Backgrounder

Line 2 Subway Train Procurement

The following note summarizes previously reported information shared to the TTC Board in November 23, 2023 – New Subway Train Procurement and Implications for Line 2 Modernization and Future Growth. (Report Link)

The purpose of this backgrounder is to provide additional context to *Agenda Item 7. Financial and Major Projects Update for the Period Ended April 27, 2024*, and the status of the new subway train procurement (Report Link)

Key Messages

- The current estimated cost for 55 new subway trains is $2.274 billion, and two-thirds of the funding, $1.516 billion, has been committed by the City of Toronto and Province of Ontario. A firm funding commitment of $758 million from the federal government would enable the TTC to start a new subway train procurement for 55 replacement trains for Line 2. The Provincial funding commitment is contingent on a federal matching contribution.

- A full funding commitment is needed as soon as possible to avoid additional cost and to de-risk capital plans. The TTC and City have **until March 2025 at the latest** to secure full funding for the train procurement. If there is insufficient funding for new trains, the TTC will need to proceed to a contingency plan of extending the life of existing Line 2 trains past design life, plus undertake an extended program of state-of good repair for the aging signal infrastructure.

- Buying new trains unlocks the opportunity to modernize Line 2 and enable growth, support sustainable transportation choices and development of new transit oriented communities. If required to maintain existing trains and assets past design life, this will introduce risks to operations, reduce service reliability on Line 2, and prevent the opportunity to add additional service capacity to support growth despite transit expansion already underway.

- The cost of delaying a train procurement another 5 to 6 years, will result in doubling the level of investment needed on the Line 2 fleet.
    - Purchasing new trains no later than Q1 2025, has an estimated cost of $ 2.4- 2.5 billion (inclusive of cost of 30 Year SOGR Program for the T1 trains).
    - This is more cost effective than overhauling the existing trains and restarting a train procurement in several years at a cost of $4.15 billion+.
    - There are also additional costs still to be quantified if the requirement is to extend life of trains, and existing signal infrastructure that will be 70 years old (in 2040) in some sections by time of replacement.

- Metrolinx is reliant on the TTC managed procurement to provide seven new trains for the Scarborough Subway Extension (SSE) and eight new trains for Yonge North Subway Extension (YNSE). The Metrolinx 15 train requirement by itself is not a sufficient quantity to

produce a viable and successful procurement. Without the TTC managed procurement, the SSE will be forced to open with the degraded existing Line 2 fleet and the YNSE will be forced to open with degraded service as the existing Line 1 fleet is not sufficient to meet the service requirements. The Province per the New Deal Agreement is funding the additional 15 trains.

- The new trains also unlock the TTC's funded Line 2 Automatic Train Control project, bringing advantages to Line 2 in terms of safety, reliability, customer experience and operational flexibility.

- The Federal Permanent Transit Fund (PTF) is set to provide new funding in 2026. Early commitments of funding under the Permanent Transit Fund (PTF) are needed this year, by opening up the intake process for critical in flight projects such as new subway trains. This is a request being made by all major transit agencies[1] (STM, TransLink), and the Canadian Urban Transit Association[2]. Even if federal funding does not flow before 2026, having a firm approval of funding to be allocated from the PTF program will allow the TTC to launch the procurement.

- Line 2 is critical infrastructure in Toronto's mobility network connecting communities from Etobicoke to Scarborough, with daily boardings of 500,000+ (2019). More than 130 TTC routes, and 19 regional routes connect to Line 2 making it an integral part of the system that keeps Toronto moving. Investment in Line 2 fleet and signal infrastructure is necessary in order to keep Line 2 in service.

[1] https://www.ttc.ca/news/2024/March/Three-biggest-transit-agencies-urge-Federal-Government-to-advance-next-wave-of-transit-funding
[2] https://cutaactu.ca/wp-content/uploads/2022/10/CUTA-PTF-Submission-Oct-14-2022.pdf

Attachment 1: Background Information – Line 2 FAQ

What is the investment decision to be made?

The decision is to either (1) buy new trains for Line 2 or (2) to extend life of the existing trains serving the Line which will start turning 30 years in 2026 (end of design life), and restart train procurement 5 to 6 years later. The decision has larger scale impacts on service reliability, future capacity, and other capital investments in Line 2, Line 1 and transit expansion (Scarborough Subway Extension, Yonge North Subway Extension).

The two options in summary are:

- **Option 1: Buy 55 replacement trains** → Modernize Line 2, Improve Service Reliability, Enable Growth.
  - New trains allow for the installation of Automatic Train Control (funded in TTC capital plan) to replace the fix block signal infrastructure which is aged.
  - This will improve service reliability, reduce service disruptions, improve customer experience with modern accessibility features and other improvements;
  - A new train contract will have options included to allow for future growth trains to be procured for Line 1, Line 2, and the Scarborough Subway Extension and Yonge North Subway Extension. Funding for growth trains will need to be secured in future – but an active base contract makes it an option.
  - Better value for money.

- **Option 2: Extend life of existing trains** → Temporary Measure; Risk to Service Reliability; No Growth.
  - Existing trains will start turning 34 years old, at time of Life Extension Overhaul (LEO), and will have undergone a 30 year SOGR program, and will also need a 35 year SOGR program to be implemented as well.
  - ATC cannot be implemented on Line 2 without new trains. This creates potential for additional unknown costs to be identified on Line 2 signal infrastructure which will be 70 years old in 2040.
  - Aging fleet and signal systems have risks associated with reduced service reliability, asset availability and potential for additional unknown costs as they continue to be maintained past design life;
  - Only temporarily delays the need to buy new trains (note get 5-6 years before another train RFP will need to be launched in 2030 at an even higher cost);
  - Insufficient trains to accommodate growth in demand on Line 2, Line 1, and to operationalize subway expansion projects already underway (SSE and YNSE).
  - Not good value for money. Opportunity cost long term given capital funding constraints and unfunded capital requirements in the TTC Capital Investment Plan.

When does the decision to buy new trains need to be made?

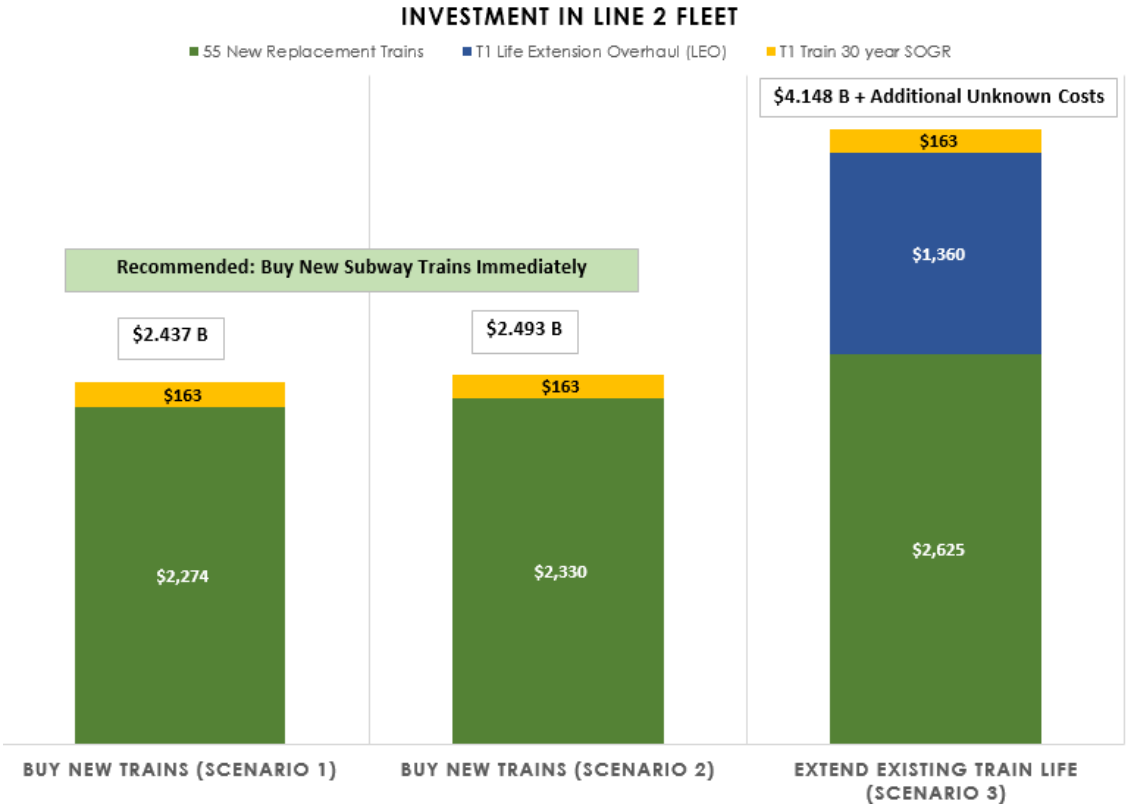
The absolute final decision must be made by March 2025 (Q1 2025), in order for the TTC to enact a contingency plan to extend the life of the existing Line 2 trains if full funding not in place for a new train order.

The TTC will be reporting to the Board in September 2024 with next steps on Line 2, including status of the RFP for new trains and Automatic Train Control, and updated information on the status of Line 2 assets.

What is the cost of investing in either option for Line 2 Fleet?

Buy 55 New Replacement Trains – **estimated final cost of $2.4 to $2.5 billion** (includes cost of a 30 Year SOGR program of existing fleet). A delay in the procurement results in additional cost for new trains. Scenario 1 assumes launch of RFP for New Trains now, and Scenario 2 assumes Launch RFP in Q1 2025 at the latest.

Extend Life of Existing Trains – $4.15 billion estimated cost + additional costs to be identified. In this scenario there is a $1.36 billion cost to undertake a Life Extension Overhaul (LEO) to extend the life of the trains to a 40-year asset life. A new train procurement will still need to commence within 5-6 years due to long lead time for train procurement and delivery. This delayed new train procurement will be necessary to replace 40-year old trains starting in 2036. This has an estimated cost of $2.63 billion. Additional costs will also be associated with a 35 Year State of Good Repair (SOGR) program for the T1 fleet – these costs will be subject to further assessment.



Note: The above chart show estimated costs associated with Line 2 trains and does not show the additional cost impacts with a delay to upgrading the Line 2 signal infrastructure to Automatic Train Control in Scenario 3. There are also impacts to other capital projects for Line 2 and Line 1 not included. For details on broader cost implications see November 23, 2023 report to the TTC Board: Board Report

In all scenarios we need to buy trains. Delay just means it becomes more expensive, the opportunity cost is higher. With the scale of the TTC's overall unfunded capital requirements, applying limited funding available to temporary life extension measures is not good value for money.

What is the funding request of the federal government?

The request is for $758 million in federal funding to complete the full funding of 55 new trains for Line 2.

Funding needs to be committed as soon as possible to avoid additional sunk costs and uncertainty in capital planning. The TTC will need to redirect municipal funding in plan to a Life Extension Overhaul in March 2025 if no funding for new trains is committed.

$758 million in federal funding unlocks a total Line 2 investment of $4.3 billion estimated cost to modernize Line 2. Provincial and Municipal funding commitments have been made for 55 new trains. The TTC Capital Plan also has funding in place for Automatic Train Control, Greenwood Yard. Without federal funding the TTC cannot modernize Line 2.

Line 2	Estimated Final Cost	Municipal Funding	Provincial Funding*	Requested Federal Funding
Line 2 T1 Fleet – 30 Yr SOGR; ATC; Line 2 Signalling SOGR; Greenwood	$1,995 M	$1,995 M	-	-
55 New Subway Trains	$2,274 M	$758 M	$758M	$758M
Total	$4,269 M	$2,753 M	$758 M	$758 M

For details on Line 2 modernization and Line 1 growth see November 23, 2023 report to the TTC Board: New Subway Train Procurement and Implications for Line 2 Modernization and Future Growth (ttc.ca)

What would be the impact if no investment was made in either option – buy new trains or extend life of existing trains?

There are the only two options available. Doing nothing is not an option unless Line 2 is to no longer be in operation. Asset replacement/ SOGR funding timelines are fixed.

The impact to Toronto's mobility would be significant if Line 2 were negatively impacted. Consider:

- 500,000+ boardings are made on Line 2 every day (2019); forecasts indicate 18% increase by 2041;
- To replace capacity of Line 2 the TTC would need to provide close to 600 bus trips per hour (note – we do not have bus fleet/ facilities to deliver that level of bus service on corridor).
- In the busiest hour during morning rush, demand on Line 2 is more than 30,000 people in one direction, equivalent of replacing 27,000 cars. Line 2 moves more than 3 times the number of people per day than the Gardiner Expressway, which has a daily volume of 140,000 cars (or 155,000 people at 1.1 people per car).
- Line 2 creates many access points across Toronto and region → 31 stations across 26.2 kms – connecting communities from Etobicoke to Scarborough. Line 2 makes connections to 130 TTC routes, and 19 regional routes through MiWay, GO Bus, GO Rail, and Union Pearson Express.