

# **New Station Initial Business Case Beamsville**

Final  
November 2020

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**Note:** With the completion of this New Station Initial Business Case in November 2020, a sensitivity was conducted to control for the scenario in which the in-corridor infrastructure investments identified in the 2019 Niagara Falls Rail Service Extension Initial Business Case needed to enable Beamsville GO are not delivered and site-specific corridor infrastructure is delivered as part of the station. This sensitivity analysis is provided in Appendix A.

In this scenario, the need for additional infrastructure to enable service to be reliably brought to Beamsville GO increases total capital costs to \$60.0M. This reduces the benefits cost ratio to 0.97 as compared to 1.60 with the initial set of assumptions presented in the main section of the business case.

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# Executive Summary

## Introduction

At the request of Niagara Region and a third party (collectively, the Proponent), Metrolinx is assessing the opportunity to develop a new GO rail station in Beamsville, a community of the Town of Lincoln. The proposed station would be located along the Niagara Extension between the proposed Grimsby GO Station to the west and the existing St. Catharines GO Station to the east. Under this “market-driven” initiative, the station would be planned and paid for by a third-party proponent and transferred to Metrolinx to own and operate.

## Option for Analysis

This Initial Business Case (IBC) assesses the proposed station in relation to a Business as Usual (BaU) scenario, which assumes 11 diesel-powered train trips per day serving three stations east of the existing Confederation GO Station as per the Niagara Falls Rail Service Extension Initial Business Case preferred option.

The station is proposed to be located on the north side of the rail corridor, to the west of Ontario Street. The opening-day track and platform layout consist of a single-sided platform and two tracks. Station facility requirements include, at a minimum, parking spaces, a passenger pick-up/drop-off (PUDO) area, bicycle parking, and a bus loop. Preliminary station sizing and cost estimates used in this IBC were developed based on future 2041 transit service and ridership forecasts conducted using the Greater Golden Horseshoe Model version 4 (GGHMv4). If approved, the station would be developed and designed by the Proponent.

## Method of Analysis

The Metrolinx Business Case Guidance is used to assess the feasibility of the proposed station compared to the BaU scenario.

Accordingly, the IBC is structured around four cases:

- **Strategic Case:** Examines how the proposed station contributes to achieving regional and local policy goals;
- **Economic Case:** Assesses key economic metrics to provide an overview of the proposed station’s performance and benefits to society;
- **Financial Case:** Analyzes the financial impacts, requirements, and viability to deliver the station; and,
- **Deliverability and Operations Case:** Outlines the technical and institutional requirements to deliver the proposed station in relation to project stakeholders, constructability, and operations and maintenance.

## Business Case Results

The Town of Lincoln is a young, educated, and growing community. Due to limited alternatives, the population is currently highly dependent on auto for transportation. By providing a local connection to the regional higher-order transit network, the proposed station in Beamsville has the potential to improve accessibility to jobs, education, and health and community services and attract more tourists and visitors to the area. Reducing car dependence and congestion would also enhance air quality and reduce greenhouse gas (GHG) emissions and improve the safety of the road network. In turn, the proposed station should provide an opportunity to change the behaviour of current and future travellers and achieve a sustainable modal shift towards public transit and active modes of transportation.

The table below summarizes key findings for each case.

Strategic Case	
<b>Strong Connections</b>	<ul style="list-style-type: none"><li>• The proposed station is anticipated to attract 48,000 net annual new trips to the regional transit network in 2041.</li><li>• Combined with existing riders diverted from nearby GO stations, annual ridership at Beamsville is expected to reach 325,000 in 2041.</li><li>• In addition, between 7,000 and 8,000 tourists and visitors could shift from auto to rail to visit the Town of Lincoln, mainly to save on car rental fees.</li><li>• The proposed station site protects for future expansion including widening the northern single-sided platform to become an island platform and adding a pocket track, a southern single-sided platform, and two pedestrian tunnels.</li></ul>
<b>Complete Travel Experiences</b>	<ul style="list-style-type: none"><li>• Transportation users will save 87,560 hours in travel time in 2041:<ul style="list-style-type: none"><li>• Transit users will experience travel time savings of 24,060 hours;</li><li>• Auto users remaining on the road network will save 63,500 hours.</li></ul></li><li>• New riders diverted from auto use will not experience net travel time savings, since auto is faster than rail for most trip origins and destinations. However, they will be attracted by the flexibility, comfort, and convenience the train offers.</li><li>• The proposed station could improve comfort and travel experience for existing transit riders as well, especially for GO Bus users who could benefit from the new amenities.</li><li>• Annual reduction in automobile use is estimated to result in a reduction of 5.4 million vehicle-kilometres travelled in 2041, supporting increased safety on the road network.</li></ul>
<b>Healthy and Sustainable Communities</b>	<ul style="list-style-type: none"><li>• The station complements the planned residential, commercial, and industrial land uses in the vicinity of the station site and provides an incentive for future development to occur.</li><li>• Active transportation could be supported through multi-use trails accessed from Ontario Street and walkways throughout the station site, which could also provide access to/from adjacent development.</li><li>• The reduced auto use, along with increased walking and cycling to the proposed station, would support the improvement of air quality.</li></ul>

Economic Case	
Total Costs (2020\$ Million, Present Value)	\$36.8 million
Total Benefits (2020\$ Million, Present Value)	\$58.8 million
Net Benefits (2020\$ Million, Net Present Value)	\$22.0 million
Benefit Cost Ratio (BCR)	1.60
Financial Case	
Total Capital Costs borne by Metrolinx (\$ Million, Present Value)	\$4.8 million
Total Operating and Maintenance Costs (\$ Million, Present Value)	\$6.2 million
Total Incremental Fare Revenue (\$ Million, Present Value)	\$10.3 million to \$13.0 million
Net Revenue (\$ Millions, Present Value)	-\$0.7 million to \$2.0 million
Incremental Cost Recovery Ratio	0.94 – 1.18
Incremental Operating Cost Recovery Ratio	1.66 – 2.10
Deliverability and Operations Case	
Project Stakeholders and Governance	<ul style="list-style-type: none"> <li>Canadian National (CN) Railway owns the subdivision. Metrolinx will need to obtain permission to build the station, undertake infrastructure upgrades, and stop trains at the proposed location.</li> <li>Coordination with Hydro One is required due to the hydro corridor running just north of the tracks. Buildings and permanent structures are not allowed to be located within the hydro corridor right-of-way and all clearance requirements must be met.</li> <li>Other stakeholders include the Ministry of Transportation (MTO), the Proponent, the Town of Lincoln, VIA Rail, Amtrak, Niagara Peninsula Conservation Authority (NPCA), Ontario Ministry of the Environment, Conservation and Parks (MECP), Indigenous Communities, and if applicable, Fisheries and Oceans Canada (DFO).</li> </ul>
Constructability Considerations	<ul style="list-style-type: none"> <li>Coordination would be required with Hydro One to acquire the relevant permits and adhere to specific requirements.</li> <li>Coordination with the NPCA is likely to be required due to the station site being on vulnerable groundwater and sand and gravel resource areas. In addition, depending on the species at risk present, permits may also be required with DFO and MECP.</li> <li>Culverts cross under the existing mainline track both east and west of the station site. In particular, the Konkle Creek culvert may require an extension and retaining structures. Fish species may also be impacted by the weir at Konkle Creek. In addition, flood and erosion hazards related to Konkle Creek are present and the associated headwater feature may need to be realigned as a result of rail expansion.</li> <li>A Stage 2 archeological assessment would be needed for the area.</li> </ul>
Operations and Maintenance Considerations	<ul style="list-style-type: none"> <li>Future demand for the proposed station is dependent on development for the area under the Beamsville GO Transit Station Secondary Plan.</li> </ul>

# 1

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## Introduction



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## Context

This Initial Business Case (IBC) considers a GO rail station in Beamsville, a community of the Town of Lincoln located along the southern shore of Lake Ontario in Niagara Region. The station would lie along the Niagara Extension, between the proposed Grimsby GO Station to the west and the existing St. Catharines GO Station to the east. The site proposed for the station is on the north side of the rail line, west of Ontario Street, as depicted in Figure 1.

This IBC is being completed at the request of Niagara Region and a third party (collectively, the Proponent). The assessment builds upon previous work, including an analysis conducted for a station at this location in 2011 as part of the Niagara Rail Service Expansion Environmental Study Report<sup>1</sup>, which protected for a future station in Beamsville.

In November 2015, Metrolinx published the GO Rail Niagara Service Extension Initial Business Case<sup>2</sup>, which assessed the performance of a peak period GO rail service between Union Station and Niagara Falls with stops in Grimsby and St. Catharines. The report found that the cost exceeded benefits by a significant margin and that additional work was required to optimize the investment.

In 2018, Niagara Region approved the Beamsville GO Transit Station Secondary Plan<sup>3</sup> (the Secondary Plan). The Secondary Plan recognizes several challenges in the station area, including the lack of access to public transit, the lack of regional connectivity and the need for land use redevelopment in the area to meet anticipated population growth. The Secondary Plan advocates that “higher-order transit would support a competitive business environment, improve connectivity and accessibility and act as a catalyst to attract broader community investment, talent, growth and innovation.”

In 2019, Metrolinx completed the Niagara Falls Rail Service Extension Initial Business Case Update<sup>4</sup>, which assessed three service options serving Confederation GO in Hamilton, Grimsby GO, St. Catharines GO, and Niagara Falls GO. The recommended service consists of four trains per peak period with two trains beginning/terminating at Niagara Falls GO Station and two beginning/terminating at Confederation GO Station, year-round daily operations of seven trips to provide service during off-peak hours, and hourly all-day service between Confederation GO Station and Union Station week round.

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<sup>1</sup> Metrolinx (2011). Niagara Rail Service Expansion Environmental Study Report. 118 Pages. Online. <http://www.metrolinx.com/en/regionalplanning/rer/Niagara%20Rail%20Expansion%20ESR.pdf>

<sup>2</sup> Metrolinx (2015). GO Rail Niagara Service Extension Initial Business Case. 12 Pages. Online. [http://www.metrolinx.com/en/regionalplanning/projectevaluation/benefitscases/Benefits\\_Case-Niagara.pdf](http://www.metrolinx.com/en/regionalplanning/projectevaluation/benefitscases/Benefits_Case-Niagara.pdf)

<sup>3</sup> Town of Lincoln (2018). Niagara Region Beamsville GO Transit Station. 64 Pages. Online. <https://www.niagararegion.ca/projects/beamsville-go-transit/pdf/beamsville-go-secondary-plan-approval.pdf>

<sup>4</sup> Metrolinx (2019). Niagara Falls Rail Service Extension Initial Business Case Update. 84 Pages. Online. <http://www.metrolinx.com/en/regionalplanning/projectevaluation/benefitscases/2019-11-14-Niagara-Falls-Rail-Extension-IBC-Update-FINAL.pdf>



## Initial Business Case Overview

The purpose of this IBC is to determine if the proposed GO station in Beamsville would provide financial and broader societal benefits and be compatible with Metrolinx and regional strategic goals and policies. The IBC also identifies risks or barriers that may impact the implementation of the station as well as infrastructure and policy measures, which may support its implementation.

The proposed station is investigated using the Metrolinx Business Case Guidance to provide an overview of how the new station would contribute to meeting regional and local policy objectives (the Strategic Case); the economic and financial performance of the station (the Economic and Financial Cases); and, technical considerations and risks (the Deliverability and Operations Case). The IBC compares the impacts of the proposed station (the investment option) against a Business as Usual (BaU) scenario, which assumes the implementation of the service concept recommended in the 2019 Niagara Falls Rail Service Extension Initial Business Case Update.



Figure 1: Location of the proposed Beamsville GO Station along the alignment for the Niagara Extension.

# 2

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## The Case for Change



## Introduction

The Case for Change defines the opportunity statement and the strategic outcomes and benefits that will guide the evaluation of the proposed station and highlights how the investment should support local and regional policy goals.

## Opportunity Statement

Niagara Region is a famous destination for millions of tourists annually. The Region is known not only for its natural attractions but also for its various festivities throughout the year. Currently, the Region experiences a significant volume of car traffic generated from different parts of the GTHA and beyond. This volume of traffic is expected to grow even further with increases in regional population growth.

The Town of Lincoln is in the centre of Niagara Region, bounded by Lake Ontario and sheltered by the Niagara Escarpment. Lincoln, home to close to 24,000 people<sup>5</sup>, is one of the fastest-growing communities in Niagara Region. Due to a lack of alternatives, the community is currently highly dependent on the automobile, with 93% of people driving or carpooling on their daily commute<sup>5</sup>. By providing a local connection to the regional higher-order transit network, the proposed station in Beamsville has the potential to reduce reliance on the private automobile and improve accessibility to jobs, education, and health and community services. Lincoln is a recognized Agricultural Centre of Excellence with thriving wine, technology, manufacturing and tourism sectors.

The proposed station also offers an opportunity to address increasing traffic volumes along the corridor between Niagara-Hamilton and the western GTHA. Reducing car dependence and congestion would enhance air quality and reduce greenhouse gas (GHG) emissions in the entire Region of Niagara and improve the safety of the road network. In turn, the proposed station would provide the opportunity to change the behaviour of current and future travellers and achieve a sustainable modal shift towards public transit and active modes of transportation.

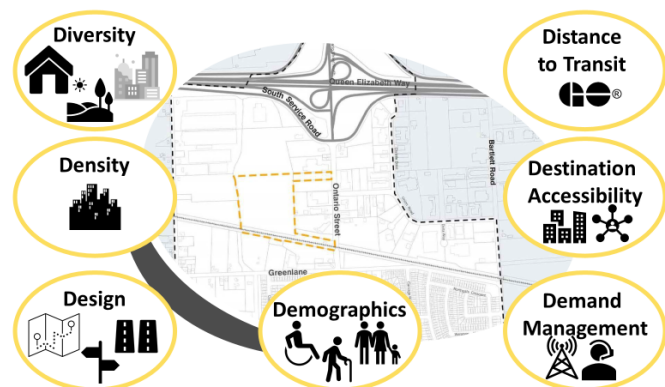


Figure 2: Opportunities for Beamsville GO Station

The proposed station presents an opportunity to redevelop the area in the vicinity of the station and act as a catalyst to achieve new mixed uses, attract new investment and promote denser forms of employment which would, in return, allow for the expected ridership growth to be realized. The components of the Opportunity Statement are summarized in Figure 2.

<sup>5</sup> Statistics Canada (2017). Census Profile, 2016 Census. Online.

Table 1 identifies the main drivers for this opportunity and summarizes how these drivers may influence the case for the proposed GO station.

Table 1: Opportunity Drivers

	Driver	How does this driver influence the problem/opportunity?	What is the impact of not addressing the problem/opportunity?
Internal to the Transportation Network	Travel Behaviour	<p>The expected population and employment growth in the vicinity of the proposed station should drive the need for higher-order transit within the area.</p> <p>Better connectivity to the regional transit network should reduce the heavy reliance on automobiles in the area.</p>	Residents and visitors will continue to rely on auto for inter and intra-regional trips, thus increasing road congestion, commute times, loss of productivity, and pollutants and GHG emissions.
	Transport Service Provision	<p>The new station should be served by a multimodal, integrated transportation network that accommodates pedestrians, cyclists, transit users and automobiles.</p> <p>New ridership and associated incremental farebox revenue should be realized by the GO network by providing an additional access option in Beamsville.</p>	Failure to increase rapid transit coverage limits access to economic, cultural, and social opportunities in the new station area and its surroundings.
External to the Transportation Network	Government Policy and Planning	<p>The Beamsville GO Transit Station Secondary Plan recognizes the station location as an area of opportunity to accommodate a Complete Street design and dense and mixed land uses.</p> <p>The Town of Lincoln Official Plan designates the station site land as an urban settlement to attract commercial growth. The proposed station is an opportunity to achieve the objectives of integrated population and employment growth in a planned community.</p>	Without investment in the proposed GO station, there would be a lack of incentive to develop a dense, transit-oriented community.
	Economic Activity, Land Use, and Demographics	Economic growth in Beamsville is supported by wine-related tourism and agricultural-related industry. The proposed station would further improve opportunities to attract visitors to the area.	The inability to address the development needs of specific areas of growth would hinder economic activity and miss the opportunity to further transform Beamsville into a renowned tourist attraction destination.

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## Strategic Outcomes and Benefits

The proposed station in Beamsville should support the realization of the Metrolinx 2041 Regional Transportation Plan<sup>6</sup> (RTP) goals, which consist of the following:

- Strong connections;
- Complete travel experiences; and,
- Sustainable and healthy communities.

The RTP goals are used as a basis to define the three strategic outcomes for the proposed Beamsville Station. Each outcome is further broken down into benefits, which will guide the strategic evaluation of the project.

**Strong Connections |** The proposed station would improve transit coverage, connect more communities to rapid transit and serve key destinations. The investment should not only provide improvements to the current situation but also support future network expansion and growth in the area.

Underlying benefits:

- Improving access to local and regional destinations;
- Attracting new riders to the transit network;
- Enhancing accessibility for tourists and visitors; and,
- Providing transit investment that can expand for future growth.

**Complete Travel Experiences |** As a result of the investment, it would be easier and faster for people to get to more destinations at more convenient times. The proposed station design would provide a safe and comfortable travel experience that meets the diverse needs of travellers.

Underlying benefits:

- Reducing travel times and increasing reliability;
- Increasing safety on the road network from reduced auto use; and,
- Improving passenger comfort through improved amenities and easy accessibility.

**Healthy and Sustainable Communities |** The location of the proposed station supports development patterns that utilize mixed use, transit-supportive, pedestrian-friendly urban environments that can save energy, improve air quality and support climate resiliency by lowering the carbon footprint.

Underlying benefits:

- Promoting land-use intensification and encouraging transit-oriented communities;
- Encouraging the use of active modes to access the GO rail network; and,
- Improving air quality by alleviating transportation-related emissions.

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<sup>6</sup> Metrolinx (2018). Metrolinx 2041 Regional Transportation Plan. 204 Pages. Online. <http://www.metrolinx.com/en/regionalplanning/rtp/Metrolinx%20-%202041%20Regional%20Transportation%20Plan%20%E2%80%93%20Final.pdf>

## Alignment with Broader Policy

A review of provincial, regional, and municipal policies and plans was performed to assess how the implementation of the proposed GO station in Beamsville supports provincial, regional, and local policy objectives. Table 2 summarizes the key considerations and alignment with broader policies.

Table 2: Summary of Alignment with Broader Policies

Stakeholder	Document/Policy	Key Considerations
Metrolinx	2041 Regional Transportation Plan (2018)	<p>The proposed station aligns with key strategies to achieve the 2041 RTP goals:</p> <ul style="list-style-type: none"> <li>• Strategy 2: Connecting more of the Region with Frequent Rapid Transit. The proposed station should increase accessibility to transit and connect more people with key destinations. The station should be acting as an attractive alternative to private car use.</li> <li>• Strategy 3: Optimizing the transportation system. The proposed station should promote the implementation of more multimodal options in the station area including walking and cycling facilities and transit stops.</li> <li>• Strategy 4: Integrating land use and transportation principles. The RTP identifies Beamsville as a potential urban development area that is expected to have significant population and employment growth in the future.</li> <li>• Strategy 5: Prepare for uncertain future. The RTP identifies priority actions to improve climate resiliency of the transportation system. The Town is already taking action to naturalize Konkle Creek by implementing wider creek corridor to establish a self-sustaining watercourse. Further actions may be required to protect the creek during the construction and operation of the proposed station.</li> </ul>
Niagara Region	Niagara Region Official Plan (2014)	<p>Chapter 9 identifies objectives that promote safe, convenient, efficient, and economical transportation systems for the movement of goods and people. The Plan has explicit objectives to encourage the development of both public transit and railway by:</p> <ol style="list-style-type: none"> <li>a. Prioritizing investment in transit infrastructure to strategic growth areas to optimize return on investment and the efficiency and viability of existing and planned transit service levels;</li> <li>b. Improving linkages from nearby neighbourhoods to major trip generators, including employment areas, tourist destinations, public service facilities, post-secondary institutions, and major transit station areas;</li> <li>c. Providing transit linkages within and between settlement areas in and outside of the Region to increase the transit mode shares;</li> <li>d. Improving accessibility to public transit;</li> <li>e. Providing park-and-ride facilities that support multimodal travel by offering linkages to pedestrian and transit routes, bicycle infrastructure, and priority spaces for carpool and car-share vehicles;</li> <li>f. Considering the role public transit plays in reducing greenhouse gas emissions; and,</li> <li>g. Transit service(s) to areas that have achieved or will be planned to achieve transit-supportive residential, commercial, institutional and employment density.</li> </ol>

Stakeholder	Document/Policy	Key Considerations
		By providing easier access to a higher-order mode of travel, the proposed Beamsville Station promotes new mixed-use developments in the station area and enhances a sense of community and standards of living for residents.
	Niagara Region Transportation Master Plan (2017)	<p>Niagara Region's Transportation Master Plan (TMP) Study Report includes goals such as integrating land use with transportation, improving connectivity between modes, and increasing sustainable transportation, all of which could be directly applied to the proposed station in Beamsville. The TMP also identifies that having travel mode options should be an increasingly important component of the transportation network, noting the health and efficiency benefits it can provide to communities.</p> <p>The TMP recommends that GO Transit's rail service keeps expanding within Niagara Region. It also recognizes the importance of developing local transit within Niagara Region and linking these services to GO stations.</p>
Ministry of Municipal Affairs and Housing	A Place to Grow (2019)	<p>The Growth Plan for the Greater Golden Horseshoe Region states that all major transit station areas (MTSA) will be planned and designed to be transit-supportive and to achieve multimodal access to stations and connections to nearby major trip generators by providing, where appropriate:</p> <ol style="list-style-type: none"> <li>Connections to local and regional transit to support the integration of services;</li> <li>Infrastructure to support active transportation;</li> <li>Commuter pick-up/drop-off areas; and,</li> <li>A minimum density target of 150 residents and jobs combined per hectare for those that are served by the GO Transit network.</li> </ol> <p>Although the location of the Proposed Station has not yet been deemed an MTSA, the proposed station area has been identified as an Urban Area in local policy documents (i.e. Beamsville GO Transit Station Secondary Plan) and is expected to contribute to designated areas of growth by enhancing transportation options and infrastructure as well as by implementing the concept of "complete street" design that accommodates all road users. Also, local policies (e.g. Beamsville GO Transit Station Secondary Plan) identify the need for a dense built form in the area surrounding the proposed GO station.</p>
Ministry of Municipal Affairs and Housing	Provincial Policy Statement (2014)	<p>The Provincial Policy Statement considers the Province's policies on land use planning. It gives clear policy direction to promote strong communities, a strong economy, and a clean and healthy environment.</p> <p>Section 1.1 discusses how managing and directing land use policies could be used to achieve efficient and resilient development and establish land use patterns. Section 1.1.1 states that communities are sustained by:</p> <ol style="list-style-type: none"> <li>Avoiding development and land use patterns which may cause environmental or public health and safety concern;</li> <li>Promoting cost-effective development patterns and standards to minimize land consumption and servicing costs; and,</li> <li>Improving accessibility for persons with disabilities and older persons by identifying, preventing and removing land-use barriers that restrict their full participation in society.</li> </ol>

Stakeholder	Document/Policy	Key Considerations
Town of Lincoln		<p>Section 1.6.7 discusses transportation systems, including the following:</p> <ul style="list-style-type: none"> <li>• Section 1.6.7.1: Transportation systems should be provided, which are safe, energy-efficient, facilitate the movement of people and goods and are appropriate to address projected needs.</li> <li>• Section 1.6.7.4: A land-use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and active transportation.</li> </ul> <p>Section 1.7 discusses long-term economic prosperity and how this should be supported by:</p> <ol style="list-style-type: none"> <li>a) Promoting opportunities for economic development and community investment-readiness;</li> <li>b) Optimizing the long-term availability and use of land, resources, infrastructure, electricity generation facilities and transmission and distribution systems, and public service facilities; and,</li> <li>i) Promoting energy conservation and providing opportunities for the development of renewable energy systems and alternative energy systems, including district energy.</li> </ol> <p>The proposed location of the Beamsville Station provides an opportunity to build a dense urban development that fosters communities that have the potential to grow economically and sustainably.</p>
	The Town of Lincoln Official Plan (2018)	<p>The Town of Lincoln's Official Plan consolidated in 2018 sets the Town Council priorities and establishes its vision for 2031. Over the Plan's period, the Town's growth is expected to increase by:</p> <ul style="list-style-type: none"> <li>• Population growth of 4,783 people;</li> <li>• Housing growth of 2,110 units; and,</li> <li>• Employment growth of 980 new jobs.</li> </ul> <p>Beamsville was identified as an Urban Area that comprises specific land use designations. The proposed station location is adjacent to the Urban Area boundaries. The lands around the proposed GO station will support mixed land use and mid to high-rise residential buildings to maintain Lincoln's small-town character.</p> <p>The proposed location will serve as a regional transit node to support future urban growth in the Niagara Region in general, and in Beamsville in particular. It will serve as access to the GO Rail network between Grimsby and St. Catharines.</p> <p>In the Beamsville GO Transit Station Secondary Plan, the potential for mid-rise mixed-use buildings has primarily been identified for parcels south of the rail corridor, north of Greenlane, and east of Ontario Street. The potential for high rise mixed-use buildings has been identified south of the rail corridor, north of Greenlane, and west of Ontario Street.</p>
	Town of Lincoln Transportation Master Plan (2019)	<p>The Town of Lincoln's TMP illustrates policies and strategies related to various transportation modes, one of which is transit. Section 4.2.3 identifies that a GO Station in Beamsville could be implemented in the long term, between 2032 to 2041 (or longer). The TMP also emphasizes the importance of</p>



Stakeholder	Document/Policy	Key Considerations
		<p>connecting local transit to the GO Station and that a transit hub could also develop.</p> <p>In addition, under Appendix E, a key component of the Complete Streets Policy is connectivity. In particular, the importance of kiss-and-ride and bicycling facilities at travel nodes was acknowledged, both of which would be prioritized at the proposed Beamsville Station.</p>
	Beamsville GO Transit Station Secondary Plan (2018)	<p>The Secondary Plan provides the framework through which the Town of Lincoln envisions the Beamsville GO Transit Station area. It encourages and supports the creation of a complete, sustainable community, which provides a range of employment opportunities, mixed land uses (e.g. commercial and residential), as well as a varying range of housing options, local services and community infrastructure.</p> <p>The Secondary Plan supports the increase of GO Transit ridership by using the integration between land use and transportation to enhance intensification and implementation of compact built form. The main objectives of the Secondary Plan are as follows:</p> <ul style="list-style-type: none"> <li>• Plan for redevelopment along Greenlane in proximity to the future GO Station;</li> <li>• Improve the streetscape and pedestrian realm along Ontario Street;</li> <li>• Protect employment lands and attract new investment;</li> <li>• Support connectivity and integration of the potential future GO Transit Station;</li> <li>• Protect stable residential neighbourhoods;</li> <li>• Promote active transportation and make efficient use of existing infrastructure; and,</li> <li>• Encourage the creation of complete communities.</li> </ul>
	Town of Lincoln Economic Development Strategy and Action Plan (2018)	<p>The Town of Lincoln Economic Development Strategy and Action Plan highlights the Town's commitment to economic development. The document addresses how the proposed station will support this commitment through the vacant land where commercial office land is available around the station.</p>

The proposed GO station in Beamsville should relieve congestion, enhance connectivity, and potentially provide an attractive investment opportunity. The next section defines the investment option for the proposed station.

# 3

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## Investment Option



## Introduction

This section describes the study area surrounding the proposed station site, the Business as Usual scenario, and the Investment Option examined in this IBC.

## Study Area

The Study Area is defined in Schedule B7 of the Secondary Plan. The Secondary Plan Area extends over 254 hectares, including the site for the proposed station, as depicted in Figure 3.

The station site is located on the north side of the Grimsby Subdivision, west of Ontario Street and north of Greenlane. Ontario Street is the main access way into Beamsville from the Queen Elizabeth Way (QEW), which runs near parallel to the rail line. The highway provides access to Hamilton and the rest of the GTHA to the west and St. Catharines, Niagara Falls, and the United States border to the east. Within the Secondary Plan, the intersection of Greenlane and Ontario Street has been identified as a major gateway improvement area that would support active transportation and allow for mixed-use development.

On the east side of the site, Ontario Street is lined with commercial and office uses to the north of the railway, residential to the south, with some clusters of commercial throughout. This land is designated primarily as mixed-use and low-density residential. On the western side of the site is Konkle Creek, where the land is designated as Natural Environment under Schedule B7 of the Secondary Plan. Land to the west of the station site is designated as Specialty Agricultural under the Town of Lincoln Official Plan and would be subject to the policies of the Greenbelt Plan. The land within the Urban Area Boundary of Beamsville would be subject to the Provincial land use policy (A Place to Grow: Growth plan for the Greater Golden Horseshoe).

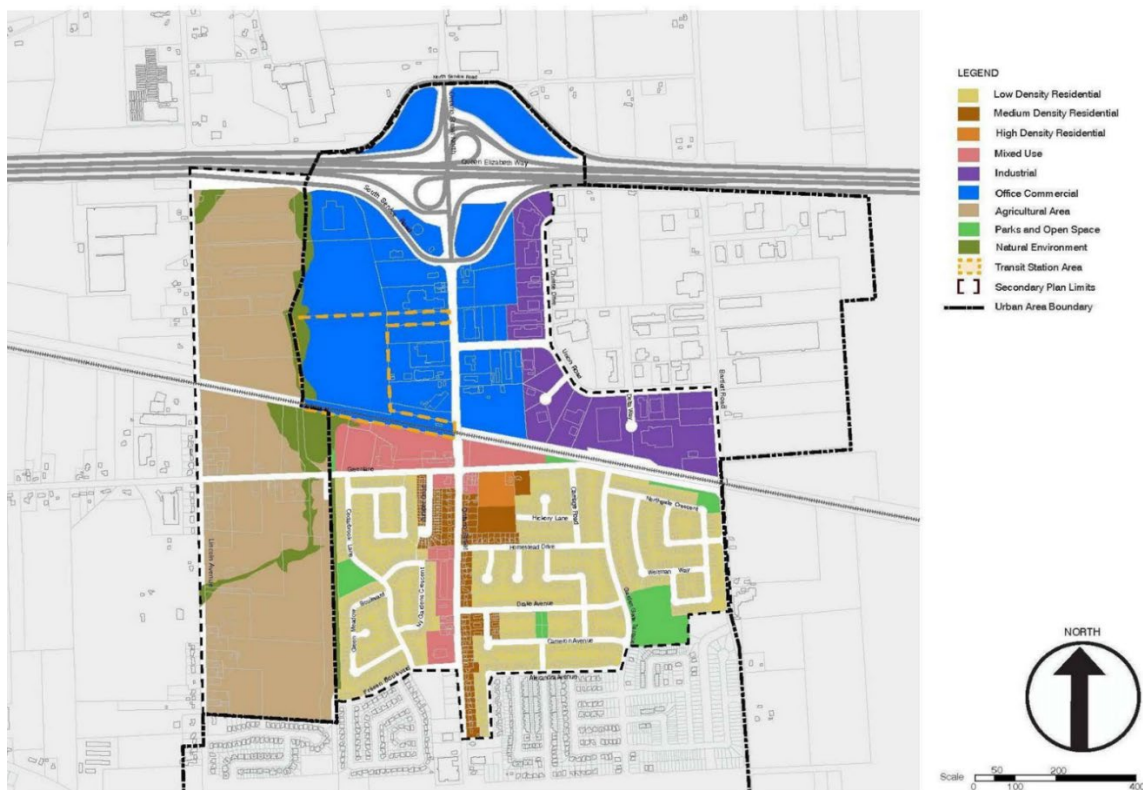


Figure 3: Map of the Study Area (Schedule B7 from the Beamsville GO Transit Station Secondary Plan)

## Business as Usual Scenario

Under the BaU scenario, the Niagara Extension is in operation with service to three stations east of Confederation GO Station. These stations would be served by a total of 11 diesel-powered train trips per day. During peak periods, there would be two Union Station-bound AM trips from Niagara Falls GO Station and two Niagara Falls GO Station-bound PM trips from Union Station. The remainder of the trips would occur during off-peak hours, with four Union Station-bound trips from Niagara Falls GO Station and three Niagara Falls GO Station-bound trips from Union Station. In addition, a total of 39 trains would also stop at Confederation GO Station daily. The BaU is based on the service concept and corresponding enabling infrastructure recommended as part of the 2019 Niagara Falls Rail Service Extension Initial Business Case. Figure 4 illustrates the service concept used in this IBC.

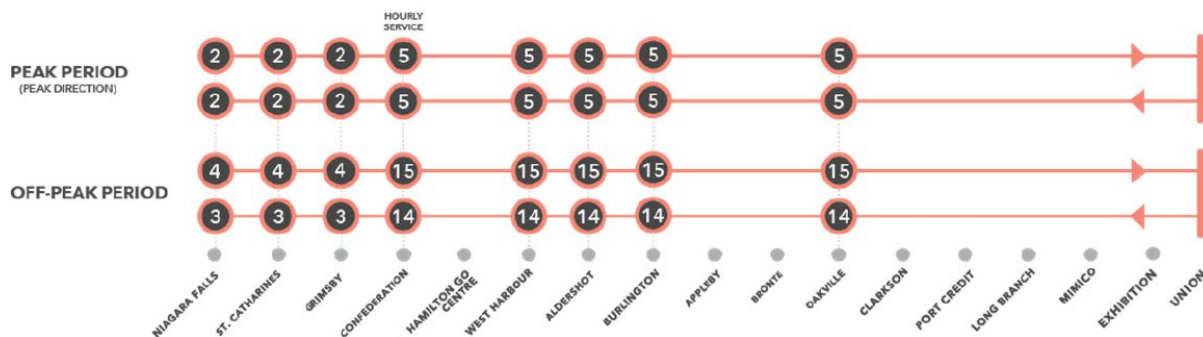


Figure 4: Service concept used in the IBC

In addition to GO rail service, GO Bus Route 12, which links Niagara Region with Burlington, has a stop in Beamsville at the Ontario Street and QEW Carpool lot. From there, passengers can reach Union Station by transferring to the Lakeshore West line at Burlington GO. Under the BaU, GO Bus Route 12 would reduce service by 11 trips per day compared to the present-day service level as this service would be provided by rail. No further GO Bus service reductions are anticipated as a result of the implementation of the proposed station in Beamsville.

Under the BaU, residents of the Town of Lincoln would have few viable options to access the GO rail network, except to drive and park or be dropped off and picked up at St. Catharines GO or Grimsby GO, which are at approximately 20 km upstream and 10 km downstream from the proposed station, respectively. These distances are too great for active transportation to be a realistic access mode to these stations. The Town of Lincoln currently offers a fixed-route local bus service that will be replaced by a regional on-demand transit service.

## Investment Option

A representative plan was developed to support the cost estimates used in this IBC and to assess the feasibility of delivering the proposed station. As the ultimate station configuration and arrangement will be determined by the Proponent, the representative concept plan was not included in this IBC.

### Track and Platform Arrangement

Currently, there is one track at the proposed site, but the BaU assumes the Grimsby Subdivision would be double-tracked with the addition of a new track to the south of the existing mainline<sup>4</sup>. A single-sided platform would be located on the north side of the track, which would require the implementation of switches on either side of the platform to serve the southern track, which would be installed as part of the BaU scenario. The eastern crossover location would be east of Ontario Street to allow for the platform to be closer to the roadway.

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This could not only allow for the station amenities to be aligned with the centre of the platform but also reduces the potential impact on Konkle Creek. Union Station-bound trains will travel on the existing (north) track and trains travelling on the new (south) track will be Niagara Falls-bound.

An additional single-sided platform on the south side of the new track and new pocket track to the north of the existing track should also be protected for to accommodate the potential for future half-hour to hourly service. Platform access infrastructure including tunnels, stairs, and elevators would be required to support this additional platform. Between the existing track and the new pocket track, the single-sided platform would be widened to become an island platform for loading and unloading passengers.

### *Station Amenities*

Station amenities are the features that support riders within a station site and include the facilities that enable riders to access a station. The station facility requirements for the proposed station, outlined in Table 3, were determined to be required to support projected ridership demand and mode shares.

Table 3: Sizing Requirements for Station Access Modes

Facility	Number of Spaces by Category
Park & Ride	410 Standard, 4 Type A, 5 Type B, 5 Carpool
Pick-up/Drop-off (PPUDO)	40 Wait, 8 Load
Transit	1 GO Bus Bay, 3 Niagara Region On-Demand Transit Bays
Cycling	32 Covered, 16 Secure

A hydro corridor runs parallel to the track and has one transmission tower within and one transmission tower just outside the station site. As per the Provincial Secondary Land Use Program (PSLUP), transmission towers require a 15-metre clearance around them, and hydro corridor rights-of-way do not allow buildings or other permanent structures to be located within them<sup>7</sup>. However, parking lots would be a permitted use within the corridor, which could enable a condensed station site. Potential impacts on station amenities, accompanying platform(s), and potential future pocket track, which may be located on the same side of the track as the hydro corridor will need to be considered as part of the detailed design. In addition, coordination with Hydro One would be required.

The proposed station location provides an opportunity to support station amenities due to its undeveloped condition. To further make efficient use of the land on the station site, the station facilities could be condensed down to the rail corridor and extend out to the Natural Environment land designation on the western edge of the station site. Priority should be placed on having active transportation, transit, and PUDO facilities in closer proximity to the station building and the centre of the platform than the parking facilities.

The only vehicle entrance currently identified is from Ontario Street to the north of the station. The Secondary Plan identified the need for an intersection assessment due to the anticipated high volume of traffic through the area. Intersection improvements are also indicated on Ontario Street at Greenlane and South Service Road. The potential for additional entrances should be considered for South Service

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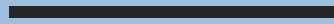
<sup>7</sup> Hydro One (2020). Secondary Land Uses on Hydro One Right-of-Ways. Online. <https://www.hydroone.com/business-services/secondary-land-use>

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Road and Lincoln Avenue, according to the Secondary Plan; however, they are not considered as part of this IBC.

The station could be accessed through a multi-use trail from Ontario Street, as outlined in the Secondary Plan. Another multi-use trail connection could be added to the southern side of the station site to provide pedestrian and cyclist access directly from Ontario Street. In addition, the station design could include walkways throughout, including through parking areas, to support the movement of pedestrians around the station site.

# 4



## Strategic Case



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## Introduction

The Strategic Case assesses the performance of the proposed station against the strategic outcomes and benefits defined in the Case for Change and summarizes how the implementation of the proposed station aligns with local and regional policy goals.

### Strategic Outcome 1: Strong Connections

The proposed station will increase regional connectivity to major destinations and employment hubs and attract new users to the GO network.

Specifically, this section analyzes the station's ability to meet the following benefits:

- Improving access to local and regional destinations;
- Attracting new riders to the transit network;
- Enhancing accessibility for tourists and visitors; and,
- Providing transit investment that can expand for future growth.

#### *Benefit 1: Improving access to local and regional destinations*

The proposed station will improve access to employment centres and key destinations for both residents of the Town of Lincoln who commute outside of the Town on a regular basis and for residents from elsewhere in the region who commute to the Town of Lincoln or could benefit from better access to employment opportunities in the Town of Lincoln. Tourists and visitors will also benefit from having an alternative to driving. The proposed station may even act as a catalyst to attract visitors that would not have visited the area in the absence of the rail option.

In 2016, the Town of Lincoln had a total population of 23,787 with 62% aged between 15 to 64 years old<sup>5</sup>. The community is well educated with 79% of those aged over 15 years of age holding a certificate, diploma or degree. The car is the primary mode of travel for 93% of commuters (88% as drivers and 5% as passengers) with only 7% using public transit or other forms of active transportation<sup>5</sup>.

That same year, 6,445 residents<sup>8</sup> commuted outside of the Town of Lincoln on a regular basis. The majority travel to destinations located between Niagara Falls and Oakville, with Hamilton as the main destination for 25% of residents commuting outside the Town. Of the top six destinations, three are located within Niagara Region, and two are within Halton Region. The City of Toronto ranks the ninth most common commute for Town of Lincoln residents. These destinations are all served by at least one GO rail station along the Niagara Extension or Lakeshore West line. A new transit connection to these key destinations will provide residents of the Town of Lincoln with a wider range of employment opportunities and access to other services such as education, health services, shopping, etc., especially for those without access to a car.

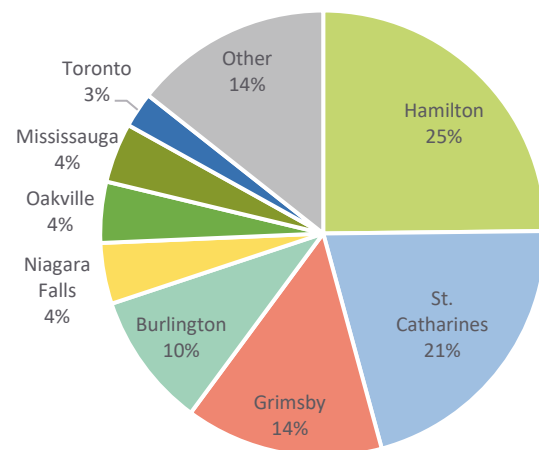


Figure 5: Destinations of Commuters outside the Town of Lincoln

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<sup>8</sup> Data provided by the Town of Lincoln from the 2016 Census.



In comparison, 5,605 people commuted into the Town of Lincoln in 2016<sup>8</sup>. The origin with the far greatest number of commuters is St. Catharines, with 36% of the total. Niagara Falls ranked fifth with 6% of the total. These two municipalities are located to the east of Beamsville and are served by GO rail stations along the Niagara Extension. These commuters could use the proposed Beamsville Station to avoid driving the 20 to 40 kilometres that separate them from their workplace.

Figure 5 and Figure 6 represent the destination and origins of commuters who commute out of and into the Town of Lincoln, respectively.

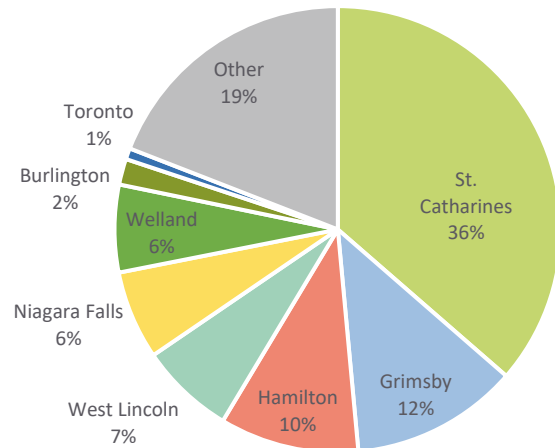


Figure 6: Origins of Commuters to the Town of Lincoln

Improving access to local and regional destinations will become increasingly important with the forecasted population and employment growth. The Secondary Plan anticipates that population and employment would increase by 1,300 people and 950 jobs within the Secondary Plan Area by 2041<sup>3</sup>. In parallel, it is estimated that the 2031 population and employment in an 800-metre radius around the stations of the Niagara Extension would be 11,200 people and 9,300 jobs<sup>4</sup> under the BaU scenario.

#### ***Benefit 2: Attracting new riders to the transit network***

Beamsville Station is anticipated to attract close to 60,000 yearly new transit trips to the regional network in 2041. New transit riders are expected to shift away from auto use to benefit from the comfort and convenience the train offers. In addition to new transit riders, the proposed station will attract 278,000 existing riders annually in 2041 who use St. Catharines GO, Grimsby GO or GO Bus Route 12, under the BaU scenario. Overall, the proposed station is anticipated to attract 325,000 annual transit trips in 2041, as shown in Table 4. However, the additional dwell time in Beamsville results in upstream ridership losses of approximately 11,000 annual trips at St. Catharines GO and Niagara Falls GO, resulting in a net regional uptake of 48,000 annual trips in 2041.

Forecasting was completed using the Greater Golden Horseshoe Model version 4 (GGHMv4) to determine the incremental ridership. The GGHMv4 does not account for exogenous demand, as such, these ridership figures consist mainly of the travel demand for GTHA residents. The additional demand for transit stemming from tourists and visitors is assessed in Benefit 3.

On a typical 2041 weekday, the proposed station would attract 235 new trips shifting away from auto and 1,110 existing riders diverting from other GO stations. A total of 441 existing transit riders would divert daily from St. Catharines GO, reducing demand at that station from 1,163 to 722. Similarly, 517 existing riders would divert daily from Grimsby GO, with 1,001 riders remaining at that station. In addition, 152 riders would switch daily from GO Bus Route 12 in favour of the train. The ridership figures include return trips, meaning that both the inbound and outbound trips for the same rider on the same day are being captured.

Table 4: 2041 Daily and Annual GO Transit Trips

	Daily Total	Annual Total
New Riders	235	59,000
Existing Riders	1,100	
St. Catharines GO	441	
Grimsby GO	517	278,000
GO Bus Route 12	152	
Lost Riders	-44	-11,000
<b>Total Ridership at Beamsville</b>	<b>1,301</b>	<b>325,000</b>
<b>GO Network Net Incremental Ridership</b>	<b>191</b>	<b>48,000</b>

### *Benefit 3: Enhancing accessibility for tourists and visitors*

Today, between 550,000 and 625,000 individuals visit the Town of Lincoln each year<sup>9</sup>. By 2041, the Town could attract between 685,000 and 780,000 visitors assuming an annual growth rate of 1%. Under the BaU scenario, tourists and visitors access the area either by private automobile, rental car, GO Bus Route 12, or VIA/Amtrak and GO rail service to visit other parts of Niagara Region served by a station.

In 2041, the additional station in Beamsville could be an attractive option for 7,000 to 8,000 visitors who would experience travel time savings and/or lower out-of-pocket costs compared to their preferred mode of travel under the BaU scenario.

To determine the potential modal shift towards rail, the analysis assessed and compared different itineraries to identify trips for which the rail service is competitive. A spreadsheet-based cost comparator was developed to determine the total trip cost associated with different origin-destination pairs and modes of travel using the generalized journey cost approach where the travel times are monetized and combined to the financial costs borne by visitors.

The analysis retained two origin-destination pairs where visitors using a car are likely to benefit from a shift to rail: from Union GO in downtown Toronto and from West Harbour GO. Union GO was chosen to account for all visitors from central GTHA in general, Toronto Pearson, Billy Bishop and Toronto. West Harbour GO was selected to account for visitors who might be residing in the west of the GTHA or tourists who have landed at John C. Munro Hamilton International Airport.

The results show that rail is not competitive to the private automobile for all origins even considering delays due to traffic congestion on the QEW during busy summer weekends. However, rail is an attractive option when compared to renting a car to access the Region. In this instance, the difference between the rail fare and the cost of renting and driving a car is enough to offset the additional travel times incurred on the train. The generalized journey cost for a one-way trip between Beamsville and Downtown Toronto using a private vehicle, a rental car, and by rail will cost close to \$55, \$86, and \$56 respectively, as illustrated in Figure 7.

<sup>9</sup> The Town of Lincoln (2020). Information provided via email.

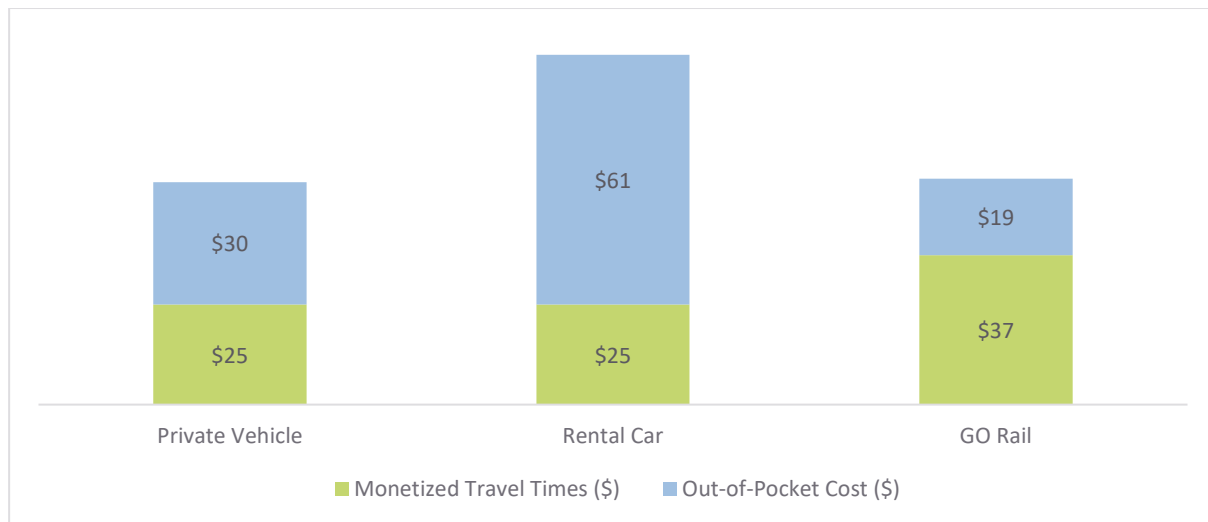


Figure 7: Generalized Journey Cost Comparison for accessing Beamsville from Downtown Toronto by Private Auto, Rental Car and GO Rail

The analysis relies on the following assumptions:

- Based on a weekday AM peak period using July 11th, 2020 Google travel time forecasts;
- The average cost of renting a car is \$1.35 per km<sup>10</sup>; based on an average of three possible pickup locations including a) Pearson Toronto Airport, b) John C. Munro Hamilton Airport, and c) the City of Toronto;
- The private vehicle operating cost is \$0.66 per km as specified by Metrolinx Guidance;
- The average vehicle occupancy for tourists and visitors is two adults;
- Car rental and operating costs are split between the average number of adults per vehicle; and,
- GO rail fare based on a single adult trip.

Next, to determine the number of people who rent a car to visit the area and are potential candidates for switching to rail, the analysis relies on the 2017 Niagara Tourism Profile Report, which shows that 65% of the Region's visitors were from Ontario, followed by 25% from the United States, 8% from overseas, and 2% from the rest of Canada<sup>11</sup>.

The analysis assumes the following:

- Visitors from Ontario: the majority use private vehicles with only 2% likely to rent a car;
- Visitors from the United States: 67% of Americans use private vehicles<sup>12</sup>;
- Visitors from the Rest of Canada: half of the visitors from the rest of Canada access the Region by automobile and the other half by air; and,
- Visitors from overseas: all overseas visitors access the Region by air and rent a car.

<sup>10</sup> Enterprise. (2020). Online. <https://www.ca.kayak.com/>

<sup>11</sup> Niagara Region. (2017). Niagara Tourism Profile. (18 Pages). Online. <https://niagaracanada.com/key-sectors/tourism/>

<sup>12</sup> Statistics Canada (2018). Travel between Canada and other countries, December 2018. Online. <https://www150.statcan.gc.ca/n1/daily-quotidien/190221/dq190221c-eng.htm>

Applying these modal shares to the forecasted annual visitors to the Town of Lincoln suggests that approximately 10% of visitors rent a car and are candidates for switching to rail. Figure 8 summarizes the origins and mode split assumptions of tourists visiting Beamsville in 2041.

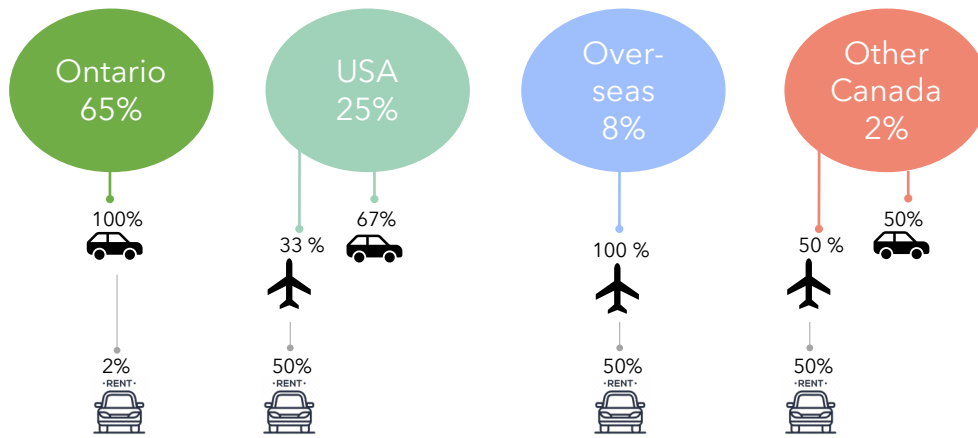


Figure 8: 2041 Visitors to the Town of Lincoln by Origin and by Mode of Travel

However, not all potential candidates will divert from their preferred mode of travel. The extent of the shift depends on the sensitivity of users to changes in the generalized journey cost. Even with the potential savings, some visitors may continue to rent a car for the flexibility it offers or for other reasons.

The potential shift is estimated by applying an elasticity measure<sup>13</sup> (i.e. the responsiveness of users to changes in travel costs) to determine the reduction in demand for rental cars as a result of the proposed Beamsville Station. The results suggest that between 7,000 and 8,000 tourists and visitors could use the rail service instead of renting a car in 2041. It should be noted that these numbers are indicative, and that further analysis should be conducted to refine the assumptions.

A similar exercise was completed to assess the potential shift in tourist trips away from GO Bus Route 12. In 2019, 11,423 passengers boarded route 12 at the GO Park and Ride in Beamsville (Ontario St @ QEW)<sup>14</sup>. A portion of the potential shift for these trips is accounted for in the commuter demand. However, daily boardings show a spike in demand of 6% during summer months relative to the annual average, as depicted in Figure 9. This additional demand is assumed to stem from tourists or visitors that are not accounted for in the GGHMv4. Tourist demand for GO bus is estimated at 644 boardings (426 on weekdays and 218 on weekends) in 2019 and grown to 970 trips in 2041 by applying an annual ridership growth rate of 1.9%.

<sup>13</sup> Based on findings from the *Fares Market Research Report* prepared for Metrolinx in May 2017.

<sup>14</sup> 2019 GO Bus Route 12 ridership data provided by Metrolinx.



Figure 9: 2019 Average Daily Boarding at Beamsville GO Park and Ride (Ontario St @ QEW)

The analysis uses the change in in-vehicle travel time between Burlington GO and Beamsville for GO bus and GO rail and applies a time elasticity measures of  $-0.73^{15}$  to estimate the number of trips that could switch from bus to rail. The elasticity measure means that a 10% reduction in travel times will result in a 7.3% increase in demand. A total of 21 visitors using GO Bus are likely to shift to rail, as shown in Table 5.

Table 5: Results of Tourist Induced Demand for Rail from GO Bus Route 12

Burlington GO to Beamsville	
2041 Tourist Demand for GO Bus Route 12	970
GO Rail Travel Time (Minutes)	53.4
GO Bus Travel Time (Minutes)	55.0
% Change in In-Vehicle Travel Time	3.0%
Time Elasticity:	-0.73
% Change in Demand:	-2.2%
Additional Demand for GO Rail 2041	21

Finally, it should be noted that the new rail stop in Beamsville may attract tourists who are already accessing the Region by rail under the BaU scenario to visit other areas. The Niagara Falls Rail Service Extension Initial Business Case Update forecasts 200 weekend (Saturday and Sunday) tourist boardings at Niagara GO and St. Catharines GO in 2031 (approximately 12,000 visitors in 2041).

The impact of the tourist demand for GO Rail is used to assess the incremental farebox revenue for Metrolinx. However, tourist demand is not factored into the regional travel time savings and reduction in auto use discussed in the remainder of this section and in the Economic Case due to the absence of data to complete the analysis.

<sup>15</sup> Based on findings from the *Fares Market Research Report* prepared for Metrolinx in May 2017.

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#### ***Benefit 4: Providing transit investment that can expand for future growth***

The station should protect for widening the single-sided platform to become an island platform, a pocket track, a southern platform, and two locations for platform access infrastructure (tunnels, elevators, and stairs). These features should be protected in the case of future GO service concept expansions along the Niagara Extension. In addition, pedestrian crosswalk locations could be proposed at the northern edge of the station site to allow for future development north of the site to easily connect to the rest of the station. The feasibility of any additional tracks and other infrastructure would require further analysis.

A consideration for expansion is CN's Bridge 6, which is in St. Catharines over the Welland Canal. This bridge rises when maritime traffic passes through this section of the canal, resulting in rail services not being able to cross over the bridge while it is raised. Coordination with the St. Lawrence Seaway Management Corporation (SLSMC) would be required to ensure seamless travel.

#### **Strategic Outcome 2: Complete Travel Experiences**

The proposed station will provide a safer, faster and more convenient travel experience for transit riders accessing Beamsville. Three benefits are related to the "Complete Travel Experiences" outcome, namely:

- Reducing travel times and increasing reliability;
- Improving passenger comfort through improved amenities; and,
- Increasing safety on the road network from reduced auto use.

#### ***Benefit 5: Reducing travel times and increasing reliability***

The proposed station in Beamsville results in net daily and annual transit travel time savings of 350 person-hours and 87,560 person-hours respectively, as summarized in Table 6.

Existing riders diverted from other GO services save 5.7 minutes on average for a daily total of 106 person-hours in 2041. These represent the net change in station access and in-vehicle time. Under the BaU, existing Beamsville-area riders who switch from St. Catharines GO likely drive in the outbound direction to access St. Catharines GO. By boarding at Beamsville, they will save the driving time that separates the two stations. Similarly, existing riders who switch from Grimsby GO likely live close to Beamsville, as their access travel time saving must be enough to offset additional in-GO vehicle journey time. Existing riders who switch from GO Bus Route 12 experience in-vehicle travel time savings between Beamsville and Burlington GO since the train runs in its own right-of-way, compared to the bus running in mixed-traffic on the QEW. Under the BaU scenario, passengers transfer to the Lakeshore West line at Burlington GO, and by boarding the train in Beamsville passengers save the additional transfer time.

Upstream riders accessing St. Catharines GO and Niagara Falls GO will experience daily delays of 22 person-hours due to the additional dwell time (i.e. 2.8 minutes) for riders to board and alight at the proposed Beamsville Station. The additional delay is enough for riders who are sensitive to the change in travel time to switch away from transit, resulting in a daily travel time penalty of one person-hour.

New riders shifting from auto are not expected to experience travel time savings, since auto is generally faster than rail. Rather, auto users are likely to shift to rail to benefit from the comfort and reliability of the train and to make better use of their time spent during their commute compared to driving (i.e., reading a book, catching up on work, etc.). These benefits are translated into travel time saving equivalents and included in the total travel time savings. In addition, auto users remaining on the road network will likely experience less congestion and shorter trips, estimated at 254 daily person-hours in 2041.

Table 6: 2041 Daily and Annual Travel Time Savings

Rider Category	Average Travel Time Savings per Trip (Minutes)	Number of Trips	Daily Total (Person-Hours)	Annual Total (Person-Hours)
Transit Users				
New Riders	2.9	235	11	2,800
Existing Riders	5.7	1,110	106	26,500
Upstream Riders	-2.8	476	-22	-5,550
Lost Riders	-1.4	-44	-1	-260
Auto Users	N/A*	N/A*	254	63,500
<b>Total</b>			<b>350</b>	<b>87,560</b>

\* Travel time savings for auto users apply to all users remaining on the regional road network.

#### *Benefit 6: Increasing safety on the road network from reduced auto use*

Overall, in 2041, the proposed station is estimated to save 21,724 vehicle-kilometres travelled per day, and approximately 5.4 million vehicle-kilometres annually. The 235 new riders switching away from auto will save 97 kilometres per trip on average for a total of 22,761 vehicle-kilometres per day in 2041. The 1,100 existing riders will save a total of 1,100 vehicle-kilometres per day. A portion of the upstream lost riders would drive to their destinations, resulting in additional distances travelled of 48.5<sup>16</sup> kilometres for each lost rider per day. This would add an additional 2,137 vehicle-kilometres in total per day to the regional road network. The vehicle-kilometres for the proposed station for summarized in Table 7. Fewer automobiles results in fewer collisions and improved safety outcomes on the road network. For reference, in 2016, the Town of Lincoln experienced a total of 212 collisions, and provincial highways located within the Niagara Region had a total of 1,107 collisions<sup>17</sup>.

Table 7: 2041 Daily and Annual VKT Savings

	Number of Trips	Average VKT Savings per Trip (Kilometres)	Daily Total (VKTs)	Annual Total (VKTs)
New Riders	235	97	22,761	5,690,000
Existing Riders	1,110	1	1,100	275,000
Lost Riders	-44	-48	-2,137	-534,000
<b>Total</b>	<b>1,389</b>	<b>-</b>	<b>21,724</b>	<b>5,431,000</b>

<sup>16</sup> The average distance saved is estimated as half of the average distance saved by new riders. The rule of half is applied to account for the fact that not all lost riders will shift to auto. For instance, some lost riders may decide not to travel anymore.

<sup>17</sup> Ministry of Transportation (2016). Ontario Road Safety Annual Report 2016. 100 pages. Online. <http://www.mto.gov.on.ca/english/publications/pdfs/ontario-road-safety-annual-report-2016.pdf>

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### *Benefit 7: Improving passenger comfort through improved amenities and easy accessibility*

The amenities at the station site should improve passenger comfort for transit users. Currently, GO Bus passengers board and alight in Beamsville at the QEW and Ontario Street Carpool Lot located on South Service Road, backing onto the QEW eastbound on-ramp. The facilities at this lot are limited to a parking lot, pedestrian shelter with seating, and bicycle parking. In comparison, the proposed station in Beamsville could provide GO Bus passengers with additional amenities (such as potentially a larger waiting area, station building with washrooms, and more bicycle parking). It could also allow pedestrians to access the proposed station from sidewalks along Ontario Street and multi-use trails directly to the site. This would result in increased passenger comfort and allow for easier access to the GO Bus service.

As the station site is not directly on Ontario Street, incorporating multi-use trails into the station design would be important to allow for convenient active transportation connections to the site. Having walkways that run throughout the site would promote walkability for pedestrians. In addition, having the PUDO and bus bays in proximity to the station building and centre of the platform could allow for convenient access and would prioritize those facilities over standard surface parking spaces.

### **Strategic Outcome 3: Sustainable and Healthy Communities**

Creating a denser, transit-oriented community within Beamsville would contribute towards promoting active transportation and reduced automobile use, both of which would also support improved air quality. It is these elements that would contribute to a sustainable and healthy community for those who live in Beamsville.

This section assesses three benefits for the proposed station's ability to realize the outcome of "Sustainable and Healthy Communities":

- Promoting land-use intensification and encourage transit-oriented communities;
- Encouraging the use of active modes to access the GO rail network; and,
- Improving air quality and reduce transportation-related emissions.



### ***Benefit 8: Promoting land-use intensification and encouraging transit-oriented communities***

The proposed station in Beamsville is expected to create an incentive for further development and intensification to occur within the Secondary Plan Station Area. The concept plan could condense the station site down towards the rail corridor to allow for more developable area on the lands directly north of the site. The parking areas could also be extended beneath the hydro corridor to make for efficient use of space, as structures cannot be constructed beneath this right-of-way.

The Secondary Plan forecasts that the population and employment will increase by 1,300 people and 950 jobs within the Secondary Plan Area by 2041<sup>3</sup>. The Secondary Plan Area ranges from approximately 500 metres to 1.3 kilometres from the station site. The Secondary Plan stresses that creating a denser community is important while still allowing for a small-town feel to be present. Multiple land uses are proposed by the Secondary Plan, including Office Commercial directly north, east and on the station site itself and Mixed-Use just south of the rail corridor. The Secondary Plan also identifies 150 people and jobs per hectare for its density target<sup>3</sup>. As illustrated in Figure 10, within and north and east of the station site, a maximum of six storeys is permitted, while up to ten storeys would be permitted just south of the rail corridor.

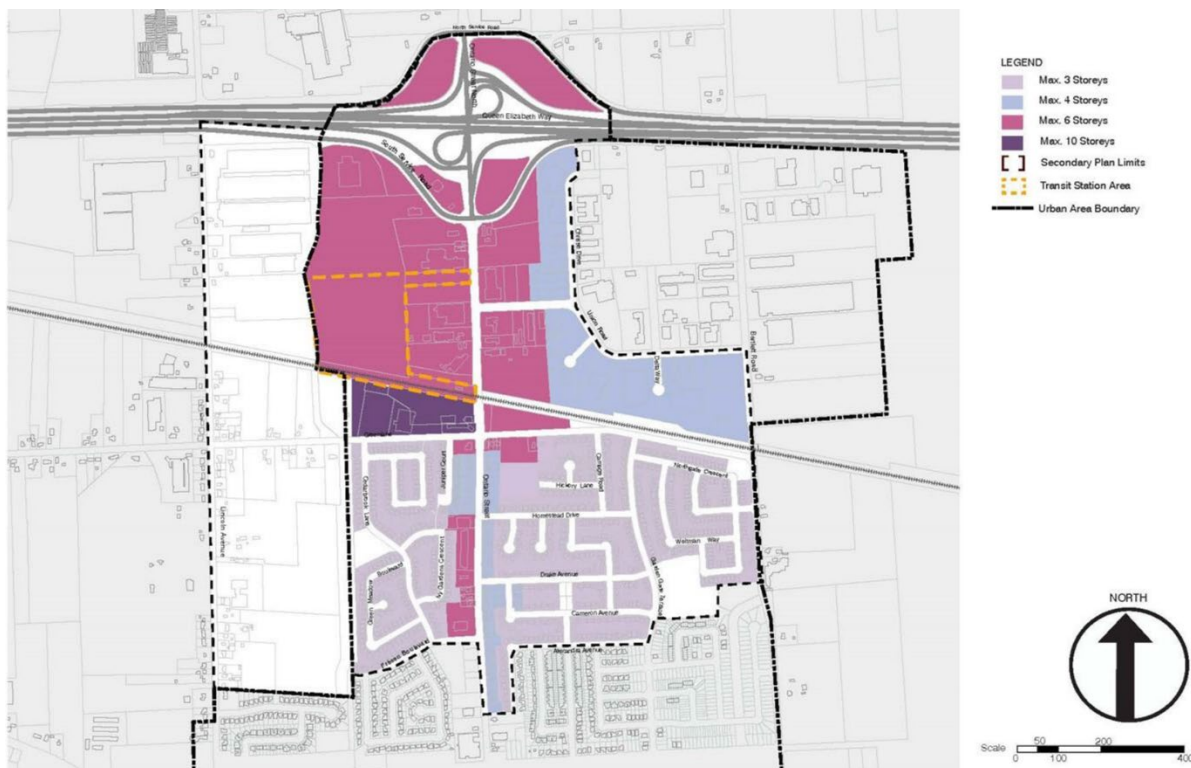


Figure 10: Beamsville GO Transit Station Secondary Plan Building Heights

### ***Benefit 9: Encouraging the use of active modes to access the GO rail network***

The proposed station provides an opportunity to change behaviour by incentivizing the current and future population to use public transit and active modes of transportation.

The planned land use densification in the Secondary Plan Station Area is conducive to promoting a greater use of active transportation to access the proposed station. For example, the 2016 Metrolinx GO Rail Station Access Plan identified mode splits of 6-8 percent for walking, and 1-2 per cent for cycling for

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Grimsby GO Station<sup>18</sup>. Achieving similar targets at Beamsville would allow the development of a complete community, and removal of more automobiles from the road network. In turn, increased walking and cycling are associated with better health, further increasing the welfare of the community.

Mitigating reliance on auto use could also reduce the parking area required in the area surrounding the station, leaving more land available for development.

The station concept could support active transportation in multiple ways due to the undeveloped nature of the proposed station location. This could include multi-use trails to allow pedestrians and cyclists to access the site as the proposed station is not directly adjacent to Ontario Street. In addition, pedestrian walkways could be included throughout and bicycle parking, both covered and secure spaces, should be provided. Similarly, effective land-use planning and management of growth are required to ensure that key infrastructure is delivered to support the development of complete communities while accommodating a young and growing workforce.

#### ***Benefit 10: Improving air quality by alleviating transportation-related emissions***

Along with increasing the safety of the road network, the avoided auto trips will also alleviate GHG and criteria air contaminant (CAC) emissions resulting from auto use. Improving the quality of air would lead to increasing the overall health of communities.

In 2018, transportation was one of the main contributors to GHG emissions in Canada and accounted for nearly 25% of the national carbon dioxide (CO<sub>2</sub>) emissions<sup>19</sup>. The quantification of the impact of transportation-related emissions on global climate change has received much attention from multiple regions. Governmental bodies, including Metrolinx, have objectives to limit GHG emissions in their mandate, especially after the International Panel on Climate Change recommended the integration of climate change into national transport policies in 2007<sup>20</sup>.

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<sup>18</sup> Metrolinx (2016). GO Rail Station Access Plan. 294 pages. Online.

[http://www.metrolinx.com/en/regionalplanning/projectevaluation/studies/GO\\_Rail\\_Station\\_Access\\_Plan\\_EN.pdf](http://www.metrolinx.com/en/regionalplanning/projectevaluation/studies/GO_Rail_Station_Access_Plan_EN.pdf)

<sup>19</sup> Environment and Climate Change Canada. (2020). National Inventory Report 1990 –2018: Greenhouse Gas Sources and Sinks in Canada. (15 Pages). Online.

[http://publications.gc.ca/collections/collection\\_2020/eccc/En81-4-1-2018-eng.pdf](http://publications.gc.ca/collections/collection_2020/eccc/En81-4-1-2018-eng.pdf)

<sup>20</sup> IPCC. (2007). Climate Change 2007 Synthesis Report. Intergovernmental Panel on Climate Change. (112 Pages). Online. [https://www.ipcc.ch/site/assets/uploads/2018/02/ar4\\_syr\\_full\\_report.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/ar4_syr_full_report.pdf)

## Strategic Case Summary

Overall, the proposed station would provide many strategic benefits to riders of GO as well as to the community of Beamsville. A summary of the key components for each benefit is provided in Table 8.

Table 8: Summarizing the Strategic Case

2041 RTP Goal	Benefit	Investment Option
<b>Strong Connections</b>	Improving access to local and regional destinations	<ul style="list-style-type: none"> <li>In 2016, 6,445 people commuted from, and 5,605 people commuted to the Town of Lincoln, with the most common destination for commuters being Hamilton at 25%, and the most common origin for commuters destined to Lincoln being St. Catharines at 35%.</li> <li>All the top-six most common destinations have at least one GO station along the Niagara Extension or the Lakeshore West line.</li> </ul>
	Attracting new riders to the transit network	<ul style="list-style-type: none"> <li>By 2041, the proposed station is estimated to attract almost 48,000 net new transit trips annually to the regional network.</li> <li>The proposed station is forecasted to attract 325,000 trips annually in 2041, including those diverted from other GO stations.</li> </ul>
	Enhancing accessibility for tourists and visitors	<ul style="list-style-type: none"> <li>The station is estimated to shift between 7,000 and 8,000 tourists off the road network to transit.</li> </ul>
	Providing transit investment that can expand for future growth	<ul style="list-style-type: none"> <li>The station should protect for a northern island platform, pocket track, a southern platform, and platform access infrastructure.</li> </ul>
<b>Complete Travel Experiences</b>	Reducing travel times and increasing reliability	<ul style="list-style-type: none"> <li>In 2041, the proposed station is estimated to generate daily travel time savings of 350 PHTs.</li> <li>Annually, the travel time savings are estimated to be approximately 87,560 PHTs.</li> </ul>
	Increasing safety on the road network from reduced auto use	<ul style="list-style-type: none"> <li>Based on the year 2041, the proposed station would be responsible for saving 21,724 vehicle-kilometres daily or approximately 97 kilometres for each new rider and approximately 1 kilometre for each existing rider.</li> <li>The annual reduction in auto use because of the proposed station is estimated to be approximately 5.4 million vehicle-kilometres.</li> </ul>
	Improving passenger comfort through improved amenities and easy accessibility	<ul style="list-style-type: none"> <li>The proposed station could enable GO Bus Route 12 to stop at a location with an increased number of passenger amenities, including multi-use trails to the bus stop.</li> <li>Once determined, the station amenities could allow for convenient access around the site.</li> </ul>
	Promoting land-use intensification and encouraging transit-oriented communities	<ul style="list-style-type: none"> <li>The proposed station would be able to complement existing land uses and provide an incentive for further development to occur.</li> <li>The proposed station is supported by the Beamsville GO Transit Station Secondary Plan.</li> </ul>

2041 RTP Goal	Benefit	Investment Option
	Encouraging the use of active modes to access the GO rail network	<ul style="list-style-type: none"> <li>Encouraging use of active transportation modes would reduce the number of automobiles on the road network</li> <li>The station concept plan could support active transportation use by providing walkways throughout the area and multi-use trails that lead directly to the site from Ontario Street.</li> </ul>
	Improving air quality by alleviating transportation-related emissions	<ul style="list-style-type: none"> <li>Reduced auto use and increased walking and cycling would support the improvement of air quality.</li> </ul>
Overall Benefits		<ul style="list-style-type: none"> <li>The proposed station is estimated to attract close to 48,000 annual net new transit trips to the regional network by 2041.</li> <li>The station concept plan protects for future service growth along the Niagara Extension.</li> <li>The proposed station would complement existing land uses and support future development.</li> <li>Aligns with the local policy from the Beamsville GO Transit Station Secondary Plan.</li> </ul>
Overall Strategic Statement		<p>The proposed Beamsville Station aligns with the 2041 RTP goals. It increases regional connectivity, promotes the use of transit and the reduction of auto use. Transit and auto users will both experience net travel time savings and the shift towards rail will improve safety and air quality for all.</p>

# 5

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## Economic Case



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## Introduction and Assumptions

The Economic Case provides the rationale for pursuing an investment in the proposed Beamsville Station from a societal perspective.

The evaluation consists of a benefit-cost analysis which tests whether there is a clear basis for proceeding with the funding and implementation of the proposed station from a social perspective, irrespective of who funds the investment. The analysis compares the additional costs arising from the project against the incremental benefits that can be monetized and included in the cost-benefit analysis. The costs include both fixed and variable costs; these include the initial capital outlay and any additional operating and maintenance costs associated with the station infrastructure throughout the evaluation period. The benefits include transportation-user impacts (i.e. travel time savings, reduced vehicle operating costs) and indirect benefits consisting of environmental and safety outcomes resulting from the reduction in auto use derived from the GGHMv4 results. The analysis does not include benefits accrued by tourists and visitors.

Over the project's evaluation period, the analysis considers the Net Present Value (NPV) measure that provides the value of benefits net of all costs throughout the investment's evaluation period discounted to the present date using a social discount rate of 3.5 per cent and the Benefit-Cost Ratio (BCR) measure that offers an indication of the economic return on investment (i.e. value creation per dollar of investment). The use of these metrics is based on the ability to quantify the benefits in terms of monetary values and comparing them to the project costs.

The Economic Case also includes the effects of achieving a compact built environment and its impact on health benefits by enhancing active modes of transportation. Assumptions provided by the Metrolinx Business Case Guidance are listed in Table 9.

Table 9: Economic Case Assumptions

Input	Impact Type
Analysis Approach	All costs and benefit are expressed in 2020\$
Evaluation Period	60 years
Social Discount Rate	3.5%
Real Inflation	0%
Value of Time (VoT)	\$18.42 per hour
VoT Growth Rate	0%
Auto Occupancy	1.08
Auto Operating Cost Savings (2019\$)	\$0.09 per km
Decongestion Benefit (2019%)	0.01 hours per vehicle-km
Safety Improvements (2019\$)	\$0.09 per km
GHG Value	\$0.01 per km
Criteria Air Contaminant (CAC)	\$0.02 per km

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## Costs

The project costs include the capital investment as well as incremental station and train operating and maintenance costs. All the cost figures presented below are incremental to the BaU scenario.

### *Capital Costs*

The capital costs are fixed one-time expenses incurred during the implantation phase of the project. The capital costs are estimated at \$28.5 million in 2020\$ present value. The costs include the labour and materials required for the site preparation and the construction of the station including, but not limited to the station building, landscape area, bus loop, the adjacent parking lots, platform and track work, as well as mechanical and electrical site services. Significant rehabilitation costs that are needed throughout the life cycle of the project's 60-year evaluation period, estimated at about \$3.7 million, are also included in the capital costs. These rehabilitation costs represent state of good repair work on Metrolinx owned station elements such as the station building, platform, bus loop, PUDO, and other related infrastructure.

### *Operating and Maintenance Costs*

Operating and Maintenance (O&M) costs are required to operate and maintain the daily services. The incremental O&M costs borne by Metrolinx are estimated at \$462,400 in 2020 dollars, for a total of \$8.30 million in present value terms over the 60-year evaluation period. The O&M costs include both daily station operations and incremental train operating costs associated with the additional stop.

The Economic Costs Summary is provided in Table 10.

Table 10: Economic Costs Summary (2020\$ Million, Present Value) \*

Cost Category	Proposed Station
Capital Costs	\$28.5
Operating and Maintenance Costs	\$8.3
<b>Total Costs</b>	<b>\$36.8</b>

\*All Totals are rounded.

## User Impacts

Transportation user impacts represent how investing in the proposed station will enhance the welfare of both transit and road network users and consist of the following:

- Travel Time Savings (Transit User);
- Travel Time Savings (Automobile User); and,
- Vehicle Operating Cost Savings.

### *Travel Time Savings*

The travel time savings for transit users are comprised of the net travel time savings accrued to existing riders diverted from other GO stations or GO Bus Route 12, to new riders shifting away from auto, and the travel time penalty incurred by upstream riders who experience a delay due the additional stop in Beamsville, including the delay sustained by lost upstream riders who choose not to use GO anymore due to time penalty. The net travel time savings for transit users are estimated at \$11.8 million in present value.

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Collectively, auto users and truck drivers remaining on the road network will save 63,500 person-hours in 2041, resulting in monetized travel time savings of \$21.5 million in present value. Reduced congestion is expected to have a positive impact on the movement of goods. Lower delivery costs are expected to result in productivity gains for businesses in the region. The travel time impacts are monetized using a value of time travel penalty of \$18.42 per hour and discounted back to a single value.

#### *Vehicle Operating Cost Savings*

Vehicle operating costs represent out-of-pocket costs to individuals driving their vehicle (e.g. gas, depreciation, maintenance, etc.). These cost savings are based on the total change in VKT at the region-wide level comparing the BaU to the new station scenario. To monetize the operating cost savings, the analysis assumes an auto operating cost of \$0.09 per kilometre.

In 2041, the proposed station is estimated to save 21,724 vehicle-kilometres daily or 5.4 million vehicle-kilometres annually resulting in vehicle operating cost savings of \$9.0 million during the evaluation period.

#### **External Impacts**

External impacts include safety outcomes from reduced number of vehicles on the road network and greater separation of pedestrians from moving vehicles, as well as greenhouse gas emission reductions and air quality improvements.

#### *Safety Benefits*

Auto use carries a higher risk of death or injury than transit use. Consequently, any reduction in auto usage will result in a safety benefit. The safety benefits are monetized by applying a unit cost of 9.5 cents per VKT to account for the increase in accidents and collisions. The number of roadway accidents is assumed to reduce at a rate of 5.3% per year.

#### *Environmental Benefits*

External impacts also consist of environmental impacts such as the reductions in GHG emissions and improved local air quality through the reduction in CACs such as NO<sub>x</sub>, PMs. These impacts do not consider any changes in GHG emissions and CACs from the additional transit activities in the area. The GHG emissions reduction and the air quality improvements are monetized by applying unit costs of 1 and 2 cents per VKT respectively. Table 11 summarizes the broader societal impacts of the new station, beyond users of the transportation and transit network.

Table 11: Communicating Present Value of External Impacts (2020\$ Million, Present Value)

Impact Type	Proposed Station
Safety Benefits	\$2.8
Environmental Benefits	\$3.1
<b>Total</b>	<b>\$5.9</b>

#### **Cost-Benefit Analysis Results**

Once monetized and discounted, the total benefits resulting from the investment in the proposed station in Beamsville amount to \$58.8 million, when considering the fare revenue adjustment as per the



Metrolinx Guidance. These benefits are more than enough to offset the total operating and capital discounted project costs, estimated at \$36.8 million, resulting in a net present value of \$22.0 million.

The analysis shows a BCR of 1.60, which means that for every dollar invested the project will create \$1.60 in value for the region. Table 12 provides a summary of the key results of the Economic Case.

Table 12: Summarizing the Economic Case (2020\$ Million, Present Value) \*

	Proposed Station
<b>Total Costs</b>	
Capital Costs	\$28.5 M
Operating and Maintenance Costs	\$8.3 M
<b>User Impacts</b>	
Travel Time Savings (Transit)	\$11.8 M
Travel Time Savings (Auto)	\$21.5 M
Vehicle Operating Cost Savings	\$9.0 M
Incremental Fare Revenue Adjustment**	\$10.5 M
<b>External Benefits</b>	
Safety Benefits	\$2.8 M
Environmental Benefits	\$3.1 M
<b>BCR</b>	<b>1.60</b>
<b>Net Benefits</b>	<b>\$22.0 M</b>

\*All Totals are rounded.

\*\* As per the Metrolinx Business Case Guidance page 107: The incremental change in revenue to transit providers is added as an impact in the numerator of the BCR.

## Sensitivity Analysis

A sensitivity analysis was completed to determine the change in overall benefits and costs when assumed growth rates were modified. The results of this analysis are presented below in Table 13.

Table 13: Economic Sensitivity Analysis (2019 \$ Millions, Present Value)

Criteria	Base Assumption	Sensitivity	Resulting BCR
VOT Growth Rate	0%	0.7%	1.67 – 1.75
Discount Rate	3.5%	2.5%	1.86 – 1.95
Ridership Growth Rate	1.9%	3%	1.61 – 1.69
Ridership Growth Rate	1.9%	1%	1.59 – 1.67

## Economic Development Impacts

The proposed station could yield economic development impacts that go beyond the benefits that can be monetized and included in the cost-benefit analysis. These impacts are not entirely incremental to the appraisal benefits calculated under the transportation user impacts above. However, substantial work is needed to quantify these benefits. Hence, they are only assessed qualitatively at this stage.

### *Wider Economic Benefits*

The Town of Lincoln's vision is to be a Centre of Excellence for Agriculture; however, its economy is diversified and includes the following:

**Agriculture** | The Town of Lincoln has the highest number of farms in the Region of Niagara. In 2020, 374 farms accounted for more than 3,400 jobs. While representing only 3% of the Region's farmland acreage, these farms account for 13% of gross farm receipts in the GGHA.

**Food and Beverage** | The beverage industry is mainly intertwined with wine production in the area. The Town has more than 50 wineries, and the concentration of beverage manufacturing jobs in Lincoln is 22 times the Ontario average.

**Tourism** | Tourism in the Town is mainly led by the flourishing wine industry. A new model that embraces a complete visitor's experience that includes wine operations, distillation and brewing processes has been popularizing the Town's wineries reputation.

**Manufacturing** | Between 2012 and 2017, the Town has seen a 15% increase in its manufacturing jobs. About 30% of the employment in the Town's manufacturing sector is mainly associated with wineries and craft beverage producers.

The regional connectivity and accessibility improvements resulting from the proposed station are expected to yield productivity gains to businesses and higher standards of living for people who work or live in the vicinity of the station. For businesses, productivity gains, defined as an increase in output per dollar of inputs, are achieved through the following:

- Better access to qualified labour: improved accessibility may provide businesses with access to a larger pool of skilled labour to fill vacancies more easily. Similarly, businesses that locate in the vicinity of the station would be able to tap into a wider labour pool. This proximity to the workforce would result in a faster match between skilled job seekers and potential employers;
- Improved efficiency of deliveries from reduced road congestion;
- More attractive street-level conditions which are more conducive to commercial activities;

- Parking costs borne by employers: Modal shift away from single-occupancy vehicle trips lowers the demand for auto parking. Lower parking requirements translate into savings for firms through a reduction in employer-provided parking spaces and for shops that offer parking to their patrons. This is another concrete example of how lower business expense – in this case, due to reduced parking costs – contribute to improving local and regional productivity; and,
- Increasing cyclist and pedestrian activity increases footfall and, in turn, can increase sales. Although customers who bike or walk to a store tend to buy less in a single visit, they tend to return more often, spending as much or more over time than the average customer who arrives by car<sup>21</sup>. Also, pedestrians and cyclists are more susceptible to shop locally.

When firms achieve higher productivity through increased sales or lower production costs, they also can increase their market share relative to their competition. The increase in market share results in more output which generates more employment and more disposable income for households. Ultimately, this means that the area becomes more attractive either as a residential location for individuals and/or as a business location for firms (i.e., as a location for additional employees and investment). Alternatively, a higher standard of living for people can take the form of a wider range of job opportunities for workers and/or a higher take-home pay. The reduced congestion on the regional road network and the higher accessibility for residents commuting to and from the Town of Lincoln will incentivize workers to access jobs that otherwise would not be available to them.

#### *Economic Impacts*

Economic impacts can be thought to represent the footprint of the project. They show how each dollar spent on the project contributes to increasing the regional gross domestic product, employment, wages and government revenue. Impacts include both the temporary impacts expected to accrue as a result of the capital outlays related to the project, and the recurring annual impacts resulting from the station and train operation and maintenance activities.

Hence, for the proposed station, the capital expenditures reported above are expected to create substantial economic activity during the construction period. However, the annual recurring operating expenditures are expected to contribute only modestly to the region's employment, earnings and GDP. These impacts cannot be added in monetary terms to the benefits reported under the transportation-user account due to likely double-counting.

#### *Economic Impacts of Projects Funded Through Incremental Fare Revenue*

The proposed station is expected to generate total net revenues of \$12.7 million (in 2020\$, present value) over the 60-year time horizon. Metrolinx's additional revenues will likely be translated into lower subsidies obtained from the Province of Ontario; which in turn translates into additional capital that the Province could potentially choose to spend on new transit projects to further improve livability and transportation conditions in the region. The expenditures for these projects will thus generate additional economic impacts. The analysis does not quantify these impacts since the specific projects are not known at this time.

#### *Property and Land Value Changes*

Cities that have built higher-order transit lines have found that in addition to making it easier for residents and workers to get around and creating economic development opportunities, the increased

<sup>21</sup> People for Bikes and Alliance for Biking and Walking. (2014). Protected Bike Lanes Mean Business: How 21<sup>st</sup> Century Transportation Networks Help New Urban Economies Boom. [https://www.sfbike.org/wp-content/uploads/2014/04/Protected\\_Bike\\_Lanes\\_Mean\\_Business.pdf](https://www.sfbike.org/wp-content/uploads/2014/04/Protected_Bike_Lanes_Mean_Business.pdf)

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accessibility and travel time savings offered by new transit services attract real-estate investment by developers. This investment can create new infill development, especially on sites with large surface parking lots, or redevelop underused sites. The new GO Station in Beamsville makes the Town of Lincoln a more attractive location to live; especially for residents who will be looking for new housing built around the Station. In addition, the new GO Station in Beamsville can equally provide businesses with incentive to relocate to areas within the vicinity of the Station to take advantage of higher accessibility to both skilled workforce and customers.

#### *Income / Distributional Impacts*

Adding a new station to the GO network could contribute social/community benefits for social groups. In 2016, 3.9% and 5.4% of the population were identified as visible minorities in the Town of Lincoln and Beamsville respectively<sup>5</sup>.

As for earnings, about 50% of Beamsville's working population earned less than fifty thousand dollars annually. Understanding the commuting patterns of Beamsville's residents could potentially help understand the potential equity impacts of the new station.

Further analysis could be completed as part of assessing the potential impacts of the new station on lower-income households and other potentially vulnerable groups, such as the elderly. The analysis should seek to determine how these groups are impacted by the change in accessibility arising from the new station, relative to the overall population affected. Also, in addition to considering the distributional impacts in the station catchment area, the analysis should also consider the impacts of the additional time penalty on the generalized journey cost for those vulnerable population groups travelling from upstream.

# 6



## Financial Case



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The Financial Case assesses the financial viability of the new station from the perspective of Metrolinx. This case aims to communicate the financial impacts of investing in the proposed station in Beamsville.

The dollar figures for the 60-year evaluation period from the potential construction start to end dates (i.e. mid-September 2024 to mid-March 2026) are in nominal dollars. Nominal dollars are the dollar amount that is expected to be paid or received expressed in the year of the payment, and they are calculated assuming an annual inflation rate of 2 percent as per Metrolinx's Guidance. Both annual costs and revenues are discounted using a nominal discount rate of 5.5 percent.

### **Project Costs**

The Financial Case only captures the portion of the lifecycle costs that will be borne by Metrolinx.

The analysis assumes that the new station is delivered through the market-driven strategy and will be funded and constructed by a third party. This third party would incur the costs associated with building the station and investing in the compact mixed-use development around the station to benefit from land value uplift around the station.

Metrolinx would only incur major rehabilitation work and incremental train and station operating costs less any cost associated with the parking lot, which will fall under the responsibility of the third party.

Once adjusted for inflation and discounted using a 5.5 per cent nominal discount rate, the major rehabilitation costs borne by Metrolinx amount to \$4.8 million, while incremental operations and maintenance costs amount to \$6.2 million for a total of \$11.0 million in present value over the period.

### **Revenue Impacts**

The net additional farebox revenue to Metrolinx is comprised of the following revenue sources:

- Full fare revenue from new riders;
- Net additional fare revenue for existing riders diverted from other GO rail stations;
- The lost revenue associated with upstream riders shifting away from transit due to the additional dwell time on the line; and,
- Tourists and visitors switching from auto.

The net incremental fare revenue for existing, new and lost riders is estimated at \$10.3 million in present value, while tourists and visitors shifting to GO may bring additional revenue varying between \$2.4 million and \$2.7 million in present value over the 60-year period. Non-fare revenues may consist of revenues from advertising, proceeds of asset disposal, or imposing forms of value capture mechanisms around the development area by Metrolinx on third parties.

### **Analysis Summary**

The total incremental fare revenue estimated at \$10.3 million without tourist demand are not enough to outweigh the incremental costs borne by Metrolinx and result in a net revenue loss of \$700,000 over the 60-year evaluation period. However, when additional fare revenue from tourists and visitors are considered, the net revenue becomes positive, varying between \$2.4 million and \$2.7 million in present value, using the lower and upper bounds of the tourist demand estimate, respectively. Table 14 provides a summary of the key results of the financial case.

Table 14: Financial Case Summary (\$ Million, Present Value)\*

Financial Case Metric	Proposed Station
<b>Incremental Costs</b>	<b>\$11.0 M</b>
Capital Costs	\$4.8 M
Operating and Maintenance Costs	\$6.2 M
<b>Incremental Farebox Revenue</b>	<b>\$10.3 M – \$13.0 M</b>
Transit Users	\$10.3 M
Tourists and Visitors**	\$0 M – \$2.7 M
<b>Net Revenue for Metrolinx</b>	<b>-\$0.7 M – \$2.0 M</b>
<b>Incremental Cost Recovery Ratio</b>	<b>0.94 – 1.18</b>
<b>Incremental Operating Cost Recovery Ratio</b>	<b>1.66 – 2.10</b>

\*All totals are rounded.

\*\*Lower bound is presented as \$0 to exclude all ridership derived from the tourist market.

# 7

## **Deliverability and Operations Case**





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## **Introduction**

The Deliverability and Operations Case details the technical and institutional requirements to deliver an investment by Metrolinx. These include project governance, major project components, project management plans, environmental assessments and construction impacts of the proposed station. The O&M component includes a review of the operations and maintenance plan, including roles and responsibilities. Finally, the Deliverability and Operations Case includes a review on the investment's procurement plan including the different public sector and third-party roles in delivering the project as well as the risk assumed by each sector and the risk associated with the investment option.

## **Project Delivery**

The project delivery section considers the delivery aspects of the investment option including identifying project sponsor(s) and governance arrangements, constructability review, project management plans, environmental assessment requirements, construction impacts and operations and maintenance review.

### *Project Sponsors and Governance*

This section of the Niagara Extension is owned by Canadian National (CN) Railway and is part of the Grimsby Subdivision. To deliver on service expansion, Metrolinx would have to enter negotiations with CN on operational and associated infrastructure upgrades.

As a result of the existing ownership structure, Metrolinx would be required to seek permission from CN to build the proposed station and stop trains at this location. If approval from CN is received, negotiations would begin with the Proponent to translate the concept into development. The proposed station development is assumed to be funded by the Proponent and transferred to Metrolinx.

In addition to CN and Metrolinx, additional stakeholders and their respective interests/responsibilities are outlined in Table 15.

Table 15: Additional Stakeholders and their Respective Interests/Responsibilities

Stakeholder	Respective Interests/Responsibilities
Hydro One	Review any potential for impacts to the two transmission towers and hydro corridor right-of-way infrastructure north of the rail corridor due to the station site, single-sided platform, and potential future island platform and pocket track; and, Ensure buildings and permanent structures are not located underneath the hydro corridor right-of-way (parking would be allowed), that clearance requirements are met and whether or not any work will be required on Hydro One equipment (at the cost of the Proponent) <sup>7</sup> .
Ontario Ministry of Transportation (MTO):	As the station site is located partially within 400 metres and fully within 800 metres of MTO land <sup>22</sup> , coordination with the MTO may be required due to the proximity of the proposed station entrance from Ontario Street to the QEW/Ontario Street interchange.
The Proponent & the Town of Lincoln:	Ensure that the station development conforms with municipal land use approvals and the Secondary Plan.
VIA Rail and Amtrak:	Coordinate with VIA Rail and Amtrak for operational purposes, since they also provide services along this corridor (two trains in total per day).
Additional stakeholders include:	Niagara Peninsula Conservation Authority (NPCA), Ontario Ministry of the Environment, Conservation and Parks (MECP), Indigenous Communities, and if applicable, Fisheries and Oceans Canada (DFO).

## Constructability Complexity and Risk

This section discusses the constructability complexities and risks for the proposed station concept.

### Station Site

The undeveloped site of the proposed station provides ample space to accommodate construction as well as the required surface parking and station amenities. Station access from the surrounding road network would need to be confirmed, especially as it relates to traffic impacts on Ontario Street.

The presence of the hydro corridor right-of-way, located at the southern edge of the station site, would require coordinating with Hydro One to acquire relevant permits and to adhere to specific requirements during construction and operations. Another consideration would be the coordination that is likely to be required with the NPCA<sup>1</sup>. According to Schedule E3 of the Town of Lincoln Official Plan, the station site is in a vulnerable groundwater area and sand and gravel resource area, for which the implications of construction would need to be examined further. As well, depending on the species at risk present, permits may also be required with the MECP and the DFO.

### Track Infrastructure

The construction of the two track turnouts, switches, rail signals, and the single-sided platform have the potential to impact the existing northern track. To mitigate impacts and reduce risk to rail operations during construction, the new infrastructure could be constructed through night-time/weekend work.

<sup>22</sup> Town of Lincoln (2016). Lands requiring MTO approvals within Lincoln. Shapefile. Online. <https://niagaraopendata.ca/dataset/lands-requiring-mto-approvals-within-lincoln>

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### *Potential Environmental Impacts*

The location of the proposed station is constrained by Konkle Creek to the west and Ontario Street in the east. Multiple culverts cross under the existing track both east and west of the station site. There is a culvert located west of Lincoln Avenue at mile 23.85 that would have a crossover over it. As well, the culvert located over Konkle Creek at mile 23.50, just west of the station site, may require an extension and retaining structures.

There are other potential environmental impacts associated with Konkle Creek. For instance, the movement of fish species may be obstructed by the weir at Konkle Creek, located north of the rail right-of-way<sup>1</sup>. There are also flood and erosion hazards since its culvert is undersized. A headwater feature that contributes to Konkle Creek is located on the south side of the rail corridor and would need to be realigned as a result of rail expansion.

A Stage 2 archeological assessment would be needed due to the archeological potential of the area<sup>1</sup>. The potential impacts on the stormwater management pond on the western edge of the station area would also need to be assessed, as the increased runoff that could be a result of the proposed station may require reengineering of the pond.

Environmental impacts will need to be further examined to determine platform design and construction techniques that minimize impacts on the natural environment and mitigate climate vulnerabilities.

### *Construction Impacts*

It is assumed that construction-related heavy vehicle traffic would access the site from Ontario Street. Traffic operations should be reviewed and the need for signal control considered, as appropriate. With respect to utilities, the impacts on the hydro corridor and the utility lines located between the hydro corridor and the rail corridor would need to be assessed.

At present, several agricultural land uses exist north, west, and south of the proposed station site, along with industrial uses to the east and commercial uses to the south. Although the extent of impacts would be dependent on the station concept that is determined, it is anticipated that impacts are likely during construction activities such as noise, dust and heavy truck/equipment traffic.

### **Operations and Maintenance Plan**

The operations and maintenance plan examines the technical and commercial feasibility of the operations for the project alternative.

### *Operating Impact and Risks*

An area of potential operational impact could be the effect on passengers at downstream stations during peak-direction service. Capacity may be reduced from the addition of riders at the proposed station in Beamsville, impacting stations along the Lakeshore West line toward Union Station. This may negatively impact the overall passenger experience if trains were to be overcrowded.

### *Maintenance and Storage Facility Access*

As per the BaU scenario, the Lewis Road Layover Facility in Hamilton would be expanded to support the proposed service concept<sup>4</sup>. The implementation of a station at Beamsville is not expected to impact maintenance and storage requirements.

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**Project Dependencies**

One of the key drivers of this initiative is the construction of a station to support future development through the Beamsville GO Transit Station Secondary Plan. As per the Secondary Plan, development would include increased densities and mixed-use developments surrounding the station site.

**Deliverability and Operations Case Summary**

Overall, the proposed station is anticipated to have a feasible delivery. The risks associated with construction impacts are anticipated to be minimal, and while coordination would be required with CN and Hydro One, it is not expected to impact the delivery of the investment option.

# 8

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## Business Case Summary



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The development of a new GO rail station in Beamsville has been subject to multiple studies by Metrolinx and other authorities, the results of which have informed this Initial Business Case.

The proposed station will enhance connectivity to the regional higher-order transit network. In 2041, the 325,000 riders using the proposed station annually will benefit from better accessibility to jobs, education, and health and community services. The proposed station could also attract between 7,000 and 8,000 tourists and visitors to the regional transit network. Existing transit users will experience travel time savings through access to a station that is closer to their place of residence or their destination. Moreover, in 2041, the proposed station will attract close to 60,000 new riders annually, who would have been using auto as their primary travel mode if it were not for the station. As a result of this modal shift to transit, road users remaining on the road network will experience travel time savings from the reduction in traffic congestion. The reduction in auto use will improve the safety of the road network and the air quality in the region.

Once monetized, extrapolated to the 60-year evaluation period and discounted, the sum of the economic benefits amounts to \$58.8 million, which is enough to offset the total project costs of \$36.8 million, resulting in a net present value of \$22.0 million.

The analysis assumes that a third-party would incur the costs associated with building the station and investing in the compact mixed-use development. From a financial perspective, Metrolinx would only incur major rehabilitation work and incremental train and station operating costs less any cost associated with the parking lot, which will fall under the responsibility of the third-party. As a result of the proposed station, Metrolinx will realize net incremental revenues varying between -\$0.7 and \$2.0 million, depending on the extent of the modal shift for tourists and visitors.

Lastly, this station location does not pose any major risks or issues in terms of constructability or operations. The main uncertainties reside with CN, who owns the subdivision. Metrolinx will need to enter discussions with CN to confirm the feasibility of building the station at this location.

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## Glossary

Term	Definition
Beamsville GO Transit Station Secondary Plan (Secondary Plan)	Approved by the Niagara Region in 2018, the Secondary Plan provides the framework through which the Town of Lincoln envisions the Beamsville GO Transit Station area.
Benefit Cost Ratio (BCR)	Present value of benefits divided by present value of costs, which is used to indicate benefits realized per dollar spent.
Business Case (BC)	A generic term for a collection of evidence which, when assembled in a logical and coherent way, explains the contribution of a proposed investment to organizational objectives. It supports decision-making process to sift options, select a preferred option and optimize the preferred option.
Business as Usual Scenario (BaU)	The baseline against which options are compared where the intervention has not occurred and existing business practices, committed plans and general trends continue.
Criteria Air Contaminant (CAC)	Emissions from vehicle engines (including automobile, bus, truck and transit) are damaging to human health, and have been linked to breathing difficulties such as asthma, heart disease and cancer. These pollutants are known as CACs.
Fisheries and Oceans Canada (DFO)	Federal authority responsible for managing freshwater resources, oceans, and fisheries within Canada.
Greater Golden Horseshoe (GGH)	The area defined by A Place to Grow (2019) plan, consisting of the GTHA along with the Cities of Barrie, Brantford, Guelph, Kawartha Lakes, Orillia, and Peterborough; the Counties of Brant, Dufferin, Haldimand, Northumberland, Peterborough, Simcoe, and Wellington; and, the Regions of Niagara and Waterloo.
Greater Golden Horseshoe Model v4 (GGHMv4)	Metrolinx's model for forecasting population, employment, and ridership around the GGHA.
Greater Toronto and Hamilton Area (GTHA)	The combined area of the Cities of Hamilton, and Toronto; and, the Regions of Durham, Halton, Peel, and York.
Greenhouse Gas (GHG)	Greenhouse gas (GHG) emissions, such as carbon dioxide, are the main contributor to global warming, and regarded as a major challenge for the global community.

Initial Business Case (IBC)	This first Business Case in the Business Case process that compares investment options and selects a preferred option for further refinement and design. This Business Case is typically used to secure funding from the Province for planning and preliminary design.
Ministry of Transportation (MTO)	Provincial ministry in Ontario responsible for transportation policy, vehicle licensing, and constructing transportation infrastructure.
Net Present Value (NPV)	Present value of benefits minus present value of costs, which is used to indicate total net benefits to the region.
Niagara Peninsula Conservation Authority (NPCA)	Beamsville is located within the jurisdiction of the NPCA, the conservation authority responsible for managing the Niagara Peninsula watershed.
Provincial Secondary Land Use Program (PSLUP)	Provincial program allowing specified uses, other than for electricity transmission and distribution, within hydro corridor right-of-ways.
Ontario Ministry of the Environment, Conservation and Parks (MECP)	Provincial ministry in Ontario responsible for managing environmental matters including protecting species at risk and developing policies, legislation, and regulations.
Niagara Region and a third party (the Proponent)	In this context, the Proponent is a collective term to refer to the Niagara Region and a third party. The Proponent requested that Metrolinx assess the opportunity to develop a new GO rail station in the community of Beamsville, located within the Town of Lincoln.
Vehicle-Kilometres Travelled (VKT)	A measure of roadway use, commonly used in estimating congestion, that reflects the distance that an individual drives, or, more typically, the cumulative distance driven by all vehicles in an urban region during a specified period. Vehicle kilometres travelled can reflect the link between land use and transportation. Land uses that are further away from each other result in longer trip lengths, more traffic on roadways and more vehicle kilometres travelled, for example



# **APPENDIX A: New Station Initial Business Case Beamsville: Supplementary Sensitivity Analysis**

Final  
November 2020

# **APPENDIX A:**

## **New Station Initial Business Case**

### **Beamsville: Supplementary**

### **Sensitivity Analysis**

Final  
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## Sensitivity Analysis

The Beamsville New Station IBC compares the benefit of developing the proposed station in Beamsville against the service concept recommended as part of the 2019 Niagara Falls Extension IBC. There is currently one track at the proposed site and in order to establish a GO station stop at this location additional corridor infrastructure is required.



Figure 1: Location of the proposed Beamsville GO Station along the alignment for the Niagara Extension.

A capital cost sensitivity analysis was conducted to test the impact that the in-corridor infrastructure requirements would have on the Beamsville IBC results. This sensitivity controls for the scenario in which the Niagara Falls Rail Service Extension in-corridor infrastructure as identified in the 2019 IBC preferred option is not delivered, and the additional in-corridor infrastructure delivery and associated costs to enable GO train service to Beamsville GO station become the obligation of a proponent.

The site-specific incremental infrastructure includes:

- One new southern side platform with passenger safety features and amenities (tactile edge strip, lighting, benches, shelters, mini-platform, etc.);
- Passing track south of the mainline including required signalling infrastructure;
- Passenger tunnel from northern side platform to southern side platform; and
- Platform access infrastructure (one set of stairs and two elevators per platform).

The sensitivity analysis does reduce the station's performance from the figures presented in the IBC. From an economic perspective, the BCR is reduced to 0.97 (compared to 1.60 in the IBC), assuming Total

Costs of \$60.7M (including the new total Capital Cost of \$52.4M) and net economic benefits are reduced to -\$1.9M (compared to \$22.0M in the IBC) over a 60-year evaluation timeline as can be seen below in Table 1.

From a financial perspective, the sensitivity analysis projects an Incremental Cost Recovery Ratio of 0.69-0.87 and an Operating Cost Recovery Ratio of 1.66-2.10. Financially, the station still performs strongly with revenues exceeding costs for operations but not enough to offset the mid-life capital renewal and operating costs. Detailed financial results can be found in Table 2.

Table 1: Economic Results of Capital Cost Sensitivity Analysis (2020\$ Million, Present Value)\*

	Proposed Station
<b>Total Costs</b>	
Capital Costs	\$52.4 M
Operating and Maintenance Costs	\$8.3 M
<b>User Impacts</b>	
Travel Time Savings (Transit)	\$11.8 M
Travel Time Savings (Auto)	\$21.5 M
Vehicle Operating Cost Savings	\$9.0 M
Incremental Fare Revenue Adjustment**	\$10.5 M
<b>External Benefits</b>	
Safety Benefits	\$2.8 M
Environmental Benefits	\$3.1 M
<b>BCR</b>	<b>0.97</b>
<b>Net Benefits</b>	<b>-\$1.9 M</b>

\*All Totals are rounded.

\*\* As per the Metrolinx Business Case Guidance page 107: The incremental change in revenue to transit providers is added as an impact in the numerator of the BCR.

Table 2: Financial Results of Capital Cost Sensitivity Analysis (\$ Million, Present Value)\*

Financial Case Metric	Proposed Station
<b>Incremental Costs</b>	<b>\$15.0 M</b>
Capital Costs	\$8.8 M
Operating and Maintenance Costs	\$6.2 M
<b>Incremental Farebox Revenue</b>	<b>\$10.3 M – \$13.0 M</b>
Transit Users	\$10.3 M
Tourists and Visitors**	\$0 M – \$2.7 M
<b>Net Revenue for Metrolinx</b>	<b>-\$4.7 M – -\$2.1 M</b>
<b>Incremental Cost Recovery Ratio</b>	<b>0.69 – 0.87</b>
<b>Incremental Operating Cost Recovery Ratio</b>	<b>1.66 – 2.10</b>

\*All Totals are rounded.

\*\*Lower bound is presented as \$0 to exclude all ridership derived from the tourist mark

