



For Action

Line 3 Bus Replacement Study Final Recommendations

Date: April 14, 2022
To: TTC Board
From: Chief Strategy and Customer Officer

Summary

The TTC's Line 3 Scarborough (also known by original names as "Scarborough RT" or "SRT") opened in 1985. After more than 37 years of continuous operation, the trains on Line 3 are well past their design life, and the vehicles are now susceptible to breakdown, particularly in inclement weather. Although they have already been overhauled extensively to extend their life, it has become increasingly difficult to maintain reliable service for customers on Line 3 due to the age of the vehicles and subsystems and the obsolescence of key parts.

On February 10, 2021, the TTC Board approved ending train service on Line 3 in 2023 and directed staff to develop a plan to replace the line with interim bus service until the Line 2 East Extension (Scarborough Subway Extension), being delivered by the Province, is opened in 2030.

After a detailed technical review, and applying the evaluation framework previously approved by the Board, along with multiple rounds of public consultations, this report recommends that train service on Line 3 would end in Q4 2023; that train service be replaced with bus service; and that parts of the existing Line 3 right-of-way be converted for dedicated bus operation to provide customers with the quickest and most reliable service. Customers would ride buses that would operate in the exclusive right-of-way between Kennedy Station and Ellesmere Station, and then travel on Ellesmere Road and Brimley Road to connect to Scarborough Centre Station.

Construction will be required to convert the right-of-way for bus operation, and new bus stop platforms will need to be constructed at Lawrence East and Ellesmere stations. Additional bus platforms will have to be provided at Kennedy and Scarborough Centre stations for the additional bus service that will operate. Midland and McCowan stations will be closed for customer service and decommissioned.

The associated capital projects needed to support the closure of Line 3 Scarborough and the replacement bus service will require approximately \$62.7 million in additional funding between 2023 and 2025. A further \$67.8 million will be required to fund operating costs between 2023 and 2030 to provide bus service on this corridor. There is

sufficient capital funding in 2022 to advance the planning and design of the required capital work. Additional capital funding will be required between 2023 and 2025. The TTC through the City has requested funding from the Province for the Line 3 Bus Replacement service given the shift in the delivery schedule for the Line 2 East Extension. This is subject to ongoing discussions between the parties. Full funding will need to be incorporated into the TTC's 2023-2032 Capital Budget and Plan submission and the associated service costs in the TTC's 2023 Operating Budget submission.

During the construction of the right-of-way conversion, the bus replacement service will need to operate on-street. This report recommends operating a one-way service via northbound on Kennedy and southbound on Midland to provide customers service between Kennedy and Scarborough Centre stations. One-way service in each direction enables the best possible traffic signals co-ordination to improve the flow of transit for customers. Other transit priority measures will be implemented along with this on-street operation, and will include signal operating modifications and physical improvements at key intersections to install queue jump lanes and farside bus bays. These potential priority measures are being discussed with the City and further co-ordination and approval will be required.

Recommendations

It is recommended that the TTC Board:

1. Approve the replacement of Line 3 train service with an express bus service in Q4 2023;
2. Approve the conversion of the Line 3 right-of-way between Kennedy Station and Ellesmere Station to a bus roadway, with stops at Tara Avenue, Lawrence Avenue East, and Ellesmere Road;
3. Approve the operation of a temporary express bus service, as described in this report, until the conversion of the Line 3 right-of-way to a bus roadway is complete;
4. Report back through the 2023 budget process on the operating and capital funding required to advance the Line 3 bus replacement project;
5. Endorse the City of Toronto's efforts to develop adaptive reuse of the Line 3 infrastructure that will not be required for continued transit service; and,
6. Forward this report to the City Manager, City of Toronto, the President and CEO, Metrolinx, and the Deputy Minister, Ministry of Transportation, for their information.

Financial Summary

The total project cost for the SRT Transition (previously called SRT Life Extension) is \$132 million. This comprises of costs to the end of 2021 of approximately \$86.7 million,

an incremental carry-forward adjustment of \$1.4 million, and funding of \$43.9 million cash flowed between 2022 and 2024. This is included in the 2022-2031 Capital Budget and Plan, as approved by the TTC Board on December 20, 2021 and by City Council on February 17, 2021. The carry-forward adjustment, subject to Council approval will adjust the total funding available in the 2022-2031 Capital Budget and Plan to \$45.3 million.

Of the \$45.3 million in the SRT Transition project budget, approximately \$21.9 million is expected to be spent between 2022 and 2023 on the remaining life extension work to ensure the SRT can continue to operate until Q4 2023.

The ending of train service on Line 3 Scarborough will require capital improvements to facilitate the bus replacement service. This includes:

1. Bus terminal platform modifications at Scarborough Centre Station and at Kennedy Station to better accommodate articulated buses for the replacement service. The total estimated cost for the platform modifications at both stations is \$14.2 million. Funding of \$2.2 million for the planning and design of this work is available in the 2022-2031 Capital Budget and Plan through the SRT Transition project budget with the remaining \$12 million unfunded;
2. Transit priority measures to facilitate efficient operation of the bus replacement service for a total estimated cost of \$7.35 million. Funding of \$2 million for the planning and design of this work is available in the 2022-2031 Capital Budget and Plan through the SRT Transition project budget with the balance of \$5.35 million to be funded; and,
3. A new temporary bus terminal needs to be constructed in the south commuter parking lot at Kennedy Station in order to accommodate the additional bus traffic and for customers to queue and board the replacement service. The temporary bus terminal will be required for the duration of the bus replacement service, until 2030 when Line 2 East Extension is open. The total estimated cost for this is \$15 million, with funding of \$5 million for planning and design of this work included in the 2022-2031 Capital Budget and Plan through the SRT Transition project budget, requiring the balance of \$10 million to be funded.

This report also recommends converting parts of the existing Line 3 right-of-way (ROW) for bus operation in order to provide customers with the fastest and most reliable bus replacement service. The total estimated capital cost for this is \$49.5 million (Class 4 estimate). It includes the construction costs to remove existing track infrastructure and systems for the trains, and to install new pavement to allow buses to operate. It also includes costs to construct new on-grade bus stops and amenities for customers. Funding of \$2 million for the planning and design of this work is available in the 2022-2031 Capital Budget and Plan through the SRT Transition project budget, however the balance of \$47.5 million will require new funding to complete this work.

In addition to the capital costs noted above, the cost to demolish surplus Line 3 infrastructure following the conversion of a portion of the Line 3 ROW for buses is

estimated to be in the range of \$150 million to \$175 million. The TTC will continue to work with the City of Toronto to study future alternate uses for the existing Line 3 guideway east of Ellesmere Station. This study will inform the scope of any decommissioning and demolition for the existing Line 3 infrastructure not needed for bus replacement service or adaptive re-use.

Table 1 summarizes the required construction and estimated capital costs.

Table 1. Summary of Capital Costs

(\$ million)	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total between 2022-2030
Capital costs										
Maintain SRT to end of 2023	11.1	10.8								21.9
Platform modification at Kennedy and Scarborough Centre stations	2.2	12								14.2
Transit Priority Measures	2	5.4								7.4
Temporary bus terminal at Kennedy Station	5	10								15
SRT conversion to busway	2	5.5	25	17						49.5
Total capital cost	22.3	43.7	25	17						108
Available funding in approved Capital Budget & Plan	(23.9)	(13)	(8.4)							(45.3)
Unfunded capital requirement	(1.6)	30.7	16.6	17						62.7

An increase in operating costs is anticipated due to the lower capacity of buses as compared to SRT trains resulting in higher costs on a net basis. This net operating budget pressure is highest in 2024 and 2025 when the bus replacement service will operate on local roads, and the impact is mitigated by reduced operator and vehicle requirements once the busway is in operation. Converting the Line 3 corridor for bus operation will provide customers with higher-quality service, and require less operating costs compared to just using regular city streets.

The additional gross operating cost for the bus replacement service using the converted ROW requires \$67.8 million beyond the \$148.8 million in existing SRT operating costs that are expected to be eliminated, to deliver the bus service from 2023 to 2030.

Table 2 summarizes the required operating costs.

Table 2. Summary of Operating Costs

(\$ million)	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total between 2022- 2030
Operating costs										
Lost parking revenue at Kennedy		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	3.2
Operating cost to deliver bus replacement service		3.7	30.9	31.4	28.1	28.7	29.5	30.2	30.9	213.4
Bus replacement operating Cost		4.1	31.3	31.8	28.5	29.1	29.9	30.6	31.3	216.6
SRT costs eliminated		(1.8)	(21.0)	(21.0)	(21.0)	(21.0)	(21.0)	(21.0)	(21.0)	(148.8)
Unfunded operating requirement		2.3	10.3	10.8	7.5	8.1	8.9	9.6	10.3	67.8

As shown in Table 1 and Table 2 above, additional capital and operating funding over and above what is currently available will be required to operate the bus replacement service and construct the Line 3 busway conversion. Much of this additional work would take place beginning in 2023 to enable the elimination of train service in Q4, 2023.

The additional buses required to provide this service from 2023 to 2030 will require a peak requirement of 66 additional buses, including spares. These additional buses, including the cost of overhaul, have a capital value of approximately \$93 million. By 2025, when the busway conversion is complete, this requirement will be reduced to 57 additional peak buses, including spares, and will be required up to 2030 when the Line 2 East Extension is open. At that time, there is residual value of approximately \$44.5 million on the additional buses. The total capital cost of buses attributable to the bus replacement service between 2023 and 2030 is approximately \$48.5 million. Sufficient funds are included in the 2022-2031 Capital Budget and Plan to support the fleet requirements.

The TTC through the City, will continue to discuss funding requirements with the Province in order to fully fund the costs associated with implementing a bus replacement service until the Line 2 East Extension is opened for service in 2030 as well as the decommissioning costs of the Line 3 SRT. The information in this report will inform the ongoing financial reconciliation exercise between the City and Province in relation to the upload of the Line 2 East Extension project in 2019.

The Chief Financial Officer has reviewed this report and agrees with the financial impact information.

Equity/Accessibility Matters

The TTC is committed to providing accessible and inclusive service across the network. The bus replacement service for Line 3 will operate with accessible buses and will meet all applicable Accessibility for Ontarians with Disabilities Act (AODA) and TTC

requirements in terms of vehicles and accessible transit stops. The stations at Kennedy and Scarborough Centre will continue to be served by buses, including Wheel-Trans, and these stations are already accessible with elevators and other features. The bus replacement service will operate until the fully accessible Line 2 East Extension opens.

Line 3 and connecting bus routes serve numerous Neighbourhood Improvements Areas (NIAs) and equity-deserving groups in Scarborough. The bus replacement service will maintain frequent transit service to NIAs and continue to serve equity-deserving groups. The recommended operating concept for the bus replacement service also minimizes inconvenience to customers by extending existing bus routes beyond Scarborough Centre Station to Kennedy Station to provide more direct service and eliminate a transfer for most customers. The recommended routing option would also convert the existing Line 3 ROW for customers on buses to ride on, which would provide them with the fastest and most reliable journey compared to other options reviewed. For this recommended option, and the interim on-street option, transit priority measures are also being pursued wherever possible, and this includes transit signal priority, queue jump lanes, and dedicated bus lanes.

The TTC recognizes the importance of reaching out and consulting with customers who are traditionally underrepresented in the planning process and may be disproportionately affected by planning decisions. To facilitate these discussions as part of the development of the Line 3 Study, the TTC worked with partners at the City's Social Development, Finance and Administration Division, to have targeted outreach with community clusters in Scarborough and residents from Neighbourhood Planning Tables. The Board-approved evaluation framework for routing options also included equity considerations as a metric. This identified customer-trips that originate from NIAs and considered the impact of the different routing options on their journeys and weighed that effect separately.

Decision History

In the summer of 2019, the Province, through legislation, assumed responsibility for the delivery of the Line 2 East Extension (Scarborough Subway Extension project), and revised the scope of the project to a three-stop subway extension, with a revised completion date of 2030. To ensure ongoing transit service is provided until the completion of the Line 2 East Extension in 2030, several options were reviewed to provide transit service along the corridor.

The results of the options analysis were reported to the TTC Board in February 2021 and the Board approved a plan to end train service on Line 3 in 2023 and directed staff to begin developing plans for a bus replacement service and study potential future uses for the Line 3 ROW and legacy structures.

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https://ttc-cdn.azureedge.net/-/media/Project/TTC/DevProto/Documents/Home/Public-Meetings/Board/2021/September_15/Reports/5_Line_3_Bus_Replacement_Study_Update.pdf?rev=16f0f703ffd14a1cb3ff5b33199e63f2&hash=3381819015E1A670D35379D737A9A989

An update was presented to the TTC Board in September 2021 and the Board approved the emerging direction for analyzing the corridors and the evaluation framework to develop actual routing options.

https://ttc-cdn.azureedge.net/-/media/Project/TTC/DevProto/Documents/Home/Public-Meetings/Board/2021/September_15/Reports/5_Line_3_Bus_Replacement_Study_Update.pdf?rev=9b4f0ee417da4adebda2f0180f4e4d14&hash=3C2AEEA15CA0202509CD4E693EB54F86

Issue Background

After more than 37 years of continuous operation, the vehicles on Line 3 Scarborough are now more than 10 years past their design life. While programs have already been implemented to overhaul structural, mechanical, and cosmetic requirements, the vehicles are still susceptible to breakdown, particularly in inclement weather. During hot weather, the propulsion equipment tends to overheat, and as a result, slower speeds are operated to help the system remain within tolerable limits, but this degrades the customer experience. In cold weather, snow and ice also affects the operation of the line and service suspension is not uncommon during extreme weather events.

Additionally, obsolescence of key parts is further contributing to maintenance difficulties. Other sub-systems, such as signalling and electrical, are also at the end of their design life. Overall, as vehicle reliability continues to degrade with equipment failures, it will result in more frequent and unscheduled service disruptions, and the required capacity to meet customer demand will not be met. As a result, customers will increasingly experience unreliable and crowded train service on Line 3.

In the summer of 2019, the Province, through legislation, assumed responsibility for the Line 2 East Extension project. The scope of the project included the decommissioning of Line 3 Scarborough, with the anticipated delivery being delayed by up to four years to 2030 from 2026. As studied in the [SRT Life Extension Project Options Analysis](#) report, extending the life of Line 3 to 2030 to coincide with the opening of the Line 2 East Extension is not feasible due to the poor business case to support it.

At the February 2021 meeting, the Board approved ending train service and decommissioning Line 3 in 2023, and directed staff to replace the line with interim bus service until the Line 2 East Extension is open. The Board also directed a comprehensive consultation process to be delivered throughout the study to engage with customers on the alternatives being developed and on potential future uses for Line 3 station lands. The Board also directed staff to include a busway on the Line 3 ROW as part of the alternatives development, and to consult on transit priority measures for buses as part of the public consultations.

At the September 2021 meeting, the Board approved the initial corridor options for the bus replacement service, which included the Line 3 ROW, and the evaluation framework to assess the routing options. Building on this work, staff developed routing options that were also brought forward for public consultations. This report will present final recommendations that are based on the culmination of technical review and public engagement for Board approval.

Comments

Required Changes for the Bus Replacement Service

The decommissioning of Line 3 Scarborough will require a very frequent bus replacement service to provide alternate service for customers connecting between important nodes like Scarborough Centre Station and Kennedy Station. To facilitate this frequent bus service, which will have buses operating more frequent than every minute during the peak periods, modifications will be required to the existing bus platforms at Scarborough Centre Station and Kennedy Station, and the construction of a new temporary bus terminal in the south parking lot at Kennedy Station. A description of the required capital works is discussed in **Appendix 1**.

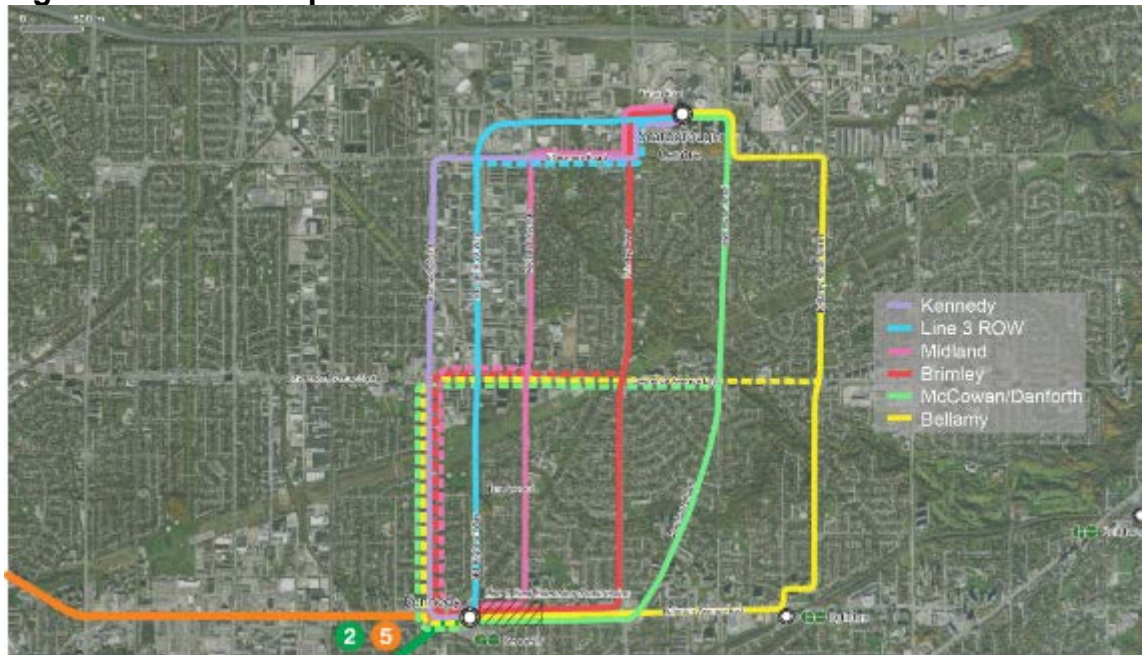
Evaluation of Options

An evaluation framework was developed as part of Round One of the study. The evaluation criteria and metrics were refined through public consultations so that the assessment of different routing options would reflect what customers also found to be valuable and important in a bus replacement service. The evaluation criteria included:

- Customer experience
- Equity considerations
- Ease of implementation
- Impacts on urban structure and built form
- Costs
- Network compatibility
- Neighbourhood and community impact

These approved criteria were then used to assess the corridor options that were also refined through public consultations in Round One of the study. The evaluation of the options, and the results of the public consultation, were reported to the Board in September 2021. The corridor options are shown in **Figure 1**.

Figure 1. Corridor Options



The resulting assessment of the different corridor options with the evaluation criteria produced 29 permutations of possible routing options based on different service concepts and fleet technology. A sensitivity analysis was also conducted to assess the robustness of the evaluation criteria. The complete evaluation is shown in **Appendix 2**.

Of the 29 options in the evaluation matrix, the top four highest-ranked options were under the route extension service concept with mixed-fleet buses. They are: the partial Line 3 corridor (which is only the at-grade portion between Kennedy and Ellesmere stations); Kennedy, Midland, and Brimley.

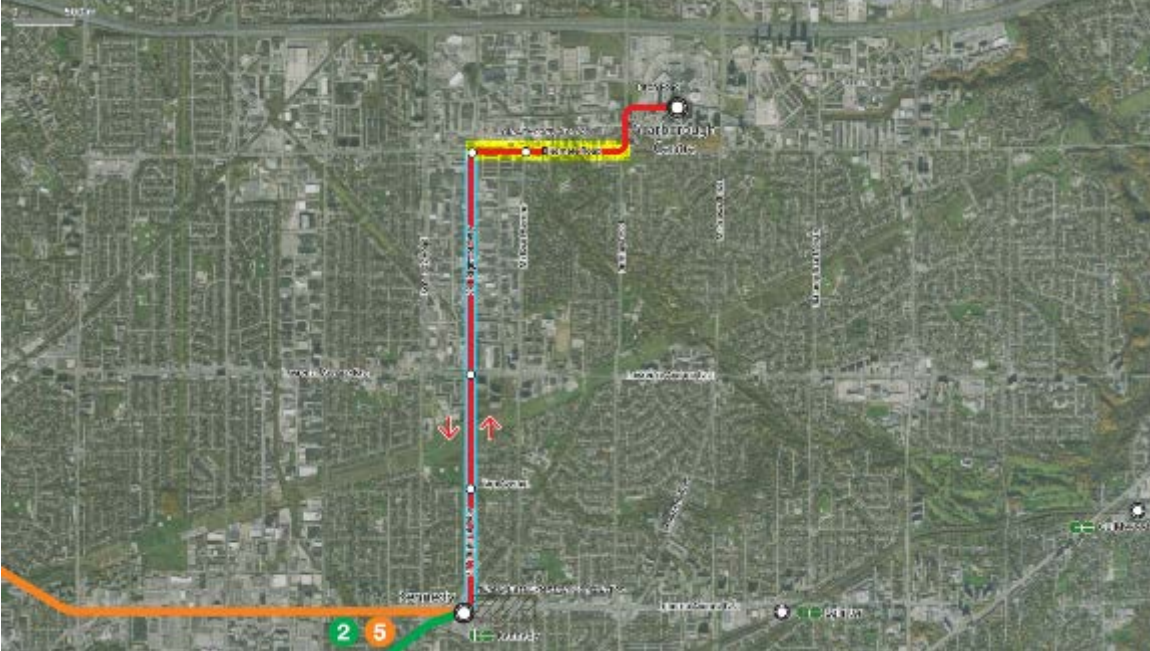
Given the results from the evaluation matrix and the sensitivity analysis, routing options were developed for the bus replacement service. Routing maps of the options are shown in **Appendix 3**. The routing options include: Option 1 – Hybrid Line 3 Right-of-Way; Option 2 – Midland and Brimley Couplet; Option 3 – Midland and Brimley Couplet with Kennedy; and, Option 4 – Kennedy and Midland Couplet.

Based on feedback from public consultations, and from further technical review, it is recommended that Option 1 – Hybrid Line 3 Right-of-Way should be implemented for the bus replacement service. This is shown below in **Figure 2**. Option 4 – Kennedy and Midland Couplet is also recommended as the interim service while the Line 3 corridor is converted over to busway operation. This is shown below in **Figure 3**. These options would operate with the service concept that extends existing busy bus routes from Scarborough Centre Station using a mixed-fleet of buses, including hybrid and electric buses.

Recommended Service: Option 1 – Hybrid Line 3 Right-of-Way

As demonstrated in the sensitivity analysis, Option 1 is the best performer among the criteria that was identified as most important for customers, particularly with customer experience and equity. The travel time for customers is the fastest with this option – a detailed comparison of customer travel times is discussed in sections below. As later sections will also discuss, the construction to enable Option 1 will take up to two years, and during this time an on-street alternative (Option 4) will still be required. A more detailed description of the recommended routing is found in **Appendix 4**.

Figure 2. Option 1 – Hybrid Line 3 Right-of-Way



Adaptive Reuse Potential of Line 3 Infrastructure with Option 1

Potential adaptive reuse of existing Line 3 infrastructure would only apply to the ROW portion north and east of Ellesmere Station, as the at-grade portion south of Ellesmere will be needed for the busway operation. All the existing station buildings, except for the Scarborough Centre Station bus terminal and concourse, will be closed and customers will be served from new on-street and grade-level bus stops. Building on feedback received from public consultations to help set emerging preferences, the TTC will continue to work with the City to develop adaptive reuse plans for these spaces. Scope, schedule, and cost estimates for any adaptive reuse will be developed as part of this process.

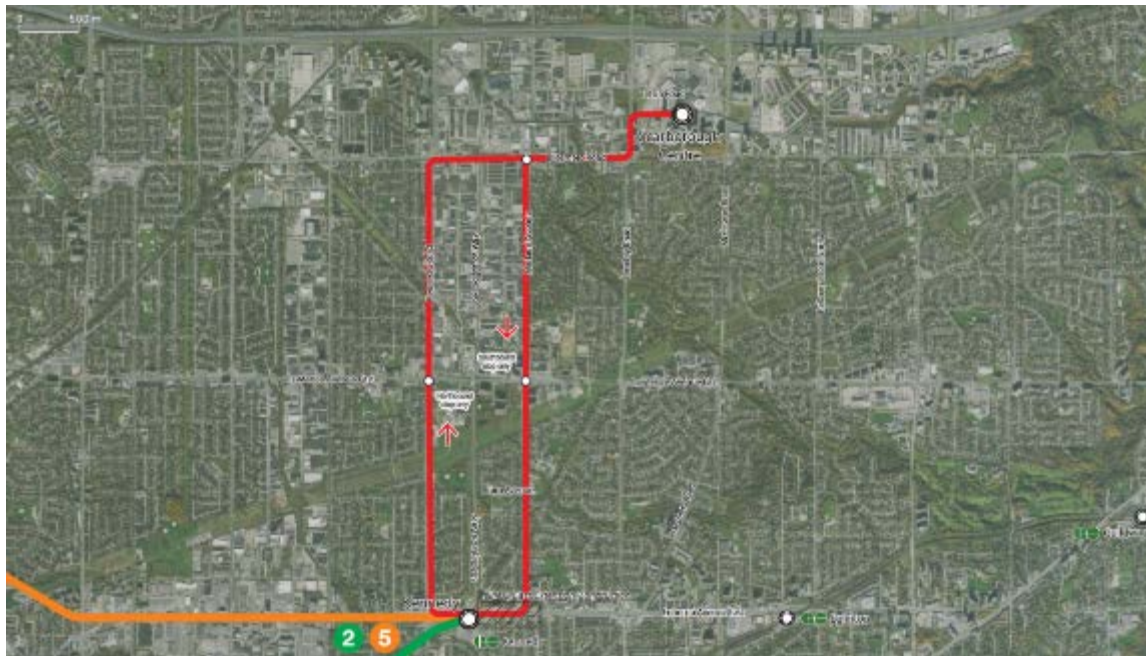
Recommended Interim Service: Option 4 – Kennedy and Midland Couplet

Based on early schedule planning, the construction for the scope of Option 1 will take up to two years. During this interim period, the train service will end and the bus replacement service will need to operate on city streets. As detailed in the evaluation table in **Appendix 2**, Kennedy, Brimley, and Midland all scored as high-ranking corridors that were suitable for the bus replacement service. Based on feedback from public consultations, customers indicated that they preferred routings that were more

direct and simple to understand. Further technical review also found that Brimley Road, which was originally a preferred corridor, has roadways that are in poorer condition than originally thought and would not be suitable for frequent bus operation without some immediate rehabilitation first.

Based on these factors, the recommended interim on-street service is for Option 4, which recommends using Kennedy Road and Midland Avenue in one-way for each direction – this maximizes the effectiveness of signal co-ordination for the very frequent bus service to optimize travel times as much as possible for customers.

Figure 3. Option 4 – Kennedy and Midland Couplet



Transit Priority Measures

Transit priority measures will be required at strategic locations to improve service reliability for customers. These measures will be applicable to both options, and much will have legacy use for the bus network even after Option 1 is implemented. The detailed design of these potential measures are being discussed with the City and further review and approval will be required. The measures are divided into two categories:

- Signal operating strategies:
 - Optimizing cycle length and splits, and selecting offsets to improve co-ordination for buses.
 - Transit Signal Priority (TSP) for critical movements.
 - Addition of protected right-turn phases that would overlap left-turn phase at key locations to increase turning capacity and reduce bus delay. This may result in the signal measure being combined with a physical improvement at some locations.
- Physical improvements:

- Queue jump lanes from either introduction of a right-turn lane or conversion from a shared through-right lane.
- Relocation and/or improvement of bus stops, which could include shifting some stops to farside in a bus bay.
- Bus Lanes similar to the implementation on Eglinton East RapidTO corridor will be studied in more detail with City partners to understand the potential benefit and trade-offs.

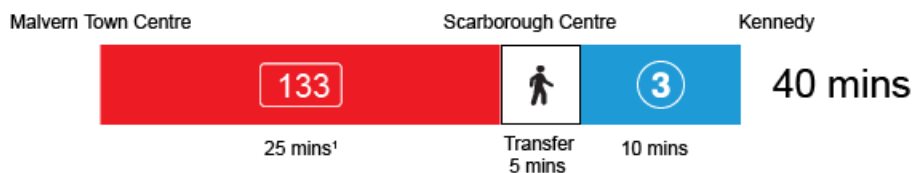
Travel Time Comparison

An important factor in designing options for the bus replacement service is to minimize the inconvenience on customers as much as possible, particularly with regards to travel times. A typical journey on the existing Line 3 train service from Scarborough Centre Station to Kennedy Station takes approximately 10 minutes, excluding any extra time from transfers, walking, or waiting for the train. A typical journey on Option 1 from Scarborough Centre Station to Kennedy Station via Ellesmere Road and the Line 3 ROW is projected to take approximately 15 minutes. A typical journey on Option 4 via the Kennedy and Midland couplet, during the peak periods, will take approximately 25 minutes – in each direction. **Figure 4** shows how the travel times will change for customers, using route 133 Neilson as an example.

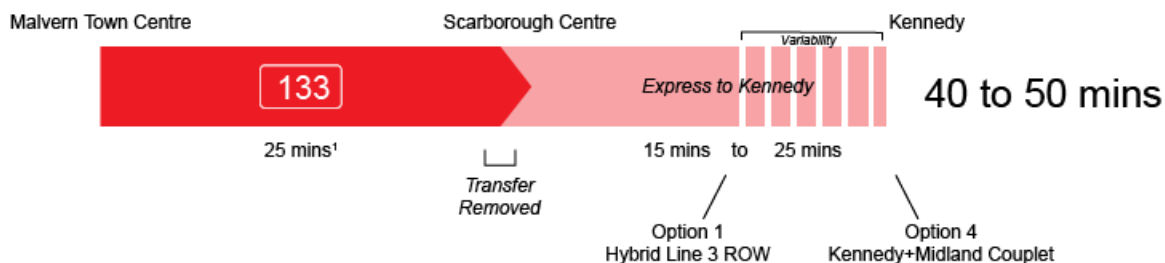
Figure 4. Travel Time Comparison How will travel change?

Malvern Town Centre to Kennedy Station

Existing Trip utilizing Line 3



Future Trip with 133 Neilson Extension to Kennedy Station



1. 133 Neilson - scheduled trip time from Malvern Town Centre to Scarborough Centre

For all options, mitigate variability through transit priority

Public Consultations

The Line 3 Bus Replacement Study followed a two-round consultation process. Round One focused on introducing the Study and sharing and seeking feedback on: bus route and corridor options, a proposed evaluation framework, and adaptive re-use of the Line 3 corridor and stations. Round Two focused on sharing and seeking feedback on a

shortlist of bus routing options for the Line 3 bus replacement service and potential next steps for adaptive re-use of Line 3 infrastructure (e.g. stations and corridors).

Detailed activities for Round Two consultation included:

- **Stakeholder Meeting 2** (October 5)
- **Virtual Public Meeting** (October 19)
- **Public survey** (October 12 to 29) – was available online, in multiple languages, and in the mail by request with pre-paid postage
- **Meetings with Community Coordination Plan tables**
 - **North Scarborough Community Cluster Meeting 2** (October 13)
 - **South Scarborough Community Cluster Meeting 2** (October 20)
- **Resident Focus Group** (October 27) – based on learnings from Round One, the recruitment approach was adjusted to capture a larger pool of eligible participants, focusing on those who live, work, or study in Scarborough, take public transit, and have identified belonging to one of the following audiences:
 - **Resident members of the local Neighbourhood Planning Tables** – Kennedy Eglinton Progressive Engagement Collaborative or Southeast Scarborough Planning Table
 - Participants in City of Toronto **Partnership-Opportunities-Legacy programs**
 - Participants in a City of Toronto **Neighbourhood Grants program**
 - People identified as **Local Champions**
 - Participants in City of Toronto's **Toronto Strong Neighbourhoods Strategy activities**
- **Pop-ups at Line 3 stations**
 - Kennedy Station (October 21)
 - Scarborough Centre Station (October 21)
 - Midland Station (October 25)
 - Ellesmere Station (October 25)
 - Lawrence East Station (October 28)
 - McCowan Station (October 28)
- **Engagement Toolkit** (October 12 to 29) – available online and in the mail with pre-paid postage, translated into Arabic, Chinese (simplified and traditional), Spanish, Tagalog, and Tamil
- **Dedicated engagement website**
- **Dedicated voicemail and email**

Similar to Round One, the TTC promoted the public consultations through its website, social media channels, and email lists, with the help of Councillors and members of the stakeholder group and consultation meeting participants, Line 3 station announcements and video screens, print and digital advertising, community posters, and news release. Further promotion was made with the addition of stop pole posters, community posters at community spaces near Line 3 stations (including libraries, recreation centres, community centres, places of worship, grocery stores, coffee shops, and post-secondary institutions), and mail drop at approximately 18,000 households within the

area bounded by Highway 401 to the north, Eglinton Avenue to the south, Brimley Road to the east, and Kennedy Road to the west.

Swerhun Inc., third-party independent engagement team retained by the TTC, led the design, delivery, and documentation of both rounds of consultation.

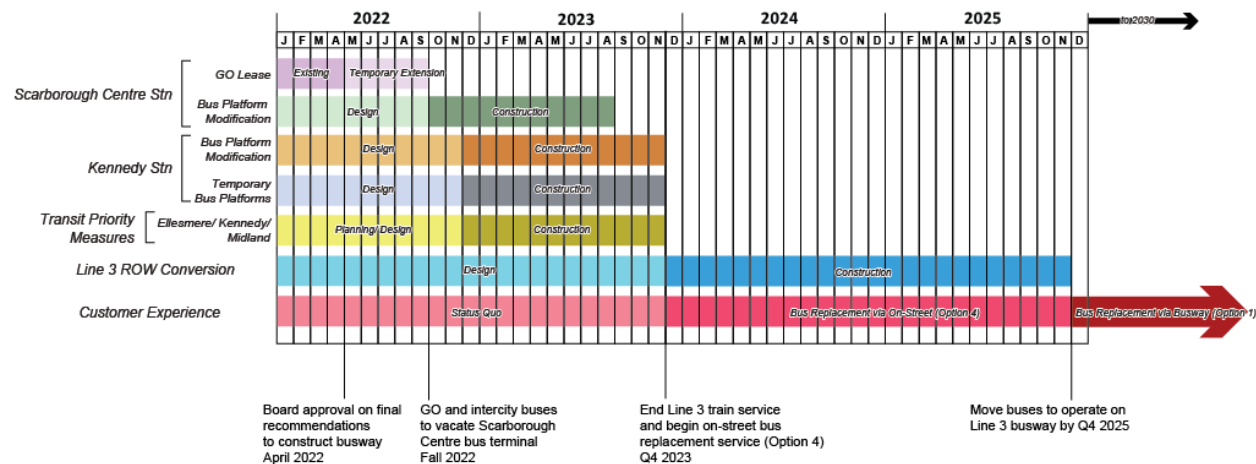
Over 1,186 people participated in approximately 18 weeks of extensive consultation for the Line 3 Bus Replacement Study. The consultations provided valuable input from customers and stakeholders, and this input has been used to develop the recommended service.

	Round One	Round Two	Total
Stakeholder Meeting	20	16	36
Meetings with Community Coordination Plan tables	51	40	91
Resident Focus Group	3	19	22
Public Survey	434	455	889
Virtual Public Meeting	0	68	68
Line 3 Pop-ups	0	80+	80+
Total	508	678+	1,186+

Project Timeline and Next Steps

A high-level timeline for the construction, closure of the train service, and operation of the bus service is shown below in **Figure 5**.

Figure 5. Schedule and Timeline
Line 3 Bus Replacement Construction Outlook



Key highlights on this timeline are:

- Detailed design of required bus terminal expansions in 2022.
- GO Transit and intercity carriers would vacate their space at Scarborough Centre Station in Q3 2022.

- Modification of the bus terminals at Kennedy and Scarborough Centre and construction of the temporary bus platforms and transit signal priority by Q4 2023.
- Train service would end in Q4 2023, once bus terminal modifications and the temporary bus platforms is complete.
- Bus service would start using on-street routings the day after train service ends in Q4 2023.
- Conversion of the Line 3 ROW for bus operation would begin after train service ends in Q4 2023, and could be complete by Q4 2025, at which point the bus service would move from on-street routings to the new busway on the former Line 3 right-of-way.

All of these times and project stages are subject to further review and refinement. As the closure of Line 3 Scarborough, and the implementation of bus replacement service, will need to be coordinated with a service change date. The candidate dates for Q4 2023 would mean the last day of train service could be: Saturday October 14, 2023; or, Saturday November 25, 2023. If construction is complete ahead of schedule, a September closure date could also be possible, on Saturday September 2, 2023. The bus replacement service would launch on the Sunday after one of these candidate dates. A confirmed date will be reported to the Board, once it is determined.

The TTC will also continue to work with the City of Toronto to study future alternate uses for the existing Line 3 guideway east of Ellesmere Station. This study will inform the scope of any decommissioning and demolition for the existing Line 3 infrastructure not needed for bus replacement service or adaptive re-use.

Contact

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Signature



Scott Haskill
Chief Strategy and Customer Officer (Acting)

Attachments

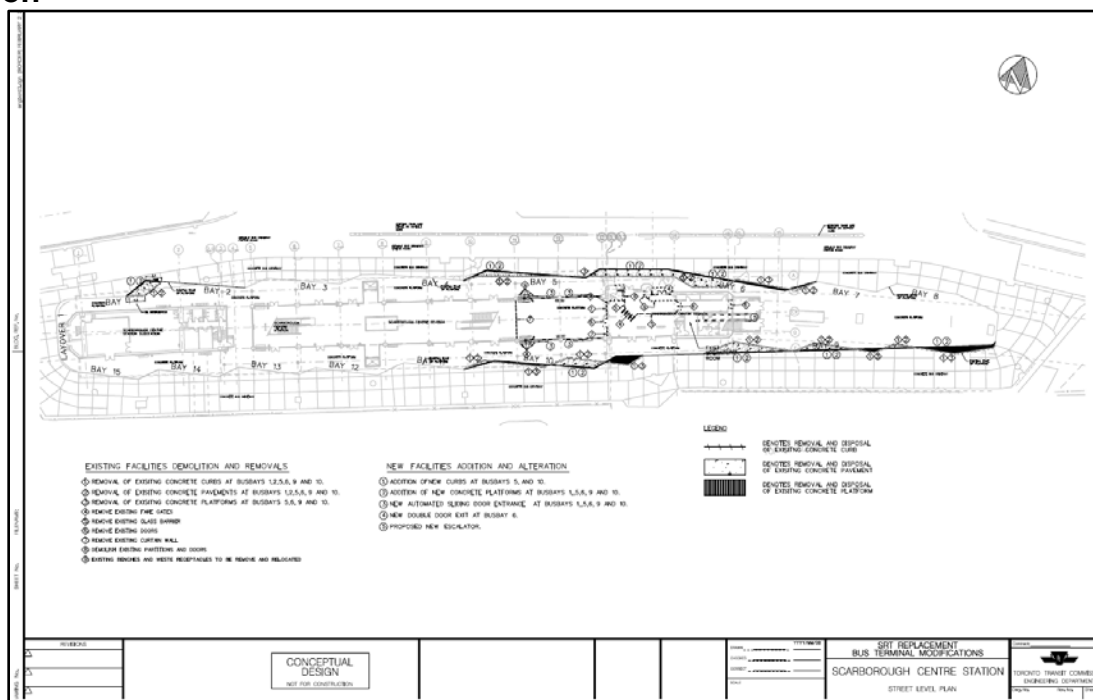
- Appendix 1 – Required Capital Modifications
- Appendix 2 – Line 3 Bus Replacement Options Evaluation Matrix
- Appendix 3 – Bus Replacement Routing Options
- Appendix 4 – Detailed Routing Summary for Option 1

Appendix 1 – Required Capital Modifications

Scarborough Centre Station Modifications

Platform modifications are required at two bus bays (bays 2 and 6) to accommodate articulated buses. The saw-tooth bays at the south east end of the terminal, from bays 9 to 13, will also be converted to tangent platforms to achieve better flow and queuing for buses, and to provide customers with better loading for westbound buses to Kennedy Station. Adjustments to the platform at bay 5 will also be required to achieve minimum platform gap for articulated buses. Figure 6 shows the conceptual design for the platform modification work required at Scarborough Centre Station.

Figure 6. Conceptual Design for Platform Modifications at Scarborough Centre Station



Additionally, fare gate equipment within the bus terminal will need to be removed to extend the fare line to cover the current GO and intercity bus platforms, which will be relocated to the west of the existing bus terminal along Borough Drive.

GO Bus Relocation from Scarborough Centre Station

Effective fall 2022, GO and intercity buses will need to relocate from the existing Scarborough Centre bus terminal so that those bays currently occupied by regional and intercity carriers can be used by TTC buses for the replacement service. More bus bays will be needed by the TTC in order to accommodate the increase in traffic from the bus replacement service.

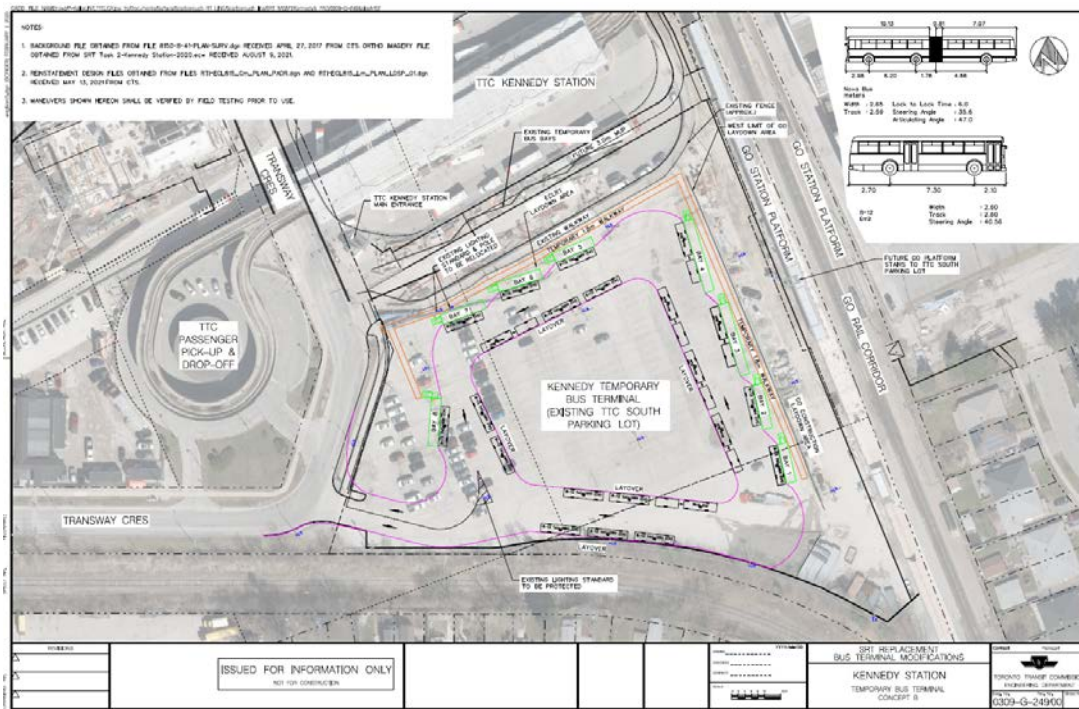
Metrolinx staff evaluated more than 10 relocation sites and considered factors such as customer connectivity to the mall and the TTC bus terminal; operational needs of GO

Kennedy Station Temporary Bus Terminal

To accommodate the additional 70 bus trips per hour that will operate from Kennedy Station as a result of the Line 3 bus replacement service, additional temporary bus platforms are needed. A new temporary bus terminal is required, and will be constructed in the existing south commuter parking lot. This is required since Metrolinx cannot make available the existing temporary platforms that were previously used for Line 5 Eglinton construction. The temporary bus terminal will consist of eight bus bays with a total of 14 layover spaces. The entrance to the temporary bus terminal will be located at the existing south driveway of the parking lot. Bus platforms will be located at the exterior of the parking lot to ensure customers do not cross in the path of buses. Figure 8 shows the conceptual design for the temporary bus terminal at Kennedy Station in the south commuter lot.

Potential conflicts with ongoing projects by Metrolinx for Line 2 East Extension and Line 5 Eglinton in the Kennedy Station area pose a construction delay risk to the new temporary bus terminal in the south parking lot, which may impact the timing of when Line 3 Scarborough service can be replaced with bus service. Efforts are ongoing to coordinate with Metrolinx to mitigate the risk.

Figure 8. Conceptual Design for Temporary Bus Platforms at Kennedy Station South Commuter Lot

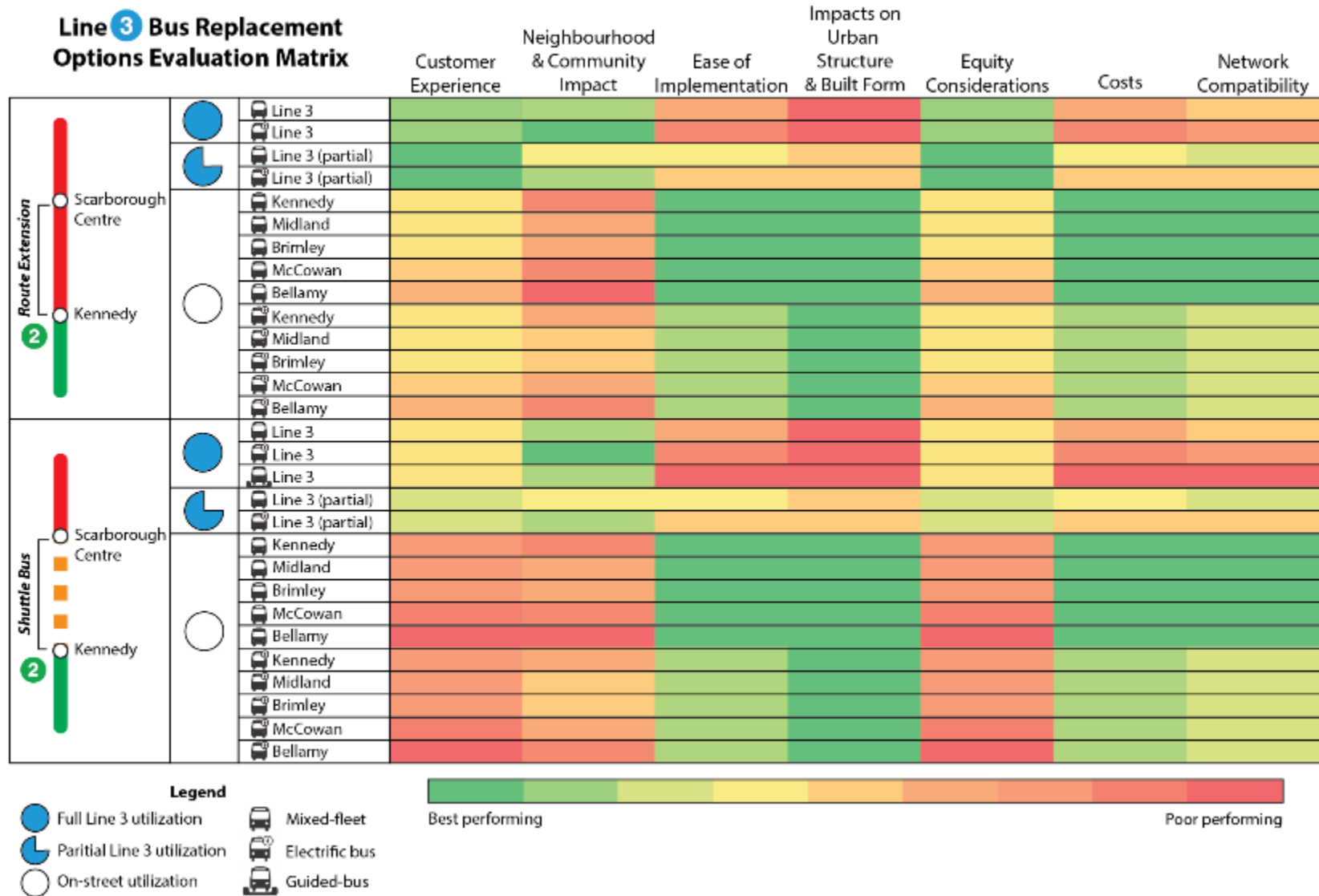


Additional Buses

Under Option 4, up to approximately 60 additional peak buses are required to provide the bus replacement service between 2023 and 2030. With Option 1 being implemented, and customers being able to use the busway, this requirement reduces to

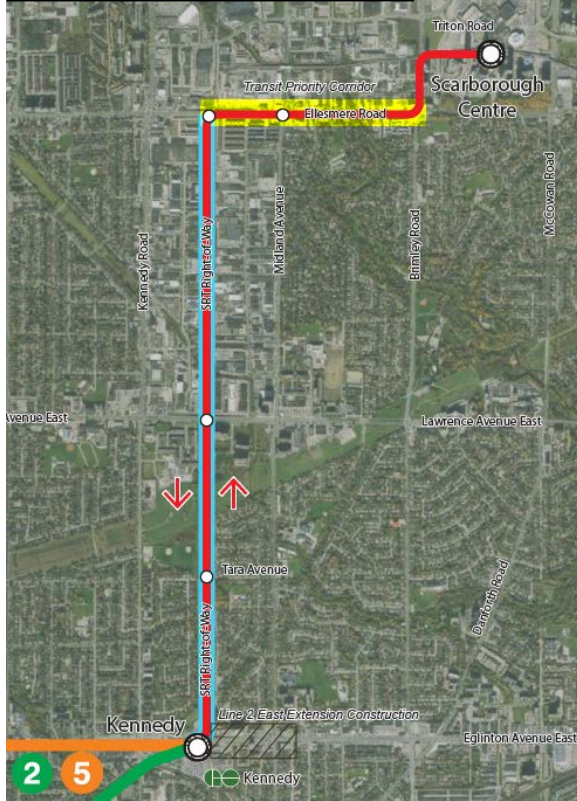
approximately 48 additional peak buses between 2023 and 2030. The additional buses will be accommodated within the fleet plan as outlined in the 2022-2031 Capital Budget.

Appendix 2 – Line 3 Bus Replacement Options Evaluation Matrix

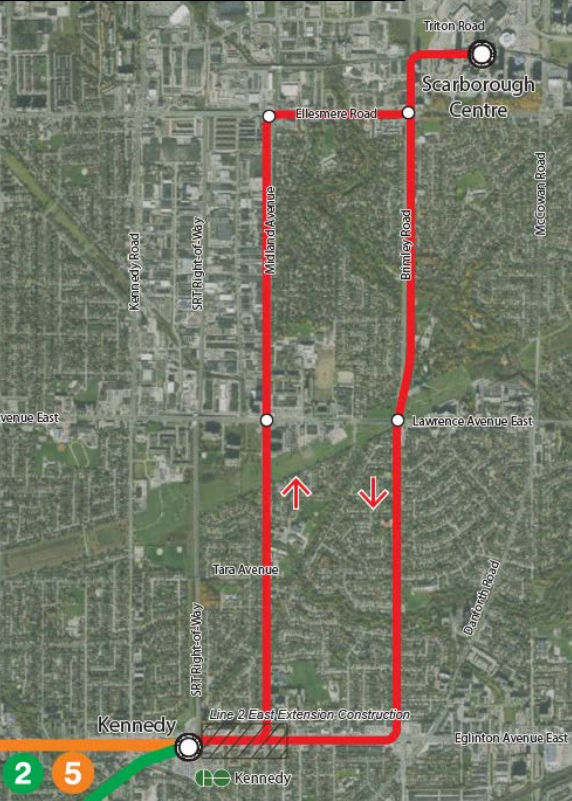


Appendix 3 – Bus Replacement Routing Options

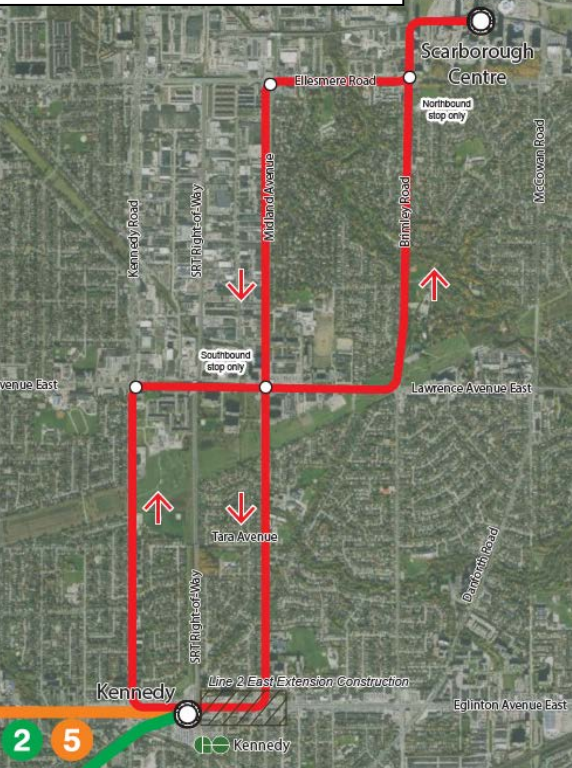
**Option 1
Hybrid Line 3 ROW**



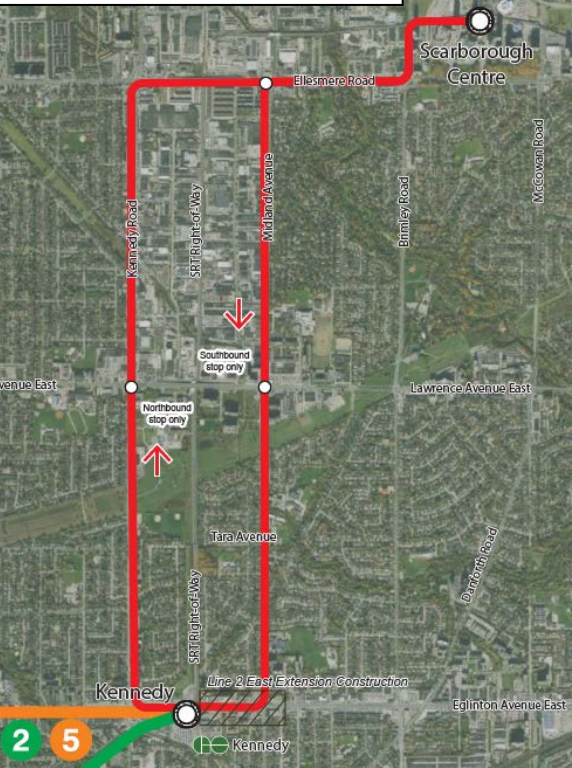
**Option 2
Midland-Brimley Couplet**



**Option 3
Midland-Brimley Couplet
Via Kennedy**



**Option 4
Kennedy-Midland
Couplet**



Appendix 4 – Detailed Routing Summary for Option 1

Engineering and Construction Details for Option 1

An engineering feasibility study concluded that it is technically feasible for the at-grade segment of the Line 3 corridor to be converted for bus operation. Approximately \$49.5 million (Class 4 estimate) will be required to convert the existing train guideway for bus operation between Kennedy and Ellesmere stations. This is based on the proposed design where new on-street stops are constructed outside existing stations at Lawrence East and Ellesmere to serve customers. A new traffic signal would also be required at the North Service Road where the busway joins Kennedy Station to allow safe and efficient operations.

Improved barriers will be required on the new busway to provide physical separation between the Metrolinx corridor to the east, and to the corridor west of the new busway. Through investigation of reviewing record drawings of the existing Line 3 corridor, the width of the existing track slab and bed varies throughout the corridor, and at some locations the width of the existing track slab is less than the required 7.3 metres width for a busway. Where the locations along the corridor may not have sufficient width to establish the full 7.3 metre busway, minor widening would be required. Where the existing storm sewer system is impacted, the drainage system will be modified. Design and acceptance of new drainage systems will be done in collaboration with the Toronto and Region Conservation Authority in areas where the Highland Creek is affected. At Lawrence East Station, a minor variance to the TTC's design manual will be required for vertical clearance between certain models of buses and the ceiling of the station structure.

The construction to convert the train right-of-way for bus operation also provides opportunity for legacy use even after the Line 2 East Extension is open. This will be a new piece of transit infrastructure, designed for both temporary and permanent use, and future express buses in the area from the nearby Kennedy or Lawrence east corridors may still take advantage of this route to provide an express connection to Line 2 and Line 5 at Kennedy Station.

Routing Details for Option 1

Under this option, the existing Line 3 ROW between Kennedy Station and Ellesmere Station would be converted for buses to operate on. Transit customers would have exclusive access to the ROW and buses would be out of general traffic for the majority of their trip. Customers would be served at stop locations similar to the existing Line 3 service, with on-streets stops at Midland as well as stops within the Line 3 ROW at Ellesmere, Lawrence East and Tara Avenue before reaching the bus terminal at Kennedy Station. These on-street bus stops will be in close proximity to the existing station buildings, and will be designed to all applicable accessibility standards. The proposed stop at Tara Avenue would add new transit access to the local community and connect to the existing pedestrian overpass. This stop would also provide a transit connection to the Meadoway. The proposed design for the Tara Avenue stop is shown in **Figure 3**.

Figure 3. Proposed Tara Avenue Stop



At Lawrence East Station, a new connection will be added to connect the ROW to Lawrence Avenue East. This will allow for customers on services on Lawrence Avenue East to connect to the ROW and to provide a rapid connection to Line 2 and Line 5 at Kennedy Station. Customers will be served at new bus stops south of Lawrence East Station as the existing station platforms will be closed. The existing bus terminal will remain open in its current configuration. The pedestrian underpass will remain available for the local community to use. Buses operating on the ROW will by-pass the platforms and serve customers at new stops on the south side of the existing station. An option to re-use the existing train platforms to serve customers was studied but is not recommended. The proposed design at Lawrence East Station is shown in Figure 4.

Figure 4. Proposed Lawrence East Station Stop



At Ellesmere Station, customers will also be served at new bus stops just south of the existing station building, and buses will connect to Ellesmere Road via a new connection with the ROW. The existing station building will be closed for customer

service, but the pedestrian underpass via the station entrance will continue to be available for the local community. The proposed design at Ellesmere Station is shown in Figure 5.

Figure 5. Proposed Ellesmere Station Stop



From the Line 3 ROW, buses will operate along Ellesmere Road with on-street stops at Midland Avenue in both directions. Transit priority is recommended along Ellesmere Road between Ellesmere Station and Brimley Road. Dedicated transit lanes will enable customers to have quicker and more reliable service. Detailed design of potential transit lanes will be advanced in collaboration with Transportation Services.

At Kennedy Station, a new connection from the ROW to the North Service Road will need to be added so that buses can come off the ROW and connect to the existing bus terminal. This new connection will require the North Service Road to become a signalized intersection where the ROW connection joins the road network. This is also required to manage the traffic in the area that will also be changed when the Housing Now development at 2444 Eglinton Avenue East comes online. Figure 6 shows the proposed configuration at this new intersection. The proposed changes for the area is shown in Figure 7.

Figure 6. Proposed Signalized Intersection at Busway and Service Road

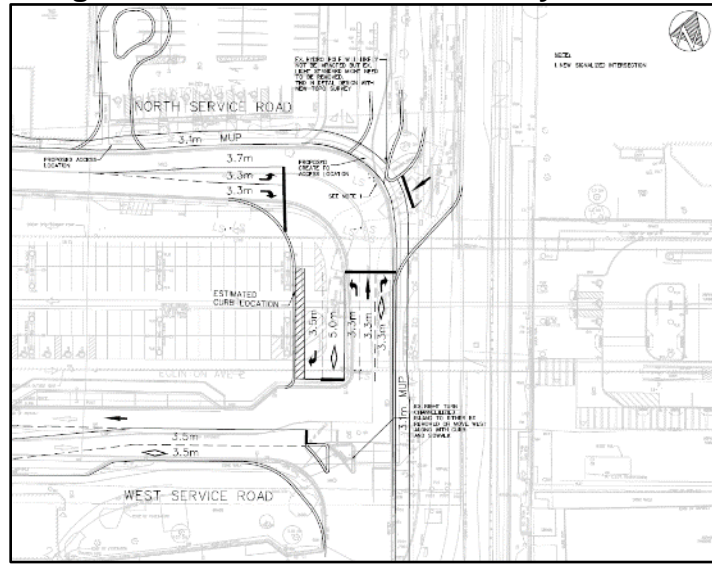


Figure 7. Proposed Changes in the Kennedy Station Area

