Problem and Opportunity: Investing in Regional Transportation to Realize and Manage Urban Growth

THE PROBLEM: THE CURRENT TRANSPORTATION NETWORK CANNOT MEET THE NEEDS OF A GROWING REGION

By 2041, the GO Service Area, including the Greater Toronto and Hamilton Area (GTHA), Kitchener-Waterloo, Barrie, and Niagara is expected to grow to over 12 million people. While this growth will be spread across the region, Toronto will remain the largest concentration of jobs and will continue to be the economic engine of the province. Travel demand is expected to increase by over 50% by the same year.¹

THE SOLUTION: TRANSFORM GO RAIL INTO A RAPID RAIL SYSTEM

GO Expansion is an investment program that will transform GO Rail into a Rapid Rail System that provides the expanded mobility the GTHA needs to accommodate growth and maintain a high quality of life and prosperous economy.

GO Expansion is one of Canada’s largest infrastructure and transport projects. It will cost $16.8 billion beyond the $38.9 GO Rail would need to spend over 60 years to continue to operate and maintain the system.

Expanding GO is a cost-effective way to add transport capacity in the GTHA by leveraging existing, under-used rail corridors that span over 400 km of the region.

MORE ALL-DAY SERVICE
SERVICE IN BOTH DIRECTIONS
TRAINS EVERY 15 MINUTES
MORE ACCESSIBLE STATIONS
AN EXPANDED UNION STATION

Over 205 km of new track laid to enable 6,000 weekly services with two-way all-day service on Lakeshore West, Kitchener, Barrie, Stouffville, and Lakeshore East.

Over 680 km of electrified track to provide trains that are up to 30% faster and 50% cheaper to operate per train KM

42 Stations are upgraded to improve accessibility

Expanding GO is a cost-effective way to add transport capacity in the GTHA by leveraging existing, under-used rail corridors that span over 400 km of the region.

HIGHWAYS

The highway network provides six lanes into the core on the Don Valley Parkway and six lanes on the Gardiner Expressway. These highways are already congested and do not have capacity for further growth.

Both highways cannot realistically be expanded further – the Gardiner runs alongside new urban developments

Investment in highways upstream will not mitigate the Downtown Toronto bottleneck, while investment in rail can decongest highways reducing travel times for people who continue to drive.

WHY NOT USE OTHER MODES TO SOLVE THIS PROBLEM?

Other modes also play a critical role in the GTHA transportation network and are being invested in through other projects and programs – however, they are not optimal solutions to provide more capacity for long distance travel and travel to Downtown Toronto from the rest of the GTHA.

¹ Population, Employment, and Demand statistics drawn from the Greater Golden Horseshoe Model v4

The Benefit: Unlocking Regional Growth through Transportation Investment

GO Expansion was evaluated using Metrolinx’s Business Case Guidance to complete a Full Business Case – the most rigorous analysis of a potential investment.3

**STRATEGIC CASE**

**Realizing regional policy**

- GO Rail will become one of the busiest railways in North America with over 200 million annual riders – allowing seamless access to the downtown core
- Passengers will save over 10 minutes a trip on average, while drivers benefit from less congested roads
- Over 40% of all homes and 45% of all jobs will have direct access to a station with two-way all-day service with a train every 15 minutes or better
- GO Rail will provide more service with up to 70% less pollution per passenger trip
- Investment in GO Expansion will generate 8,300 annual job equivalents in the first twelve years of construction and delivery

**ECONOMIC CASE**

**Realizing value for society**

- Total benefits of $42.2 billion compared to $16.2 billion in economic costs resulting in a benefit cost ratio of 2.6 to 1 - meaning every dollar invested generates $2.60 for Ontario.4
- Benefits include:
  - Transit User Benefits of $35.4 billion
  - Auto Traveller Benefits of $3.3 billion
  - Auto Operating Cost savings of $1.9 billion
  - Health and Safety Benefits of $1.1 billion.
  - Emission Reduction Benefits of $330 million

**FINANCIAL CASE**

**Managing financial resources accountably to maximize returns**

- GO Rail’s incremental revenue is $12.3 billion, which means that most of the $16.8 billion in incremental costs can be paid for by farebox revenue, leading to a net incremental investment of $4.5 billion
- GO Expansion recovers 110% of all operating costs over its lifecycle (up to 130% per year after 2055)

**DELIVERABILITY AND OPERATIONS CASE**

**Ensuring benefits are realized through innovative delivery mechanisms**

- Metrolinx has already secured most necessary environmental approvals and has begun early and enabling works
- Metrolinx is shortlisting international consortia to deliver GO Expansion through a Public Private Partnership model, where a private partner consortium will Design Build Operate Finance (partially) and Maintain the system through construction and the first 30 years of operations

The case for GO Expansion is robust – it will realize significant benefits to transit users, drivers, and the region as a whole. By leveraging an existing network of over 400 km of railway, GO Expansion will break the development bottleneck and unlock the development potential of the region. This means:

- **More time with family, for everyone** - travellers using GO Rail will get from where they are to where they want to go faster, while drivers will benefit from decongested roads.
- **More money in pockets** - travellers who switch to GO Rail will save money by not paying for gas and parking.
- **More jobs and increased productivity** - investing in rail will create new jobs in the transport sector and make the GTHA a more competitive place to invest and do business.
- **Better business for Metrolinx** - more efficient trains will reduce operating subsidy requirements, and improved service will grow ridership and revenue.
- **Partnering with Private Sector** - private sector partnerships will minimize delivery risk and support job growth and industrial investment in the GTHA, while ensuring GO Rail service meets customer needs.

3 Metrolinx Business Case Guidance

4 Benefits indicated in the table do not add to $42.2 due to rounding. Table E.4 provides a detailed summary of benefits and costs.
For over fifty years, GO Rail has provided high-quality, fast, and reliable commuter rail service. GO Rail began as a one line pilot in 1967 and has now grown into one of North America’s largest and most successful commuter rail systems, exemplified by:

- Daily ridership of over 200,000 passengers and over 70 million annual passengers.
- Consistent ridership growth for the last 20 years.
- Passenger rail service on seven lines covering over 400 km of railway corridors and 66 stations.
- Service is integrated with municipal bus networks and rapid transit systems with new connections being added alongside the development of new rapid transit.

Today, the GO Rail Service Area covers a population of over 8.8 million people living in the Greater Toronto Hamilton Area (GTHA), Kitchener-Waterloo, Barrie, and Niagara. Since its inception as a pilot, GO Rail has evolved into a core service for these communities and each day nearly 40% of commuters headed to Downtown Toronto make use of GO Rail services.

While GO Rail has played a crucial role in shaping regional growth and economic development in the GTHA, it is only realizing a portion of its overall potential and requires new investment to meet the evolving needs of the region.

GO Rail can be transformed into a Rapid Rail system that provides services all day in both directions with faster trains. This transformation will significantly expand transportation capacity to support growing communities and changing economies across the GO Rail Service Area.

The analysis in this Full Business Case (FBC) builds on over three years of analysis and investment planning to put forward the case for this transformation.
From a Pilot Project to a Region-Shaping Service: The Evolution of GO Rail

### 1967-1978
- **1967**: Service launched between Oakville (Lakeshore West line) and Pickering (Lakeshore East line), with hourly two-way all-day service and peak service to Hamilton
- **1968**: Exhibition station opens (Lakeshore West line)
- **1974**: Georgetown line (now Kitchener line) opens
- **1978**: Richmond Hill line opens

### 1981-1990
- **1981**: Milton line opens
- **1982**: VIA’s commuter services to Bradford and Stouffville transferred to GO Rail
- **1988**: Lakeshore East line extended to Whitby
- **1990**: Georgetown line extended to Guelph via Acton
- Barrie line extended from Bradford to Barrie

### 1992-2002
- **1992**: Lakeshore West line extended to Aldershot
- **1995**: Lakeshore East line extended to Oshawa
- **1999**: Off-peak weekday service extended to Burlington (Lakeshore West line) and Oshawa (Lakeshore East line)
- **2002**: Off-peak service added to Georgetown line as far as Bramalea

### 2006-2011
- **2006**: Lakeshore East line weekend service extended from Pickering to Oshawa
- **2008**: Stouffville line service extended to Lincolnville
- **2009**: Summer weekend and holiday service to Niagara Falls launches
- **2011**: Georgetown line extended to Guelph and Kitchener and renamed to Kitchener line

### 2013-2016
- **2013**: 30-minute service on Lakeshore East and Lakeshore West lines launched
- **2015**: Lakeshore West line extended to West Harbour
- **2016**: Off-peak service added to Kitchener line as far as Mount Pleasant
- **2017**: UP Express service to Pearson Airport starts with all-day service every 15 minutes

### 2017-2030
- **2017**: Hourly off-peak service starts on Stouffville line
- **2018**: Lakeshore East and West lines mid-day service increased to nearly every 15 minutes
- **2019**: Procurement for GO Expansion
- **2025 – 2030**: GO Rapid Rail services launch on Lakeshore West, Kitchener, Barrie, Stouffville, and Lakeshore East lines
The Case for Change

The Problem: the Current Transportation Network Cannot Meet the Needs of a Growing Region

The GTHA is one of the fastest growing city-regions in North America and is a national centre for business, culture, and education. By 2041, regional population is expected to increase by 42% to more than 10 million people and total regional employment is estimated to grow by 41% to 4.8 million. In the same year, the GTHA’s commute shed (the GO Service Area) will reach a total population of 12.4 million with many people living and working in different communities. While this growth will be spread across the region, Toronto will remain the largest employment centre in the region with over 40% of all jobs.

The regional transportation network has an important role to play in ensuring the region can manage this significant growth. Travel demand is expected to grow alongside population and is forecast to increase by 50% from 8 peak million trips to over 12 million by 2041. By 2031, demand for travel into downtown Toronto will exceed the capacity of the highway network and the rapid transit network will similarly be crowded.

A congested transportation network will not support regional plans and polices for urban development because:

- Congestion can increase travel times for drivers by as much as 120% compared to uncongested conditions with today’s travel demand.
- Congestion is estimated to cost the region’s economy up to $15 billion annually in lost productivity by 2031.

In order to accommodate growth, the network will need to:

- Enable travel between emerging Urban Growth Centres and major employment, education, and recreation centres.
- Provide reliable and high capacity transportation options to downtown Toronto, which will remain the heart of the region’s economy.
- Support broader development goals for quality of life, economic development, and a protected environment.

As a result, investment is required to reduce congestion and provide fast and reliable travel within cities and across the region in order for the GTHA to remain a globally competitive region to live in and do business.

The Solution: Transform GO Rail into a Rapid Rail System

A rail based investment is proposed to expand travel choices across the region and to Downtown Toronto in order to manage congestion and support a high quality of life and economic competitiveness.

There is significant untapped potential for the network to provide new rail based transportation options that are faster, more efficient, and more frequent. Investment in rail is the best option to provide additional capacity in the GTHA because GO Rail:

- **Offers competitive travel times** - GO Rail saves travellers time each day compared to other modes.
- **Covers the region** - GO Rail allows customers to travel across the GTHA and beyond on a network spanning over 400km of corridors.
- **Provides readily expandable capacity** - GO rail trains can carry 2,000 travellers, which is more than a new lane of highway can carry in an hour. Every morning GO Rail can move 80,000 passengers - this is the same capacity as 40 lanes of highway.
- **Generates revenue that can cover some or all operating and maintenance costs** - a full GO Rail train in the peak period does not require operating subsidy.
- **Integrates with other modes** - GO Rail is connected to existing and in delivery rapid transit and local bus systems.

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5 Population, Employment, and Demand statistics drawn from the Greater Golden Horseshoe Model v4.


Rapid Rail: Faster, More Frequent, Two-Way All-Day Service

Rapid Rail systems differ from commuter rail systems in that they provide two-way all-day service with high frequencies (typically a train every fifteen minutes or better) using higher speed trains (typically electrified with faster breaking/acceleration and maximum speeds of 120 km/h). Rapid Rail systems have successfully been deployed to manage demand and support economic prosperity in over 60 cities around the world as shown in Figure E.1.

Why Not Invest in Other Modes?

Other modes play a critical role in the GTHA transportation network and are being invested in through other projects and programs – however, they are not optimal solutions to provide more capacity for long distance travel and travel to Downtown Toronto from the rest of the GTHA.

Highways

The highway network provides six lanes into the core on the Don Valley parkway and six lanes on the Gardiner Expressway. These highways are already congested and do not have capacity for further growth. Both highways cannot realistically be expanded further:

- Recent urban developments alongside the Gardiner Expressway have left no room for widening.
- The Don Valley parkway runs through a sensitive environmental area.

Investment in highways upstream will not mitigate the Downtown Toronto bottleneck, while investment in rail can decongest highways reducing travel times for people who continue to drive.

Subways and Rapid Transit

The TTC subway network serves a critical role in ensuring travellers can travel across Toronto and through downtown. New rapid transit to Downtown Toronto is being explored as a means to reduce crowding and expand accessibility – however, using subways or rapid transit to connect the rest of the GTHA to Downtown Toronto will be cost prohibitive, while the railway network already provides 400km of coverage across the GTHA. Other forms of rapid transit, such as Light Rail Transit is being explored to allow for intra-municipal mobility but is not fast enough to provide competitive regional travel.
Figure E.1: International Rapid Rail Examples

**PARIS, FRANCE**
Paris’ railway blends radial and cross city lines to provide high levels of accessibility across the city throughout the day.

**LONDON, ENGLAND**
London has frequent electric railway services on 40 routes in a network that has developed progressively since the 1920s into a Rapid Rail style system.

**TOKYO, JAPAN**
The Tokyo rail network, provides high frequency services across the metropolitan region and into neighboring regions using fast electric trains.

**SYDNEY, AUSTRALIA**
Sydney has frequent two-way all-day services extending over a large network. Nearer the city centre, trains run every 5-10 minutes, while further out, headways extend to 15 or 30 minutes.
GO Expansion Program Overview

Today the GO Rail system is a commuter rail system that largely serves trips in the peak period to and from the core. Investment will transform GO Rail into a Rapid Rail system to support a growing region - this means:

- **Faster and More Efficient Trains** - new trains will realize travel time savings (up to 29% faster) for customers and reduced costs to operate (up to 60% cheaper).
- **Two-way, all-day service** - whether a traveller’s destination is work, education, or recreation, they can access more of the region on GO Rail with up to 6,000 weekly services.
- **A train every 15 minutes, or better** - travellers can turn up and go at their station and the system will provide capacity to accommodate growth in travel demand into the future.

Parallel Programs

Metrolinx is currently developing two additional GO Rail programs alongside GO Expansion:

- **New Stations across the GO Rail network**, which will allow more people to make use of GO Rail.
- **GO Rail Extensions to Niagara, Kitchener, and Bowmanville**, which will add new service and connectivities to the Kitchener, Lakeshore West, and Lakeshore East lines.

These programs are being designed and evaluated through their own Business Case processes.

A Rapid Rail system will provide a range of benefits and opportunities for the region, including:

- **More time with family, for everyone** - travellers using GO Rail will get from where they are to where they want to go faster, while drivers will benefit from decongested roads.
- **More money in pockets** - travellers who switch to GO Rail will save money by not paying for gas and parking.
- **More jobs and increased productivity** - investing in rail will create new jobs in the transport sector and make the GTHA a more competitive place to invest and do business.
- **Better business for Metrolinx** - more efficient trains will reduce operating subsidy requirements, and improved service will grow ridership and revenue.
- **Partnering with Private Sector** - private sector partnerships will minimize delivery risk and support job growth and industrial investment in the GTHA, while ensuring GO Rail service meets customer needs.
- **A healthier and more sustainable region** - GO Expansion will realize reduced air pollution, fewer road accidents, and improved health for the region.

The specific benefits GO Expansion will realize for the region and the requirements to deliver are further explored in the four cases in this FBC.

Reference Concept Design for GO Rail

Metrolinx has developed a Reference Concept Design (RCD) that illustrates how the GO Expansion program can be delivered and the scope of benefits the region could realize as a proof of concept (further detailed in Table E.1).

This reference concept design is used to:

- Demonstrate that a working approach to deliver GO Expansion is possible.
- Determine a budget and construction schedule to be approved by Treasury Board.

This RCD was developed based on over three years of engineering, economic, and modelling analysis to present a realistic and deliverable concept for GO Expansion.

This means a private sector partner will collaborate with Metrolinx to design, build, finance, and operate GO Rail as a Rapid Rail system. As a result, the exact specifications of the future GO Rail system will be determined through the GO Expansion procurement process where potential partners will submit proposals to realize the core benefits and objectives of GO Expansion defined in Table E.1 and Figures E.1 and E.2.

The RCD is just one of many potential infrastructure and service investment programs that could be deployed to reach these objectives. Proposals submitted to Metrolinx may vary in their design and delivery (example: different signalling approaches, different track designs) - however they all must deliver the performance objectives specified in this FBC.
## Table E.1: GO Expansion Program Summary

<table>
<thead>
<tr>
<th>GO Expansion Program Element</th>
<th>Description</th>
<th>Performance Objectives</th>
<th>Reference Concept Design Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MORE ALL-DAY SERVICE</strong></td>
<td>Provide service throughout the day and on weekends, not just on weekday peak periods</td>
<td>6,000 weekly services, including:</td>
<td>• Expanded track and on-corridor works to accommodate more frequent service in both directions:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lakeshore West – two-way all-day service between Union and Hamilton, fifteen minute service or better between Burlington and Union</td>
<td>• Eleven new rail/road and two rail/rail grade separations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Kitchener – two-way all-day between Mount Pleasant and Union, fifteen minute service or better between Bramalea and Union</td>
<td>• 205 km of new track</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Barrie – two-way all-day between Allandale and Union, fifteen minute service or better between Aurora and Union</td>
<td>• Eleven new Pedestrian bridges</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stouffville – two-way all-day between Mount Joy and Union, fifteen minute service or better between Unionville and Union</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lakeshore East – two-way all-day with fifteen minute service or better between Oshawa and Union</td>
<td></td>
</tr>
<tr>
<td><strong>SERVICE IN BOTH DIRECTIONS</strong></td>
<td>Provide two-way service on more of the GO Rail network</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TRAINS EVERY 15 MINUTES</strong></td>
<td>Increase frequencies to a train every fifteen minutes or better where possible on the GO Rail network</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FASTER AND MORE EFFICIENT TRAINS</strong></td>
<td>Make use of fleet that are more cost effective to operate and have faster acceleration and stopping</td>
<td>• Making use of trains that are up to 29% faster and up to 50% cheaper to operate per train kilometer</td>
<td>• Combination of Electric Multiple Units (EMUs) or Electric Hauled Locomotives</td>
</tr>
<tr>
<td><strong>MORE ACCESSIBLE STATIONS</strong></td>
<td>Provide improved stations, allowing for easier access to GO Rail</td>
<td>• Customers can board and alight faster, reducing trip times times by 2-5 minutes</td>
<td>• Over 680 km of GO Rail track is electrified</td>
</tr>
<tr>
<td><strong>AN EXPANDED UNION STATION</strong></td>
<td>Improve Union Station’s capacity and passenger facilities, improving train operations and passenger experience</td>
<td>• Ability to accommodate reference frequencies on each GO Rail Line</td>
<td>• Level boarding included at 42 stations to decrease boarding, alighting, and platform clearance time, which will decrease train dwell times</td>
</tr>
</tbody>
</table>

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GO EXPANSION FULL BUSINESS CASE

Figure E.2: GO Rail Off-Peak Service
With and Without GO Expansion

SERVICE LEVEL:

- 15 MINS OR BETTER
- 20 MINS
- 30 MINS
- 60 MINS
- NO SERVICE

EXTENSIONS UNDER DEVELOPMENT
Figure E.2 (continued):
GO Rail Peak Service
With and Without GO Expansion

SERVICE LEVEL:
- 15 MINS OR BETTER
- 20 MINS
- 30 MINS
- 60 MINS
- NO SERVICE
- EXTENSIONS UNDER DEVELOPMENT
The Strategic Case for GO Expansion

Overview

Metrolinx Strategic Cases articulate how a proposed investment supports or achieves regional plans, policies, and goals. Urban and regional development policies in the GTHA and GO Service Area have been organized into four broad policy themes to communicate the strategic benefits of Metrolinx investments:

- Transportation Benefits - increasing efficiency, effectiveness, and resiliency of the transportation system.
- Quality of Life Benefits - making it easier for people to access more of the region with safe and convenient services.
- Economic Prosperity Benefits - supporting economic development by reducing commute times, connecting businesses, and supporting investment.
- Protected Environment Benefits - supporting conservation by reducing the environmental impact of travel.

The Strategic Case for GO Expansion

GO Expansion is expected to contribute significantly to regional plans and policies by improving transportation and promoting a high quality of life, continued economic prosperity, and measures to protect the environment. The ten core benefits for GO Expansion are described in Figure E.3

Figure E.3: Ten Reasons Communities in the GO Service Area Benefit From GO Expansion

1. **Doubling rail ridership** - GO Expansion will nearly double GO Rail’s ridership. By 2055, annual ridership will exceed 200 million (compared to 105 million without GO Expansion). This ridership gain includes nearly 60 million additional off-peak and counter peak trips, a net increase of 210%. This ridership increase reflects the latent demand for improved rail service in the region. Delivering GO Expansion alongside the delivery of rapid transit projects and improved station access will allow GO Rail to act as the foundation of a region wide transit network and realize these significant ridership increases. Ridership changes are shown in Figure E.4 and Table E.2.

2. **Capacity for a growing region** - GO Expansion will allow GO Rail to add over 1,000 new rail services a day by upgrading rail corridors and Union Station. Once upgraded, GO Rail can increase capacity until the end of the century to meet increased demand as the region’s population and employment continue to grow.

3. **A self-sustaining railway** - GO Expansion will reduce the costs of operating trains and increase ridership, leading to a railway system that covers all operating costs with fare box revenue. With GO Expansion, GO Rail revenues will exceed 110% of operating costs over the next sixty years, with revenue equalling 150% of costs in 2055.

4. **A railway that meets customer needs** - GO expansion will transform the customer experience for railway passengers. GO Rail will pivot from a peak only railway to a two-way all-day service with 15 minute or better frequencies that will let customers turn up and go for their service. This transition to a ‘subway’ style service will appeal to a range of customers and make GO Rail a competitive mode for many more trips than today’s commuter focussed customer experience.

5. **New regional connections** - After GO Expansion, 41% of the region’s people will be able to access a GO Rail station with two-way all-day service by transit (compared to 34% without GO Expansion). In addition, over 4,000 cultural, educational, and social service facilities will be readily accessible with two-way all-day GO Rail service. This will allow people to choose transit to take them from where they are to where they want to go - greatly improving their quality of life.

6. **A healthier region with a safer transportation network** - GO Expansion will generate 15 million new walking and cycling trips to access GO Rail station a year. Active travel options tend to promote improved health. In addition, as more drivers choose GO Rail, there will be less traffic and an estimated 7,000 fewer accidents resulting in death or injury over the project lifecycle in the GTHA.
**EXECUTIVE SUMMARY**

**ECONOMIC PROSPERITY**

**Faster commutes** - GO Expansion will reduce commuter times by an average of 10 minutes per trip and as much as 20-30 minutes for other trips. After GO Expansion is delivered, 45% of all jobs in the region will accessible by transit from a GO Rail station with two-way all-day service, compared to 35% in the off-peak. In addition, nearly 60% (a net increase of 30%) of all jobs in the GTHA will be accessible within a one hour trip on the GO Rail network from Union Station. This means people will have less stressful commutes and more productive time for work, supporting to an overall more prosperous region.

**Catalyzing regional development** - GO Expansion will reduce travel times between Urban Growth Centres and downtown Toronto by 25 minutes in the off-peak and 10 minutes in the peak. This ‘shrinking’ effect has been seen to unlock investment and urban development in other city-regions. As more of the region’s planned Urban Growth Centres are closer to downtown, they become more attractive places to do business, invest or live, which in turn could accelerate development. New developments could lead to a more productive region or address housing affordability by unlocking more of the region for denser and complete community style development.

**Creating new jobs across the region** - GO Expansion is a regional project that will generate trades and professional jobs during it design, construction, and operations. An estimated 8,300 annual job equivalents for the first twelve years of delivery will be created over the lifecycle of the program.

**PROTECTED ENVIRONMENT**

**Cleaner air and energy conservation** - GO Expansion will reduce Criteria Air Contaminants that impact human health and up to 13.5 megatonnes of Greenhouse Gases that contribute to climate change. After the project is delivered, nearly 145,000 cars trips per day will shift to rail and with more efficient trains, rail Greenhouse Gas emissions will drop from 1.85 kg/trip to 0.5 kg/trip.

**Table E.2:** GO Expansion Ridership Impacts

<table>
<thead>
<tr>
<th>Annual Ridership (millions)</th>
<th>2017 Peak Ridership</th>
<th>2017 Off-Peak, Contra-Peak, and Weekend Ridership</th>
<th>2017 Total Ridership</th>
<th>2031 Peak Ridership</th>
<th>2031 Off-Peak, Contra-Peak, and Weekend Ridership</th>
<th>2031 Total Ridership</th>
<th>Ridership Percent Change 2017-2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lakeshore West</td>
<td>11.6</td>
<td>6.1</td>
<td>17.7</td>
<td>22.5</td>
<td>15.3</td>
<td>37.8</td>
<td>113%</td>
</tr>
<tr>
<td>Lakeshore East</td>
<td>9.0</td>
<td>4.7</td>
<td>13.7</td>
<td>23.9</td>
<td>14.7</td>
<td>38.6</td>
<td>181%</td>
</tr>
<tr>
<td>Milton</td>
<td>7.0</td>
<td>0.0</td>
<td>7.0</td>
<td>9.3</td>
<td>0.0</td>
<td>9.3</td>
<td>33%</td>
</tr>
<tr>
<td>Kitchener</td>
<td>5.2</td>
<td>2.9</td>
<td>8.0</td>
<td>19.5</td>
<td>25.1</td>
<td>44.6</td>
<td>395%</td>
</tr>
<tr>
<td>Barrie</td>
<td>4.5</td>
<td>0.1</td>
<td>4.6</td>
<td>14.0</td>
<td>14.1</td>
<td>28.1</td>
<td>505%</td>
</tr>
<tr>
<td>Richmond Hill</td>
<td>2.5</td>
<td>0.0</td>
<td>2.5</td>
<td>3.8</td>
<td>0.0</td>
<td>3.8</td>
<td>54%</td>
</tr>
<tr>
<td>Stouffville</td>
<td>3.2</td>
<td>0.7</td>
<td>3.9</td>
<td>10.1</td>
<td>6.3</td>
<td>16.5</td>
<td>323%</td>
</tr>
<tr>
<td>GO Rail Network</td>
<td>42.9</td>
<td>14.5</td>
<td>57.4</td>
<td>103.2</td>
<td>75.5</td>
<td>178.7</td>
<td>211%</td>
</tr>
</tbody>
</table>
With investment, total annual ridership on the GO Rail network will exceed 200 million by 2055.
Strategic Case Conclusion
GO Expansion has a robust Strategic Case based on the core benefits it realizes for the Region:

- It will transform how people travel across the region - allowing customers to use the transit network in new ways that improve their journey travel time and experience.
- It provides the capacity that allows the region to manage population and employment growth through to the end of the century.
- It will make significant contributions to regional and provincial policy objectives by directly improving quality of life, economic prosperity, and environmental quality.

These strategic benefits are summarized by transit users, drivers, and the GTHA as whole in Table E.3

Table E.3: Benefits of GO Expansion to Rail Passengers, Drivers, and the Region

<table>
<thead>
<tr>
<th>Background</th>
<th>Rail and Transit Passengers</th>
<th>Drivers</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faster service (average of 10 minutes saved per trip)</td>
<td>• Faster service (average of 10 minutes saved per trip)</td>
<td>• Reduced congestion (over 145,000 cars off the road each day) on major highways leading to more reliable and quicker travel times</td>
<td>• A more connected region can attract investment in urban development or businesses - GO Expansion will bring major urban growth centres closer together by reducing travel time by 10-25 minutes</td>
</tr>
<tr>
<td>Expanded choices - 29% of places to live and 32.5% of places to work are accessible with a fast, frequent, two-way all-day GO Rail service</td>
<td>• Expanded choices - 29% of places to live and 32.5% of places to work are accessible with a fast, frequent, two-way all-day GO Rail service</td>
<td>• A more connected region can attract investment in urban development or businesses - GO Expansion will bring major urban growth centres closer together by reducing travel time by 10-25 minutes</td>
<td>• For the first twelve years of program delivery there will be 8,300 job equivalents created annually in construction and supply-chain industries</td>
</tr>
<tr>
<td>More of the region can be reached by GO Rail including 4,000 cultural, educational, social service, and recreational sites within transit access distance of a station with two-way all-day service</td>
<td>• More of the region can be reached by GO Rail including 4,000 cultural, educational, social service, and recreational sites within transit access distance of a station with two-way all-day service</td>
<td>• Improved health due to cleaner air and a more active population</td>
<td>• Improved health due to cleaner air and a more active population</td>
</tr>
<tr>
<td>Increased connectivity to the rapid transit network</td>
<td>• Increased connectivity to the rapid transit network</td>
<td>• Improved health due to cleaner air and a more active population</td>
<td>• A more resilient transportation network with reduced operating subsidy, expanded choice, and substantial additional capacity for the rest of the century</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improved health due to cleaner air and a more active population</td>
<td>• Reduced traffic accidents and emissions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improved health due to cleaner air and a more active population</td>
<td></td>
</tr>
</tbody>
</table>
The Economic Case for GO Expansion

Overview
Metrolinx Economic Cases applies international and local best practice for socio-economic economic appraisal to answer the following key questions:

- What does the investment cost in economic terms?
- What benefits will the investment realize?
- Do benefits exceed costs?

GO Expansion Economic Benefits
GO Expansion is expected to realize $42.2 billion in economic benefits across the GTHA and GO Service area to travellers and society. GO Expansion realizes benefits in three ways:

1. Reducing travel time for existing and new customers by increasing frequencies and reducing travel times. This means customers can access more of the region with GO Rail and will benefit from faster travel times and frequent services that reduce customer need to plan ahead.
2. Reducing the number of automobile trips, which in turn reduces emissions and car accidents and encourages more active travel.
3. Increasing the energy and fuel efficiency of GO Rail trains, leading to emission and pollution reductions.

These benefits include:

- Transit User Benefits of $35.4 billion due to reduced travel times - on average travellers could save 10 minutes per trip compared to today’s service levels and speeds, with some travellers saving over 20 minutes.
- Auto Operating Cost Savings of $1.9 billion due to people spending less on gas, parking, and other car based travel costs.
- Auto Traveller Benefits of $3.3 billion due to reduced congestion on major roadways, which allows for faster and less stressful travel for the region’s drivers.
- Health and Safety Benefits of $1.1 billion due increased walking and cycling to GO Rail stations (health benefits) and fewer vehicles on the road leading to fewer car accidents (safety benefits).
- Emission Reduction Benefits of $330 million due to reduced emissions that cause health impacts and climate change

The Economic Case for GO Expansion - GO Expansion’s Benefits Significantly Exceed Costs

The Economic Case for GO Rail is summarized in Table E.4. GO Expansion’s benefits significantly exceed its costs leading to a Benefit Cost Ratio (BCR) of 2.6 - that means for every $1.00 invested in GO Expansion, the province can realize an economic benefit of $2.60. This BCR reflects how transformative GO Expansion will be for how the region travels and conducts business. Each line 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.

The Net Present Value (NPV - benefits minus costs) for GO Expansion is $26 billion. This means the province invests $16.2 billion to realize benefits of $42.2 billion, leading to a net return of $26 billion distributed across the region - equal to $9,000 per household in the GTHA.

Based on a strong BCR and NPV, the Economic Case for GO Expansion is clearly established. From an economic viewpoint, transforming GO Rail into a Rapid Rail system is a crucial and high value investment that will not only benefit travellers but also realize economic value for the entire region.

8 Benefits indicated in this list do not add to $42.2 due to rounding. Table E.4 provides a detailed summary of benefits and costs.
### Table E.4: Economic Case Summary

<table>
<thead>
<tr>
<th>Present Value of Economic Impact (Million 2017 CAD $)</th>
<th>Total</th>
<th>Lakeshore West</th>
<th>Kitchener</th>
<th>Barrie</th>
<th>Stouffville</th>
<th>Lakeshore East</th>
<th>System-Wide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Incremental Costs</strong></td>
<td>$16,220</td>
<td>$2,520</td>
<td>$1,930</td>
<td>$3,520</td>
<td>$2,450</td>
<td>$2,000</td>
<td>$3,800</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td>$12,220</td>
<td>$2,240</td>
<td>$960</td>
<td>$2,550</td>
<td>$1,680</td>
<td>$2,150</td>
<td>$2,640</td>
</tr>
<tr>
<td>Corridor</td>
<td>$8,500</td>
<td>$1,160</td>
<td>$630</td>
<td>$2,130</td>
<td>$1,140</td>
<td>$1,540</td>
<td>$1,900</td>
</tr>
<tr>
<td>Fleet</td>
<td>$3,720</td>
<td>$1,080</td>
<td>$330</td>
<td>$420</td>
<td>$540</td>
<td>$610</td>
<td>$740</td>
</tr>
<tr>
<td><strong>Operating &amp; Maintenance Costs</strong></td>
<td>$4,340</td>
<td>$360</td>
<td>$1,000</td>
<td>$1,020</td>
<td>$830</td>
<td>-$100</td>
<td>$1,230</td>
</tr>
<tr>
<td>Operating</td>
<td>$1,860</td>
<td>$170</td>
<td>$720</td>
<td>$500</td>
<td>$440</td>
<td>-$130</td>
<td>$160</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$2,480</td>
<td>$190</td>
<td>$280</td>
<td>$520</td>
<td>$390</td>
<td>$30</td>
<td>$1,070</td>
</tr>
<tr>
<td>Terminal Value</td>
<td>-$340</td>
<td>-$80</td>
<td>-$30</td>
<td>-$50</td>
<td>-$60</td>
<td>-$50</td>
<td>-$70</td>
</tr>
<tr>
<td><strong>Total Benefits</strong></td>
<td>$42,145</td>
<td>$7,120</td>
<td>$5,590</td>
<td>$13,040</td>
<td>$4,270</td>
<td>$8,330</td>
<td>$3,795</td>
</tr>
<tr>
<td><strong>Total User Benefits</strong></td>
<td>$40,700</td>
<td>$6,930</td>
<td>$5,510</td>
<td>$12,830</td>
<td>$4,190</td>
<td>$8,100</td>
<td>$3,140</td>
</tr>
<tr>
<td>Transit User (reduced travel times and increased frequencies)</td>
<td>$35,430</td>
<td>$5,720</td>
<td>$5,020</td>
<td>$11,720</td>
<td>$3,700</td>
<td>$6,690</td>
<td>$2,580</td>
</tr>
<tr>
<td>Auto Operating Cost Savings</td>
<td>$1,940</td>
<td>$420</td>
<td>$180</td>
<td>$460</td>
<td>$170</td>
<td>$500</td>
<td>$210</td>
</tr>
<tr>
<td>Auto User (Decongestion)</td>
<td>$3,330</td>
<td>$790</td>
<td>$310</td>
<td>$650</td>
<td>$320</td>
<td>$910</td>
<td>$350</td>
</tr>
<tr>
<td><strong>Total External Benefits</strong></td>
<td>$1,445</td>
<td>$190</td>
<td>$80</td>
<td>$210</td>
<td>$80</td>
<td>$230</td>
<td>$655</td>
</tr>
<tr>
<td>Reduction in Accidents Resulting in Death or Injury</td>
<td>$550</td>
<td>$120</td>
<td>$50</td>
<td>$130</td>
<td>$50</td>
<td>$140</td>
<td>$60</td>
</tr>
<tr>
<td>Increased Physical Activity</td>
<td>$565</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$565</td>
</tr>
<tr>
<td>GHG Emission Reductions</td>
<td>$220</td>
<td>$50</td>
<td>$20</td>
<td>$50</td>
<td>$20</td>
<td>$60</td>
<td>$20</td>
</tr>
<tr>
<td>Reduced Air Pollution</td>
<td>$110</td>
<td>$20</td>
<td>$10</td>
<td>$30</td>
<td>$10</td>
<td>$30</td>
<td>$10</td>
</tr>
<tr>
<td><strong>Economic Case Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$25,925</td>
<td>$4,600</td>
<td>$3,660</td>
<td>$9,520</td>
<td>$1,820</td>
<td>$6,330</td>
<td>N/A</td>
</tr>
<tr>
<td>Benefit Cost Ratio</td>
<td>2.6</td>
<td>2.8</td>
<td>2.9</td>
<td>3.7</td>
<td>1.7</td>
<td>4.2</td>
<td>N/A</td>
</tr>
</tbody>
</table>
The Financial Case for GO Expansion

Overview
The Metrolinx Financial Case assesses the overall financial impact of a proposed investment, including:
- How much will the investment cost to build, operate, and maintain?
- How will the investment impact Metrolinx’s revenues?
- How will the investment be funded?
- What is the net financial impact of the investment?

GO Expansion Incremental Costs
The business as usual scenario (the future state of GO Rail without GO Expansion) for GO Rail will require continued capital and operating investment. Over the next 60 years, GO Rail will require $39 billion in investment ($12 billion in capital, $27 billion in operating cost) without GO Expansion. These investments will not significantly expand service or support ridership growth in off-peak or counter-peak markets.

GO Expansion requires an incremental investment of $16.6 billion ($12.2 billion capital and $4.4 billion operating costs) that will generate new ridership, benefits, and revenue beyond what GO Rail would generate under the business as usual scenario.

GO Expansion Revenue Impacts
GO Expansion will attract more passengers, significantly increasing revenues generated by both peak and off-peak service. Without GO Expansion, GO Rail will generate revenues of $22.3 billion. With Go Expansion, forecasted incremental revenues are $12.3 billion, which will increase GO Rail’s Revenue to $34.6 billion.

Financial Case Summary
Table E.5 summarizes the key financial indicators for GO Expansion. Investment in GO Expansion allows Metrolinx and the GTHA to provide a step change in service with an incremental investment of $4.5 billion (incremental costs – incremental revenue) between 2019 and 2085.

This incremental subsidy will allow GO Rail to:
- Provide over 1,000 new services a day, leading to 630 thousand daily riders (in 2031 compared to 340 thousand in a scenario without GO Expansion), an increase of 87% from today’s ridership by increasing investment by 27%.
- Cover up to 110% of all operating costs with farebox revenue and up to 130% per year by 2055. This will be achieved by implementing more efficient trains and attracting more demand per train. Incremental revenues not only cover incremental operating costs but will also cover $7.8 billion of GO Expansion’s capital costs.

Based on these financial results, GO Expansion has a robust financial case. Investment in GO Expansion will realize a step change in service while also generating new revenues that will allow GO Rail to be self-sustaining.

NOTE: the Financial Case and Economic Case both assess the costs of an investment, but do so for different purposes. The Financial Case is concerned with the net impact on Metrolinx and Provincial finances in nominal (inflation adjusted) terms in order to support investment and financial planning.

The Economic Case is concerned with the overall cost to society and is expressed in real terms (impact of inflation removed) to illustrate the opportunity cost of spending on GO Expansion.

As a result, the costs included in the two cases do not directly align. For example, the Economic Case could be used to assess the question: is spending resources on GO Rail the best use of these resources? While the Financial Case answers the question: how much money is required to deliver new GO Rail service?

Only the Financial Case should be used for investment planning.
## Table E.5: GO Rail Costs with and without GO Expansion

<table>
<thead>
<tr>
<th>($ billion)</th>
<th>Without GO Expansion</th>
<th>With GO Expansion</th>
<th>Incremental Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital Expenditure</strong></td>
<td>($12)</td>
<td>($24.3)</td>
<td>($12.3)</td>
</tr>
<tr>
<td><strong>Operating and Maintenance</strong></td>
<td>($26.9)</td>
<td>($31.4)</td>
<td>($4.5)</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td>($38.9)</td>
<td>($55.7)</td>
<td>($16.8)</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td>$22.3</td>
<td>$34.6</td>
<td>$12.3</td>
</tr>
<tr>
<td><strong>Net Investment</strong></td>
<td>($16.6)</td>
<td>($21.1)</td>
<td>($4.5)</td>
</tr>
<tr>
<td><strong>Operating Surplus or Surplus</strong></td>
<td>($14.6)</td>
<td>$3.2</td>
<td>$7.8</td>
</tr>
</tbody>
</table>

### Illustrative Annual Financial Case Values ($ Million)

<table>
<thead>
<tr>
<th></th>
<th>2031-2032</th>
<th>2031-2035 Revenue/Operating Costs</th>
<th>2031-2032 Forecasted Average Daily Ridership</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Costs</strong></td>
<td>($790)</td>
<td>$950</td>
<td>340,000</td>
</tr>
<tr>
<td><strong>Revenues</strong></td>
<td>$605</td>
<td>$1,000</td>
<td>635,000</td>
</tr>
<tr>
<td><strong>Revenue/Operating Costs</strong></td>
<td>76.5%</td>
<td>105%</td>
<td>295,000</td>
</tr>
</tbody>
</table>
Overview
The Metrolinx Deliverability and Operations case demonstrates that the proposed investment can be delivered successfully and key risks can be managed. It focuses on the following questions:

- How will the project be managed and governed?
- What approach will be used to deliver and procure the investment?
- What are key project risks and can they be mitigated?

Procurement Approach
The procurement approach for the GO Expansion program has been developed to address the following objectives to:

- Achieve effective transfer of design cost and schedule risk to those who are best able to manage them.
- Mobilize private sector and international expertise, where appropriate, to optimize design, delivery and operations.
- Retain control and flexibility to meet future needs.
- Achieve competitive pricing.

Metrolinx will use an Alternative Finance and Procurement model where responsibility to design, build, operate, maintain, and partially finance (DBFOM) will be shared with private sector delivery partners. This approach is aligned with the overall objectives of the procurement approach and transfers delivery and design risk to private sector partners. To the extent these risks are transferred, specifications can be less prescriptive and more performance based. This incentivizes contractors to optimize their design and delivery approach to maximize long term benefits and minimize life cycle costs. While a private partner will operate GO Rail under the GO Expansion program, Metrolinx retains accountability for revenue risk, customer experience, connectivity between other agencies, and decisions on service planning and fares.

Risk Management
The core risks identified for this program are:

- **System performance risk** - where the railway may not operate as planned due to the technical delivery approach used. This risk is transferred to the delivery partner as they are responsible to deliver the outputs specified within this FBC.
- **System Integration Risk** - where individual components of the program may not function together as intended. The procurement approach requires all major elements to be delivered by one partner (made up of smaller entities as needed) with ultimate responsibility to ensure all elements are integrated.
- **Construction Disruption Risks** - where current services could be disrupted by the construction of new infrastructure for GO Expansion. A performance regime has been developed to ensure that delivery partners minimize impact on existing service through careful planning and staging in order to reduce this risk.
Conclusion

Business Case Conclusions
This FBC for GO Expansion builds upon over three years of study, analysis, design, and investment planning to present a deliverable plan to transform GO Rail into a Rapid Rail system. This transformation is a critical investment that will allow the GTHA to grow by over 40% by 2041 while providing a high quality of life and remaining a competitive place to do business. The four cases in this FBC together articulate a compelling case to invest in GO Expansion (illustrated in Table E.4) based on its ability to:

- **Leverage existing corridors** - the GO Rail network already connects major population and employment centres across the GTHA. GO Expansion adds more and faster service to these existing corridors. This allows passengers to access more of the region with shorter and more reliable travel times. This time saved generates significant economic benefits for the region and its people.

- **Break the bottleneck** - more rail capacity and improved connectivity to Downtown Toronto will unlock economic development potential by allowing more people to commute to the core each day.

- **Unlock development** - expanded off-peak and counter-peak services will make Urban Growth Centres across the region more attractive places to live, work, and invest. This will catalyze regional development in line with plans and policies across the region.

Recommendations
Based on the performance across these four cases, Metrolinx will submit this FBC to the Minister of Transportation to inform decision making on future transportation investment.

Next Steps
Following Metrolinx's stage-gate process, the GO Expansion program will continue to progress through several next steps:

- The program is moving forward to the Province for investment decisions, informed by this Full Business Case.
- As of November 2018, Metrolinx is conducting a Request for Qualifications (RFQ) process to shortlist potential partner consortiums to deliver the GO Expansion program.
- Pending approval by the Province and the successful shortlisting of potential partners, Metrolinx will launch a Request for Proposal (RFP) for GO Expansion.
- 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.
Table E.5: The Case for Investment in GO Expansion

<table>
<thead>
<tr>
<th>Case</th>
<th>Case Evidence</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Case</strong></td>
<td>GO Expansion will realize four types of benefits:</td>
<td>These strategic benefits illustrate how GO Expansion will directly address the problem statement:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Transportation Benefits</strong> - faster journey times and higher frequencies</td>
<td>• It will provide new transportation choices that can accommodate significant population growth and help tackle congestion.</td>
</tr>
<tr>
<td></td>
<td>will double annual ridership to over 200 million (daily trips exceeding</td>
<td>• It will provide the foundations of a region wide Frequent Rapid Transit Network (as described in the 2041 RTP).</td>
</tr>
<tr>
<td></td>
<td>630 thousand, with less congestion for drivers due to 165,000 fewer</td>
<td>• It will support the GTHA in maintaining a high quality of life, prosperous economy, and protected environment as its population grows by over 40%.</td>
</tr>
<tr>
<td></td>
<td>car trips a day) while ensuring the network has reduced subsidy requirements</td>
<td><strong>Based on this evidence, the Strategic Case for GO Rail justifies it as an investment to achieve regional policy and realize the benefits of rapid growth.</strong></td>
</tr>
<tr>
<td></td>
<td>and can accommodate demand growth past 2055.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>Quality of Life Benefits</strong> - connecting nearly 30% of the GTHA’s population</td>
<td></td>
</tr>
<tr>
<td></td>
<td>with fast, frequent, and reliable services while also supporting a healthier</td>
<td></td>
</tr>
<tr>
<td></td>
<td>region by adding 15 million walk and cycle trips to stations a year.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>Economic Prosperity</strong> - reducing congestion and saving commuters up to 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>minutes a trip while also creating 8,300 annual job equivalents over twelve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>years in construction and supply-chain industries and decreasing journey times</td>
<td></td>
</tr>
<tr>
<td></td>
<td>by up an average of 25 minutes between Urban Growth Centres in the off-peak.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>Protected Environment</strong> - reducing emissions per rail trip by 70% and total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greenhouse Gas emissions by 13.5 megatonnes, while also reducing Criteria Air</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contaminants and other pollutants that impact human health.</td>
<td></td>
</tr>
<tr>
<td><strong>Economic Case</strong></td>
<td>The Economic Case for GO Expansion assessed a range of benefits and costs:</td>
<td>GO Expansion’s benefits significantly exceed costs:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Incremental economic costs of $16.2 billion</strong> over the investment lifecycle</td>
<td>• GO Expansion realizes $42.1 billion in benefits by investing $16.2 billion resulting in a BCR of 2.6 to 1 - this means for every $1.00 invested in GO Expansion, the region will benefit by $2.60.</td>
</tr>
<tr>
<td></td>
<td>• Economic benefits of 42.2 billion, including:</td>
<td>• This is an NPV of $25.9 billion, meaning a benefit of nearly $9,000 per household.</td>
</tr>
<tr>
<td></td>
<td>• Transit user benefits of $35.4 billion</td>
<td><strong>Based on this evidence, the Economic Case justifies investment GO Expansion as means to realize economic benefits in Ontario.</strong></td>
</tr>
<tr>
<td></td>
<td>• Road user benefits of $3.3 billion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Auto Operating Cost savings of $1.9 billion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Accident reduction and health improvement benefits of $1.1 billion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Emission reduction benefits of $330 million</td>
<td></td>
</tr>
<tr>
<td><strong>Financial Case</strong></td>
<td>Without GO Expansion, GO Rail will require a net investment (capital and</td>
<td>GO Expansion’s incremental investment of $4.5 billion will allow Metrolinx to transform GO Rail from a commuter system into a world class Rapid Rail system that doubles ridership, saves passengers 10 minutes per trip, and realizes significant benefits while reducing the need for operating subsidy.</td>
</tr>
<tr>
<td></td>
<td>operating costs minus revenues) of $16.6 billion over the next 60 years.</td>
<td><strong>Based on this evidence, the Financial Case suggests that GO Expansion is a beneficial investment with a manageable level of required investment.</strong></td>
</tr>
<tr>
<td></td>
<td>GO Expansion requires a net investment of $21 billion in the same time period,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>meaning the net incremental investment for GO expansion is $4.5 billion.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In addition the incremental revenue generated by GO Expansion could allow GO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rail to run without subsidy beyond 2031 and achieve an revenue/operating ratio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of 130% by 2055.</td>
<td></td>
</tr>
<tr>
<td><strong>Deliverability and Operations</strong></td>
<td>Metrolinx has conducted extensive project development, environmental</td>
<td>GO Expansion has undergone significant development - from a technical design perspective as well as from a project governance and procurement practice that draws from international best practice.</td>
</tr>
<tr>
<td>Case</td>
<td>assessment, and operational planning projects to ensure GO Expansion is</td>
<td><strong>Based on this evidence, the Deliverability and Operations Case, is found to demonstrate GO Expansion is readily deliverable.</strong></td>
</tr>
<tr>
<td></td>
<td>deliverable. In addition, an innovative P3 model will minimize risk and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>support delivery on time and budget.</td>
<td></td>
</tr>
</tbody>
</table>