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**DATE:** May 19, 2010

**TO:** Metrolinx Board of Directors

**FROM:** *John Howe, Vice-President, Investment Strategy and Project Evaluation (ISPE)*

**RE:** **GO Transit Rail Improvements Benefits Case Analysis (BCA)**

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## **Executive Summary**

On November 28, 2008, the former Metrolinx Board approved the Regional Transportation Plan, entitled *The Big Move*, which included improvements to GO rail services as Top 15 Priority Projects. Further, to help inform the project funding decision-making process, the Board directed staff to undertake Benefits Case Analyses (BCA's) for the balance of the Metrolinx Top 15 priority projects.

The purpose of the BCA process is to identify, at a high level, the best-performing project scope options for each project. The Metrolinx BCA extends beyond traditional transportation cost-benefit analysis. In addition to measuring the transportation user and financial impacts of each option, the BCA also addresses long-term economic, environmental and social impacts – consistent with the three foundation pillars of *The Big Move*.

This BCA report addresses four of the six GO projects identified in the Metrolinx Top 15: Significant rail infrastructure and service improvements to the existing Barrie, Milton and Richmond Hill corridors, plus a proposed extension of the Lakeshore East corridor to Bowmanville.

## **Recommendation**

### **RESOLVED:**

- THAT the Metrolinx Board receive the GO Transit Benefit Case Analysis (BCA) report for rail service improvements in the Barrie, Milton and Richmond Hill corridors, and the Bowmanville extension
- THAT the Board direct staff to:

- Input the BCA findings into the Metrolinx Project Prioritization Framework and Metrolinx Electrification Study of the GO Transit rail system, both currently under development
- Continue to work on planning, design and engineering (PDE) and Environmental Assessment (EA) requirements to strengthen the cost confidence process and maintain these projects in a high state of implementation readiness
- Report back on the BCA results for the Stouffville Corridor in June 2010

## **Background**

In July 2009, Investment Strategy and Project Evaluation (ISPE) staff reported back to the Metrolinx Board on the results of the Lakeshore Express Rail BCA. In addition to the Lakeshore BCA, ISPE also led a separate BCA study (the “GO Rail BCA”) to assess the costs and benefits of improvements on the following GO rail corridors identified as Top 15 priorities:

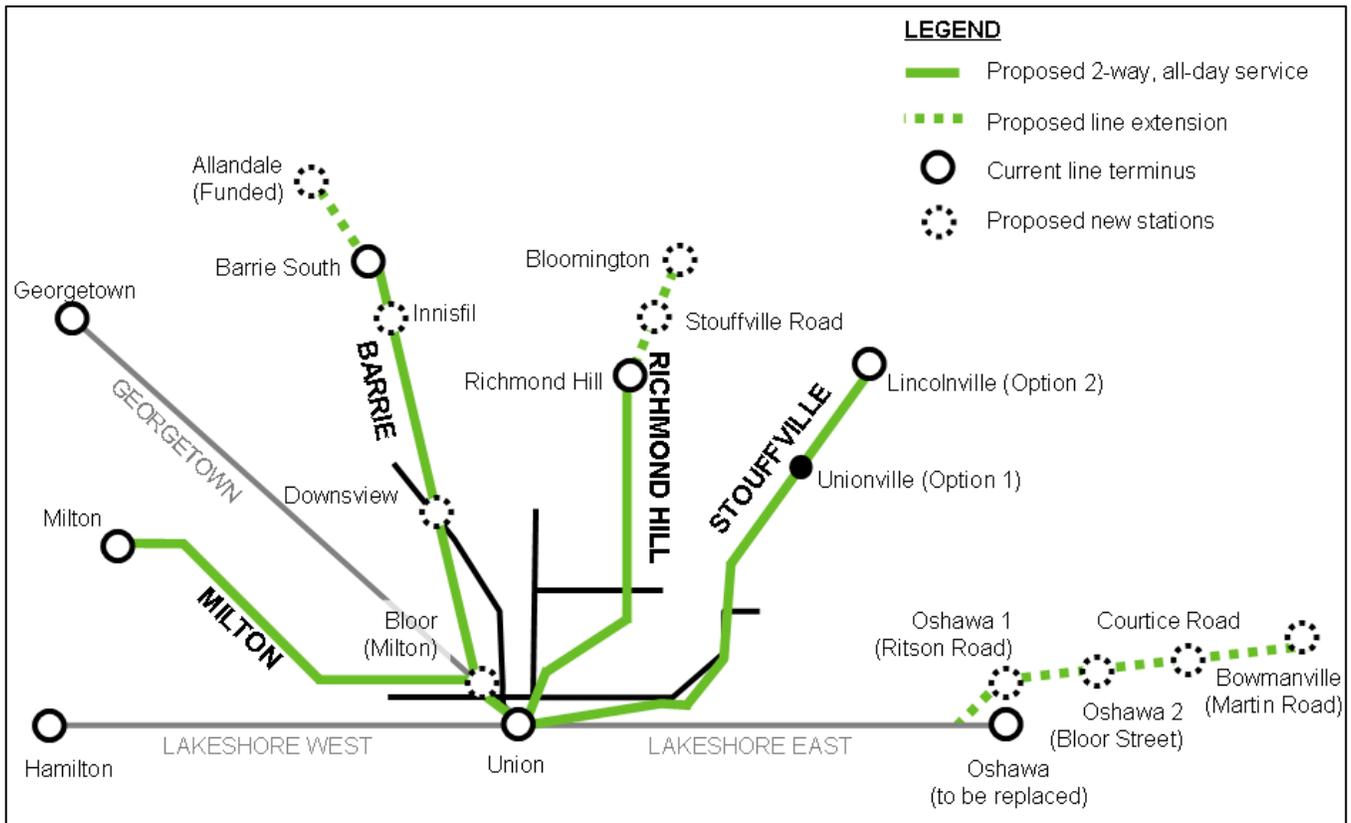
1. Milton Corridor – two-way, all-day service
2. Barrie Corridor – two-way, all-day service
3. Richmond Hill Corridor – two-way, all-day service and corridor extension to Bloomington Road
4. Lakeshore East – extension to Bowmanville
5. Stouffville Corridor – two-way, all-day service to Unionville or Lincolnville

This Board report is focussed on the BCA results for the first four of the above corridors. BCA results for Stouffville Corridor are expected to be complete in late May 2010 and will be the subject of a separate report back to the Board in June 2010.

## **The BCA Approach**

Following a competitive process, ISPE retained an experienced consulting team led by Halcrow, along with Hatch Mott MacDonald and Delcan, to carry out the GO Rail BCA. The development of the ultimate service concepts assessed in the BCA for the five subject corridors involved close collaboration between ISPE, Corporate Infrastructure, Operations, and Policy and Planning staff. Wherever possible, the consultant team built on costing work developed through recent GO feasibility studies, environmental assessments and other planning studies in each corridor to ensure consistency in the capital cost estimates. The proposed corridor and service improvements, including corridor extensions and proposed new stations, are illustrated in Figure 1 below.

**Figure 1 – Proposed Corridor Extensions and Service Improvements**



The key service assumptions in the BCA included the following phased improvements:

- Scenario A: Two-way, all-day service and corridor extensions in place by 2021 on each corridor, along with peak period service improvements;
  - Half-hourly service in off-peak periods and during peak periods in the counter-peak direction (e.g., departing Union Station) to replace existing Train-Bus services; and
- Scenario B: Peak period services expanded to 10-minute headways by 2031 on all corridors.

As the key objective of the GO Rail BCA was to evaluate the case for the service-level improvements and corridor extensions envisioned in The Big Move, for the purposes of costing and analysis (e.g., estimating travel times), the continued use of diesel technology was assumed in each corridor. The report makes clear reference to the Electrification Study as the appropriate venue for evaluating future technology options on all corridors. As well, the final report will reference GO’s plan to move to Tier-4 compliant diesel operations in the near future as the technology becomes commercially available.

Capacity limitations in the Union Station Rail Corridor (USRC), and at the station itself, may be an obstacle to implementing the 2031 peak period service levels envisioned in this BCA. Two studies are currently underway by Metrolinx related to this issue. The first is focused on determining the demands on Union Station platform and track capacity and the USRC rail and signal capacity, and quantifying the growth in platform space required and developing a staging plan for the next five to 25 years. The second is a broader and related study to examine options beyond Union Station for meeting the additional 2031 demand and capacity needs. It is anticipated that these studies will be complete by late 2010/early 2011.

**BCA Evaluation Results**

**Figure 2 – Summary of GO Rail BCA Multiple Account Evaluation Results**

	Barrie	Milton	Richmond Hill	Bowmanville Extension	
Capital Cost (\$m)	2021:	798	782	696	496
	2031*:	160	128	160	128
Capital & Incremental Operating Costs (PV, \$m)	1,505	1,230	1,118	1,104	
Transportation User Benefits (PV, \$m)	2,598	2,130	1,441	662	
<b>Benefit-Cost Ratio</b>	<b>1.7</b>	<b>1.7</b>	<b>1.3</b>	<b>0.6</b>	
Emissions Reduction (PV, \$m)	16	14	10	4	
Jobs During Construction (direct + indirect, person-years)	14,500	14,000	12,800	9,400	
2031 GDP Impact (PV, \$m)	113	94	69	37	
Social Community Impacts	Additional services will contribute to: - reduced car 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 enhancements to peak period services on each corridor.

As shown in Figure 2 above, the Barrie and Milton Corridors demonstrate the highest benefit-cost ratios (BCRs) at 1.7 for each. In fact, these are among the strongest results of any of the projects evaluated to date through the BCA process. The particularly strong results for the Barrie and Milton Corridors are due in large part to the projected growing levels of traffic congestion in parallel 400-series highway corridors in the northern and western areas of the GTHA. The provision of expanded GO service in these corridors results in significant travel time savings for both auto and transit users in the corridor, which are reflected in the high transportation user benefits values.

The extended Richmond Hill Corridor is also a strong performer with a BCR of 1.3. A sensitivity analysis completed as part of the BCA indicated that the BCR would drop to 1.1 if the proposed Yonge North Subway extension to Richmond Hill was assumed to be in place.

Costs outweighed benefits for the Bowmanville extension, indicating that it likely would not warrant the same level of ultimate service intensity as the Milton, Barrie and Richmond Hill Corridors, or the remainder of the Lakeshore East Corridor.

The costs presented in the GO Rail BCA are expressed in 2008 dollars as order-of- magnitude estimates for high-level project appraisal purposes only. Refined cost estimates, implementation phasing strategies and timelines would need to be developed through further detailed planning, design, and engineering (PDE) work by Metrolinx for each corridor.

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