

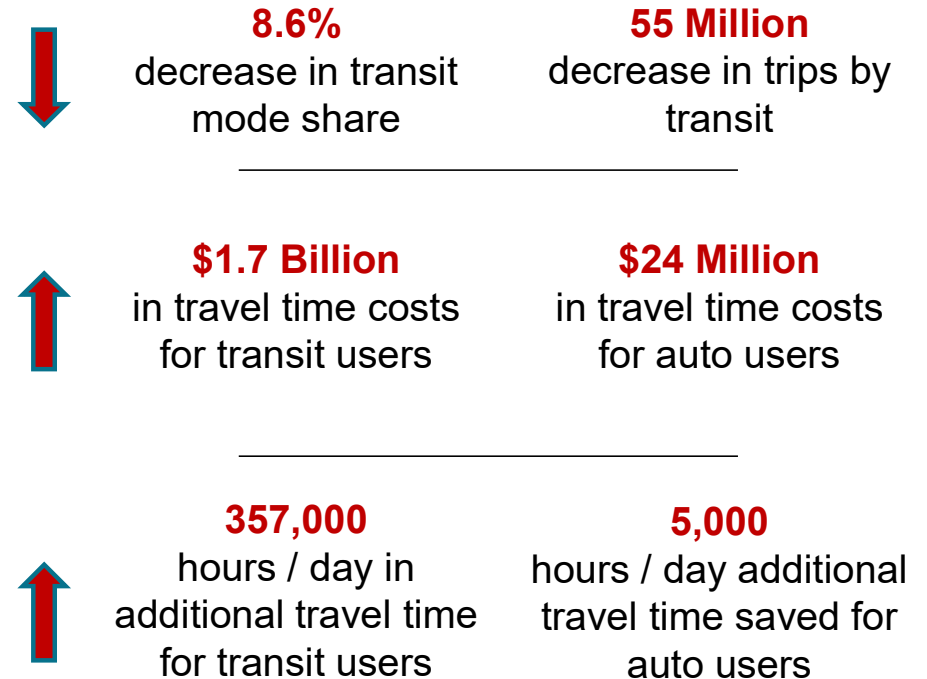
2025 Operating Budget (Non- labor only)	2025 Capital Budget	2025 10-Year Capital Budget & Plan	Unfunded Priorities (15 Year Time Horizon)	Fully Funding 15- Year Capital Investment Plan
<b>\$0.4 Billion</b> in GDP	<b>\$1.7 Billion</b> in GDP	<b>\$16.7 Billion</b> in GDP	<b>\$37.7 Billion</b> in GDP	<b>\$54.4 Billion</b> in GDP
<b>\$0.8 Billion</b> in Economic Output	<b>\$4.2 Billion</b> in Economic Output	<b>\$40.1 Billion</b> in Economic Output	<b>\$91.7 Billion</b> in Economic Output	<b>\$132.3 Billion</b> in Economic Output
<b>6,500 Jobs</b>	<b>25,300 Jobs</b>	<b>133,300 Jobs</b> over 10 Years	<b>543,000 Jobs</b> over 15 years	<b>784,000 Jobs</b> over 15 Years

# Transit & Auto User Benefits: Toronto-Wide

## Impact of Increasing Service (2019 Proxy):






## Consequence of Not Investing (Line 2 Shutdown):


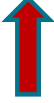



# Transit & Auto User Benefits: Impact to NIA's

## Impact of Increasing Service (2019 Proxy):

	<b>5.3%</b> increase in transit mode share	<b>12 Million</b> increase in trips by transit	<b>40%</b> of total increase
	<b>\$82 Million</b> in travel time savings for transit users	<b>\$5 Million</b> in travel time savings for auto users	<b>20%</b> of total savings
	<b>17,000</b> hours / day in travel time saved for transit users	<b>1,000</b> hours / day in travel time saved for auto users	

## Consequence of Not Investing (Line 2 Shutdown):

	<b>9.8%</b> decrease in transit mode share	<b>22 Million</b> decrease in trips by transit	<b>41%</b> of total decrease
	<b>\$595 Million</b> in travel time costs for transit users	<b>\$10 Million</b> in travel time costs for auto users	<b>35%</b> of total costs
	<b>124,000</b> hours / day in additional travel time for transit users	<b>2,000</b> hours / day additional travel time saved for auto users	

# Auto Operating and Ownership Costs

## Impact of Increasing Service (2019 Proxy):



**14,400**

Reduction in household vehicles



**\$16 Million**

Reduction in annual operating costs



**\$101 Million**

Reduction in annual parking costs



**\$86 Million**

Reduction in vehicle ownership costs



**\$17 Million**

Reduction in annual accident costs

## Consequence of Not Investing (Line 2 Shutdown):

**19,600**

Increase in household vehicles

**\$19 Million**

Increase in annual operating costs

**\$111 Million**

Increase in annual parking costs

**\$247 Million**

Increase in vehicle ownership costs

**\$20 Million**

Increase in annual accident costs

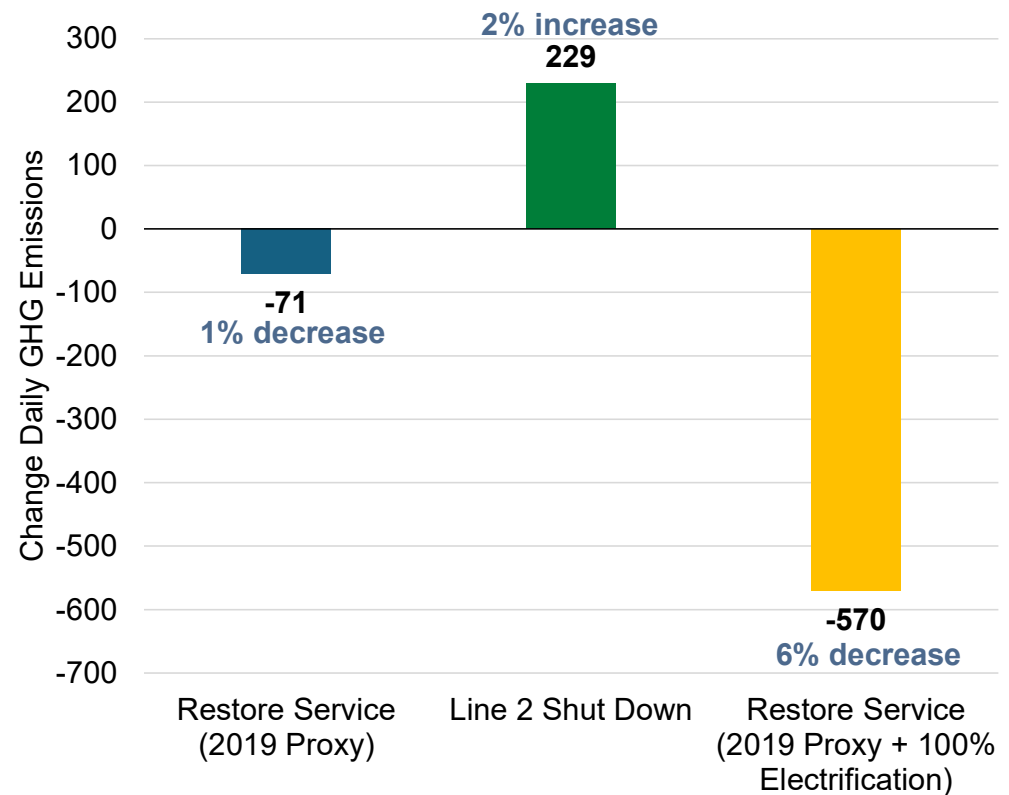
# TTC's Impact of City's GHG Emissions

This study estimates a base case level of GHG emissions for Bus and Auto at **9,255 tonnes** of daily GHG emissions

The base case was compared against the following scenarios:

- A return to full service (2019 used a proxy)
- The closure of Line 2
- A return to full service with the assumption of a 100% electrified fleet

Change in Daily Auto and Bus GHG Emissions



Base case – 2023 Service Plan (91% of 2019)

## Line 2 Shutdown Decreases Access to All Groups

### Access to Destinations:

#### All Toronto Residents:



**-17%**

Jobs

**-9%**

High  
Schools

**-14%**

Doctor's  
Offices

**-5%**

Hospitals

**-5%**

Grocery  
Stores

**-15%**

Attractions

#### All Neighborhood Improvement Area Residents:



**-16%**

Jobs

**-13%**

High  
Schools

**-7%**

Doctor's  
Offices

**-1%**

Hospitals

**-2%**

Grocery  
Stores

**-21%**

Attractions

#### Low Income Households:



**-17%**

Jobs

**-9%**

High  
Schools

**-14%**

Doctor's  
Offices

**-5%**

Hospitals

**-5%**

Grocery  
Stores

**-15%**

Attractions

#### Recent Immigrants:



**-11%**

Jobs

**-9%**

High  
Schools

**-10%**

Doctor's  
Offices

**-2%**

Hospitals

**-2%**

Grocery  
Stores

**-9%**

Attractions



# Future Enhancements to UofT Research

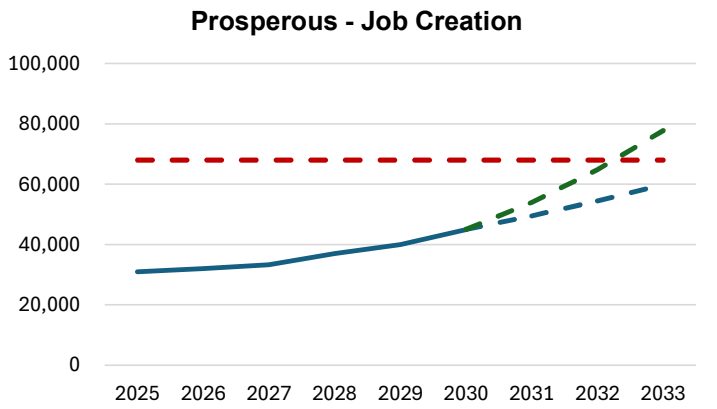
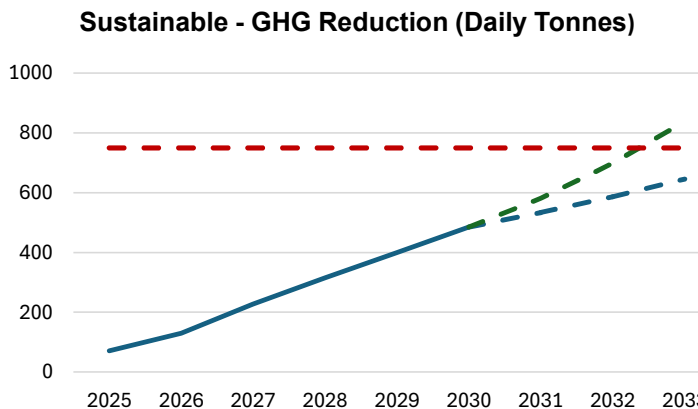
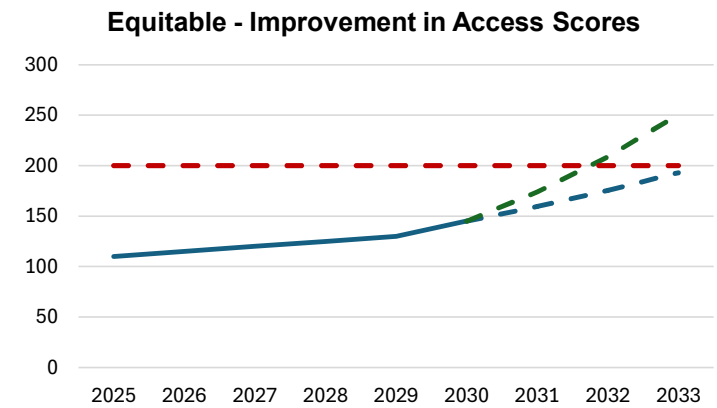
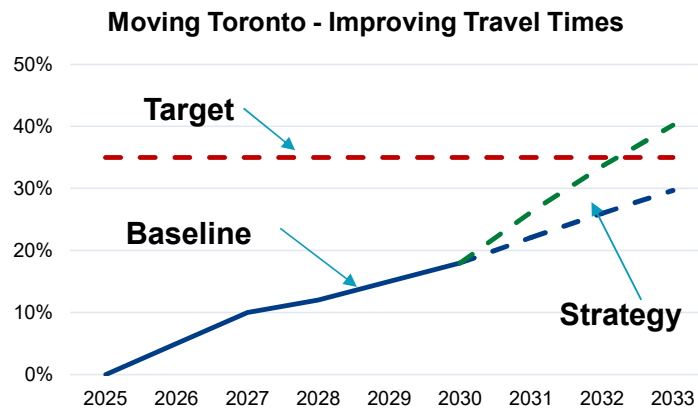
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- **Update Model System & Automate Metric Generation:**
  - Incorporate post-pandemic data from the 2022 Transportation Tomorrow Survey
  - Improve accuracy in predicting rider preferences across transit and non-transit modes
  - Increase precision in evaluating service changes and their impacts
  - Enable detailed, real-time outputs for service planning, budget forecasting, and long-term strategy
- **Build In-House Capacity:** Train TTC staff to use the model for ongoing service and policy analysis
- **Incorporate Housing Data:** Link transit demand forecasts with evolving land use and housing patterns
- **Model Emerging Mobility Policies:** Integrate ride-share and cycling policies to assess their impact
- **Advance Mode Share Modelling:** Improve understanding of how travelers shift between modes over time
- **Expand Economic Research:**
  - Evaluate TTC as a “propulsive firm” driving innovation and economic growth in the GTA and Ontario
  - Explore how investments can build domestic electric vehicle and transit supply chains
  - Model economic impacts of tariffs and green industry investment

# How Model can be Operationalized

- **Run model annually** using service plan and budget
- Track measures to **establish baseline**
- Set outcome **targets**
- **Develop strategies** to achieve outcomes and improve quality of life
- **Monitor results**

## Moving Toronto towards a more equitable, sustainable and prosperous future



# Research Supports Top Tier of Strategic Planning Framework

## Strategic Planning Framework

