



METROLINX



**Dundas, Durham-Scarborough,
Hurontario-Main and GO Stouffville
Benefits Case Analyses (BCA)**

What is a Benefits Case Analysis?

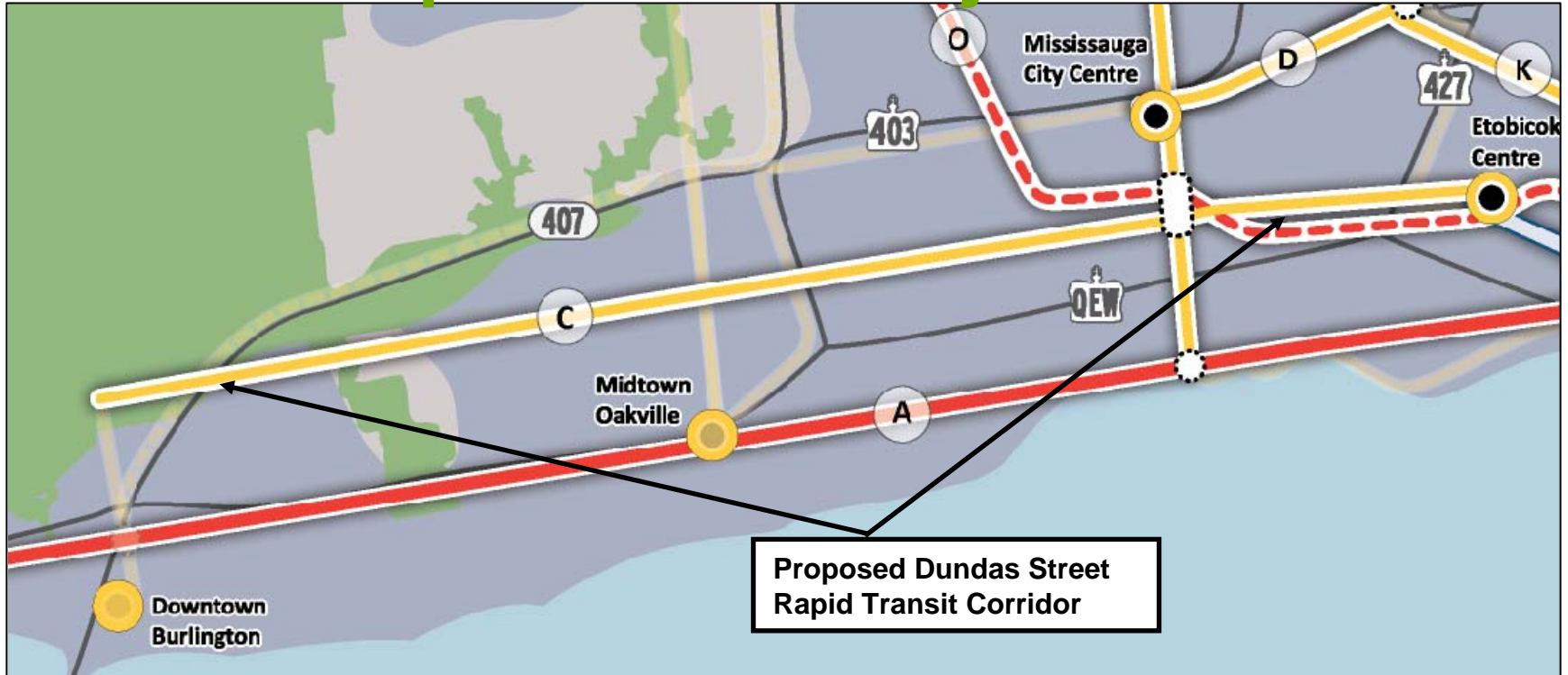
- Multiple Account Evaluation (MAE) used to assess project performance
 - Accounts evaluated are:
 - Transportation user benefits
 - Financial impacts
 - Environmental impacts
 - Economic development impacts
 - Social community impacts
- Traditional transportation cost-benefit accounts
- Metrolinx “3-pillar” accounts
- Measure incremental costs and benefits in each account versus the “Base Case”
 - Base Case is usually current service plus network projects/improvements with funding commitments

Recap: BCAs for Top 15 Priority Projects

- November 2008 – Metrolinx Board approves *The Big Move* and requests BCAs for all remaining unfunded Top 15 Priority Projects
- Dundas, Hurontario/Main, Durham-Scarborough, and GO Stouffville BCAs are the final “Top 15” BCAs presented to Metrolinx Board
- BCAs inform decision-makers on the merits of major transit projects, consistent with the triple-bottom line goals and objectives of *The Big Move*
 - Provides key input to Metrolinx project prioritization process currently under development

Dundas, Durham-Scarborough, Hurontario-Main and GO Stouffville BCAs

Dundas Rapid Transit Project Overview



- Envisioned to provide higher order rapid transit service from Kipling Station in Toronto to Brant Street in Burlington
- BCA examines both LRT and BRT technologies along the 37 km corridor
- Connects the Kipling, Mississauga City Centre and Oakville mobility hubs
- Halton Region has completed a complementary rapid transit study
 - Dundas Street is one segment of a larger Halton rapid transit network

Dundas BCA Options

Today:

- TTC, Mississauga, Oakville and Burlington Transit operate in the study area
- Combination of local and express bus service operating on brief segments of the corridor
- Peak-period HOV lanes on Kipling-Hurontario segment
- Six-lane road widening program on Halton segment



Dundas, Durham-Scarborough, Hurontario-Main and GO Stouffville BCAs

Dundas BCA Results

	Option 1: BRT Light	Option 2: BRT West to Hurontario	Option 3: LRT West to Hurontario	Option 4: Full BRT
Total Capital Cost (Current \$)	\$225 M	\$291 M	\$648 M	\$505 M
Total Capital & Incremental Operating Cost (PV)	\$222 M	\$273 M	\$554 M	\$466 M
Transportation User Benefit (PV)	\$373 M	\$432 M	\$499 M	\$772 M
Benefit : Cost Ratio	1.7	1.6	0.9	1.7
Emissions reduction (PV)	\$2.8 M	\$3.3 M	\$3.9 M	\$5.2 M
Development Potential (PV)	\$47 – 99 M	\$292 – 610 M	\$422 – 837 M	\$472 – 989 M
Jobs during Construction (person years)	914	1,812	4,271	3,819
Jobs long-term (person years)	42	100	55	144

Dundas, Durham-Scarborough, Hurontario-Main and GO Stouffville BCAs

Dundas Considerations

- All BRT options generate very strong benefit-cost ratios
- BRT technology advantage: allows for flexible implementation phase-in
- Current road widening of Dundas Street provides an opportunity to simultaneously build rapid transit infrastructure in Halton Region, using 2008 Quick-Win provincial funding
- Need for a Dundas rapid transit “service strategy”
 - Service delivery, governance, fare policy and operating subsidy coordination/integration issues across four transit jurisdictions
 - North-south “branch routes” in Halton and Mississauga seen as integral to the system

Durham-Scarborough Project Overview



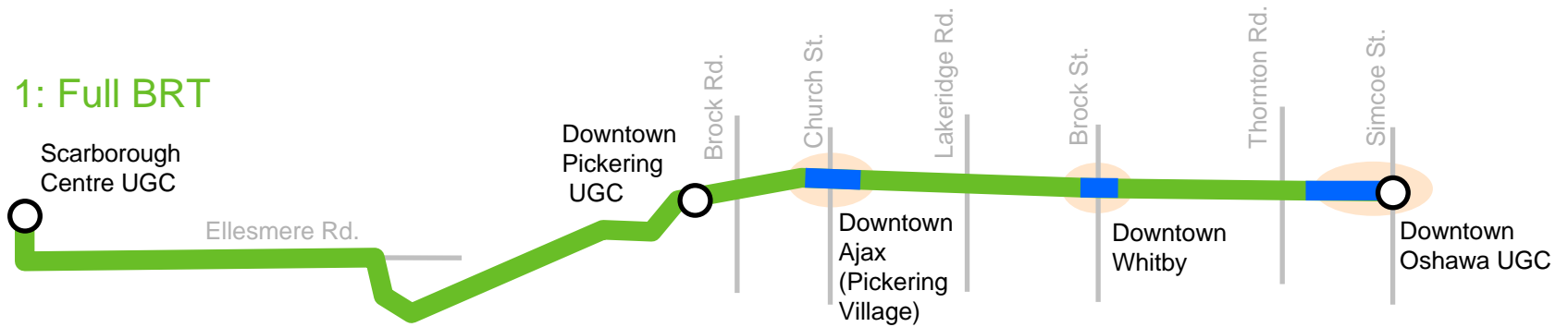
- Connects Urban Growth Centres in Downtown Oshawa, Downtown Pickering and Scarborough Centre
 - Other key destinations: University of Toronto Scarborough Campus, Centenary Health Centre, Downtown Ajax and Whitby
- Provides Durham and Scarborough with direct access to TTC rapid transit network at Scarborough Centre

Dundas, Durham-Scarborough, Hurontario-Main and GO Stouffville BCAs

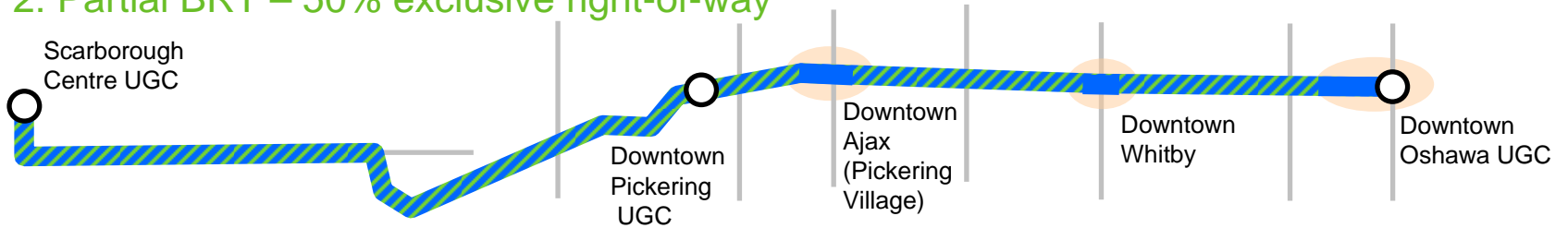
Durham-Scarborough BCA Options

Today: Durham Regional Transit (DRT) services and GO Bus service (Routes 94 & 95)

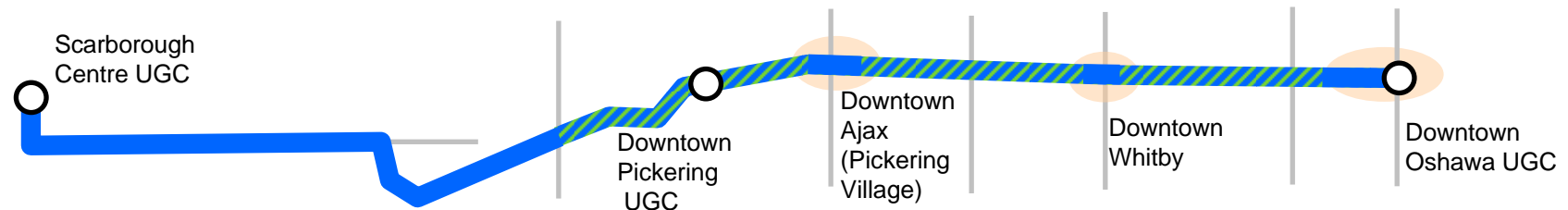
Option 1: Full BRT



Option 2: Partial BRT – 50% exclusive right-of-way



Option 3: Mixed traffic in Toronto, Partial BRT in Durham



Dundas, Durham-Scarborough, Hurontario-Main and GO Stouffville BCAs

Durham-Scarborough BCA Results

	Option 1: Full BRT	Option 2: Partial BRT	Option 3: Partial BRT in Durham (mixed traffic in Scarborough)
Total Capital Cost (Current \$)	\$498 M	\$392 M	\$277 M
Total Capital Cost & Incremental Operating Cost (PV)	\$444 M	\$307 M	\$246 M
Transportation User Benefit (PV)	\$525 M	\$327 M	\$216 M
Benefit : Cost Ratio	1.2	1.1	0.9
Emissions reduction (PV)	\$3.8 M	\$2.2 M	\$1.1 M
Development Potential (PV)	\$57 - 59 M	\$51 - 53 M	\$51 – 53 M
Jobs during Construction (person years)	1,903	1,187	992
Jobs long-term (person years)	39	30	26

Dundas, Durham-Scarborough, Hurontario-Main and GO Stouffville BCAs

Durham-Scarborough Considerations

- Options 1 and 2 generate positive benefit-cost ratios
- Operating strategy and fare policy – corridor extends through GO Bus, TTC and Durham Rapid Transit (DRT) service areas
 - BCA assumes seamless “open-door” policy
 - Fare collaboration requires agreement between City of Toronto/TTC and Durham Region/DRT
- Planning for Scarborough segment of corridor at a very preliminary stage relative to Durham
 - Ellesmere alignment from Toronto/Pickering border to UTSC requires further study/development to address community impact issues
 - Highway 401 and other east-west alternatives in Scarborough may be considered
- 2008 Quick-Win provincial funding allows Durham to move ahead with intersection widening and transit priority measures at key Highway 2 locations
- Durham segment could be designed and engineered for potential future upgrade to Light Rail Transit (LRT)

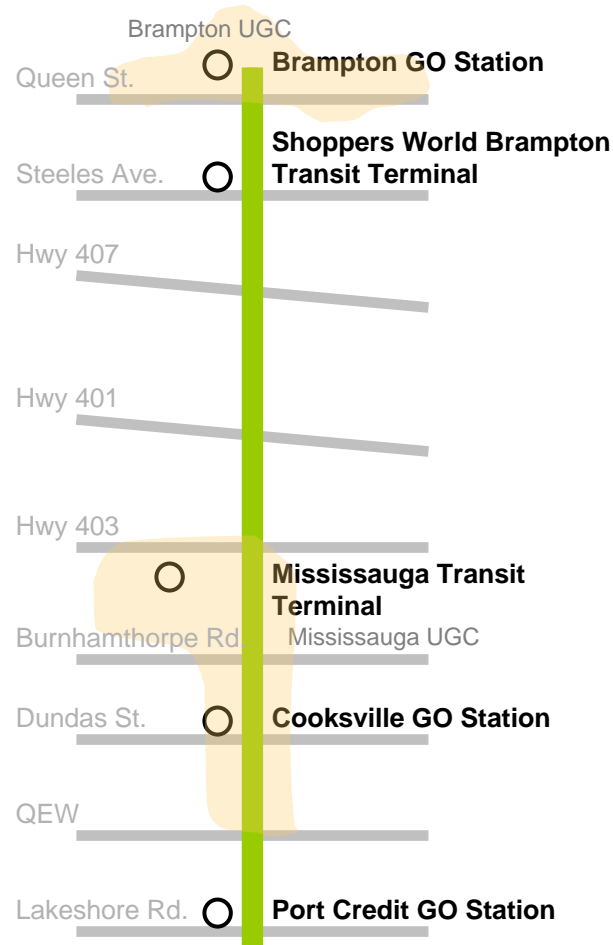
Hurontario-Main Project Overview

- Envisioned to provide higher order rapid transit service from Downtown Brampton to Port Credit
- BCA examines both LRT and BRT technologies along the 20 km corridor
- Connects **two** Urban Growth Centres and **four** Mobility Hubs in Mississauga and Brampton, and **seven** major east-west transit corridors, including Brampton Zum BRT
- Potential future extension north to Mayfield Road in Caledon

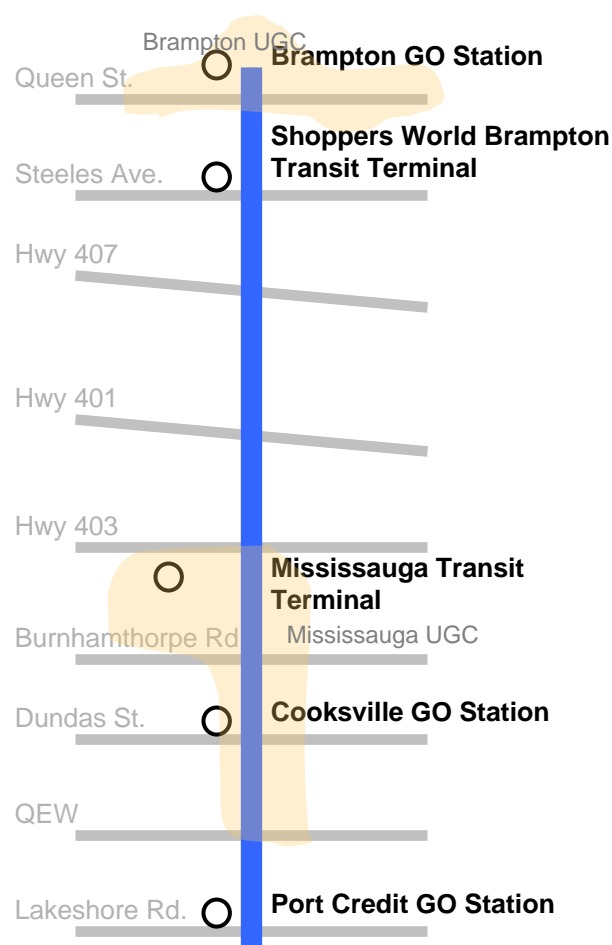


Hurontario-Main BCA Options

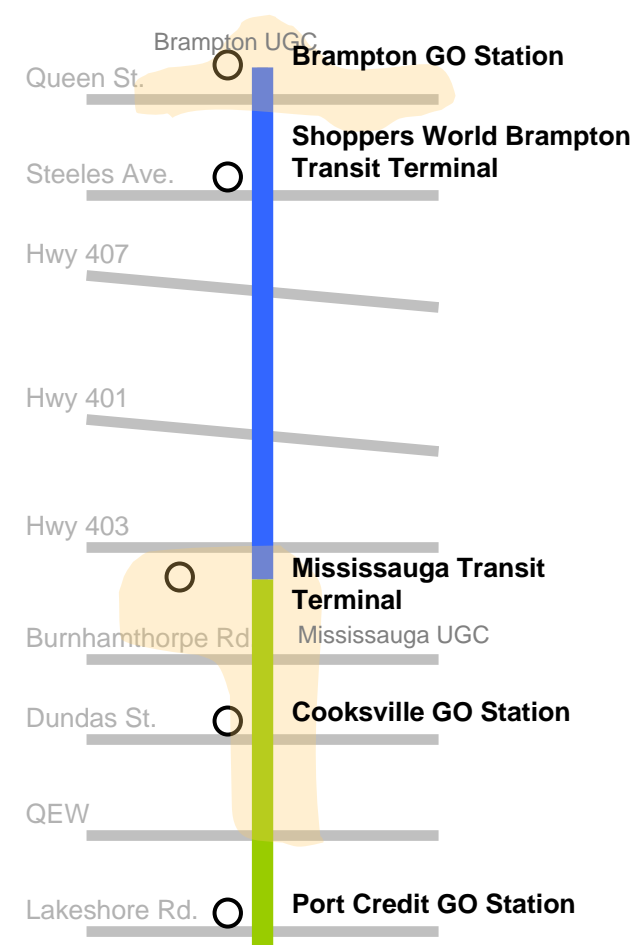
Today: Local and express bus service delivered by Mississauga and Brampton Transit



Option 1: Full LRT



Option 2: Full BRT



Option 3: LRT in southern section, BRT in northern section

Hurontario-Main BCA Results

	Option 1: Full LRT	Option 2: Full BRT	Option 3: South LRT, North BRT
Total Capital Cost (Current \$)	\$1,345 M	\$359 M	\$755 M
Total Capital & Incremental Operating Cost (PV)	\$1,206 M	\$330 M	\$679 M
Transportation User Benefit (PV)	\$1,779 M	\$538 M*	\$692 M
Benefit : Cost Ratio	1.5	-	1.0
Emissions reduction (PV)	\$8.0 M	\$4.7 M	\$5.9 M
Development Potential (PV)	\$208 - 417 M	\$98 - 157 M	\$158 - 317 M
Jobs during Construction (person years)	7,000	1,309	3,671
Jobs long-term (person years)	575	16	260

Full BRT option cannot meet projected 2021 capacity requirements and therefore the Benefit-Cost Ratio is not provided

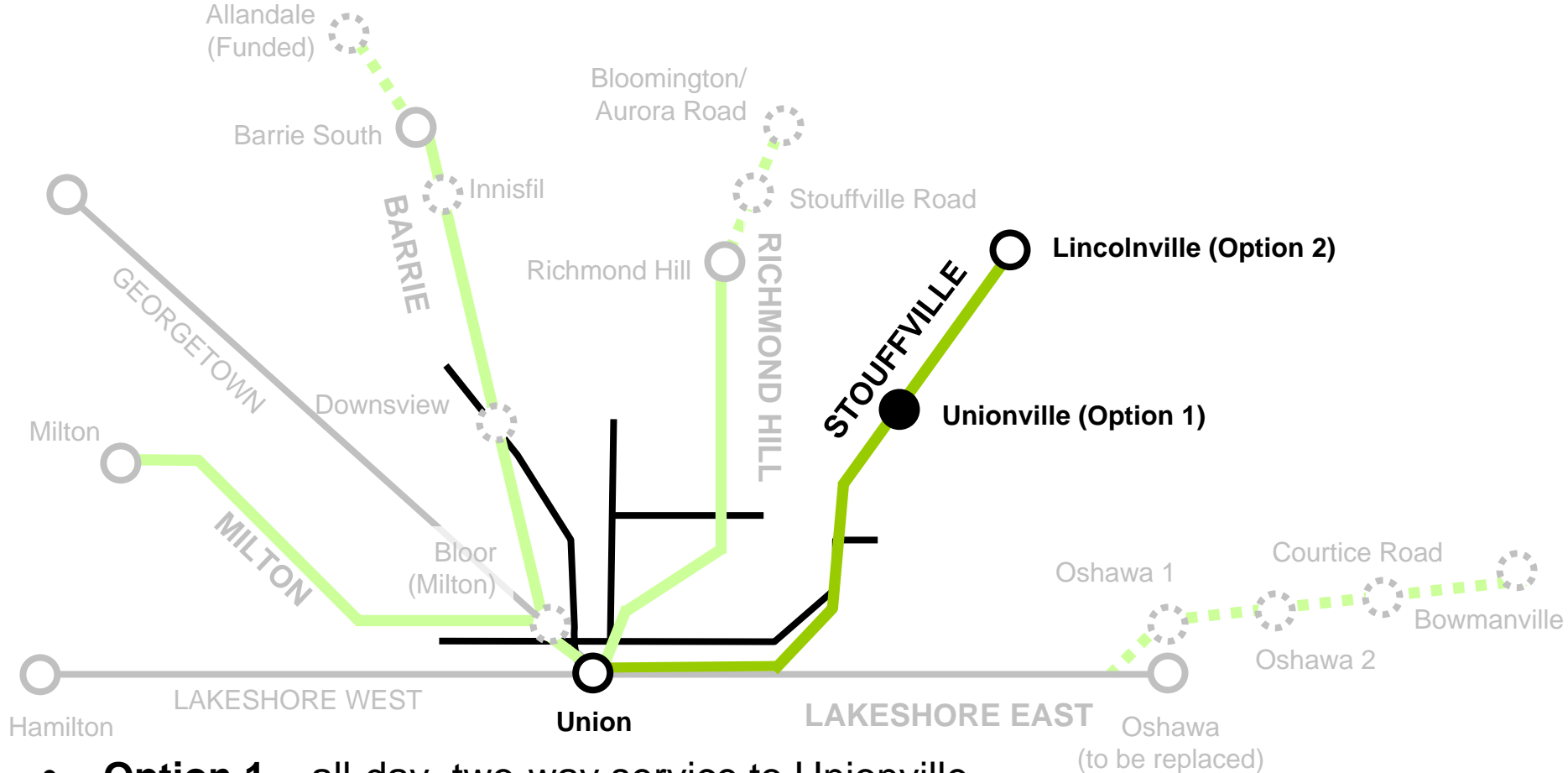
Hurontario-Main Considerations

- Full and partial LRT options generate positive BCA results
- How best to serve Downtown Mississauga?
 - Mississauga Downtown21 Plan provides conceptual routing plan; further planning, design and engineering (PDE) required
- Maintenance yard location to be determined
 - Dependent on potential phasing which is subject to more detailed PDE
 - Intensity of existing development in southern portion of the corridor makes situating a yard more difficult
- Corridor constraints
 - Narrow rights-of-way in Downtown Brampton and south of the QEW to be examined in future PDE work
- Next-step PDE workplan
 - Brampton and Mississauga to propose PDE workplan to Metrolinx for project advancement
 - Workplan to include Brampton Queen Street BCA

GO BCA Objectives

- Assess incremental benefits and costs for two-way, all-day service on five GO rail corridors identified as Metrolinx Top 15 priorities
 - Barrie, Lakeshore East extension to Bowmanville, Milton and Richmond Hill BCA presented to Metrolinx Board in May 2010
- BCA results for Stouffville Corridor subject of this report
- BCA provides high level evaluation of incremental costs and benefits of ultimate service build-out on each GO corridor
 - Refined cost estimates, implementation staging and phasing strategies for each corridor to be further developed through planning, design and engineering (PDE) work by Metrolinx
 - Implementation scenarios in BCA report are assumed for analysis purposes only and would be subject to construction funding

GO Stouffville BCA Options



- **Option 1** – all-day, two-way service to Unionville
- **Option 2** – all-day, two-way service to current line terminus at Lincolnville

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GO Stouffville BCA Service Level Assumptions

- **Scenario A** – Assumes 2-way/all-day service to Unionville (Option 1) or Lincolnville (Option 2) in 2021, consistent with GO 2020 plan
 - Half-hourly service in off-peak periods and half-hourly service in counter-peak direction during peak periods
 - Replaces existing off-peak/counter-peak Train-Bus services
- **Scenario B** – In addition to 2-way/all-day service (Scenario A), assumes peak period service is expanded to 10-minute headways to Unionville or Lincolnville in 2031
 - Report acknowledges Union Station capacity issues and makes reference to Union Station Capacity and Downtown Access studies underway by Metrolinx
- Assumed continued use of clean diesel technology in each corridor
 - Future diesel equipment assumed to be compliant with Tier-4 emission standards
 - Reference to Electrification Study to examine longer-term technology options

GO Stouffville BCA Results

	Unionville (Option 1)	Lincolville (Option 2)
Total Capital Cost (Current \$)	\$377 M	\$694 M
Scenario A 2021 Scenario B 2031*	+\$64 M	+\$128 M
Total Capital & Incremental Operating Costs (PV)	\$521 M	\$896 M
Transportation User Benefits (PV)	\$508 M	\$579 M
Benefit-Cost Ratio	1.0	0.6
Emissions Reduction (PV)	\$2.7 M	\$3.1 M
Jobs During Construction	3,990 person-years	7,440 person-years
2031 GDP Impact (PV)	\$19 M	\$22 M
Social Community Impacts	Additional services will contribute to: <ul style="list-style-type: none"> - reduced auto dependency, - increased walking & cycling activity, and - will stimulate residential development around accessible services 	

*Capital costs between Scenario A (2021) and B (2031) are for additional train sets required for proposed peak period service enhancements.

Dundas, Durham-Scarborough, Hurontario-Main and GO Stouffville BCAs

GO Stouffville Considerations

- Unionville option generates 1:0 benefit-cost ratio
 - Extending two-way, all-day service from Unionville to Lincolnville results in small increase in benefits at significantly higher cost
 - North of Markham, corridor is located in Greenbelt – with limited future development growth potential
- Terminating two-way all-day service at Unionville would avoid significant infrastructure requirements through constrained central Markham section of corridor
 - Significant costs required for grade separating road/rail crossings, 20 km of additional double-tracking to Lincolnville, station upgrades, retaining/sound walls and other structures
- Unionville Option would enhance access to Markham Centre UGC and provide connection with Highway 7 VIVA BRT and future 407 Transitway

Next Steps

- **Maintain project planning momentum towards**
 - Environmental Assessment (EA)
 - Increased capital cost confidence
 - Construction readiness in anticipation of future implementation/funding decisions
- **Dundas Street**
 - Detailed “service strategy” and PDE work for BRT in partnership with Halton, Burlington, Oakville, Mississauga and Toronto
 - Halton Region working to determine allocation of 2008 Quick Win funding
- **Durham-Scarborough**
 - Detailed PDE work for BRT in partnership with Durham and Toronto
 - Move forward with implementation of Phase 1 Highway 2 BRT supported by 2008 Quick Wins funding for Durham
- **Hurontario-Main**
 - Detailed PDE work for LRT in partnership with Brampton and Mississauga
 - Commence BCA evaluation of Brampton’s Queen Street corridor
- **GO Stouffville**
 - Ongoing detailed PDE
 - Ongoing incremental corridor capacity optimization and service improvements
 - Key input for GO Electrification Study currently under development
- **All of these projects**
 - Currently unfunded
 - Subject to Metrolinx Project Prioritization Framework and 10-Year Provincial Infrastructure Plan
 - Potential funding sources in the future Metrolinx Investment Strategy

Dundas, Durham-Scarborough, Hurontario-Main and GO Stouffville BCAs