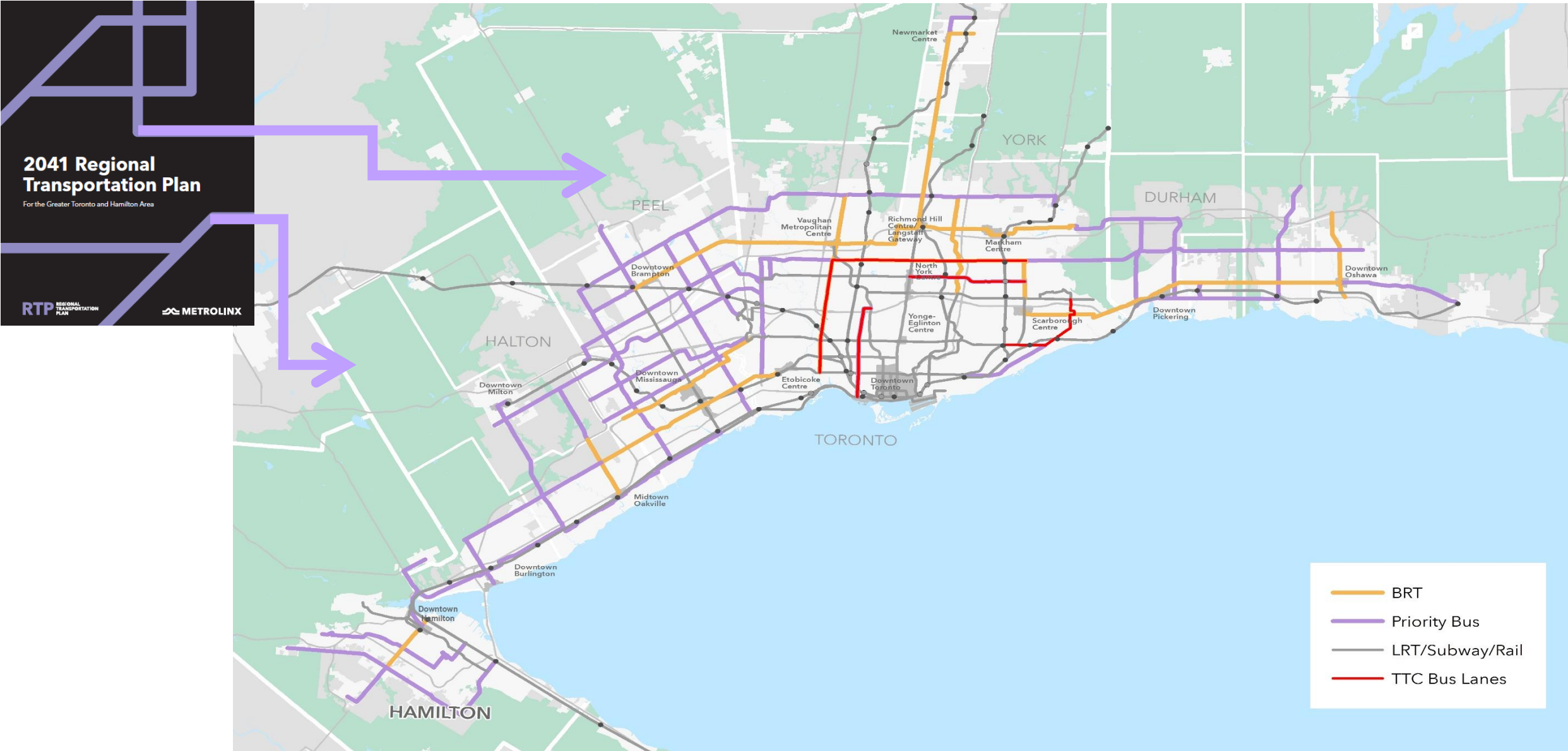


# Queen St-Hwy 7 BRT Initial Business Case Briefing

December 15, 2020

# BRT AS PART OF THE TOTAL TRANSIT SYSTEM



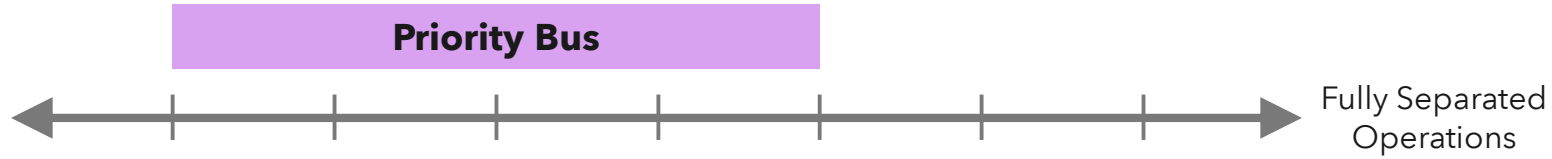
## **BRT/BUS PRIORITY AS PART OF THE FRTN**

- Multi Jurisdictional corridors connecting municipalities and Municipal Service Providers (MSP) to regional destinations, GO Stations, LRT and subways;
- Planned in partnership with municipalities, and MSPs as the operators of services and owners of the Right of Way (ROW);
- Supports an adaptable transportation network : Investment in BRT corridors will provide much need through transit capacity that can be scaled and grown overtime to meet demand resulting from new urban development;
- Delivery options to be explored for future, potential delivery of the BRT project.

# PRIORITY BUS TO BRT SPECTRUM






Mixed Traffic Operations








Fully Separated Operations




## Priority Bus Features

-  Shared HOV and bus lanes
-  Aligned to curb
-  Queue jump lanes

## Shared Features

-  Transit signal priority
-  Off-board fare collection
-  All door boarding
-  High quality stations
-  All-day frequent service

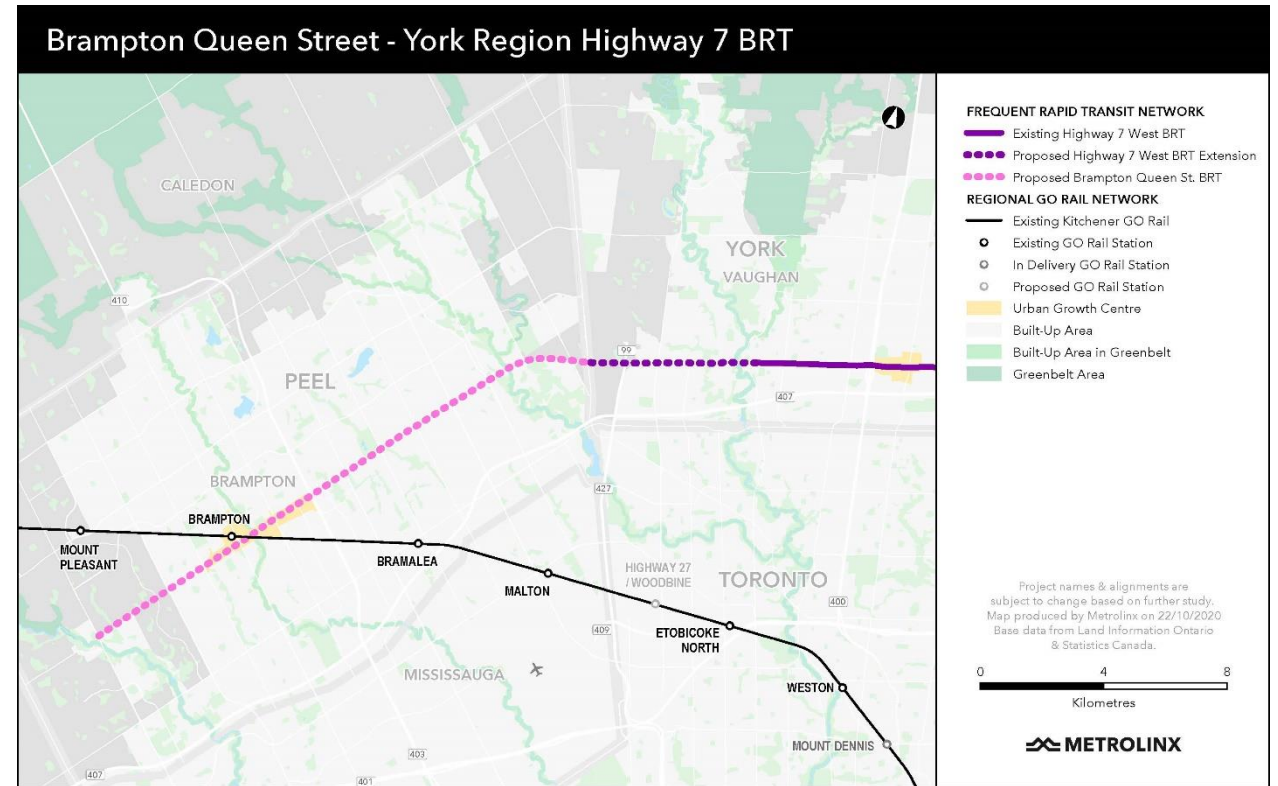
## BRT Features

-  Dedicated bus lanes
-  Median busway
-  Platform-level boarding
  - Grade Separation

*These are some examples of Priority Bus & BRT features, there are many other transit features that make up BRT.*

# OVERVIEW

- Brampton-York BRT is a 24-km bus rapid transit line from the current YRT Viva infrastructure terminus at Helen Street in York Region to Mississauga Road in Brampton
- Centre-median BRT is proposed along the 24-km line, with two configuration options being considered:
  1. Conversion of one general purpose traffic lane in each direction
  2. Addition of a transit lane in each direction through road widening (with lane conversion through Downtown Brampton)
- Proposing infrastructure and service integration between Brampton and York, extending the frequent rapid transit network through York Region and Brampton. Project will integrate with the existing Viva network along Highway 7.
- Key issues/needs include decision on whether to widen the road or convert general purpose traffic lanes into transit lanes and ensuring integration between Brampton and York Region services



# KEY PROJECT BENEFITS



**9.5**

Minutes Saved  
Per Rider

## Transportation

Extending the GTHA's frequent rapid transit network through the Queen St-Highway 7 Corridor, providing increased transportation choices and connecting key destinations



**37%**

Increase in Ridership

## Quality of Life

Shaping growth, improving public health, environmental health and air quality, safety and connectivity and encouraging active transportation.



**2,000-  
2,400**

Millions of Dollars of  
Economic Benefits

## Economic and Regional Development

Connecting commuters to jobs, catalyzing urban land development, and supporting innovation and prosperity by connecting major employment hubs, academic institutions, and centres of innovation.



**2.6-3.3**

Benefit to Cost  
Ratio

## Environmental Sustainability

Improved energy use and efficiency through lower vehicle kilometres travelled (VKT) by increased ridership, lower auto use, and supporting car-free forms of development and lifestyles.

# OPTIONS ANALYZED IN THE INITIAL BUSINESS CASE

- The IBC evaluated service plans and infrastructure options separately. From the evaluation the recommended service is a single main BRT trunk route plus additional feeder priority routes.

**Scenario 4: Centre-Median BRT with Lane Conversion\*** – Proposes the conversion of a traffic lane per direction to median BRT exclusive lanes along the corridor, including Downtown Brampton (curbside BRT instead of centre-median at pinch-point).

This option reduces the number of traffic lanes along the length of the corridor by one per direction, impacting general traffic but having much lower property and construction costs

**Scenario 5: Centre-Median BRT with Lane Addition\*** – Proposes one median BRT exclusive lane per direction along the length of the corridor as a result of road widening everywhere except Downtown Brampton (Queen Street between McMurphy Avenue and Kennedy Road). Through Downtown Brampton lane conversion is proposed.

This option widens the road through the majority of the corridor, providing the service without impacting general traffic.

**Scenario 6: Hybrid Alternative Including Centre-Median BRT (Lane Addition) and Mixed Traffic** – Proposes one BRT exclusive lane per direction except for segments in constrained zones (ex. Downtown Brampton and rail/highway crossings) and segments showing impacted capacity due to traffic lane conversion. Mixed traffic solutions would be implemented in the exceptions.



Sample road cross-section in-between Dixie Road and Highway 410 for Scenario 4 and Scenario 5

\*Scenario 4 and Scenario 5 will be evaluated and refined in the Preliminary Design Business Case

# INITIAL BUSINESS CASE SUMMARY

QUEEN ST - HWY 7 BRT	OPTION 4 - LANE CONVERSION, CURBSIDE LANE AT PINCHPOINT	OPTION 5 - ROAD WIDENING, LANE CONVERSION AT PINCHPOINT	OPTION 6 - ROAD WIDENING, MIXED TRAFFIC AT PINCHPOINT
<b>Strategic Case</b>			
<b>Transit Ridership</b>	18,813 total ridership in the AM peak hour	18,734 total ridership in the AM peak hour	15,110 total ridership in the AM peak hour
<b>Transit User Experience</b>	10 minute travel time reduction*	9 minute travel time reduction*	7 minute travel time reduction*
<b>Mobility Choices</b>	4% higher transit mode share (6.9 to 7.1%)	5% higher transit mode share (6.9 to 7.2%)	3% higher transit mode share (6.9 to 7.1%)
<b>Environmental Quality and Safety</b>	Most considerable improvement	Considerable improvement	Least considerable improvement
<b>Overall Strategic Benefit</b>	Greatest improvements in additional transportation choices, sustainable growth, emission reduction and connectivity	Greatest improvements in additional transportation choices, sustainable growth, emission reduction and connectivity	Noticeable improvements in additional transportation choices, sustainable growth, emission reduction and connectivity
<b>Economic Case</b>			
<b>Total Benefits(\$2020, NPV)</b>	\$1.96 billion	\$2.42 billion	\$1.63 billion
<b>Total Cost (\$2020, NPV)</b>	\$585 million	\$936 million	\$582 million
<b>Capital Cost (\$2020, NPV)</b>	\$95 million	\$490 million	\$151 million
<b>Benefit-Cost Ratio</b>	3.3	2.6	2.8
<b>Net Present Value</b>	\$1.37 billion	\$1.48 billion	\$1.05 billion
<b>Financial Case</b>			
<b>Total Project Costs (\$2019, NPV)</b>	\$595 million	\$946 million	\$590 million
<b>Net Present Value (\$2019, NPV)</b>	-\$381 million	-\$701 million	-\$418 million
<b>Deliverability and Operations Case</b>			
<b>Summary</b>	Minimal physical constraints during construction process	Considerably high amount of reconstruction of constrained segments	Least amount of reconstruction of constrained segments, but mixed traffic operations heightens operational risks

\*Average travel time saving between major origin-destination pairs compared to the BAU.



# STATUS AND NEXT STEPS

## NEXT STEPS

### Status Update

- IBC draft is complete, final version will be published in December 2020
- The IBC results showed significant benefits, including travel time savings, increased transit ridership, and shaping growth
- Work ongoing developing PDBC scope and governance agreements with all stakeholders

### Upcoming Milestones

- Confirm PDBC scope of work and release tender to market for contract to complete PDBC - Late 2020/Early 2021



# BRT INFRASTRUCTURE IN THE GTHA

## Median Busway



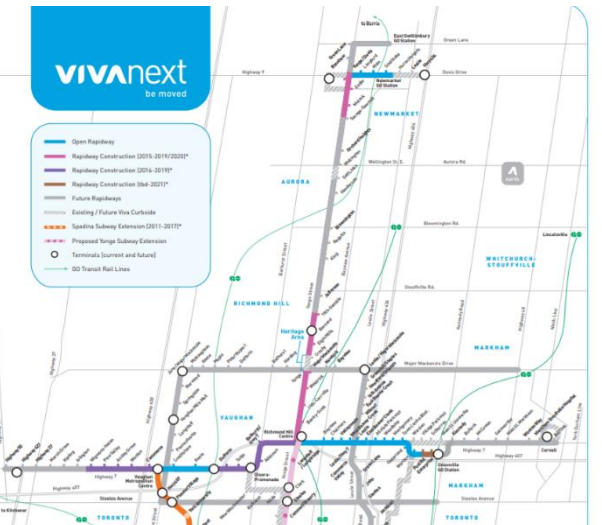
## Curbside Bus Lane



## Priority Bus

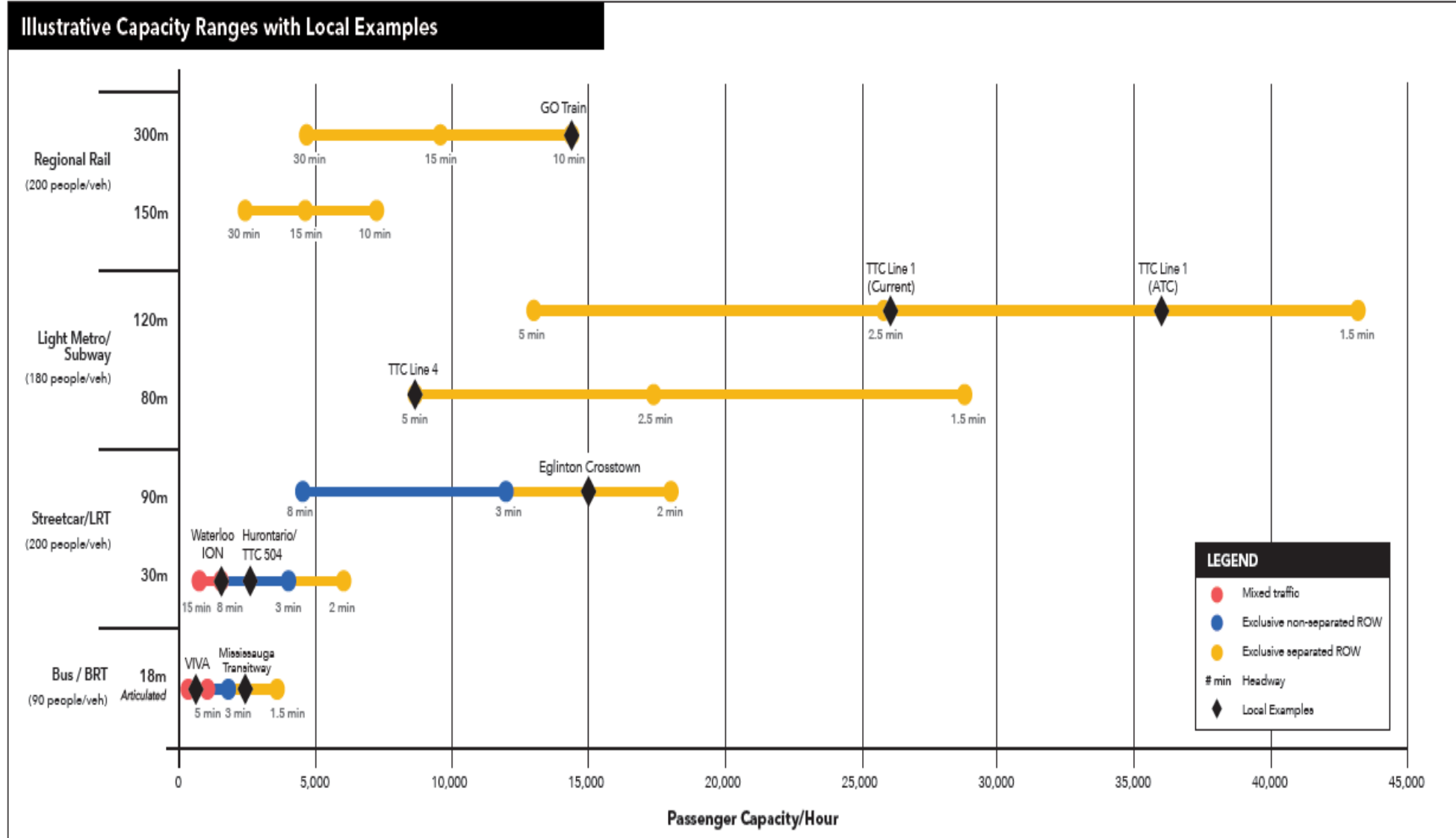


## Branded Services/BRT Lite



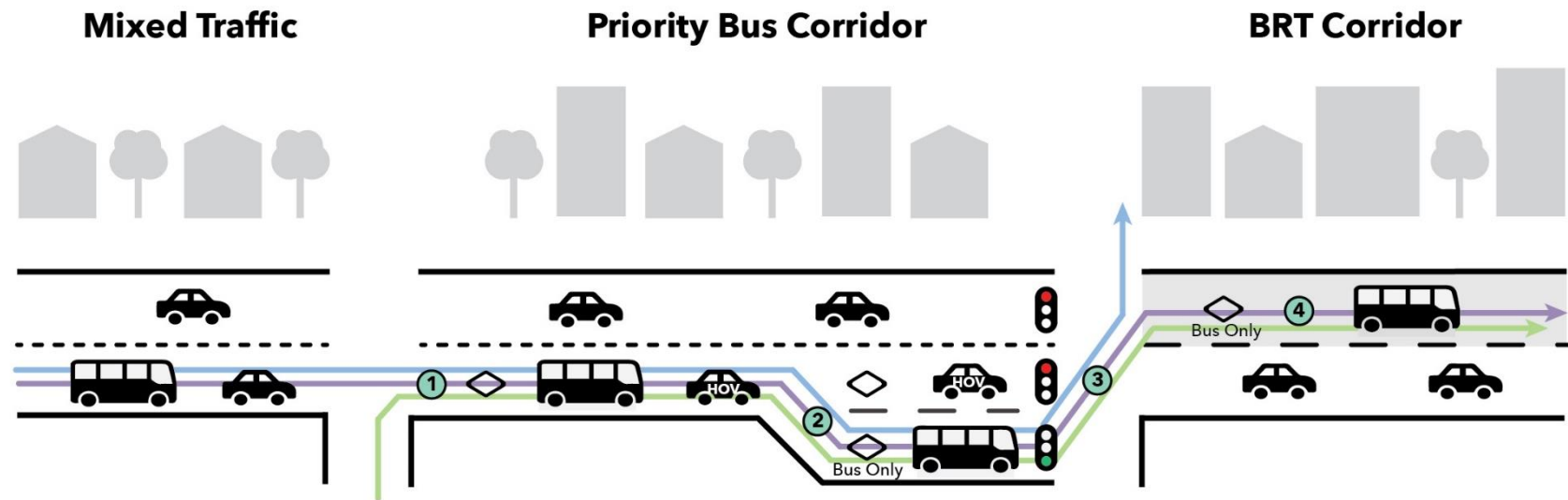
# CAPACITY OF TRANSIT TECHNOLOGIES

- BRT capacity approx 5,000 pph
- From the findings of the RTP 2041 and FRTN work -BRT is the best option for 905 communities and corridors to connect with TTC subway and GO Rail/Bus
- RTP 2041 and FRTN work findings show BRT and bus priority are the best options to deliver the objectives of the 2041 RTP and implementation of the FRTN



# WHY BRT?

- A cost effective approach to develop ridership over time and support cross border travel as services are adjusted to meet demand
- BRT can be designed to be converted to LRT when demand warrants
- Flexibility for multiple bus routes and service providers to use the infrastructure which increases project benefits
- Leverage existing Municipal Service Providers increasing fare integration and regional travel options
- Increases in ridership, faster travel times and encourages development (e.g. Viva, Dundas Corridor, Durham-Scarborough BRT)



Some measures that can be used to improve speed and reliability of transit in priority corridors:

- ① Shared bus and HOV lane
- ② Queue jump lane for buses
- ③ Transit Signal Priority
- ④ Dedicated bus lane

Multiple bus routes can share Priority Bus and BRT corridors, and operate in mixed traffic, without the need to transfer.