

To: Metrolinx Board of Directors

From: Leslie Woo, Chief Planning and Development Officer
Spencer Gibbens, GO Expansion, Head Sponsor
Joshua Engel-Yan, Director, Research and Planning Analytics

Date: December 6, 2018

Re: **GO Expansion Full Business Case**

Recommendations

RESOLVED, based on the recommendations in the report prepared by the Chief Planning and Development Officer, entitled "GO Expansion Business Case", and any further amendments directed by the Board at its meeting on December 6, 2018;

THAT the Board endorses the results of the GO Expansion Full Business Case;

And **THAT** the Board direct staff to submit the GO Expansion Full Business Case to the Ontario Minister of Transportation to inform decision-making and to seek further direction;

And **THAT** the Board direct staff to report back on the status of the GO Expansion program in February 2019;

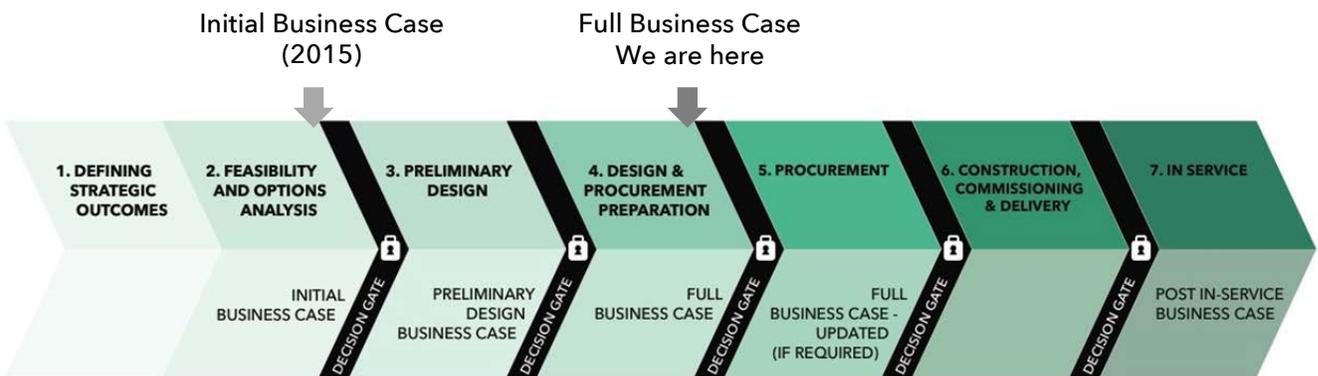
And **THAT** the Board direct staff to transmit the GO Expansion Full Business Case to the municipal Regional Roundtable for information.

Executive Summary

This report confirms that the GO Expansion Full Business Case (FBC) has been completed, meeting the Metrolinx standards for business cases. The FBC confirms a specific program option needed to advance to the procurement stage in Metrolinx's multi-stage decision making process (i.e., the stage-gate process), adopted by the Board on December 7, 2017 and as illustrated in Figure One. The FBC outlines the need for, and benefits of the investment, defines the scope of the program, and provides the rationale for the investment, including transportation rationale, economic performance, capital and operating costs, and requirements for successful delivery.

In 2015, Metrolinx published the Regional Express Rail Initial Business Case (the RER program herein referred to as "GO Expansion"). Since then, the GO Expansion program has progressed significantly, including the development of a reference train service plan, reference concept design, and refined and updated ridership forecasts and cost estimates.

Figure One - Metrolinx Stage-Gate Process



The GO Expansion program will transform GO Rail service from mainly a commuter service to a frequent, rapid rail system that will provide faster two-way all-day service across the Greater Golden Horseshoe. The expanded services provide faster journey times, which, by adding electrified trains and improving station access, create a better customer experience. This is expected to deliver benefits totalling \$42.2 billion over 60 years for an incremental investment of \$16.2 billion. This yields an overall benefit cost ratio (BCR) of 2.6 and net present value of \$25.9 billion, indicating the investment delivers strong value for money.

The business case analysis is based on researched and established criteria and robust analytical methods for economic evaluation of transportation projects as published in Metrolinx’s Draft Business Case Guidance. The work was also peer reviewed by specialists in the field. Over 30 sensitivity tests are documented in the FBC document illustrating how changes to key inputs (e.g., value of time, auto operating costs) would affect results and demonstrating the robustness of the program.

The Program is being delivered through a series of contracts that have been organized into three programs known as Early/Enabling Works, On-Corridor (OnCorr) and Off-Corridor (OffCorr). The construction of corridor infrastructure, systems such as signaling and electrification, provision of new rolling stock, corridor maintenance and the operation of the trains is consolidated under the OnCorr Design Build Finance Operate Maintain (DBFOM) contract. Early Works are civil works that either enable infrastructure for future service increases, are needed state of good repair improvements or components that can be delivered early, to reduce schedule risk for the program. OffCorr includes customer and safety-related improvements to existing stations and the introduction of new stations that are delivered in partnership with third parties.

GO Expansion Program Definition

Metrolinx has developed a Reference Concept during the preparations for this procurement to ensure that the program and its benefits can be delivered within the available budget. Because the procurements will seek to leverage the experience of world leading private sector players, the focus will remain on the desired outcome and not on prescriptive

implementation of the Reference Concept. Private-sector delivery teams will improve on this Reference Concept.

The Reference Concept includes:

- 15 minute or better all day, two-way service across the entire GO-owned network
- Express services where feasible to cut travel times from more distant portions of the network
- Electrified train service that provides faster acceleration, speed and effect lower operating costs
- Upgraded signaling system that will enable the rail network to support more service and continued safety
- Upgraded and expanded fleet to enable flexible responses to changing demand and improved customer experience
- Implementation of level boarding to provide safer and quicker access between platforms and trains. Additional work is underway to develop technical concepts for migration to level boarding.

The FBC analysis also assumes that all fare barriers have been removed with an integrated fare system in place.

Further expansion of the GO Rail network through new stations and rail extensions are addressed in the narrative of the FBC, but are not included in the scenario that has been costed and evaluated:

- For new stations, Metrolinx is actively pursuing opportunities for Transit Oriented Development with third parties. TOD improves integration of the system with local transit and local communities, generate additional ridership, and deliver stations at lower cost. The FBC considers new stations through a sensitivity analysis.
- For rail extensions, Metrolinx is continuing to develop plans to extend or improve GO services to Hamilton, Milton, Kitchener, Bowmanville and Niagara. The Reference Concept for GO Expansion includes provision for all of these train services over the GO Rail Network, including platform capacity at Union. These projects are proceeding with their own business cases and are not included in the GO Expansion FBC.

Key Findings

Figure Two summarizes the economic and financial performance of the FBC. The FBC findings demonstrate that the program is expected to deliver benefits over \$42.2 billion for an investment of \$16.2 billion over the 60 year lifecycle of the investment. The GO Expansion program's benefits significantly exceed its costs leading to a Benefit Cost Ratio (BCR) of 2.6. In plain language, this means that for every \$1.00 invested in GO Expansion, Ontarians benefit by \$2.60. The project has a Net Present Value (NPV - benefits minus costs) of \$25.9 billion. Each rail corridor in the GO Expansion program is expected to realize benefits that exceed costs, with the range of BCRs running from 1.7 to 4.2.

From an economic viewpoint, transforming GO Rail into a Rapid Rail system is a crucial and high value investment for the region that will not only benefit GO users, but also travellers that continue to drive.

Peer Review

This FBC has followed Metrolinx's Business Case Guidance, and the work is based on international best practice for economic and financial analysis and the evaluation of transportation projects. This guidance was peer reviewed by economists and policy professionals from industry, academia, and the public sector.

In addition to the Metrolinx Business Case Guidance, the FBC itself has been independently peer reviewed by international experts in major rail projects (see Appendix A). This review's primary focus was to confirm the robustness of the evidence and information provided in the FBC as well as confirming that the document provides the information necessary to inform decision-making in this stage of the project lifecycle.

Sensitivity Tests

Sensitivity tests were undertaken to determine how variations in project assumptions could impact overall project performance. A range of tests were conducted to explore the key variables that drive project performance and the breakeven point beyond which the project would be unfeasible. Some key results are:

- Performance is most heavily driven by realizing the costs estimates, a 25% cost escalation would reduce the BCR to 2.29
- User benefits are most heavily driven by value of time, a 25% reduction would reduce the BCR to 2.32
- Including the 12 new stations recommended for advancement in March 2018 would not significantly affect the BCR (decrease by 0.08), but increase ridership by 6M in 2031 and increase overall net benefits by \$1.7B
- In the very unlikely scenario that there is very limited ridership growth (i.e., peak ridership stays at natural growth with no off-peak ridership growth), the project would have a BCR of 1.0

The Role of the Business Case in Decision Making

The FBC demonstrates that the GO Expansion program will deliver very positive transport benefits and strong value for money. The FBC should be used to inform government decision making to enable the program to advance to the next stage. There are a wider range of factors that are considered as part of investment selection that could affect this program, such as:

- Provincial approval of the project to proceed to RFP release
- Economic and financial trends that might affect cost estimates
- Any changes to market readiness and capacity to deliver the project
- Affordability and availability of third party funding to advance new stations
- Emerging policies, government economic objectives, local community considerations

Metrolinx will develop a Benefits Realization Plan to ensure that the benefits described in this FBC are delivered as the program advances. If there are changes that would significantly alter the business case (e.g., changes to the value of time, cost estimates, delivery timeframe) the FBC will be updated appropriately.

Next Steps

The GO Expansion program will continue to progress through several next steps:

- The program is moving forward to the Province for consideration, informed by this Full Business Case
- Targeted municipal and stakeholder engagement and public outreach
- As of November 2018, Metrolinx is conducting a Request for Qualifications process to shortlist potential partner consortiums to deliver the GO Expansion program.
- Pending final approval by the Province, Metrolinx would proceed in joint effort with Infrastructure Ontario (IO) to move from the Request for Qualifications phase to the formal Request for Proposals phase to select an integrated private sector joint venture to significantly upgrade GO service.
- Metrolinx will develop a benefits realization plan to ensure that the benefits described in this FBC are protected through the procurement process
- If significant changes are made to the program during procurement, an updated Full Business Case will be produced
- Once the program is in service, Metrolinx will produce a Post In-Service Business Case to review the actual costs and performance of the program

Appendix A Peer Reviewers

Metrolinx engaged two independent senior professionals to undertake a peer review of the GO Expansion Full Business Case:

- Richard Davies is a specialist in rail strategy, bidding and economics. He recently supported United Kingdom's Department for Transport's Rail Passenger Services team on franchise policy, current revenue trends and the design of the new West Coast Partnership.
- Martin Gray is the founder and Managing Director of Steel Associates Limited, a management consultancy based in London. Among his achievements, he has taken the lead on high-value projects within High Speed 2, Transport for London Property Partnership, Houses of Parliament and Paddington Station Commercial development.

Attachment A GO Expansion Full Business Case

Figure Two - Key Results from Economic and Financial Case

