Northumberland County

GO Expansion Business Case & Economic Impact Study

Final Report

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AECOM: 2020-04-27

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1. Introduction

Northumberland County ("the County") is undergoing an exciting time of change in its history. Situated just east of the Greater Toronto and Hamilton Area ("GTHA"), the County is well-positioned to take advantage of its location, growing population, diverse industry, and shifting land use to define itself as an attractive destination for people to live, work, and play.

In 2015, the County engaged in discussions with the Ontario Ministry of Transportation and Metrolinx to advance the case for expanding GO Transit service coverage to Port Hope and Cobourg. In 2017, the County completed its first Transportation Master Plan (TMP), which recommended completing a business case study for the extension of GO rail services into the County and continuing discussions with Metrolinx to improve regional transit connectivity.

As a follow-on to the TMP, the County commissioned AECOM to develop and assess viable options for extending transit services into the County. This study is the County's first undertaking to explore the extension of GO Transit.

The purpose of this study is threefold**:**

1. Engage with local community members and key stakeholders to better understand their current and future accessibility and mobility needs.
2. Define representative options for the extension of GO Transit and assess the social and economic benefits associated with each option to identify the one that best meets the current and future needs of Northumberland County.
3. Engage Metrolinx for input, guidance, and review of the business case and, ideally, endorsement.

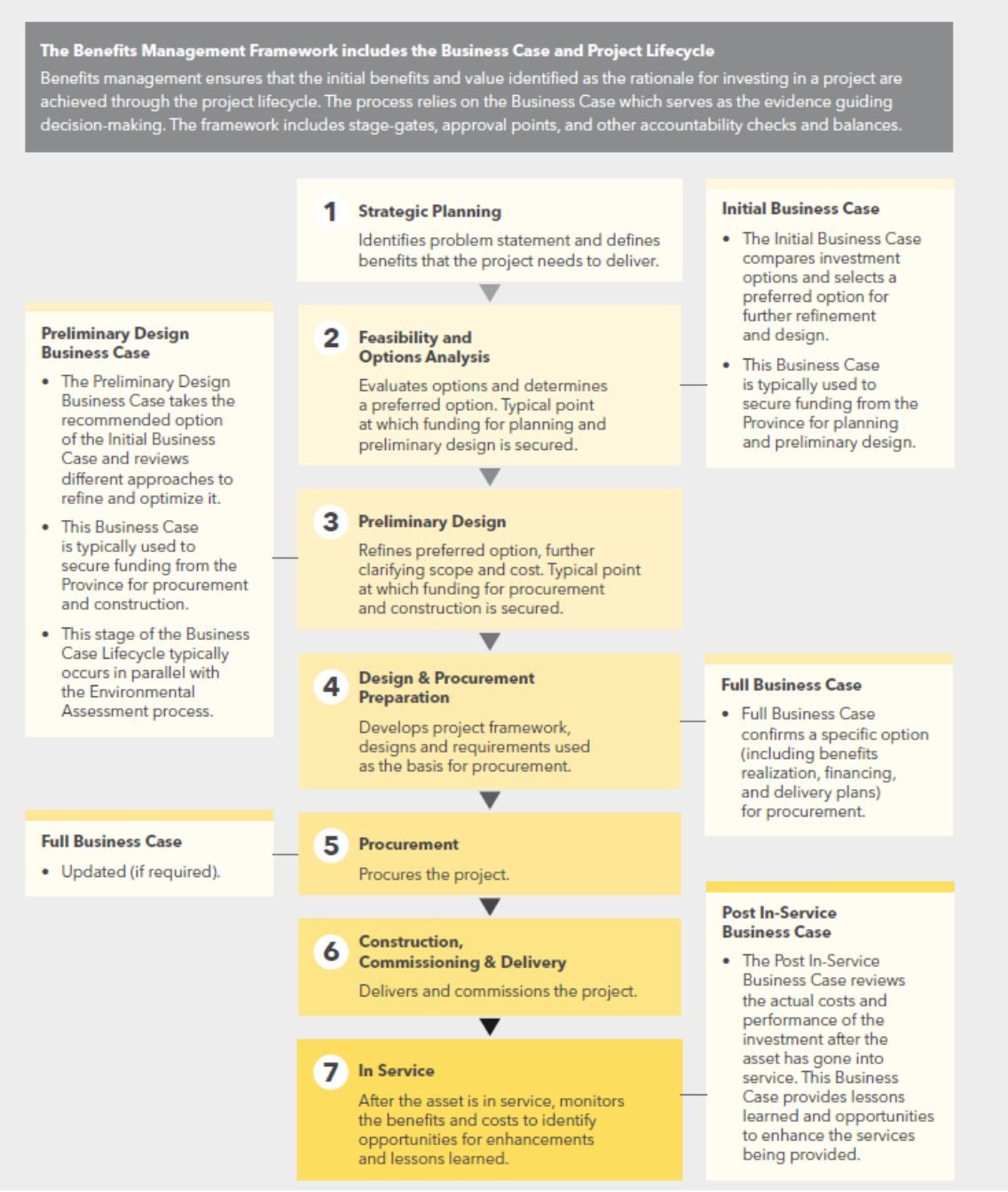
Given that this study is intended to be presented to Metrolinx, AECOM developed a study that is consistent with the Metrolinx Business Case Guidance (April 2019). At the onset of any investment project, the Guidance recommends defining an Opportunity Statement, which identifies the need for change, and Project Goals or Objectives that are consistent with local and regional plans and policies.

In September 2019, the Project Team hosted a Stakeholder Workshop to confirm the Opportunity Statement and Project objectives and discuss route and technology options with local representatives before engaging the general public. Workshop participants included representatives from Northumberland County, Community Care Northumberland, Municipalities of Brighton, Port Hope, and Trent Hills, Town of Cobourg, Township of Hamilton and Northumberland County Tourism. On January 15, 2020, the Project Team launched an online survey to capture preliminary thoughts and feedback related to potential GO Transit expansion from members of the public within the County. This online survey was developed using Survey Monkey and consisted of ten questions – seven (7) open-ended questions about current and future transportation and transit needs within the County and three (3) administrative questions to gather feedback about survey participants. The online survey was closed on February 11, 2020, and received a total of 5,535 responses, 5,468 online via the web link and 67 hard copy responses. Survey responses are summarized in the "Consultation Summary Report" presented in Appendix A.

Based on information gathered through the Consultation Strategy, the Project Team defined realistic investment options to be investigated through the business case evaluation framework. The Metrolinx Business Case evaluation framework is particularly appropriate in this instance because it not only considers the economic and financial impacts but also integrates other strategic and deliverability considerations that go beyond the traditional economic and financial criteria to further support the justification for the investment.

Business Case analyses are mandated by Metrolinx for all capital projects. As projects develop in scope, business cases are updated to refine the rationale and requirements for delivering said investment. As shown in the Figure below, the Initial Business Case ("IBC") is the first of four business cases completed in an investment's lifecycle.

The IBC compares each option against a Business as Usual ("BAU") scenario (i.e., without any new investment in intercity transit) to determine how each option addresses the Opportunity Statement and the project objectives and to recommend an option for further investigation.



Source: Metrolinx Business Case Guidance Volume 2 (April 2019).

2. Background

Northumberland County is comprised of seven municipalities, all of which have unique population and employment demographics, and a diverse range of education levels, health services, and tourism and recreation programs.

This section explores those demographics and provides an understanding of the current and future mobility needs in the County, with a specific focus on intercity travel between the County and destinations within the GTHA.

Demographic data and existing travel patterns presented in this section are informed by available County policies, plans, and studies including, but not limited to, the County Official Plan, Transportation Master Plan, Economic Development Master Plan, and the 2016 Census of Population.

Community input gathered through the Stakeholder Workshop and the Online Survey also forms an essential part of the data collection process to understand accessibility and mobility needs.

Figure 1: Map of Northumberland County and its seven municipalities

Northumberland County is located to the east of Durham Region and is comprised of seven distinct municipalities – Town of Cobourg, Municipality of Port Hope, Municipality of Trent Hills, Municipality of Brighton, Township of Hamilton, Township of Alnwick / Haldimand, and Township of Cramahe.
Source: An Integrated Economic Development Master Plan (Northumberland County, 2017).

Population

In 2016, Northumberland County was home to over 85,500 residents[1] with the two most populous municipalities, Cobourg and Port Hope, each comprising approximately one-fifth of the total. Together, the towns of Cobourg, Port Hope, Trent Hills, and Brighton comprise more than 70% of the County's population. **Figure 2** shows the distribution of the Northumberland County population across the seven municipalities and the Alderville First Nation.

The population is expected to grow approximately 1% per year to just over 107,000 in 2041[2]. A minimum of 80% of the forecasted growth is expected to occur in the six urban areas of the County, comprising of Brighton, Campbellford, Cobourg, Colborne, Hastings and Port Hope. The remaining 20% is expected to occur in rural areas, which include significant portions of Brighton, Trent Hills, Township of Cramahe, Port Hope, Hamilton Township, and the Township of Alnwick/Haldimand.

The urban areas within the County present attractive locations for retirees looking to settle down in a small community in proximity to the dynamic GTHA. As a result, the County has one of the highest proportions of seniors in Canada, with over a quarter of the population over the age of 65. Seniors represent more than 30% of the population in Cobourg and make up a quarter of the population w in Port Hope, Trent Hills, and Brighton. **Figure 3** shows the proportion of the population by age group within the County, and throughout the municipalities, based on data retrieved from the 2016 census.

Demand for an inclusive, accessible transportation system will only grow as the proportion of older adults continues to increase. The demographic of older travellers represents a great economic opportunity for the travel and tourism industry, with research suggesting they travel more often and spend more money on trips than any other age group[3]. Retired travellers may have the opportunity to make more frequent day trips (e.g. groceries, medical appointments, banking, social visits, etc.) and longer trips outside peak times. Discretionary trips for older adults, such as social visits to friends and family, reduce feelings of isolation and improves an individual's health, social inclusion and quality of life.

Figure 3: Distribution of Population by Municipalities

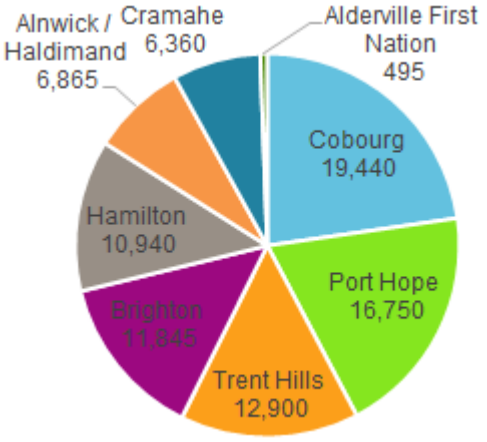
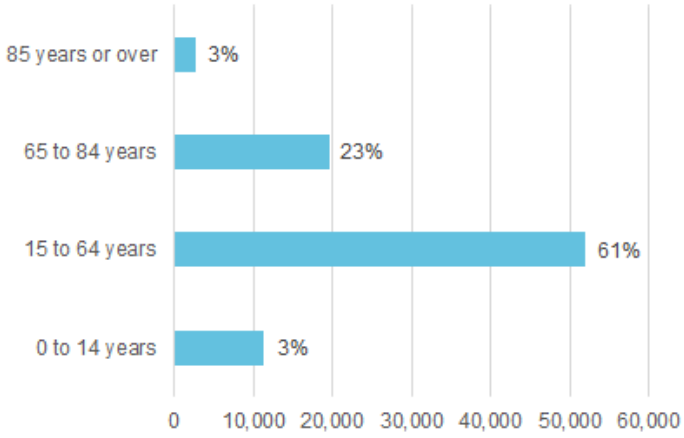


Figure 2: Distribution of Population by Age Group



[1] Statistics Canada. 2017. "2016 Census." *Northumberland, CTY [Census division], Ontario and Ontario [Province] (table).* Accessed March 1, 2020. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E.
[2] Northumberland County. 2016. "Northumberland County Official Plan." 23 November. Accessed March 1, 2020. https://www.northumberland.ca/en/business-and-development/resources/Documents/County-Offical-Plan.pdf.
[3] Council of Canadian Academies, 2017. Older Canadians on the Move. Ottawa (ON): The Expert Panel on the Transportation Needs of an Aging Population, Council of Canadian Academies.

Employment

In 2016, Northumberland County counted 40,095 jobs[4]. The most commonly held occupations were from the retail, manufacturing, health care/social assistance, construction, and accommodation/food services industries. Cobourg and Port Hope had the highest concentration of jobs, with 42% of the total.

Figure 4 shows the breakdown of the labour force by industrial sectors within Northumberland County, and throughout the municipalities, based on data retrieved from the 2016 census. The primary sector is related to the production and retrieval of raw materials with activities including mining, fishing, and agriculture. Secondary industries involve the transformation of raw material into finished or manufacture goods, with employees within this sector known as "blue-collar" workers. Tertiary industries are considered the service sector, with activities including retail, transportation, hotels, sales, and more. Finally, the quaternary sector provides services related to the knowledge sector, including activities such as research and development (R&D), finance, media, and information technology (IT). The majority of workers within Northumberland County fall within the tertiary sector, with 58% of workers working in retail, educational services, accommodation and food services.

Manufacturing jobs remain a staple source of high wage employment in Ontario communities, including those within the County. From a transportation standpoint, the County is well-positioned to actively seek warehousing and logistics opportunities, taking advantage of its location along the Highway 401 corridor. However, land use surrounding manufacturing industries is traditionally heavily reliant on auto and not conducive for transit services.

The County will continue to support micro and small enterprises, which comprise over 90% of businesses within the County while ensuring there are measures in place to attract and retain larger employers[5]. Transit can also help in attracting economic investment in a community by letting future employers know that they will have access to a large labour pool that is connected and mobile. This can be leveraged as a strong economic development tool used to attract employers to the County.

Figure 5: 2016 Labour Force Population Aged 15 Years and Over by Industrial Sector

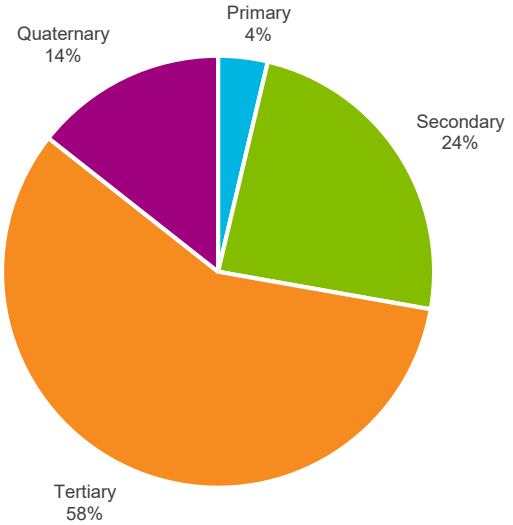
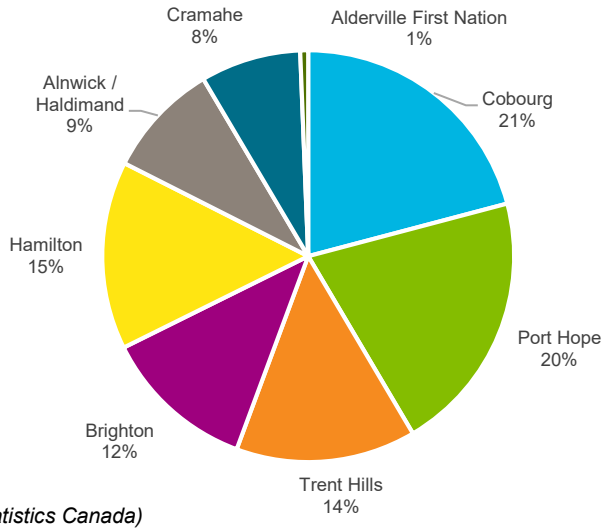


Figure 4: 2016 Labour Force Population Aged 15 Years and Over by Place of Residence



Source: 2016 Census (Statistics Canada)

[4] Statistics Canada. 2017. "2016 Census." *Northumberland, CTY [Census division], Ontario and Ontario [Province] (table).* Accessed March 1, 2020. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E.

[5] Northumberland County. 2017. "An Integrated Economic Development Master Plan." *Northumberland County.* Accessed March 1, 2020. https://www.northumberland.ca/en/county-government/resources/Documents/Economic-Development-Master-Plan.pdf.

Education

Close to 17% of survey respondents noted that education was one of the primary reasons for travelling outside the County. Given that there are no post-secondary institutions in the County, students must travel outside the County to seek post-secondary education. There are limited transit options available to students accessing these institutions outside the County, with the majority of the available transit options being unattractive due to high fares, multiple transfers required, and long travel times.

The following 5 colleges and universities are located within a 50-kilometre radius of the County, all with students from Northumberland County enrolled:

1. **University of Ontario Institute of Technology (UOIT):** Located in Oshawa, UOIT has over 10,000 full-time students, with enrolment at UOIT expected to double. An economic impact study completed in 2015 found that the growth of UOIT in terms of student enrolment and employment was likely an important contributor to Durham Region's and Northumberland County's overall economic success. UOIT also plays an important role in increasing the competitiveness of Durham Region and Northumberland County by working with the private and public sectors to promote and enhance the region's innovative capacity[6]. Currently, UOIT students who reside in the County have limited travel options to get to campus, aside from driving.

2. **Trent University**: With campuses in Peterborough and Oshawa, Trent University boasts over 10,000 full-time students (8,240 undergraduate students in Peterborough, 1,382 undergraduate students in Oshawa, 626 graduate students). There are currently no available transit routes between Northumberland County and Trent University.

3. **Durham College:** With campuses in Oshawa and Whitby, Durham College has more than 13,600 full-time post-secondary and apprenticeship students. One of the College's community employment service locations is in Port Hope, where students and graduates can receive comprehensive employment and job search services. Although there are currently no direct transit routes between Northumberland County and Durham College, students could take VIA rail to Oshawa GO, then take Durham transit from the station to campus.

4. **Loyalist College:** Located in the City of Belleville, Loyalist College has approximately 3,000 full-time students. There are currently no available transit routes between Northumberland County and Loyalist College.

5. **Fleming College:** With four campus locations in Peterborough County (Peterborough, Lindsay, Haliburton and Cobourg), Fleming College has more than 16,000 students enrolled. There are currently no available transit routes between Northumberland County and Fleming College.

In terms of elementary and secondary education, Northumberland County is located within the jurisdiction of the Kawartha Pine Ridge District School Board and the Peterborough Victoria Northumberland and Clarington Catholic District School Board. There are 42 elementary schools, 6 secondary schools, and 4 independent schools that are located within the County. Elementary and secondary school students receive school bus service from the Student Transportation Services of Central Ontario (STSCO), who also provide out of boundary services by request.

[6] University of Ontario Institute of Technology (UOIT). 2015. "Economic Impact of UOIT on Durham Region and Northumberland County." *University of Ontario Institute of Technology (UOIT).* December. Accessed March 1, 2020. https://shared.uoit.ca/shared/uoit/images/about-uoit/economic-impact-report_v3.pdf.

Health Services

Over 54% of survey respondents listed medical appointments and/or healthcare as one of their primary reasons for travelling outside the County. Hospitals that are located outside of the County, but still provide service to the County, including the Hospital for Sick Children (Toronto), Ontario Shores Centre for Mental Health Sciences (Whitby), Peterborough Regional Health Centre (Peterborough), and Women's College Hospital (Toronto). An extension of transit services between the GTHA and Northumberland County would fill the significant mobility gap for passengers making crucial trips to these medical facilities located outside the County.

The two main health services facilities located in Northumberland County are Campbellford Memorial Hospital and Northumberland Hills Hospital, located in Campbellford and Cobourg, respectively. Numerous walk-in clinics and medical centres are located within the County's urban areas as well, which provide health care services to County residents.

Tourism and Recreation

Recreation and leisure have been identified as a key reason for Northumberland residents to travel outside the County, with over 80% of survey respondents who selected this reason. However, the only existing available transit option for Northumberland residents travelling to the GTHA is to take a VIA Rail train from Cobourg or Port Hope to the Oshawa GO Station or beyond. Any extension of transit services into the County would need to consider that many of these discretionary trips may occur during off-peak periods and weekends, requiring a flexible transit service that operates outside of weekday peak hours.

Northumberland County is a diverse and thriving tourism destination, boasting 5.8 million tourists per year, with $562 million spent annually by tourists[7]. Major contributors for seasonal tourism include two provincial parks (Presqu'ile Provincial Park in Brighton and Ferris Provincial Park in Campbellford), and several other protected natural areas and forests. The majority of visitors that travel to the County drive, as is evident by the popularity of the Top 5 Road Trip routes within the County. Visitors who do not have access to a car lose the opportunity to participate in the recreational activities that the County has to offer.

A seasonal shuttle bus service, the Brighton Bus, was previously provided from Brighton to Presqu'ile Provincial Park in July and August, two days a week. The bus operates two days a week, Wednesday and Thursday, starting at 10 am from Brighton and operates a one-hour loop until mid-afternoon, with the last departure at 3 pm. Residents aboard the bus can enter the park at no cost and spend the day at the beach, while people camping at Presqu'ile can make the trip the other way to shop and dine in the downtown.

In July 2019, Quinte Access, a non-profit organization that provides transportation services for persons with special needs and seniors, announced they would be providing a Sunday bus service within Brighton, free of charge. The route will operate on a one-and-a-half-hour loop, with various stop locations within the town, at Presqu'ile Provincial Park, as well as at local markets and farms just outside of the town of Brighton. The purpose of this service is to allow residents and visitors of the area the ability to access markets and explore the local area to promote community involvement for all of its members. This Sunday service operated between 9 am and 3 pm each weekend, between July and November.

[7] Northumberland County. *Tourism Industry: Northumberland County, Ontario.* Accessed March 1, 2020. https://www.investnorthumberland.ca/site-selection/tourism-industry-northumberland-county-ontario/.

Road Network

The travel demand model projections prepared as part of the County's Transportation Master Plan indicate that traffic levels remain fluid throughout most of the County in the 2031 horizon year, but congestion levels are likely to increase by 2041 and become more significant throughout the County's road network by 2061.

Highway 401 is the key east-west linkage through Northumberland County, providing connections to many of the County's urban communities located along the Lake Ontario shoreline. Highway 401 has a six (6) lane cross-section west of County Road 18 (Burnham Street) in Cobourg, which narrow highway to four (4) lanes east of County Road 18.

According to the Northumberland County TMP, during peak periods, congestion east of Cobourg through the existing 4-lane section can result in significant amounts of westbound traffic diverting from Highway 401 and following alternate routes through the eastern part of Northumberland County. This often results in significant additional traffic on key sections of the County Road network including County Road 2 through Brighton, Colborne and Grafton as well as connecting north-south routes[8]. The various transportation network elements within Northumberland County are shown in Figure 9 sourced from the County's Official Plan.

Existing Transit Services

Existing transit services currently provided within Northumberland County include both intra-regional and inter-regional services. The majority of intra-regional public transit service is focused on the urban areas of Port Hope and Cobourg, whereas the Northumberland Transportation Initiative services are provided in the other areas of the County.

The existing transit services within Northumberland County are summarized below:

- **Town of Cobourg Transit**: provides 2 public bus routes, along with on-demand transit services within the Municipality of Cobourg;
- **Port Hope Transit:** provides 2 public bus routes, along with on-demand transit services within the Municipality of Port Hope;
- **Northumberland Transportation Initiative (NTI)**: Provides on-demand bus service to the municipalities of Trent Hills, Bramabe, Alnwick/Haldmand, and Hamilton; and,
- **VIA Rail:** provides intercity rail service with stops in Cobourg and Port Hope.

Cobourg Transit

The Cobourg Transit system consists of two routes that provide connections to and from residential and industrial areas to the downtown core seven days a week. The conventional fixed-route service is contracted out to a private operator.

An on-demand service called Wheels is offered to eligible riders who cannot use conventional transit. An accessible taxi service, BTS, is in operation when Wheels buses are not available but conventional transit is running. The adult fare is $2 for a single trip or $16 for 10 tickets. Monthly passes are available for adults, seniors, and students, as well as an After School pass.

[8] Northumberland County. (2016). *Transportation Master Plan.* Cobourg: Northumberland County. Retrieved from Northumberland County: https://www.northumberland.ca/en/County-

A shuttle bus service is provided between Cobourg and Port Hope that arrives at 10 and 40 minutes past each hour at Northumberland Mall. The shuttle bus operates Monday through Saturday and does not run on Sundays or holidays. Passengers taking the shuttle bus may transfer to a Cobourg Transit bus for $1.

Figure 6 and **Figure 7** show the annual ridership between 2014 to 2018 for Cobourg Transit conventional bus service, and on-demand services, respectively. In 2018, Cobourg Transit had a total ridership of 101,172 passengers, which is a 3.3% decrease from the 104,651 trips recorded in 2017. The general trend between 2014 to 2018 shows declining ridership for the conventional bus service. However, the demand for door-to-door Wheels service remains constant, while the demand for BTS has increased year over year. These trends reflect the needs of the aging population within the County which require accessible services outside of conventional transit means.

Figure 7: Cobourg Transit Conventional Service Annual Ridership (2014-2018)

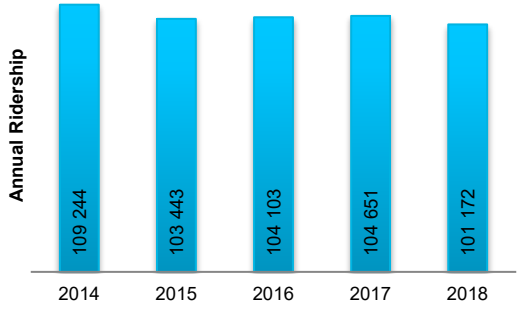
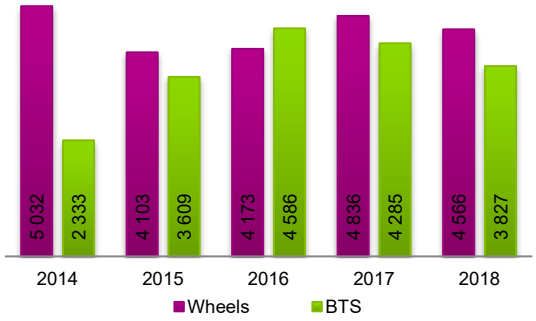


Figure 6: Cobourg Transit On-Demand Service Annual Ridership (2014-2018)

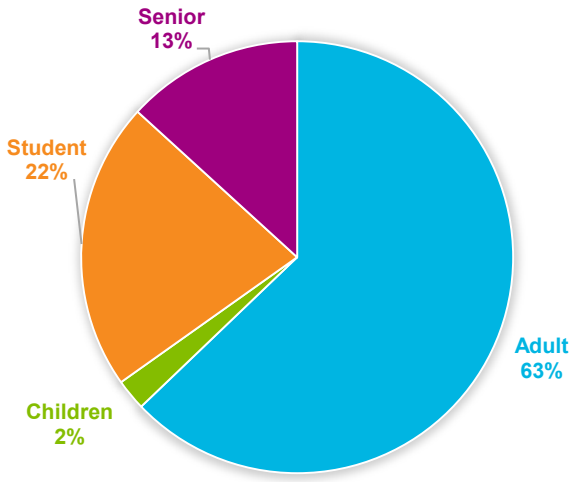


The Port Hope Transit system consists of two fixed routes, including one which extends to Cobourg (Northumberland Mall and Northumberland Hills Hospital for an extra fare). The system provides services from residential and industrial areas in Port Hope to the downtown. The transit operating hours are Monday to Friday from 7 am to 8 pm, and Saturdays from 9 am to 4 pm. No service is provided on Sundays or holidays.

Paratransit services (ROLLS) are also provided on-demand, with operating hours that match the conventional transit service hours. On-demand service is restricted to residents of the urban area. The transit fare for a single trip is $2.50 for adults (18-64 years), $2.00 for seniors and $1.50 for children. Monthly passes are available for adults, seniors and students.

In 2016, Port Hope Transit had a total ridership of 61,569 passengers and provided 208,626 vehicle-kilometres and 7,228 vehicle-hours of service. As shown in Figure 8, 13% of trips were taken by senior passengers, which far exceeds the provincial proportion of 2% of total transit trips (without GO) taken by seniors[9].

Figure 8: Breakdown of Port Hope Passenger Trips in 2016



[9] Canadian Urban Transit Association. (2016). Ontario Urban Transit Fact Book - 2016 Operating Data. Retrieved from Ministry of Transportation (MTO): https://collections.ola.org/ser/74971/2016.pdf

Northumberland Care

The Northumberland Transportation Initiative (NTI) is an on-demand service operated by Northumberland Community Care that addresses accessible and rural needs within the County. The service operates in towns and hamlets within Trent Hills, Cramahe, Alnwick/Haldimand and Hamilton. Service is provided from these areas to locations in Cobourg (e.g. Northumberland Mall and Northumberland Hills Hospital). A one-way fare within a route is $5 per person. Vans operate four days per week (Monday, Tuesday, Thursday, Friday) from 8 am to 6 pm. The fleet is comprised of six vans, four of which are accessible. Vans travel approximately 90,000 kilometres on one route in one year, with all vehicles having travelled over 30,000 kilometres[10].

VIA Rail

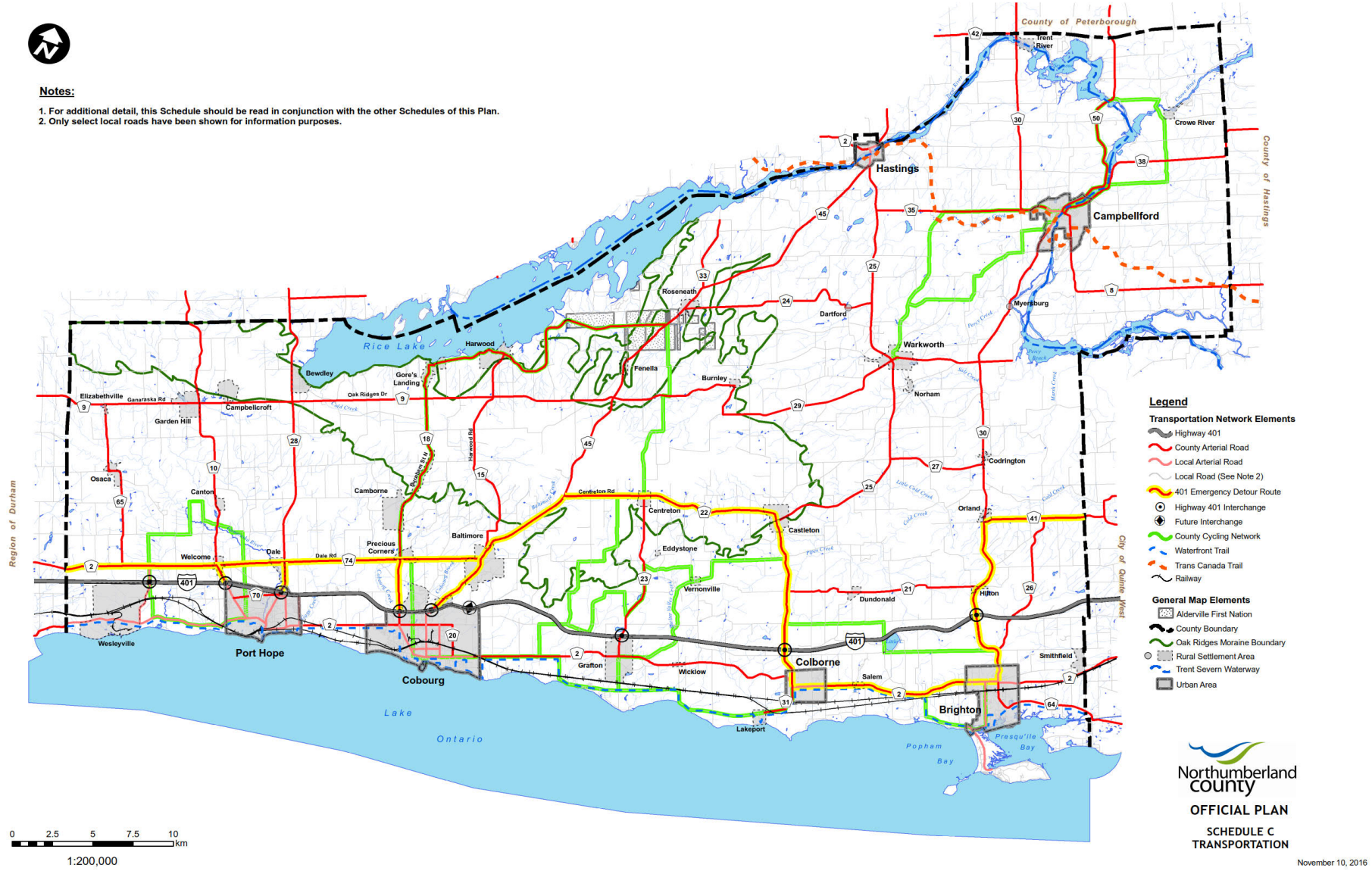
VIA Rail stops in Cobourg and Port Hope along both the Toronto – Montreal and Toronto – Ottawa corridors. From Monday to Friday, five trains depart from Cobourg to Oshawa; on Sundays, there are four trains. Typically, there is one train per day from Port Hope to Oshawa, with two trains on Saturdays. Prices for one-way tickets range from $20 to $40.

Taxi

Licensed private taxi services within the County include Cobourg Cab, A-1 Taxi, Cobourg/Port Hope Taxi, Van Air Taxi, First Choice Taxi, and Ganaraska Taxi. In February 2019, a motion was brought forward in Cobourg Council to remove the limits on the number of taxis permitted and begin investigating options for ride-sharing services such as Lyft and Uber.

[10] McCue, Lorna, Lisa Tolentino, and Robb MacDonald. 2014. “Accelerating Rural Transportation Solutions: Ten Community Case Studies from Ontario.” *Rural Ontario Institute.* October. Accessed March 1, 2020. http://www.ruralontarioinstitute.ca/uploads/userfiles/files/ARTS_-_Case_Studies_for_WEB.pdf.

Figure 9: Northumberland County Transportation Routes



Source: Official Plan Schedule C (Northumberland County, 2016)

2.1 Mobility Gaps

The online survey included several questions related to perceived concerns and issues associated with transportation and public transit within the County. The survey questions asked participants to gauge their travel habits within and outside the County, including their primary mode of transportation, frequency of travel, key destinations and trip purposes. The responses gathered through the survey serve as anecdotal evidence to support the travel demand analysis presented in Section 4.

Notable travel trends among survey respondents indicate that:

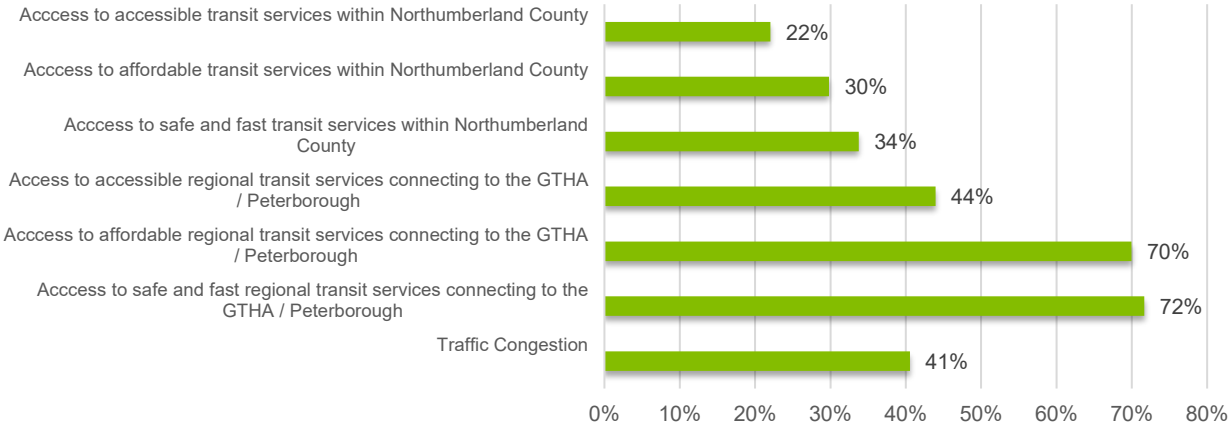
- Auto is the primary mode of transportation for 88% of respondents (81% drive themselves and 7% rely on friends or family members to drive them);
- Most participants (75%) travel outside the County at least twice per week;
- The main destinations outside the County are Toronto and Durham Region;
- 40% of respondents travel outside the County for work and 55% to access medical care;
- 80% of participants are travelling to Toronto for recreation/leisure purposes;
- One of the main concerns related to commuting and transit services was access to transit services connecting to the Greater Toronto Regional Transit Network/Peterborough;
- 98% of respondents would use GO Transit if it were available; and
- If available, most participants would use a GO Transit service monthly or several times a week if it were available to them.

The survey responses, as well as feedback received during the Stakeholder Workshop, revealed the following mobility gaps:

Lack of transit connectivity with the GTHA: People travelling to the GTHA often have no alternative mode to driving for accessing the GO rail network or to get to their destination. Those driving to the GTHA are often faced with heavy traffic congestion on Highway 401 during peak periods. The lack of accessible, safe/fast and affordable transit connections to the GTHA transit network has been identified as the top three issues regarding commuting and transit services for Northumberland residents. Figure 10 shows the main concerns and issues facing communities within Northumberland regarding commuting and transit services. Besides, 72% of respondents noted that one of their main concerns was access to safe and fast regional transit services connecting to the Greater Toronto regional transit network and Peterborough.

A greater transit service coverage that connects to the local transit network would further promote transit ridership and reduce reliance on auto, reducing congestion on the highway. A resounding 98% of survey respondents would use a GO Transit service (e.g. bus, train, shared service, etc.) if it were available in their community.

Figure 10: Main Concerns/Issues Regarding Commuting and Transit Services



Lack of transit connectivity within the County: Although a shuttle bus operates between Cobourg and Port Hope, there is a lack of transit connectivity to other municipalities and rural areas within the County. The existing transit service has been identified as non-reliable and inconsistent, factors that may be attributed to the decline in transit ridership. The existing transit services within the County generally do not operate during weekday nights and offer limited or no service on Sundays. This limits the opportunities for those who are reliant on transit and are therefore unable to visit friends and family or attend recreational activities and appointments.

Strain on existing transit network: As the population and workforce of the County continues to grow, and age, access to public transit will become increasingly important. Given that approximately a quarter of Canadians over the age of 65 do not drive, door-to-door transit becomes an essential key to providing mobility options for seniors. Access to good transit in auto-centric communities eases social isolation, provides connections to medical care, and in many cases is safer than driving. Stress will be placed on the existing systems, and with continued pressure on the specialized transit and community transportation services, an increasing number of trips denied due to resource shortages can be expected. The limited mobility options will impact the quality of life of residents, reducing their access to employment and recreational opportunities. This will disproportionally impact the senior population within the County, affecting their ability to age in their homes and outside of nursing homes and long-term care facilities.

Inequitable effects of transportation policies: Transportation policies have historically been inequitable in its approach to distributing travel time and accessibility benefits across different socio-economic groups in the region. Those living in rural communities are often left out of the conversation due to the low population and employment density which results in a low rate of return on transit investments. Residents in rural locations must take private vehicles to access the urban areas unless they live within the service area of on-demand transit service. Those who may not have access to vehicles, such as students, lower-income families, and/or immigrants, will have severely limited mobility options. Policies created to address transit connectivity should take into account the impacts on all socio-economic groups.

These mobility gaps provide the rationale to proceed with the study and business case process of identifying and evaluating investment options. By identifying gaps within the existing transportation network, the Project Team can pinpoint key drivers for change and locate the opportunities to address the mobility issues raised by stakeholders and the general public.

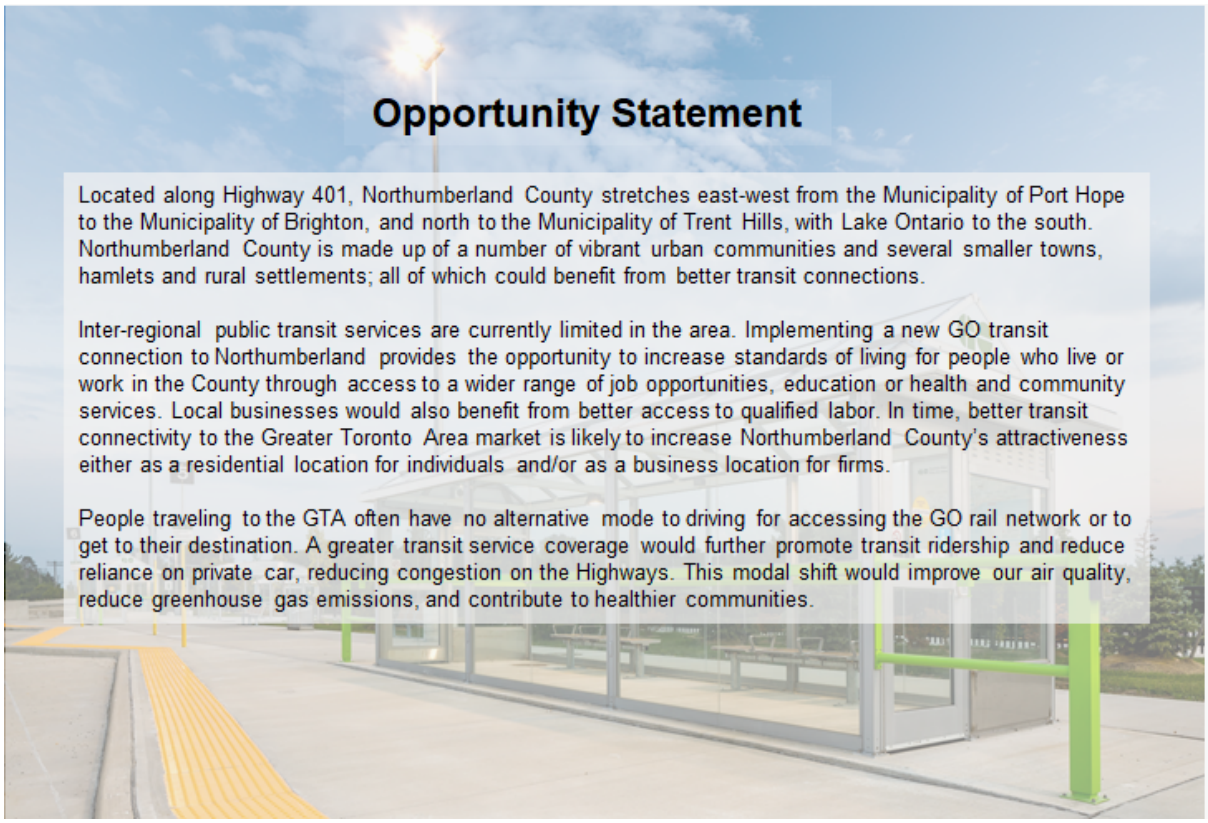
3. Case for Change

This section presents the Opportunity Statement, which will inform decision-making at all stages of the investment's development. The Opportunity Statement defines the issues and concerns to be addressed by the project, the types of benefits this investment can realize, the fit with local and regional policies, and a range of relevant experience from the GTHA that have addressed a similar opportunity in recent years.

3.1 Opportunity Statement

The Opportunity Statement was developed in two steps. The Project Team first developed a draft opportunity statement based on previous studies and discussions with the County. As a second step, the Project Team confirmed the Opportunity Statement during the Stakeholder Workshop.

These discussions resulted in the opportunity statement presented below:



3.2 Opportunity Drivers

Table 1 identifies the key issues and considerations, both internal and external, that support the case for investment in the expansion of GO Transit services into Northumberland County.

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 Transport Network	Travel Behaviour	• Population and employment growth in the County drive the need for improved transit coverage, particularly in urban areas. • Improving connectivity and offering greater transit service coverage would further promote transit ridership and reduce reliance on private auto, reducing congestion, especially on Highway 401.	• Lack of accessibility to transit in the County may result in continued reliance on auto and further increased road congestion, resulting in longer commute times, loss of productivity, and a reduction in air quality.
	Transit Service Provision	• Increased transit connectivity to Northumberland County should provide a much-needed connection between the County and the GTHA higher-order transit network. • New ridership and associated incremental farebox revenue should be realized by expanding the GO network to serve new riders.	• No increases in service provisions would result in continued lack of connectivity between those in the County and the GTHA, limiting access to economic, cultural, and social opportunities in the urban areas of growth.
External to the Transport Network	Government Policy and Planning	• The extension of GO Transit services into the County is supported through County and local municipality policies (e.g. Northumberland County Official Plan, Northumberland County Transportation Master Plan). • The 2041 Regional Transportation Plan outlines Metrolinx's mandate to provide GO rail and bus services to municipalities in the GO Transit service area outside the GTHA (including Northumberland County).	• Without funding for this initiative, those that are reliant on transit services would be unable to access inter-regional destinations. This significant gap in mobility services would limit opportunities for employment and socializing, particularly for vulnerable road users such as the elderly.
	Economic Activity, Land Use, and Demographics	• The Northumberland County Official Plan forecasts that the total population growth in urban areas and rural lands would be 25,033 from 2011 to 2041, while the employment growth is expected to be 7,000 over the same period. A minimum of 80% of expected population and employment in the planning period is expected to occur in the six urban areas of the County (Brighton, Campbellford, Cobourg, Colborne, Hastings, Port Hope).	• The inability to address the development needs of urban areas of growth would hinder economic activity and miss the opportunity to establish an integrated multi-modal transportation system that facilitates the safe and efficient movement of people between the County and the GTHA.

3.3 Strategic Outcomes and Objectives

The extension of GO Transit into Northumberland County should support the realization of the Metrolinx 2041 Regional Transportation Plan goals, which consist of providing 1) strong connections; 2) complete travel experiences, and 3) sustainable and healthy communities.

The 2041 RTP goals are used as a basis to define the three strategic outcomes for the transit investment, which are as follows:

GOAL 1: STRONG CONNECTIONS | The extension of GO Rail services in Northumberland County should improve transit coverage and serve key destinations in the high population centres in Port Hope and Cobourg. Given the current lack of transit connectivity between the County to the GTHA, this transit investment would significantly increase access to economic, cultural, and social opportunities in the urban areas of growth.

Underlying objectives:

- Connect to higher-order transit services;
- Increase transit ridership; and
- Increase accessibility to employment areas and services.

GOAL 2: COMPLETE TRAVEL EXPERIENCES | The extension of GO Transit services into the County should make travel easier for people to go to different destinations at more convenient times. The new transit options should benefit daily lives by reducing travel times and costs while providing an easy, safe and comfortable travel experience that meets the diverse needs of travellers.

Underlying objectives:

- Improve travel times;
- Ensure safe service and network; and
- Provide accessible service for all.

GOAL 3: HEALTHY AND SUSTAINABLE COMMUNITIES | The transit investment supports land-use intensification, GO Rail accessibility and reduced reliance on the automobile. Land use and development patterns that utilize mixed-use, transit-supportive, pedestrian-friendly urban environments can save energy, improve air quality and support climate resiliency by lowering the carbon footprint. An integrated transportation network in the County should help encourage more sustainable transportation behaviours by reducing dependency on the private automobile.

Underlying objectives:

- Reduce private vehicle-use and congestion on H-401;
- Support active transportation;
- Maximize environmental benefits; and
- Support tourism and economic development.

3.4 Alignment with Local and Regional Policy

The expansion of GO Transit services to connect Northumberland County with the rest of the GTHA aligns with provincial, regional, and local policy and planning goals. These objectives aim to improve the quality of life and safety, guide economic growth and development, and achieve environmental sustainability throughout the region. The key considerations and alignment with broader policies have been summarized in **Table 2**.

Table 2: Summary of Alignment with Broader Policies

Stakeholder	Document/Policy	Key Considerations
Metrolinx	2041 Regional Transportation Plan (2018)	The project aligns with the following key strategies proposed to achieve the 2041 RTP goals: • Strategy 2 – Connect More of the Region with Frequent Rapid Transit: the extension of GO Transit would increase standards of living for people who live or work in the County through access to a wider range of job opportunities, education or health and community services. • Strategy 4 – Integrate Land Use and Transportation: Considering that 80% of population and employment growth from 2011 to 2041 is expected to occur in the six urban areas in the County (Brighton, Campbellford, Cobourg, Colborne, Hastings, Port Hope), it is critical to develop a transportation system that is compatible with and supportive of existing and future land uses. Metrolinx's mandate as outlined in the RTP includes providing GO Rail and bus services to municipalities in the GO Transit service area outside the GTHA (i.e. the outer ring). Future planning for GO Transit infrastructure and services will continue to consider the needs of communities outside the GTHA and will be coordinated with local municipal plans to station area access and development.
Ministry of Municipal Affairs and Housing (MMAH)	Places to Grow (2017)	The vision of future development outlined in the Growth Plan includes complete communities that are compact, transit-supportive and make effective use of infrastructure and public service facilities. The investment aligns with the following guiding principles outlined in the Growth Plan: • Support the achievement of complete communities that are designed to support healthy and active living; • Prioritize intensification and higher density to make efficient use of land and infrastructure and support transit viability; • Provide flexibility to capitalize on new economic and employment opportunities as they emerge; and • Improve the integration of land-use planning with planning and investment in infrastructure and public service facilities.
Northumberland County	Northumberland County Official Plan (2016)	The investment would align with the following Guiding Principles laid out in the County's OP: 6. To ensure that housing is available to all ages, abilities, incomes and household sizes, and is located in areas near public transportation, jobs, and essential goods and services. 8. To establish an integrated transportation system that safely and efficiently accommodates various modes of transportation including trains, automobiles, trucks, and public transit, cycling and walking. 11. To work with the adjacent communities on matters of common interest, which includes growth management, economic development, transportation, infrastructure, natural heritage features and areas, water resources and source water protection The investment would meet the following Transportation Objectives outlined in the OP: a) Facilitate the safe and efficient movement of people and goods within the County's communities and to and from adjacent municipalities; b) Establish an integrated transportation system that safely and efficiently accommodates various modes of transportation including trains, automobiles, trucks, air, public transit, cycling and walking; c) Develop a transportation system that will encourage unity within the County and will satisfy local municipal transportation demands; d) Promote public transit, cycling and walking as energy-efficient, affordable and accessible forms of travel; and e) Protect transportation corridors to facilitate the development of a transportation system that is compatible with and supportive of existing and future land uses. The County's minimum designated Greenfield area density target is 30 residents and jobs per hectare, combined for the urban areas in the County. The County has also identified a minimum intensification target of 40% of all residential development occurring annually within the County will be within the built boundary of the urban areas.

Stakeholder	Document/Policy	Key Considerations
	Northumberland Economic Development Master Plan (2017)	Economic growth within the County can be bolstered by accommodating planned expansions of major transportation corridors to connect people with employment areas. The investment would align with one of the key components of the Integrated Economic Development Master Plan of Connective Infrastructure/Services for Day-to-Day Living. This key component identifies the need for residents to be connected to external opportunities and markets via transportation corridors, technology, services and institutions of wellness and learning.
	Northumberland Transportation Master Plan (2017)	Section 2.4 (Opportunities and Challenges) identifies the potential for the extension of GO Rail service to Bowmanville to further facilitate extensions into the County, especially to the high population centres in Port Hope and Cobourg. The County recommended exploring the implementation of interim measures such as bus services to the GTHA from the County to prove the viability of the service. Further potential opportunities include leveraging new technologies to provide efficient and effective mobility services throughout the County (including on-demand transit), as well as improving inter-regional public transit services, including extending the existing GO Transit network currently available in the neighbouring Durham Region. Policy recommendation PO20 states that the County will conduct semiannual discussions with Metrolinx on potential intra-regional transit connections.
	Northumberland 2019-2023 Strategic Plan (2019)	One of the Strategic Priorities under the *Thriving and Inclusive Community* specific area of focus is to enhance transit services. Action items to realize this Strategic Priority is to advocate for the extension of GO Transit to Northumberland and explore opportunities for innovative partnerships to enhance public transit within the County. The transit investment will also align with the Strategic Priority of implementing key Master Plans and advancing Key projects. Implementing measures in the Transportation and Cycling Master Plans will improve public transit and mobility services throughout the County while fostering sustainable growth.
Town of Cobourg	Town of Cobourg Official Plan (2018)	The Town of Cobourg is identified as a regional centre with a strong, liveable, and healthy community that provides a full range of opportunities to live, work, play, and shop. Expansion of transit services and/or increased mobility options would reinforce and further integrate the multimodal transportation system that includes transit, cycling, walking and good movement. A Major Transit Station has been identified in the OP at the existing VIA Rail station, with the lands adjacent to the transit station identified as the Major Transit Station Area. The Town will encourage improved access to the station for transit and active modes, recognizing the station's role as a major gateway to the community.
	Town of Cobourg Strategic Plan Components (2019 – 2022) (2019)	Strong, sustainable public, private partnerships have been identified by the Town as a key requirement for improving the quality of life for those who live, work and play in the area. One of the Strategic Actions identified in this Strategic Plan is to work with transit authorities in the area to integrate transit services, which will help realize the vision of extending transit services in the County.
Municipality of Port Hope	Port Hope Official Plan (2017)	Public service facilities should be located in community hubs, where appropriate, to promote cost-effectiveness and facilitate service integration, access to transit and active transportation. Land use designations permit any public facilities (e.g. schools, recreational centres, fire, ambulance, and police stations) and daycare centres to be serviced by and have access to public transit and active transportation infrastructure.
	Port Hope Strategic Plan (2019)	The transit investment would align with the Municipal Priorities identified for Port Hope of Intentional Growth Planning, which aims to achieve a balance between economic growth and residential growth/affordability that includes diversification.

3.5 Relevant Experiences

Following the development of the Opportunity Statement and confirmation that the investment project aligns with local and regional policy goals, the next step consists of developing a set of clearly defined investment options. Section 4 identifies and defines the options for the extension of GO Transit into Northumberland County. However, before diving into the elaboration of these options, it is worthwhile having a look at what has been done elsewhere to identify lessons learned and best practices from similar projects across Southern Ontario. **Figure 11** summarizes the key takeaways from the review of the precedent projects. Case studies were selected for their scale, context, and relevance to the situation at hand.

Figure 11: Key Takeaways from Relevant Case Studies

Innisfil Transit Uber Pilot – Innisfil, ON

In 2017, the Town of Innisfil launched a pilot project where the ride-sharing app Uber functioned as an on-demand public transit service in the town. The average fare for each trip is around $5, with the city subsidizing the rest of the actual trip cost. Trips outside the subsidized areas receive a flat $6 discount. In 2018, a total of 85,943 Uber trips were taken, with the cost of subsidies for that year totalling $640,000.[11].

The program cost is expected to reach $1.2 million for 2019, which exceeds the $900,000 the Town allocated for the programme. Several oversights have emerged since the beginning of the programme, including the unaffordable cost of transit for low-income residents, a dramatic increase in the number of vehicles on the road network, and the negative implications for environmental sustainability.

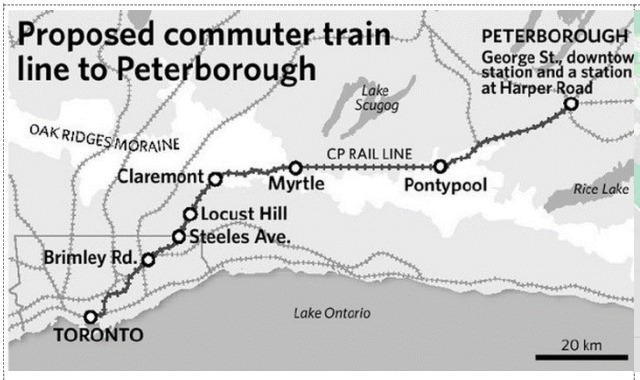
In July 2019, Metrolinx and Lyft launched a six-month pilot program to provide first- and last-mile solutions for riders getting to and from GO Stations. By starting or ending a trip with Lyft at certain GO stations (i.e. Exhibition, Oakville, Unionville and Bramalea), new and existing customers will save $4 on their next five Lyft rides.[12].

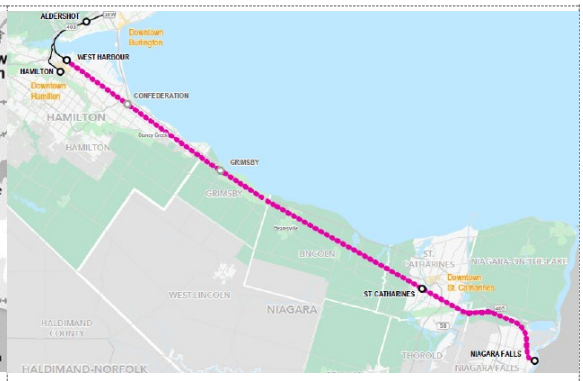
During the pilot, customers can simply drop their pin in the pick up/drop-off zones in the Lyft app to get a ride in minutes. The designated pick-up and drop-off areas at each station are marked with special signage. This pilot provides an opportunity to explore how working with a mobility partner like Lyft can improve connections to transit, creating more seamless journeys for customers around the region. There is no financial cost to Metrolinx associated with this promotional partnership with Lyft.

Milton GO Connect – Town of Milton, ON

The Town of Milton delivered a concept pilot, which utilized available technology from RideCo to provide on-demand service to connect passengers to/from Milton Transit to/from their desired GO Rail station in the morning and afternoon peak periods. Milton GO Connect was in-service for 10 months from May 2015 to March 2016. The fare was $1.95 at your door or $1.45 at a local hub no more than a few minutes' walk away. Ridership stabilized at around 1700 trips per month, or 85 trips per average service day. During the four stabilized months, the cost per trip averaged $10.32 ($8.37 to agencies after a $1.95 fare).
Demand: confirmation there is a market segment willing to adopt new on-demand services to connect to transit.
Pricing: customers are willing to pay a higher fare for the convenience of true on-demand service.
Operations: necessary to limit the number of stops per vehicle to ensure travel time remains competitive for the first person who enters the vehicle.
Future pilots: extend for a longer duration, to provide a gestation period in the market and enable full evaluation.[13]

[11] Burston, Cole. 2019. *The Innisfil experiment: the town that replaced public transit with Uber.* 16 July. Accessed March 1, 2020. https://www.theguardian.com/cities/2019/jul/16/the-innisfil-experiment-the-town-that-replaced-public-transit-with-uber.
[12] Lyft. 2019. "Streamlining Your Trip with Metrolinx." *Lyft Blog.* 13 July. Accessed March 1, 2020. https://www.lyft.com/blog/posts/streamlining-your-trip-with-metrolinx.
[13] Information provided by Metrolinx on March 10, 2020.





Peterborough Rail Study – Peterborough, ON

In 2010, Metrolinx undertook a joint study for the potential reinstatement of passenger rail service between Toronto and Peterborough. The study evaluated three alternative routes for a rail connection from Peterborough to downtown Toronto. Three potential service levels (Basic Service, Enhanced Service, and All-Day Service) were assessed to determine which commuter rail type of service would be most appropriate.

Capital costs ranged from $541 million to $1.5 billion for the initiation of basic service by 2016, with total lifecycle capital costs ranging from $627 million to $1.6 billion assuming ramp-up to Enhanced Service after 2021. Estimated average gross annual operating and maintenance costs are in the order of $21 – 25 million per year for the initial years of basic service (2016 to 2021), then $43 – 44 million annually after 2021.[14].

Ridership forecasts showed that 1,900 total boardings per weekday for both directions can be expected in 2016, increasing to 4,160 boardings in 2031. All-day and weekend services were found to be unjustified based on the ridership projections.

In June 2019, $71.1 million in federal funding was announced to further study a proposal for a VIA Rail passenger train service between Quebec City and Toronto, via Peterborough. The entire rail project is expected to cost $4 billion with work potentially being completed by 2022.[15].

Niagara GO Rail Expansion – Niagara, ON

Metrolinx is investigating the extension of GO Rail services to Niagara Falls, an investment that would add new rail service and connectivity to the Lakeshore West GO Rail Line. An Initial Business Case conducted in 2019 assessed three extension options – along with a "Business as Usual" (BAU) scenario – in the study area spanning the existing West Harbour GO Station in Hamilton to Niagara Falls in the east of Niagara Region.

Capital costs ranged from $312 million to $374 million with operating and maintenance costs ranging from $234 million to $1.2 billion over the entire project 60-year lifecycle.[16].

Ridership forecasts between Confederation GO Station to Niagara Falls GO for the year 2031 ranged from 447,000 total annual boardings in the BAU scenario, to 3,367,000 in Option 3 (most frequent service).

The Benefit Cost Ratio (BCRs) of the three investment options ranged from 1.1 to 1.2, indicating similar performance when considering overall costs, benefits, operability, policy alignment and stakeholder considerations.

A Preliminary Design Business Case will be developed once an option has been agreed upon by Metrolinx, the Province and impacted stakeholders. This business case will begin assessing the preferred option at a more detailed level of analysis, further refining project scope, service pattern, and benefits and costs.

[14] Metrolinx. 2010. "Peterborough Rail Study Final Report." *Metrolinx.* February. Accessed March 1, 2020. http://www.metrolinx.com/en/regionalplanning/projectevaluation/studies/Peterborough_Rail_Study.pdf.

[15] Kovach, Joelle. 2019. *Via Rail high-frequency passenger service a high priority for feds.* 17 December. Accessed March 1, 2020. https://www.thepeterboroughexaminer.com/news-story/9778196-via-rail-high-frequency-passenger-service-a-high-priority-for-feds/.

[16] Metrolinx. 2019. *Niagara Falls Rail Service Extension: Initial Business Case Update.* November. Accessed March 1, 2020. http://www.metrolinx.com/en/regionalplanning/projectevaluation/benefitscases/2019-11-14-Niagara-Falls-Rail-Extension-IBC-Update-FINAL.pdf.

4. Investment Options

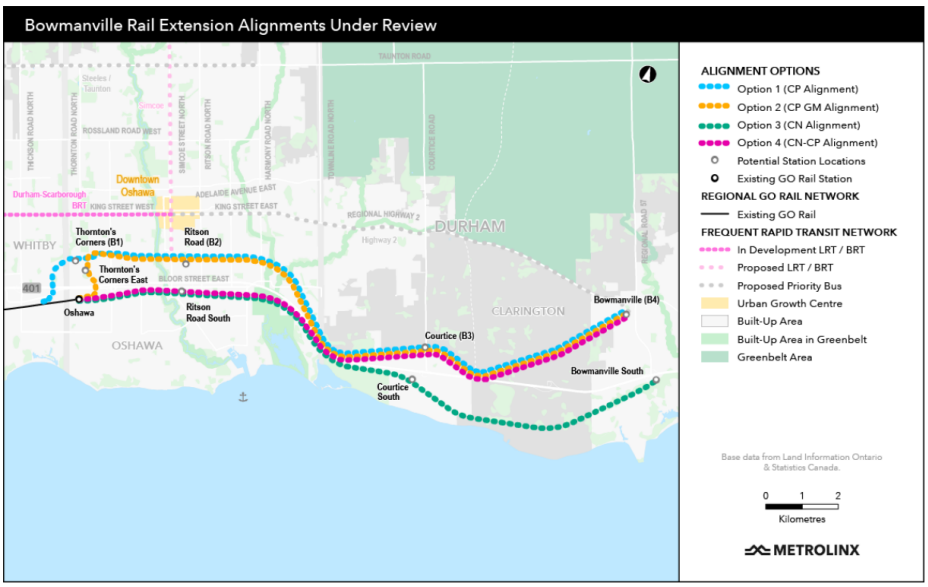
This chapter presents the prevailing conditions under the Business as Usual (BaU) scenario (i.e., without any new investment in intercity transit) and explores corridor and technology options for the transit service extension into Northumberland. Investment Options are further refined to a shortlist of investment options to be compared against the BaU scenario through the four lenses of the business case evaluation framework in the next section.

4.1 Business as Usual Scenario

The BaU provides a baseline comparison for the investment options described hereafter. The BaU scenario assumes the continuation of current transit services in the region and includes approved improvements within the GO network, but does not include the extension of GO Transit services into Northumberland County. The main transit improvement project impacting Northumberland County is the Lakeshore East GO Rail corridor extension to Bowmanville.

In 2016, the Province of Ontario announced a $550 million commitment to extend the Lakeshore East GO Rail corridor over an additional 20 kilometres. The extension includes four new stations and a new track linking the GO corridor west of the existing Oshawa GO Station to the CP Belleville sub facilitated by a new rail overpass across Highway 401. In February 2020, Metrolinx released an Initial Business Case Update for the Bowmanville Rail Service Extension[17]. Four alignments were examined in the IBC, as shown in **Figure 12**. The report recommended that Option 2 with a two-way all-day service pattern as it balances ridership, benefits and overall project costs be advanced through the Business Case development process as it balances ridership, benefits and overall project costs. The IBC assumes a five year of construction (2020-2024), with a hypothetical opening year of 2025. The proposed Bowmanville GO station is expected to have a daily ridership of 1,000 to 2,000 passengers during the 2031 AM peak period. The station access target mode split is 10 to 12% of passengers taking local transit, with the modal split of micro-transit passengers to be determined[18]. The four new stations have been identified to have significant potential for micro-transit to serve a zone corresponding to a radius ranging between 1km and 3.5km around the stations.

Figure 12: Lakeshore East GO Rail Corridor Extension Alignment and Station Options



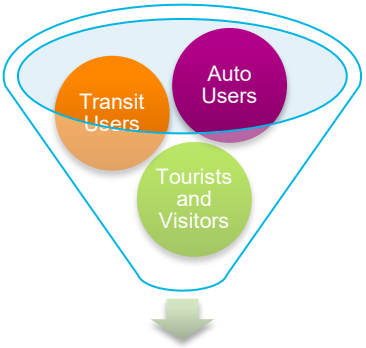
Source: Metrolinx. 202*0. Initial Business Case Update: Bowmanville Rail Service Extension.*

[17] Metrolinx. 2020. Bowmanville Expansion Webpage. http://www.metrolinx.com/en/greaterregion/projects/bowmanville-expansion.aspx

[18] Metrolinx. 2016. GO Rail Station Access Plan. http://www.metrolinx.com/en/regionalplanning/projectevaluation/studies/GO_Rail_Station_Access_Plan_EN.pdf

Current Travel Demand by Mode

The new transit service is likely to attract new trips to the transit network. To assess the potential demand for each investment option, it is necessary to understand current and future travel patterns under the BaU scenario.



Total Demand for Travel

The results of the travel demand analysis will be used in Section 5 to assess the efficiencies that can be achieved by different travel demand segments under each option. Efficiencies consist of the travel time savings and out-of-pocket cost savings (e.g., fuel, parking, fare) relative to the BaU. Travel demand market segments consist of 1) transit users, whether they drive or carpool to a GO Rail station or use VIA Rail services; 2) auto users, both drivers and passengers; and 3) tourists and visitors to the region.

Transit Demand

The 2015 GO Rail Survey indicates that 197 daily trips originating from the County were taken to access the Oshawa GO and Whitby GO stations. A vast majority of these transit users (85%) drive their car to the GO stations, 8% carpool and 8% use another mode to access the GO Rail Station. More than 85% of trips are destined to Downtown Toronto (including 14% to the University of Toronto, 14% to Queen's Park), 8% to Central Toronto and 8% to Scarborough**. Table 3** shows daily boardings at Oshawa GO and Whitby GO originating from the County during a typical 2015 weekday.

Table 3: Demand for GO Rail Originating from Northumberland County (2015 Weekday)

Municipality	Oshawa GO	Whitby GO	Total
Port Hope	87	21	108
Cobourg	58	11	69
Colborne	20	0	20
Total	**165**	**32**	**197**

Source: AECOM Analysis using the 2015 GO Rail Survey Database.

The analysis assumes that the same number of transit trips are taken using the VIA Rail service, resulting in close to **400 transit trips**. This assumption relies on the online survey results, which show that similar proportions of respondents rely on public transit and VIA Rail as their primary mode of transportation.

The analysis applies a 1.8% annual growth rate to determine that the number of daily transit trips will grow from 400 trips in 2016 to 625 trips in 2041.

Auto Demand

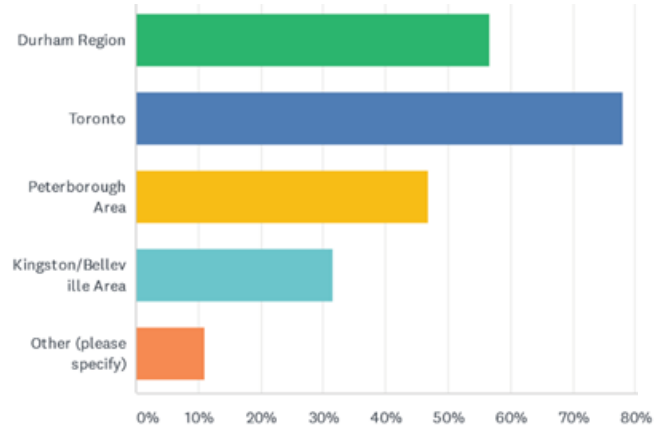
The total demand for travel by auto outside of Northumberland County is broken down into three categories, consisting of 1) commuters travelling to/from their place of work, 2) students, and 3) discretionary trips (e.g., medical appointments, shopping, visiting friends and family, etc.).

The 2016 Census indicates that 11,095 residents commute to work outside the County daily. The Travel Tomorrow Survey (TTS) indicates that GTHA-wide, work commute trips represent 50% of total trips and school and discretionary trips represent 7% and 43% of the total, respectively. Applying these shares to the number of work commute trips results in a total daily auto demand of 22,435 trips, excluding tourists and visitors (evaluated separately below). Table 4 presents the number of daily trips by trip purpose.

Table 4: Number of Daily Trips outside Northumberland County by Trip Purpose, 2016

Trip Purpose	Share of Total	Daily Trips
Work	50%	11,095
School	7%	1,480
Discretionary	43%	9,860
Total	**100%**	**22,435**

In terms of destination, the online survey results indicate that most respondents travel to Toronto (78%). Other popular destinations include Durham Region (57%), Peterborough Area (47%), Kingston/ Belleville area (32%), and other destinations (11%). Those who chose “other” indicated they mainly travel to destinations including Niagara Region, Hamilton, Ottawa, Trenton, Guelph, Burlington, Oakville, Mississauga, and Barrie.



24% survey respondents travel outside the County several times per week, 20% on a daily basis, 20% on a monthly basis, and 19% on a weekly basis. In total, 83% of participants travel outside the County on a monthly basis, at a minimum.

The County’s Transportation Master Plan suggests that daily vehicle-kilometres travelled, and daily vehicle-hours travelled will grow respectively by 1.2% and 1.9% per year on average between 2011 and 2041. Using a midpoint of 1.5% growth per year suggests that auto demand will grow to close to 32,000 daily trips in the 2041 horizon year.

Tourist Demand

According to the Ministry of Tourism, the Kawarthas Northumberland Region as a whole hosted 6.1 million visitors and tourists in 2017.[19] By 2041, the County could attract in excess of 7.8 million visitors and tourists, assuming an average annual growth rate of 1%.[20]

Tourists and visitors currently access the County by private vehicle, rental vehicle, or using the VIA rail service.

Table 5 shows the number and share of tourists and visitors by origin as well as the number of trips by mode and by origin. The 2017 statistics show that tourists and visitors from Ontario access the

[19] Ontario Ministry of Heritage, Sport, Tourism and Culture Industries. Tourism Regions. Online. <http://www.mtc.gov.on.ca/en/research/rtp/rtp.shtml>

[20] Based on average annual growth rate of tourist demand to Ontario between 2007 and 2017. Source : Government of Ontario Opend Data. Online. <https://data.ontario.ca/dataset/inbound-visits>

County mostly by private vehicle (97%) or by rail (3%). Other Canadians access the region either by private vehicle (73%) or vehicle rental (27%), whereas 67% of international tourists use rental vehicles and 16% access the region by rail. In total, in 2017, approximately 65,500 tourists and visitors accessed the region by rail and close to 26,000 parties rented a vehicle to visit Northumberland.

Table 5: Tourist and Visitor Demand to Northumberland County by Access Mode (2017)

	Ontario	Other Canada	International	Total
2017 Tourist Demand (person trips)	5,999,390	91,935	52,489	6,143,815
2017 Tourist and Visitor Demand (% of total)	98%	1%	1%	100%
Share of spending by mode				
Private Vehicle	97%	73%	17%	93%
Vehicle Rental	0%	27%	67%	4%
Transit	3%	0%	16%	3%
Total	100%	100%	100%	100%
Number of Trips by mode				
Private Vehicle (vehicle trips)	2,351,957	27,163	3,497	2,382,617
Vehicle Rental (vehicle trips)	1,788	9,857	14,218	25,863
Transit (person trips)	62,046	0	3,421	65,467

Source: AECOM Analysis based on statistics from Ontario Ministry of Heritage, Sport, Tourism and Culture Industries Tourism Regions. Online. <http://www.mtc.gov.on.ca/en/research/rtp/rtp.shtml>.
Notes : Analysis uses the distribution of total spending ($) by mode of transportation to access the region as a proxy for demand by mode and assumes an average party size of 2.48.

The next section presents the investment options considered for this Initial Business Case.

4.2 Investment Options

The options for extending GO Transit services into the County were identified in collaboration with key stakeholders from municipalities within the County. The options were determined by combining route options and technology (or mode) options.

To help identify and define the options, stakeholders were asked the following questions:

To receive feedback on route options to consider for potential future GO Transit service in the County:

- Using the study area map of the County, draw your preferred route option for potential future GO service? Keep in mind the number of stops, travel time of route from beginning to end and between stops, and potential connections to other modes of transit.

To receive feedback on the presumed preferred mode of GO Transit:

- What mode of transportation would you use for your typical trip/ commute in place of driving? Why is this mode of transit preferred?
- Keeping in mind the strategic goals and objectives for this project, which mode of transit would best serve current and future residents of Northumberland County?

Route Options

At the outset of the route options exercise, Stakeholders reached a consensus. The new transit service concept should be developed in two phases and use a hub-and-spoke approach. The first phase consists in connecting municipalities along Highway 401 to the nearest GO Rail station. This route option includes stops in central locations in Trenton Junction, Coburg and Port Hope and then connects to Oshawa GO or Bowmanville GO, once the new station is in operations. The three main hubs should be located near an access ramp to Highway 401 and have available parking for users to park their car or be dropped off in the morning and picked up on their return trip.

In a second Phase, Stakeholders would like to consider an additional route departing from the Port Hope hub and offering a northern connection to Peterborough using the Highway 2 corridor.

Technology Options

The transit investment would extend GO Transit service coverage from the GTHA into Northumberland County, with a particular focus on improving regional transit service to Port Hope and Town of Cobourg. Potential modes of transportation considered include new GO Bus routes. The extension of the Lakeshore East GO Rail Line, a new Light Rail Transit corridor using rail vehicles operating within general traffic lanes or with little separation from traffic, on-demand services using smaller vehicles. In addition to these traditional transit modes, stakeholders identified the potential to subsidize seats on the current VIA Rail service.

Streetcars, monorails, Personal Rapid Transit (PRT), and other unique transit modes were not identified as viable alternatives, either technologically nor in terms of responding to the demands and constraints of the corridor, and so were not evaluated.

A high-level assessment of each option found that the alternative modes are not equally compatible with the Strategic Goals and Objectives described in **Section 3.3**. For instance, the extension of GO Rail services and the implementation of a new Light Rail systems, which require high levels of investment to implement and operate are already deemed not feasible given the low levels of ridership in the corridor, and the long construction and implementation process. **Table 6** lists the advantages and disadvantages of each option.

Table 6: Long List of Technology Options

Technology	Advantages	Disadvantages
GO Bus 	• Proven technology • Cost-effective for riders and County • Flexibility to adapt • Vehicle capacity • Quick implementation • No added road infrastructure • Lower initial investment cost • Potential to connect to existing local transit services for first- and last-mile • Reduction in auto use	• Slower operating speeds than other higher-order modes of transit • Subject to congestion on Highway 401 during peak periods (potentially alleviated by the implementation of a dedicated bus lane on Highway 401) • Fixed route only • Less cost-effective for areas outside of the Highway 401 corridor • Long land area required for buses • Requires parking infrastructure at stops
GO Rail 	• Extension of the existing Lakeshore East GO Line offering seamless connection to the GTHA network • Fast and reliable • Potential for all-day, two-way service similar to the Bowmanville Extension Service Concept • Electrified service minimizes environmental impacts • Reduction in auto use and congestion	• No existing dedicated tracks or stations • Prohibitive capital and operating costs • Planned electrification of the Lakeshore East GO line would require an electric service • Long implementation process • Possible ridership loss at downstream stations if the train is at capacity • Limited space for additional train service into Union Station • Passengers must use alternative modes for first- and last-mile trips
VIA Rail 	• Opportunity to build VIA Rail ridership • Ability to build on existing infrastructure • Additional revenue source for VIA Rail • Fast and reliable • Familiarity with service for passengers who already use VIA for their commute • Reduction in auto use and congestion	• Novel practice, never been tested • Seat availability is variable • May impose logistics issues for VIA and GO • Additional operating costs for VIA Rail • Low frequency, low flexibility to adapt service to demand • Limited number of stations, longer access/egress trips • Parking capacity constraints at the Cobourg station
Light Rail 	• Fast and reliable • Flexibility to adapt service to demand • Electric vehicles reduce carbon footprint • Reduction in auto use and congestion	• Prohibitive capital and operating costs • Long construction and implementation process • Requires a dedicated maintenance and storage facility • Capacity far exceeds demand in the area • Lack of seamless integration with GO network due to different rolling stock • High fare levels to recover costs
On-demand services 	• Convenience • Flexibility to adapt service to demand • Potential for door-to-door service • Serves multiple origins and destinations • Possibility to use hybrid or electric vehicles to reduce carbon footprint • Quick implementation • No added road infrastructure	• Rural versus urban destinations • Must cover a larger geographical area • Less reduction in auto use and congestion compared to other transit options • Requires access to a smart device • Smaller capacity (4-6 passengers per trip depending on vehicle size) • Less cost-effective for passengers and operators

Options for Evaluation

Based on the balance of pros and cons for each option, the stakeholders shortlisted three different options to be assessed through the four lenses of the Business Case Evaluation Framework.

The investment options are as follows:

1. GO Bus service connecting Colborne to Oshawa GO with stops in Cobourg and Port Hope;
2. Micro-transit/on-demand service using minivans to pick up riders at predefined stops in Trenton Junction, Cobourg and Port Hope and connecting to the Oshawa GO Station and Peterborough City Center; and
3. VIA Rail services to allow riders boarding at VIA Rail stations within the County to travel to/from the Greater Toronto Area at a fare similar to GO Rail (Metrolinx to subsidize the difference between VIA Rail fare and GO Rail fare).

Potential Ridership for Each Option

The four-case assessment hinges on the potential for each option to attract new transit riders to the network and to reduce travel times and distances travelled by private vehicles. A spreadsheet-based cost comparator was developed to estimate the total trip cost associated with different origin-destination pairs and modes of travel using the generalized journey cost (GJC) approach where the travel times are monetized and combined to the financial costs borne by travellers to determine the extent to which each option can compete with the preferred modes of travel to and from the GreaterToronto Area under the BaU scenario.

First under the BaU scenario, three modes of travel are available to access the GTA: park and ride at a nearby GO Rail station (i.e., Oshawa GO, Withby GO, or the planned Bowmanville GO), driving all the way, or VIA Rail services.

For the GO Park and Ride option, the analysis relied on statistics from the 2015 GO Rail Survey data, which shows that GO rail users traveling from Northumberland County originate from Cobourg, Port Hope and Colborne and access either Oshawa GO or Withby GO stations. Table 7 presents the input used to derive the generalized journey cost for each origin-destination pair for GO Park and Ride trips under the BaU. For instance, to attract park and ride users originating from Port Hope who board at Whitby GO, the new transit service would need to cost less than $44 per trip, when combining the travel time costs and the out-of-pocket costs.

Table 7: Generalized Journey Cost for GO Park and Ride Trips Originating from Northumberland County

From	Port Hope	Cobourg	Colborne	Port Hope	Cobourg	Colborne
To	**Union (via Whitby GO)**			**Union (via Oshawa GO)**		
Auto Travel Time per trip (min)	45	55	65	40	50	60
GO travel time per trip		53			61	
Journey Travel Time (min)	98	108	118	101	111	121
Journey Travel Cost ($)	$29	$33	$36	$30	$33	$36
Auto Distance (km)	56	67	91	50	61	85
Auto Cost per trip ($)	$5	$6	$8	$5	$5	$8
GO fare per trip ($)		$9.60			$10.30	
Out-of-Pocket Costs	$15	$16	$18	$15	$16	$18
Generalized Journey Cost	$44	$48	$53	$45	$49	$54

The analysis uses the following assumptions:

- Travel times for a typical weekday AM peak period using February 11, 2020 Google travel times;
- The private vehicle operating cost is $0.09 per km as specified in the Metrolinx Business Case Guidance;
- The hourly value of time is $18.06 as per the Metrolinx Business Case Guidance;
- GO rail and VIA Rail fares are based on a single adult trip.
- Excludes travel time and cost to access the nearest transit stop in Port Hope, Cobourg or Colborne.

The same approach is used to assess the generalized journey costs for auto users driving all the way from Cobourg to Union Station and for VIA Rail users who board in Port Hope and Cobourg and egress at Union GO Station.

Table 8 summarizes the demand, the average generalized journey cost, the travel time and the auto distances travelled for the BaU option. The demand for each mode is estimated based on the daily demand by mode presented in Section 2, which has been halved to only account for the AM peak period and adjusted to 2020 ridership levels using a 1.8% average annual growth rate. The year 2020 is used in this case to align with the travel conditions (time and distances) used in the analysis.

Table 8: Demand, Travel Time and Auto Distances Travelled by Mode under BaU, 2020 AM Peak Period

BaU Mode of Travel	Demand	GJC	Travel Time	Auto Distances
Park and Ride	215	$47	106	58
Auto	18,403	$38	90	120
VIA Rail	100	$52	85	0

The same approach is used to determine the average generalized journey cost for each investment option. The difference between the BaU scenario and each investment option will allow to determine the extent to which each investment option can attract riders to each investment option.

Option 1: GO Bus Service

For analysis purposes, it is assumed that the GO Bus route would have three stops (Port Hope, Cobourg and Colborne) in the County and then offer an express service to Oshawa GO Station. **Table 9** shows the assumptions used to derive the generalized journey costs for GO bus trips from the three points of origin. The generalized journey costs for a GO Bus trip varies between $47 and $64 with a weighted average of $52. The results suggest that the GO Bus service is not competitive to the private automobile or to park and ride trips. However, with a flat fare of $5, GO Bus is a somewhat attractive option compared to using VIA Rail to access the GTA.

Table 9: Generalized Journey Cost for a New GO Bus Service Originating from Northumberland County

From	Port Hope	Cobourg	Colborne
To		**Union (via Oshawa GO)**	
Distance to Station (km)	50.3	61.0	84.6
Local Road Distance (km)	0	9	17.2
No. of Stops (5 minutes per stop)	0	1	2
Bus Travel Time per trip (min)	40	82	121.6
Journey Travel Time (min)	106	135	162
Monetized Journey Travel Time ($)	$30	$43	$55
GO rail travel time per trip (min)		61	
GO fare per trip ($)		$10.30	
Bus Cost per trip ($)	$5	$5	$5
Generalized Journey Cost	**$47**	**$56**	**$64**

The analysis uses the following assumptions:

- Each stop results in a 1-minute penalty for upstream users;
- Buses run at an average speed of 30 km/h on local roads and at traffic speed on the highway;
- The private vehicle operating cost is $0.09 per km as specified in the Metrolinx Business Case Guidance;
- The hourly value of time is $18.06 as per the Metrolinx Business Case Guidance;
- GO rail fares are based on a single adult trip, GO Bus fare is $5.

Option 2: Micro-Transit Service

The service concept for the micro-transit option is very similar to the GO Bus concept with each vehicle having the possibility of making a stop in Port Hope, Cobourg, and Colborne. The main difference is the travel speed on local roads, which is assumed to increase from 30 km/h for GO bus to 40 km/h for micro-transit vehicles. This change in speed on local roads and the possibility of filling up the vehicle at one or two stops, reduces the travel times compared to GO Bus, bringing the generalized journey cost to $45 for a micro-transit trip to Oshawa GO and onto Union GO Station. Therefore micro-transit is not only a competitive option to VIA Rail but also to GO Park and Ride, which increases the potential to attract new riders compared to the GO Bus scheme.

Option 3: VIA Rail Subsidized Trips

The third investment option consists of Metrolinx subsidizing seats on VIA Rail trains. For analysis purposes, it is assumed that Metrolinx would pay one third of the existing VIA Rail fare and the user would pay two thirds. For example, the VIA Rail ticket price between Cobourg and Union GO Station is approximately $27, so users would end up paying $18 out of their pocket per trip. Changing the ticket price brings down the generalized journey cost to $43 for this option. Similarly to the micro-transit service, the VIA Rail subsidized trip has the potential to retain VIA Rail users and to attract GO Park and Ride users.

Table 10 summarizes the generalized journey cost, the travel times and the distances travelled by private auto by trip under each investment option. Comparing the results against those of the BaU modes of travel shown in Table 8 indicates for example that each rider shifting from GO Park and Ride in the BaU to micro-transit will save incur travel time penalty of 8 minutes, but save 58 km of auto distances, on average, resulting in a reduction of their overall generalized journey cost of approximately $2.

Table 10: Demand, Travel Time and Auto Distances Travelled under Each Option, 2020 AM Peak Period

BaU Mode of Travel	GJC	Travel Time	Auto Distances
GO Bus	$53	124	0
Micro-Transit	$45	114	0
VIA Rail	$43	85	0

Providing a cost-competitive access mode to the GTA may divert a portion of existing trips and even attract new trips that would not have been made without the new service. However, not all potential candidates will divert from their preferred mode of travel. Even with potential savings, some users may continue to use their preferred mode of travel for the flexibility it offers or for other reasons. The extent of the shift depends on the sensitivity of users to changes in the generalized journey cost. The potential shift is estimated by applying an elasticity measure [21] (i.e. the responsiveness of users to changes in travel costs) to determine the reduction in demand for GO Park and Ride and for VIA Rail trips for each investment option.

[21] Based on findings from the *Fares Market Research Report* prepared by AECOM for Metrolinx in May 2017.

Table 11 shows the approach used to estimate potential demand for each option using the elasticity method. The results suggest that only a marginal number of people would use the GO Bus service. The micro-transit service attracts fewer than 10 people during the 2020 AM peak period and the VIA Rail option attracts 103 users. The relatively high demand for VIA Rail is due mostly to the fact that the analysis assumes that 100% of existing VIA Rail users would continue to use the service at a discounted ticket price. This option would divert approximately 3 users from the GO Park and Ride option under the BaU. The bottom rows of the table show the total travel savings and reduced auto distances travelled for each option. Users switching to the micro-transit option will sustain travel time penalties compared to their current mode of travel, but will save on auto operating costs. The VIA Rail option has the potential to incur 103 minutes of travel time savings and 63 km travelled during the 2020 AM peak period compared to the BaU scenario.

Table 11: Potential Demand, Travel Time Savings and Reduced Auto Distances Travelled, 2020 AM peak Period

	GO Bus	Micro-Transit		VIA Rail	
BaU mode of Travel	VIA Rail	GO Park and Ride	VIA Rail	GO Park and Ride	VIA Rail
GJC - BaU	51.93	47.95	51.93	47.95	51.93
GJC - New Transit Option	52.00	46.60	46.60	43.10	43.10
% change in GJC	-0.1%	2.9%	11.4%	11.3%	20.5%
Fare elasticity:	-0.48	-0.11	-0.48	-0.11	-0.48
% change in transit demand:	0.1%	-0.3%	-5.5%	-1.2%	-9.8%
Demand - BaU	100	215	100	215	100
Potential Modal Shift	0.1	0.7	5.5	2.7	9.8
Potential Demand	<1	6		13	
Travel Time Savings (minutes)	Marginal	-200		63	
Auto Distances Saved (km)	Marginal	361		156	

The next section presents the four-case evaluation for each option.

5. Four-Case Evaluation

This section provides a high-level assessment of the three investment options through four different lenses: the strategic case, the economic case, the financial case and the deliverability and operations case.

Case	Criteria	Option 1: GO Bus	Option 2: Micro-Transit	Option 3: VIA Rail
Strategic Case	Strong Connections	• Provides a new transit connection to the GO higher-order transit network • Marginal flexibility to service other destinations • Marginal potential demand for the new service • Less than 1 rider during the 2020 AM peak period	• Provides a new transit connection to the GO higher-order transit network • High flexibility to service other destinations, such as Peterborough • Limited potential demand for the service • 6 riders during the 2020 AM peak period	• Does not provide a new transit connection to the GO higher-order transit network since service is already available • Fixed-route, fixed stations, no flexibility to serve new destinations • Significant potential demand for the service • 13 riders during the 2020 AM peak period (without the existing 100 VIA Rail users)
	Complete Travel Experience	• Marginal travel time savings for new users • Limited flexibility to change route, timetable and headway and number of stops • Marginal reduction in parking constraints at Oshawa GO	• Travel time penalty of 200 minutes for new users during the 2020 AM peak period • Provides highest flexibility in terms of departure time, number of stops, routes, etc. • Service can easily be tailored to the demand with additional vehicles or changes in pick-up/drop-off locations • Limited reduction in parking constraints at Oshawa GO	• Travel time savings of 63 minutes during the 2020 AM peak period • Limited flexibility in terms of service frequency, timetable • Limited available seats during peak periods may result in excess demand that cannot be accommodated
	Healthy and Sustainable Communities	• Marginal reduction in private auto use	• Most important reduction in private auto use with 361 vehicle-kilometres saved during the 2020 AM peak period	• Important reduction in private auto use with 156 vehicle-kilometres saved during the 2020 AM peak period

Case	Criteria	Option 1: GO Bus	Option 2: Micro-Transit	Option 3: VIA Rail
		• Marginal reduction in congestion and GHG emissions • Reduced private auto use somewhat offset by additional bus distances travelled	• Reduced private auto use somewhat offset by micro-transit vehicle distances travelled	
Economic Case	Transportation user benefits (i.e., travel time savings and reduced auto operating costs)	• Marginal travel time savings and reduced auto operating costs	• Monetized travel time penalties likely to offset reduced auto operating cost savings, resulting in negative transportation user benefits	• Monetized travel time savings and reduced auto operating cost savings will result in highest transportation-user benefits
	Indirect benefits (i.e., road safety, improved air quality and reduced GHG emissions)	• Marginal reduction in auto use will not generate indirect benefits	• Important reduction in auto use (321 km) will improve road safety outcomes and reduce air pollution and GHG emissions	• Reduction in auto use (156 km) will improve road safety outcomes and reduce air pollution and GHG emissions
	Wider Economic Benefits	• Marginal improvements to connectivity and accessibility to high-productivity employment hubs	• Improvements to connectivity and accessibility to high-productivity employment hubs	• Most important improvements to connectivity and accessibility to high-productivity employment hubs
Financial Case	Farebox revenue for Metrolinx	• Marginal additional revenue due to low ridership level	• Limited additional revenue due to low ridership level	• Limited additional revenue due to high subsidy costs
	Capital Costs	• Bus acquisition cost (depend on size and number) • Stations and parking lots	• Vehicle acquisition costs (depend on size and number) • Software development • Stations and parking lots	• No additional capital costs since rail service is already in operations

Case	Criteria	Option 1: GO Bus	Option 2: Micro-Transit	Option 3: VIA Rail
	Operating Costs	• Highest operating costs due to size of vehicle and fuel consumption rate	• Vehicle operating costs • Software maintenance	• Seat subsidy per rider to VIA Rail may be important. • Likely to subsidize existing VIA Rail users boarding in Cobourg and Port Hope, incurring additional costs to Metrolinx without adding new riders to the transit network or reducing reliance on auto use.
Deliverability and Operations Case	Stakeholders and governance	• Service likely delivered by GO Transit • Need to coordinate with local transit providers to align timetables	• Possibility to partner with an on-demand service operator (i.e., Uber, Lyft, etc.) to reduce the costs	• Need to coordinate with VIA Rail to see if there is an interest and, more importantly, to confirm seat availability during peak periods.
	Risks and uncertainties to deliver the new service	• Low risks and constraints for implementing the service through GO Transit	• Possibility to learn from previous and ongoing pilot projects in other parts of the GTHA	• No experience in the GTHA with this type of service
	Operational risks	• GO Buses may run empty due to low demand for the service • Limiting the service to two stops in Cobourg and Port Hope likely to reduce travel times and increase attractiveness of the service • Implementing a reserved bus lane on Highway 401 may increase the attractiveness of the service compared to auto use and GO Park and Ride.	• Possibility to learn from previous and ongoing pilot projects in other parts of the GTHA • Implementing a high occupancy vehicle lane on Highway 401 may increase the attractiveness of the service compared to auto use and GO Park and Ride.	• Difficulty to predict the number of available seats on any given day • Requires high level of coordination with VIA Rail • Service completely dependant on VIA Rail

6. Conclusion

The County of Northumberland commissioned the GO Expansion Business Case and Economic Impact Study to identify options for extending GO transit services into the County. A stakeholder workshop with representatives from the County and municipalities identified a long list of options for the new transit service. The options were screened against a list of criteria and three transit service options were identified for comparison and evaluation using the Metrolinx Business Case Framework:

1. GO Bus service connecting Colborne to Oshawa GO with stops in Cobourg and Port Hope;
2. Micro-transit/on-demand service using minivans to pick up riders at predefined stops in Trenton Junction, Cobourg and Port Hope and connecting to the Oshawa GO Station and Peterborough City Center; and
3. VIA Rail services to allow riders boarding at VIA Rail stations within the County to travel to/from the Greater Toronto Area at a fare similar to GO Rail (Metrolinx to subsidize the difference between VIA Rail fare and GO Rail fare).

A spreadsheet-based travel demand forecasting tool was developed to assess the potential demand, travel time savings and reduced auto use for each option compared to the BaU scenario. Under the BaU, users accessing the GTA have three options: GO park and ride at a nearby GO rail station, driving to their destination or using VIA Rail. The modelling results show that none of the shortlisted option can compete against driving all the way to destination both in terms of travel time and distances travelled. Option 1, a new GO Bus service with fixed-stops in Colborne, Cobourg and Port Hope is the less attractive option. Option 2, the micro-transit service is somewhat attractive to users due to the reduced auto operating costs, although it may result in higher travel times depending on the number of stops considered. Option 3 is the most attractive in terms of travel times and reduced auto operating costs.

However, based on Metrolinx's Four-Case Business Case Framework, this study recommends Option 2, the micro-transit service as the preferred option, for further analysis. Option 2 provides the most flexibility in terms of vehicle size, service frequency, location of pick-up and drop-off points, number of stops, etc. Another benefit of this option is that it requires little footprint for stations, as curbside pick-ups and drop-offs can easily be organized compared to the GO Bus service, which requires dedicated bus bays and parking lot area for people to access the service. Option 2 also offers the possibility to partner up with an on-demand service operator to reduce start-up costs, including the software development and the vehicle acquisition costs. Option 1 may be considered as a mid- to long-term option, when demand for the service is enough to justify the additional capital and operating costs to Metrolinx. Option 3, although attractive to users due to the potential travel time savings compared to the BaU, may be more difficult to implement as it involves a lot of coordination with a third party, VIA Rail, and the fact that there are no prior experiences in delivering such a service anywhere else in Canada. Varying seat availability may also render the service unreliable for GO users. Lastly, given that approximately one hundred people already travel from the County to the GTA using VIA Rail, Metrolinx may end up subsidizing existing transit users, which would result in a negative net farebox revenue for Metrolinx, without the desired effects of reducing auto use.

Further analysis is required to refine the analysis for Option 2 both in terms of potential ridership and costs. As a next step, a complete initial business case evaluating different service concepts should be developed. Moreover, in order to provide a fair comparison to other Metrolinx investment projects, the potential demand for the new service should be evaluated using the Greater Golden Horseshoe Model. A more detailed analysis should also investigate the capital and operating costs of delivering and operating the service over a full 60 evaluation period.

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