



STAFF REPORT ACTION REQUIRED

Scarborough Rapid Transit Options

Date:	July 12, 2013
To:	City Council
From:	City Manager
Wards:	All
Reference Number:	

SUMMARY

This report has been prepared in conjunction with the CEO of the TTC.

Purpose of the Report

City Council confirmed its support for the four Light Rail Transit (LRT) projects - Scarborough LRT, Eglinton Crosstown LRT, Sheppard East LRT, and Finch West LRT - in February and March 2012. Council approved the terms of the Master Agreement for the delivery of the four LRT projects in October 2012, and the agreement was signed by the City, TTC and Metrolinx in November 2012 ("The Master Agreement"). The Master Agreement provides the legal framework for the delivery of the Toronto Light Rail Transit Program, an \$8.7 billion investment in Toronto's transit infrastructure.

In May 2013, City Council indicated support for the extension of the Bloor-Danforth subway line from Kennedy Station to Scarborough Centre and Sheppard Avenue (the "Scarborough Subway"). As a result, Metrolinx has requested clarification on the City's commitment to the Master Agreement and the Scarborough LRT project, in a letter received June 28, 2013. The letter outlines sunk costs and other implications associated with a change in direction by the City, in addition to the transfer of \$320 million of the approved \$1.8 billion (\$2010) Scarborough LRT budget to the Eglinton Crosstown LRT. Further, Metrolinx intends to suspend work on the Scarborough LRT if Council confirmation of support for the project is not received by August 2, 2013.

The purpose of this report is to present information on the potential financial, planning and other implications of pursuing an extension of the Bloor-Danforth subway instead of

the Scarborough LRT. A preliminary review of the issues from a financial, planning, legal, and project delivery perspective are outlined.

Rapid Transit Options: LRT and Subway

TTC staff have identified that either an LRT or subway can effectively serve the Scarborough RT transit corridor. Each technology option offers distinct advantages. The main benefits of the subway option are higher speed, elimination of the transfer at Kennedy station, and projected higher ridership. Further there is no need to shut down the Scarborough RT during construction of a subway extension. Conversely, the LRT option provides greater overall geographic coverage, more stations providing greater local access, larger population served, and reliable high quality service at a lower cost.

The LRT option has been studied more extensively. The lack of time to consider all necessary assumptions related to a review of the subway option introduces risk when considering transportation network and land use implications. An issue requiring further review is the impact of the subway extension on the transit network as a whole. Further work is required to accurately report on forecast subway ridership as it relates to network planning considerations.

In terms of land use planning, the proposed extension of the Bloor-Danforth subway would pass through largely stable residential areas and the primary trip generation points would be the Scarborough Centre and the Sheppard Avenue terminal. The proposed subway station at Lawrence Avenue is largely surrounded by a stable, low density area. Because the subway's design capacity exceeds 2031 forecast ridership levels, a robust program to attract significant employment growth (and to a lesser extent residential growth) to the Scarborough Centre will be required to increase ridership. Conversely, the LRT line will operate in an established corridor of proven transit demand that is currently being under-served by the at-capacity RT line.

Financial Implications

The preliminary estimate of the cost of the subway option is \$2.3 billion (\$2010), plus certain transitional costs related to continuing and later dismantling the SRT. The estimates in the report are based on the full Metrolinx budget for the LRT option being transferred to the City to offset \$1.8 billion of these costs. When the net cost is escalated from the 2010 base year to the expected time of expenditure, the incremental capital cost is estimated to be \$1.1 billion. It should be noted that currently, Metrolinx has reduced the budget for the Scarborough LRT project and has therefore only offered to provide a credit or offset of \$1.48 billion.

The City expects to obtain changes to the *Development Charges Act* for this project, similar to those that were provided for the Toronto York Spadina Subway Extension (TYSSE) project, to allow a portion of these costs to be recovered from development charges under a future by-law amendment. Furthermore, the City should be able to

further offset these costs if it can qualify for federal infrastructure or P3 Canada funding similar to that obtained for major transit investments in Kitchener-Waterloo and Ottawa.

Based on these variables, assumptions, and subject to various risks related to inflation, cost estimation and interest rates, staff estimate that the City could fund the incremental capital cost through a tax increase of 1.1 – 2.4% over the next three years. If it is Council's intention to proceed with the subway option, it is recommended this Council commit to a minimum dedicated increase of 0.5% in 2014 to ensure that the appropriate funding is in place at the time of the decision.

The subway option would also require the City to be the owner/operator of the new asset, and therefore be responsible for incremental operating and capital maintenance costs, less the offsets the City is able to obtain from Metrolinx for the operating and capital maintenance costs Metrolinx would avoid by not proceeding with the LRT.

Implications for Toronto's Long Term Transit Priorities

As directed by Council the City is currently undertaking a comprehensive review of Toronto's transportation priorities through the Official Plan Review process (i.e. "Feeling Congested") to identify future transit infrastructure that best meets city building objectives, integrates transit and land use planning, and complements other transportation modes. A report on future rapid transit priorities will be presented to Council at the conclusion of the Official Plan review process. Based on ongoing preliminary work the top five unfunded rapid transit proposals include Waterfont West LRT, Don Mills LRT, Downtown Relief Line (East), Scarborough Malvern LRT and Waterfont East LRT. The Bloor-Danforth subway extension places in the next five rapid transit proposals that also include Jane LRT, Steeles West LRT/BRT, Downtown Relief Line (extension to Eglinton Avenue), and Eglinton LRT extension to Pearson Airport. The decision to adopt subway technology could impact the ability to fund the other priorities that are ultimately established through the current Official Plan review process. Further review and refinement of the rapid transit decision-making framework will occur over the next several months as City staff conclude public consultations and complete the due diligence exercise currently underway.

An important issue that is not clearly understood at this time is how a subway extension might impact on the transit network as a whole. The ridership growth attributed to the extension of the Bloor-Danforth line would accelerate the need for other major system improvements to relieve overcrowding on the Yonge Subway, south of Bloor, and at Bloor-Yonge Station, as described in the Downtown Rapid Transit Expansion Study (2012). These would include capacity increases to Bloor-Yonge Station or the construction of a Relief Subway line, or equivalent, into the downtown. Whether the DRL becomes a prerequisite to address higher ridership on the Bloor-Danforth line has not been studied in detail yet may become a critical determining factor.

State of Good Repair and Infrastructure Priorities

The City would be required to debt finance a portion of the costs, resulting in an increase in the City's debt burden. It must be noted that the incremental capital and potential incremental capital maintenance costs outlined in this report, would be in addition to other capital state of good repair pressures. Council will have less financial flexibility to fund other key state of good repair and infrastructure priorities. The 2014-23 Capital Plan already identified \$2.5 billion in new TTC capital needs (mainly state of good repair), \$750 million plus for unfunded social housing repairs, and significant capital needs for Transportation Services, Toronto Water, etc. In addition, as noted above, there are likely other transit priorities to emerge from the Official Plan review process, and interests in other community infrastructure projects that are currently unfunded. Undertaking the subway project will reduce budget flexibility to address other Council priorities now and in the future.

Master Agreement Approval Process

This report outlines two options for Council's consideration with respect to rapid transit options for Scarborough. The first option recommends Council support the Scarborough LRT under the current Master Agreement.

The second option recommends that if Council confirms support for the Scarborough Subway, the City Manager be authorized to amend the Master Agreement and enter into an agreement with Metrolinx with respect to funds allocated to the Scarborough LRT. City Council should also commit to funding the share of the City's cost of constructing the Scarborough Subway.

It should be noted that the optional recommendation to support the Scarborough Subway includes the recommended terms upon which an agreement must be reached with Metrolinx in order to amend the Master Agreement. This may also require agreement with the Province in a separate form. If no agreement is reached on the recommended terms, the Master Agreement remains a legally binding agreement whereby Metrolinx remains obliged to construct the Scarborough LRT. The City Manager would then be required to report back to Council for direction.

RECOMMENDATIONS

The City Manager recommends that City Council consider the following options with respect to rapid transit options for Scarborough:

- A. City Council confirm its support for the Scarborough LRT project under the Master Agreement.

OR

- B. City Council confirm its support for the Scarborough Subway and:

- (1) Authorize the City Manager to amend the Master Agreement, and, if necessary, enter into a separate agreement with Metrolinx and the Province, to:
- (a) remove the Scarborough LRT from the description of the program to be constructed by Metrolinx under the Master Agreement (the "Program");
 - (b) amend the overall Program budget by reducing it by \$1.8 Billion representing the anticipated cost of constructing the Scarborough LRT (the "LRT Amount");
 - (c) ensure that the Master Agreement continues to apply to the interchange between the Scarborough Subway and the Sheppard East LRT at Sheppard East Station, and the Eglinton Crosstown LRT at Kennedy Station;
 - (d) redirect to the City for the purpose of the construction of the Scarborough Subway, the following amounts:
 - (i) the LRT Amount (defined above as \$1.8 Billion), indexed by an appropriate cost escalation factor from 2010 to the date of transfer to the City (the "Indexed LRT Amount"), payable to the City in a manner to be agreed upon by the parties having regard to ensuring that the City's financing charges or contract payments related to the Indexed LRT Amount are fully offset over the life of the City's financing, or contract payments in respect of the Indexed LRT Amount; and
 - (ii) the estimated value, as agreed to by the parties, of any costs which would have been borne by Metrolinx under the Master Agreement in respect of the Scarborough LRT

related to operations, capital maintenance, and such other costs as may be negotiated between the parties; and

- (e) make any further amendments to the Master Agreement as may be necessary to reflect the removal of the Scarborough LRT from the Program.

all on such terms and conditions as are satisfactory to the City Manager and TTC Chief Executive Officer, in consultation with any other relevant City officials, and in a form acceptable to the City Solicitor.

- (2) Commit to funding the City's share of the cost of construction of a Scarborough Subway by:
 - (a) Directing the Deputy City Manager and Chief Financial Officer to prepare a Development Charge By-law to include the City's share of capital costs in respect of the Scarborough Subway project for Council consideration in 2014
 - (b) Requesting the Province of Ontario to make appropriate amendments to the Development Charges Act for the purposes of the Scarborough Subway Project similar to those made by the Province for the Toronto York Spadina Subway Extension project
 - (c) Requesting the Federal Government to contribute Toronto's fair share of federal funding under the P3 Canada Fund, the Building Canada Fund and all other available sources of federal funding for the construction of the Scarborough Subway.
 - (d) Committing to a property tax increase over three years, dedicated to funding a Scarborough Subway, in an amount between 1.1% and 2.4% (depending upon the amount of funding received through Recommendations B(2)(a) and (c)), on the residential property class, and 1/3 of such a rate increase on the non-residential property classes (in accordance with current City policy), starting with a minimum tax rate increase in 2014 of 0.5% on the residential property class, together with the corresponding 1/3 rate increase on the non-residential property classes, with the balance of the residential and non-residential three year rate increase to be phased-in in the years 2015 and 2016.
- (3) Direct the appropriate City officials to seek the necessary approval under the Environmental Assessment Act be sought using the Transit Project Approval Process as set out in Ontario Regulation 231/08, as amended.
- (4) Authorize the appropriate City officials to take all actions necessary to give effect to this recommendation.

Financial Impact

If Council confirms its support for the Scarborough LRT project, there are no new costs to the City beyond its obligations under the existing Master Agreement.

If Council confirms its support for an extension of the Bloor-Danforth subway to Sheppard Avenue, the incremental capital costs of building a subway versus an LRT would accrue to the City.

The Metrolinx approved budget for the Scarborough LRT is \$1.8 billion. The letter from Metrolinx indicates that the available funds for the Scarborough LRT has been adjusted to \$1.48 billion to reallocate \$320 million to the Eglinton LRT project related to the Kennedy station interchange. Neither the City nor the TTC has been provided details or commented on this adjustment. The recommendations of this report would provide authority to proceed with a subway on the basis of the transfer of the full \$1.8 billion allocation.

The preliminary estimated cost impact based on the Metrolinx approved budget and the Metrolinx available funds is as follows.

Table 1.				
Preliminary Incremental Cost Estimates: Subway Option				
	<u>Metrolinx Approved Budget for LRT</u>		<u>Metrolinx Figures per June 28/13 Letter</u>	
	(\$millions)			
	(\$2010)	(\$nominal) ²	(\$2010)	(\$nominal) ²
Subway Option Cost Estimate	\$2,300 ¹	\$3,283	\$2,300	\$3,283
Metrolinx Scarborough LRT Budget	(\$1,800)	(\$2,448)	(\$1,480) ³	(\$1,991)
Sunk Costs	\$85		\$85	
Net Capital Incremental Cost	\$585	\$835	\$925³	\$1,320
Additional potential incremental costs:				
Vehicle re-negotiation costs	TBD		TBD	
SRT Life Extension ⁴	\$96	\$132	\$96	132
SRT Decommissioning & Demolition	\$75	\$118	\$75	\$118
TOTAL Potential Incremental Capital Cost	\$756	\$1,085	\$1,096	\$1,570

1 TTC preliminary cost estimates based on historical cost per km to be confirmed at 30% design. The accuracy of these estimates should be considered +/- 30%.

2. Escalated by 4% consistent with Statistics Canada non residential construction index for Toronto CMA over past 15 years.

3. Based on Metrolinx letter indicating Scarborough LRT allocation subject to a \$320 million reduction; Expected incremental capital costs of at least \$925M (\$2010)- all adjustments not shown.

4. TTC estimate of SRT capital cost to extend to 2023

It is important to note that the Metrolinx budget envelope is presented in \$2010. The actual nominal dollar expenditures and the related estimated cost differential of the subway versus LRT option would likely increase due to price escalation. Using a construction cost inflation estimate of 4.0% per annum, and assuming that construction of a subway would occur over a 6 year period commencing in 2018 (allowing four years for Environmental Assessment/TPAP and project design), the capital cost would increase to approximately \$3.28 billion (in nominal/ inflated dollars).

Metrolinx has identified sunk costs of \$85 million relating to work already undertaken on the Scarborough LRT project, including a prorated share of LRT vehicle design costs, TTC and Metrolinx management costs (TTC had early responsibility for project management), and property acquisition costs.

The estimates above assume that the Metrolinx share of project funding will be subject to escalation to allow for inflation. Metrolinx has also indicated that under a subway scenario, since the City would be owner of the asset the transfer of escalated Metrolinx allocations may occur over a longer time frame. The Metrolinx allocations will have to be of sufficient size to fully offset the equivalent value of City debt and/or contract payments. This assumption is fundamental to the cost estimates presented above.

In addition to the above costs, if the Bloor-Danforth subway were to be extended this would trigger the need for Automatic Train Control (ATC) on the line. This requires that funds of approximately \$450 million currently included in the TTC's 10 year capital program for post 2023, to be brought forward to support completing the ATC project with the subway project.

Possible Approaches to Funding Capital Cost

It is assumed for the purposes of the analysis that the City will implement a series of dedicated property tax increases and begin accumulating a project reserve balance in 2014 in order to minimize the tax increase and the future debt requirements for the project. Capital expenditures would be funded from the reserve until it is depleted, and remaining costs would be debenture financed at an assumed interest rate of 4.2% over a 30 year term (subject to prevailing market rates at the time of issuance)

Annual debt service charges (principal and interest) would range from **\$26 million to \$57 million** over a thirty year period as shown in Table 2. The level of debt service can be funded by a one-time dedicated property tax rate increase in 2014 of 0.5%, and a subsequent increase ranging from 0.6% to 1.9% over the 2015 – 2016 period depending on the magnitude of Federal funding and development charges that is achieved.

Table 2. Potential Funding Sources				
(Nominal \$ millions from Table 1)				
	<u>Metrolinx Approved Budget for LRT (Adjusted)</u>		<u>Metrolinx Figures per June 28, 2013 Letter (Adjusted)</u>	
		With Federal Assistance		With Federal Assistance
Subway Option Cost Estimate	\$3,283	\$3,283	\$3,283	\$3,283
Less Provincial Transfer	(\$2,448)	(\$2,448)	(\$1,991)	(\$1,991)
Net Capital Incremental Cost	\$835	\$835	\$1,320³	\$1,320³
Plus potential additional costs for SRT extension and decommissioning	\$250	\$250	\$250	\$250
Net Potential City Incremental Capital Cost	\$1,085	\$1,085	\$1,570	\$1,570
City Funding Sources:				
Federal Funding (50% of City share)		(\$418)		(\$660)
Development Charges	<u>\$209</u>	<u>\$104</u>	<u>\$330</u>	<u>\$165</u>
Total Potential Tax Supported Cost	<u>\$876</u>	<u>\$563</u>	<u>\$1240</u>	<u>\$745</u>
Total Residential Tax Increase in 2014 ²	1.7%	1.1%	2.4%	1.6%
Remaining increase in 2015 – 2016 if 0.5% implemented in 2014	1.2%	0.6%	1.9%	1.1%
Estimated Future Annual Debt Service Charge ¹	\$41	\$26	\$57	\$38

1. 30 year debt @ 4.2% p.a.
2. Assumes 1% residential increase raises \$23.7 million in 2014.
3. Escalated net capital incremental cost at \$925 million (\$2010) per Table 1.

The foregoing analysis shows the debt service and property tax impact if the incremental capital costs are funded through property taxes, and supplemented by development charges and potentially a federal contribution, as follows:

- Development Charges (DC) could be levied to recover the growth-related City share of capital costs. In the table above, it is assumed that up to 25% of the City's share of certain capital costs are funded from development charges. Based on experience with the TYSSE project, this figure could be achievable if similar legislative amendments are adopted by the Province to allow for relief from historical level of service caps, the statutory 10% rate deduction for transit, and the mandatory 10 year planning period.
- Federal infrastructure funding, including funding from the P3 Canada Fund, up to 50% of the City's share of project costs, corresponding to less than 20% of the total expected project cost; and/or
- Proceeds from sale of transit oriented development rights (if any).

Transitional Costs

A subway project would have a different construction period and impact on current SRT operations. For example, rather than replacing the SRT with bus service during construction, it is expected to be feasible to invest in extending the SRT service beyond 2015, through the construction period. The cost is estimated to be approximately \$96 million to extend the SRT another 8 years from the scheduled closure in 2015, to the end of subway construction in 2023. Similarly, the decommissioning costs for the SRT are estimated to be \$75 million in \$2010. These costs are in addition to (not included in) the preliminary \$2.3 billion subway project costs estimate.

Ongoing Operating and Maintenance Costs

Under the current Master Agreement, Metrolinx is responsible for ongoing capital maintenance and for negotiating an operating cost sharing agreement with the TTC for the LRT, in keeping with its ownership of the line. An operating arrangement with the TTC, including allocation of fare revenues, has yet to be established.

If Council decides to pursue a subway option, then the incremental capital maintenance and ongoing operating costs would be a City and TTC expense. Again, if the City receives a transfer of the as yet unquantified Metrolinx allowance for the comparable operation and capital maintenance allowance for the LRT project as per the recommendations, this figure would be reduced commensurately.

The annual capital maintenance requirement for a subway extension has yet to be determined, and is likely to be nominal in the initial years of operation, and grow in significance over the life of the project. For example, an annual capital maintenance cost of 1 – 2% of total project cost would be \$32 – \$64 million per year to be funded from transit fares and taxes, less transferred budget allocations from Metrolinx.

Financial Implications Related to Planned Future Transit Infrastructure

The City is currently undertaking a comprehensive review of Toronto's transportation priorities through the Official Plan Review process to identify future transit infrastructure that best meets city building objectives. A decision to adopt higher cost subway technology will likely result in a surplus capacity that may not be required within a reasonable long term planning horizon. The investment could impact the City's ability to fund other critically important priority transit projects that will be identified through the current Official Plan review process.

Additional pressures on the anticipated 2014-23 Capital Plan

It is crucial that Council consider undertaking these costs within the context of other capital and operating pressures and investment options likely to be faced by the City over the period. For example other pressures already identified during the 2014 -23 administrative review of the Capital Budget include:

- \$2.5 billion for TTC in new, primarily state of good repair, spending,
- \$750 million for unfunded Social Housing repairs, and
- anticipated additional costs of local transit priorities that will be identified as part of the ongoing Official Plan review
- significant capital needs for Transportation Services, Toronto Water, Parks Forestry and Recreation, etc
- currently unbudgeted plans such as the Port Lands Acceleration Initiative

In general, if the City decides to undertake the subway project, it will place pressure on the City's ability to maintain debt service ratios below guidelines. Furthermore, it will directly reduce budget flexibility to address ongoing operational and service levels issues now and in the future.

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

DECISION HISTORY

City Council

At the June 8-10, 2010 meeting of City Council, the following reports were jointly considered: "*Scarborough Rapid Transit - Transit Project Assessment Study Recommendations*" ([EX44.23](#)), and "*Official Plan Amendment for Scarborough Rapid Transit (SRT) Extension - Final Report*" ([PG38.2](#)). Council approved the conversion and extension of the Scarborough RT to LRT, and amendments to the Official Plan. The Environmental Project Report (EPR) was submitted to the Ministry of Environment, and the Minister of Transportation and CEO of Metrolinx were informed of Council's decision.

City Council at the February 8, 2012 meeting on "*Metrolinx Transit Projects in Toronto*" ([CC17.1](#)), affirmed its support for the light rail transit (LRT) priority plan for Toronto consistent with the Metrolinx "5 in 10" plan and specifically supported the implementation of the following projects:

- The Finch West LRT from the Spadina Subway extension to Humber College;
- The Eglinton Crosstown LRT from Jane Street to Kennedy Station; and
- The Scarborough RT conversion to LRT from Kennedy Station to Sheppard Avenue, with an extension to the Malvern Town Centre as funds become available.

At the March 21, 2012 meeting on the "*Report from the Expert Advisory Panel Regarding Transit on Sheppard Avenue East*" ([CC20.1](#)), City Council confirmed the Sheppard Avenue East LRT as a priority line within the approved Metrolinx "5 in 10" plan. The expert panel reviewed both LRT and subway options for the Sheppard East

corridor and recommended LRT technology. City Council also directed City staff to develop a comprehensive transit plan to identify future transit priorities through the Official Plan Review process. Direction was also given to conduct broad public consultation on future transit infrastructure improvements and develop a funding strategy.

At the October 30, 2012 meeting of City Council, the report "*Metrolinx-City of Toronto-Toronto Transit Commission Master Agreement for Light Rail Transit Projects*" ([CC27.6](#)) was considered. The four LRT transit projects are included within the terms of the Master Agreement. Council approved several recommendations related to the implementation of the transit projects as defined in the Master Agreement, reaffirming support for the four LRT projects. The binding Master Agreement was signed by Metrolinx, TTC and the City of Toronto on November 28, 2012.

At the May 7, 2013 meeting on the report "*Metrolinx Transportation Growth Funding-Dedicated Revenues*" ([EX31.3](#)), City Council supported the extension of the Bloor Danforth Subway Line from Kennedy Station to the Scarborough Town Centre and north to Sheppard Avenue. The focus of the staff report was on a recommended City position on various funding tools for Council endorsement and subsequent submission to Metrolinx as input to their investment strategy. The report did not provide analysis or recommendations with respect to rapid transit options for Scarborough.

Toronto Transit Commission

At the January 21, 2013 meeting of the Toronto Transit Commission (TTC), TTC staff responded to a request for information on technology choices for Sheppard East and Scarborough RT corridors. The report, "*Response to Commission Enquiry: Service/Technology Choices for Sheppard East and Scarborough RT Corridors*" was deferred. ([January 21, 2013 Report](#))

ISSUE BACKGROUND

On June 28, 2013, the City Manager received a letter (Attachment 1) from the President and CEO of Metrolinx in response to the May 2013 City Council resolution supporting the extension of the Bloor-Danforth subway to Scarborough Centre and Sheppard Avenue. Metrolinx has requested clarification on the City's support for the conversion and extension of the Scarborough RT to LRT, as the recent Council resolution has created uncertainty around the City-TTC-Metrolinx Master Agreement currently in effect.

The Master Agreement was negotiated based on the resolutions of Council in February 2012 and the Sheppard Expert Transit Panel in March 2012. The scope of the Master Agreement (Schedule E), defined as the "Program" includes:

- i. Sheppard East LRT
- ii. Finch West LRT

- iii. Eglinton Crosstown LRT
- iv. Scarborough Rapid Transit (RT to LRT conversion and extension)
- v. Transit Expansion Light Rail Vehicles
- vi. Maintenance and Storage Facility (for Sheppard East LRT and Scarborough Rapid Transit)
- vii. Maintenance and Storage Facility (for Finch West LRT)
- viii. Maintenance and Storage Facility (for Eglinton Crosstown LRT)

Metrolinx has stated in the letter that they continue to rely on the Master Agreement as the legal contract with the City and the TTC to deliver LRT projects. Without confirmation of support for the Scarborough LRT project by August 2, 2013, Metrolinx has indicated work currently underway on the project will be suspended pending clarification from the City on the status of the current Master Agreement.

Metrolinx Identified Implications to Change from Current Plan to Subway Proposal

The June 28, 2013 letter from Metrolinx (Attachment 1) outlined key financial and other issues from Metrolinx's perspective, if Council does not support the Master Agreement and Scarborough LRT project. The financial impact statement (see above) provides an overview of the cost implications of pursuing an extension of the Bloor-Danforth subway in place of a Scarborough LRT. The following provides an overview of other key issues raised by Metrolinx:

Procurement

Metrolinx, TTC and the City have undertaken work on the Toronto Light Rail Transit Program since the signing of the Master Agreement in November 2012. A change in direction on the Scarborough LRT project will have implications for current active competitive procurements related to the overall program. Specifically impacts to procurement processes for the Maintenance and Storage Facility (MSF) that is being designed to service the Light Rail Vehicles for the Sheppard East and Scarborough LRT lines and to the Eglinton Crosstown project that intersects at Kennedy Station with the Scarborough LRT have been identified.

As noted by Metrolinx, Requests for Proposals (RFP) for the new Scarborough MSF at Conlins Road closed on May 7, 2013. Metrolinx and Infrastructure Ontario (IO) are currently in the process of evaluating the bid proposals. The Request for Qualifications (RFQ) for the Eglinton Crosstown-Scarborough LRT project closed on May 14th. A change to the Scarborough LRT project will delay the issuance of the RFP that is currently scheduled to be released in October 2013. Metrolinx has raised concern that the uncertainty around City Council support for the Scarborough LRT project may impact their ability to attract quality bids for their procurements. Cost impacts and schedule delays to the program may result.

Project Delivery/Governance

Under the Master Agreement, Metrolinx has ownership and control over the delivery of the Scarborough LRT project. Should City Council choose to pursue a subway option, it would still need to consider the roles and responsibilities of the City, Metrolinx, and the TTC in the delivery of the project.

Schedule Delays

In addition to schedule delay impacts to current active competitive procurements Metrolinx has identified (see above), further delays may be expected while the City and TTC undertake required planning studies of a proposed extension of the Bloor-Danforth subway. Reassessment of the project delivery timelines for all projects in the Light Rail Transit Program will be required.

COMMENTS

1. Master Agreement

The Master Agreement approved by City Council for the four LRT transit projects was signed with Metrolinx on November 28, 2012. This agreement is a binding agreement between the parties pursuant to which Metrolinx will build, maintain, and own the four LRT projects, including the Scarborough LRT.

If City Council decides to support the Scarborough LRT project and does not support the Scarborough subway extension, no amendment to the Master Agreement is required. Such a decision would reconfirm to Metrolinx, the City's commitment to the existing Master Agreement.

If City Council decides to support the construction of a Scarborough subway extension as an alternative to the Scarborough LRT, the Master Agreement requires amendment to remove the Scarborough LRT from the description of the program to be constructed, maintained, and owned by Metrolinx. Furthermore, the overall program budget of \$8.7 billion identified in the Master Agreement requires amendment so as to reduce the program budget by the anticipated cost of the Scarborough LRT of \$1.8 billion. Other incidental amendments may be required, including a possible amendment to the amount of Metrolinx's contribution to public realm enhancements as part of the program. The interchange between the Sheppard East LRT and the Scarborough Subway at the Sheppard East Station must continue to be covered by the Master Agreement.

Additionally, if City Council intends to support the construction of a Scarborough subway extension, an agreement with Metrolinx, and possibly the Province, will be required to ensure that the anticipated cost of the Scarborough LRT of \$1.8 billion is reallocated to the City for the purpose of the Scarborough subway construction together with an agreed upon amount in respect of operating and capital maintenance costs which

would have been borne by Metrolinx in respect of the Scarborough LRT. This may form part of the Master Agreement amendments or may require a separate, stand-alone agreement.

2. Current Plan: Scarborough RT to LRT

The conversion of the Scarborough RT to LRT has been the position of TTC and Council for several years. In 2006, the TTC undertook a comprehensive study to look at options for replacing the aging Scarborough RT system, which has been operating at over-capacity and requires updated technology. The study considered both an LRT option as well as extension of the Bloor-Danforth subway line. In 2007, the TTC introduced the Transit City Light Rail Plan and recommended the Scarborough RT be converted to LRT technology. Provincial funding for the project was announced in 2009 for the four LRT lines including the Scarborough LRT. In 2010, the TTC and City Council approved the EA/TPAP for the project. On June 29, 2012, the Province approved Metrolinx's transit plan for the four LRT lines.

Metrolinx has an approved budget of \$1.8 billion (\$2010) to rebuild and extend the Scarborough RT as an LRT. The Scarborough LRT project outlined in Schedule E of the Master Agreement defines the project scope as the conversion of the existing alignment from Kennedy Station to McCowan Station and extension to Sheppard Avenue—10 kilometres and up to 8 stations. More specific details of the project scope include:

- Conversion of existing structure and station to accommodate Metrolinx LRVs—6.5 kilometres and up to 6 stations
- Grade separated extension from McCowan to Sheppard Avenue—3.7 kilometres and up to 2 new stations
- Automatic Train Operation employed along entire route
- Connection at Kennedy Station that does not preclude through running with Eglinton Crosstown LRT
- Convenient passenger interchange with Sheppard East LRT at Sheppard Avenue
- Connection to the Scarborough RT/Sheppard East LRT MSF located at Conlins Road
- Designed for 3-car LRV trains

The current plan will provide rapid transit service to three priority neighbourhoods, with stations in walking distance of approximately 47,000 residents and employees. The projected annual ridership for the Scarborough LRT is 31 million riders.

The project is currently scheduled to be constructed over the period 2015-2020. The Scarborough RT is slated to be decommissioned in 2016 after the Pan Am Games, to allow for construction of the LRT conversion and extension.

Metrolinx has informed the City and TTC of the transfer of \$320 million from the approved Scarborough LRT budget of \$1.8 billion (\$2010) to the Eglinton Crosstown LRT budget. The new Metrolinx estimate for the Scarborough LRT project of \$1.48

billion is based on a future value engineering and redesign exercise yet to be undertaken by Metrolinx. The new estimate for the Scarborough LRT has not been validated by the TTC.

3. Subway Proposal

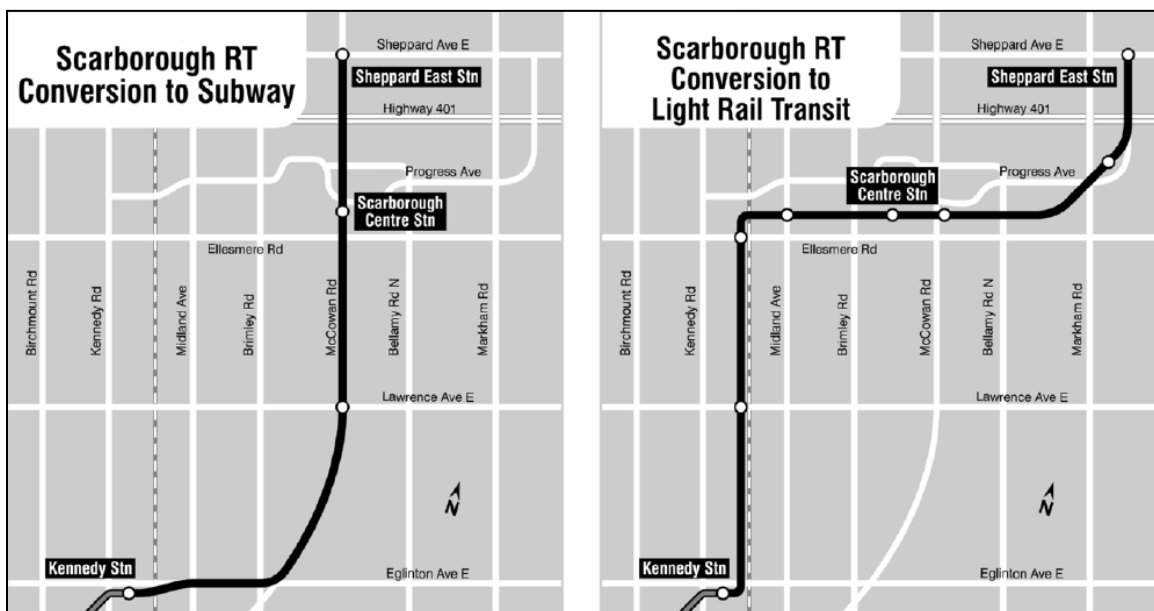
At the May 2013 meeting, while considering the report [EX31.3 "Metrolinx Transportation Growth Funding-Dedicated Revenues"](#), City Council supported the extension of the Bloor-Danforth line from Kennedy Station to Scarborough Town Centre and extending to Sheppard Avenue East. Analysis and staff recommendations on rapid transit options for Scarborough were not the objective of the May 2013 report. The proposed subway extension was outlined by TTC staff in the [January 21, 2013 report](#) deferred by the TTC commission. Details of the proposed subway alternative include:

- 7.6 km extension of the existing Bloor-Danforth subway line, with 3 new stations
- A new, alternate alignment (see figure 1) will be required in order to accommodate subway technology
- TTC estimated budget is \$2.3B (\$2010)

The proposed plan would provide rapid transit service to one priority neighbourhood, with stations in walking distance of approximately 24,000 residents and employees. The projected annual ridership for an extension of the Bloor-Danforth line is 36 million riders. Further details of regional/local ridership characteristics are provided in Section 5, "Planning Evaluation".

Figure 1 provides a side by side comparison of the alignment of the current plan for a Scarborough LRT and the proposed extension of the Bloor-Danforth subway line.

Figure 1. Comparison Maps of Scarborough Rapid Transit Options



4. TTC Analysis of Options

The January 21, 2013 report from TTC staff to the Commission outlined findings with respect to LRT and subway technology for both the Sheppard East and Scarborough RT corridors. The report noted that from a technical and engineering perspective, it is feasible to build either subway or LRT in both corridors.

For the Scarborough RT corridor, TTC analysis indicates both subway and LRT offer distinct advantages, and the corridor could be effectively served by either technology.

The main benefits of the subway option are:

- higher speed
- most-reliable, highest-quality service
- elimination of transfer at Kennedy station
- higher ridership (higher speed and elimination of transfer attract people away from other services)
- no need to shut down the Scarborough RT during construction of a subway extension

The main benefits of the LRT option are:

- greater overall geographic coverage
- more stations – better local access
- larger population served
- reliable, high-quality service
- lower cost

Table 3. Comparison of LRT and Subway Options (Source: TTC January 2013 Board Report)		
	LRT	Subway
Route Length	9.9km	7.6 km
Number of New Stations	7	3
Speed (Projected)	36 km/h	40 km/h
Customer Convenience Advantage	Improved, easier transfer at Kennedy Station	Eliminate transfer at Kennedy Station
Residents & Employees within walking access of stations	47,000	24,000
Annual Ridership projected to 2031	31 million	36 million
Peak Hour Ridership Projected to 2031 in peak direction	8,000 persons/hr	9,500 – 14,000 persons/hr
Technology Capacity	15,000 persons/hr	30,000 persons/hr
Travel Time- Kennedy to Sheppard	15 min	10 min

Ridership Projections

The TTC ridership projection of approximately 9,500 persons/hr (peak direction) for the subway option, is based on an evaluation undertaken in 2006. A more recent preliminary assessment undertaken by City Transportation Planning staff has resulted in a higher number of approximately 14,000 persons/hr (peak direction) reflecting more current transit network and land use forecasting assumptions. The lack of time to consider all of the necessary assumptions in further detail is reflected in the high degree of variability in the ridership projections for a subway. Further work is required to accurately report on forecast subway ridership particularly as it relates to transit network planning. For example, the City's forecast of 14,000 persons/hr (peak direction) assumes the Downtown Relief Line (DRL) is in place. The increased ridership would accelerate the need for other major system improvements to relieve overcrowding on the Yonge Subway, south of Bloor, and at Bloor-Yonge Station, as described in the Downtown Rapid Transit Expansion Study (2012). These would include capacity increases to Bloor-Yonge station or the construction of a Relief Subway line, or, equivalent, into the downtown.

Whether the DRL becomes a prerequisite to address higher ridership on the Bloor-Danforth line has not been studied in detail yet may become a critical determining factor. There are several other key assumptions that would normally be tested further to understand the full consequences of a subway option on accommodating future travel patterns on the transit network.

If the Bloor-Danforth subway were to be extended, the elimination of the current transfer at Kennedy Station would attract increased ridership to the Bloor-Danforth subway line. This would trigger the need for Automatic Train Control (ATC) on the line, a project which is currently included in the TTC's 10-year Capital Program (\$450 M) for post 2023 implementation. The BD subway extension would require these funds to be brought forward as to complete the ATC project concurrently with the Bloor-Danforth subway extension project.

By comparison, the LRT option has undergone extensive study through the environmental assessment process and greater confidence can be placed in the ridership forecast.

Scarborough RT

A key consideration raised is that the current Scarborough RT's vehicles have reached the end of their normal lifespan after thirty years in operation. The Scarborough RT line has been required to operate at reduced speed and capacity owing to the deteriorated state of the RT vehicles. The need for major investment to upgrade the Scarborough RT is becoming a critical situation requiring a timely response.

5. Planning Evaluation

The transportation component of the Official Plan is currently undergoing a mandatory, five-year public review under the banner of the “Feeling Congested” campaign. This ongoing review includes an assessment of 24 unfunded rapid transit proposals in terms of each line’s contribution to network development as measured against eight broad evaluation criteria. The Scarborough RT conversion to LRT (and extension from McCowan Road to Sheppard Avenue) is not included in this review because it is an existing rapid transit facility and the replacement has been approved and funded. Details of the Scarborough RT conversion can be found in the “Scarborough Rapid Transit Environmental Project Report” (2010) ([Link](#)).

The proposal to replace the Scarborough RT by extending the Bloor-Danforth subway line north and east to Scarborough Centre and Sheppard Avenue has not been incorporated into the review of rapid transit proposals as it was only recently given support by City Council at its meeting in May, 2013. Consequently, a detailed analysis of the subway proposal has yet to be undertaken.

Decision-Making Framework for Assessing Rapid Transit Proposals

The decision-making framework that has been developed as part of the “Feeling Congested” initiative to enable informed decision making can be adapted to help assess the relative planning merits of the two proposals to replace the Scarborough RT. The decision-making framework is primarily designed to assess different rapid transit proposals or corridors at the network level. It needs to be interpreted cautiously when applied to the more specific task of comparing rapid transit technologies within a given corridor, as is the case in the Scarborough situation.

The overall approach is described in the "Feeling Congested Phase 2 Toolkit" which explains how the eight criteria that were identified and ranked in Phase 1 can be translated into measures to evaluate rapid transit proposals. These eight criteria define a comprehensive evaluation framework that balances the more traditional transportation planning concerns of reduced travel times, and increased ridership with broader city building measures:

- Choice – develop an integrated network that connects different modes to provide for more travel options
- Experience – capacity to ease crowding/congestion; reduce travel times; make travel more reliable, safe and enjoyable
- Social Equity – do not favour any group over others; allow everyone good access to work, school and other activities
- Shaping the City – use the transportation network as a tool to shape the residential development of the City

- Healthy Neighbourhoods – changes in the transportation network should strengthen and enhance existing neighbourhoods; promote safe walking and cycling with and between neighbourhoods
- Public Health & Environment – support and enhance natural areas; encourage people to reduce how far they drive
- Affordable – improvements to the transportation system should be affordable to build, maintain and operate
- Supports Growth- investment in public transportation should support economic development; allow workers to get to jobs more easily; allow goods to get to markets more efficiently

Detailed measures have been created to correspond to these eight criteria. For example, "Shaping the City" is measured by projected population growth within walking distance of the line, existing population density, and percentage of the line passing through designated Mixed-Use Growth Areas.

A comparison of the eight "Feeling Congested" criteria to those applied in the earlier Sheppard Avenue East "Expert Panel" is provided in Attachment 2.

The Phase 2 technical analysis continues to be refined and will inform the final evaluation phase which will include such additional considerations such as strategic fit, funding availability and timing, with recommendations on rapid transit priorities being brought forward through the Official Plan review process.

Application of the Decision-Making Framework: Scarborough RT Corridor

The exploratory application of the "Feeling Congested" decision-making framework provides further insight regarding the results of the TTC's evaluation of the technology choices for the Scarborough RT corridor as presented in a report to the January 21, 2013 Commission meeting. Both the LRT and subway proposals provide reliable, high-quality service and are effective in accommodating forecast levels of travel between Scarborough Centre and Kennedy Station, the dominant pattern of demand in the corridor. The importance of a transfer-free ride through Kennedy Station is confirmed as a major advantage of the subway proposal, which combined with higher operating speeds and frequency, attracts a greater number of riders from a wider regional area. On the other hand, the longer LRT line coupled with more stations provides greater geographic coverage and greater access to targeted growth areas and areas of projected population growth at a significantly lower capital cost.

Apart from serving the development of Scarborough Centre, the LRT line would support development in the Kennedy-Midland corridor, provide rapid transit service to Centennial College and be well-positioned for a future extension of the line into the Malvern Town Centre. The proposed extension of the Bloor-Danforth subway would pass

through largely stable residential areas and the primary trip generation points would be the Scarborough Centre and the Sheppard Avenue terminal. It should be noted that the proposed subway station at Lawrence Avenue is largely surrounded by a stable, low density area with the exception of Scarborough Hospital, General Campus, at the northwest corner of Lawrence/McCowan. The subway's design capacity exceeds 2031 forecast ridership levels, requiring a robust program to attract significant employment growth (and to a lesser extent residential growth) to the Scarborough Centre in order to increase ridership. The LRT line will service three priority neighbourhoods compared to the subway's one.

It emerges from this preliminary evaluation process that the LRT line and the subway proposal serve somewhat different travel markets. The LRT technology more appropriately reflects city building policy goals contained in the Official Plan, where-in transit capacity is matched to a range of potential future land use outcomes. Preliminary forecasting work suggests 10.2% of the LRT's ridership would come from outside the City of Toronto. By comparison, 14.6% of the subway's ridership would come from outside the City of Toronto. The LRT line focuses more on local travel needs, and provides opportunities for placemaking— creating complete communities within the city— whereas the subway offers a more express service that increases its appeal to regional riders.

The "Feeling Congested" decision-making framework is still currently under development and will be applied to the 24 rapid transit proposals under review to identify top performing projects. The Scarborough RT replacement is a priority due to the urgent need to replace the current aging infrastructure. Setting aside the current operational issues with respect to the Scarborough RT, preliminary application of the decision-making framework to the subway option suggests that from an overall network development perspective, it would be among the lower tier of the top 10 performing projects.

The LRT line will operate in an established corridor of proven transit demand that is currently being under-served by the at-capacity RT line. In this sense, the LRT line puts new and improved transit capacity where it is most needed. Included in the improved service is a much more convenient transfer arrangement at the Kennedy Station.

At this point in time, considerably more is known about the LRT line which has been through the Environmental Assessment approval process and has undergone extensive public discussion. There has been limited time to assess the subway proposal and the preliminary results of the Phase 2 decision-making framework's technical analysis should not be considered an exhaustive review.

Considerations for Competing Transit Priorities

The analysis completed to-date indicates that a decision to adopt the higher cost subway technology will result in a surplus ridership capacity to 2031. This will impact the ability to fund other important priority transit projects that will be identified through the current

Official Plan review process. For example, based on ongoing preliminary work the top five unfunded rapid transit proposals that could be impacted include Waterfont West LRT, Don Mills LRT, Downtown Relief Line (East), Scarborough Malvern LRT and Waterfont East LRT. The Bloor-Danforth subway extension places in the next five rapid transit proposals that also include Jane LRT, Steeles West LRT/BRT, Downtown Relief Line (extension to Eglinton Avenue), and Eglinton LRT extension to Pearson Airport. A number of these projects are also included in the Metrolinx Big Move Plan, but are not currently funded. The high cost of the subway option may impact funding streams for these other projects and likely require the application of additional revenue tools/taxes to fund the necessary transit infrastructure.

6. Timing Implications of Environmental Assessment Approvals

The environmental impacts of the Scarborough RT conversion to LRT were studied and approved in 2010 by City Council and the TTC Board and were reviewed by the Province through the Ontario Transit Project Assessment Process (TPAP) process. The environmental impacts of the subway option have not been similarly studied, and would have to be assessed and provided to City Council and the TTC Board. There are two possible processes, the Individual Environmental Assessment (EA) Process or TPAP.

As briefly described below, the need to undertake a review of the environmental impacts of a subway option will extend the timing to deliver improved transit service to replace the Scarborough RT by a minimum of approximately 2 years.

Individual EAs are typically carried out for large-scale, complex transportation infrastructure undertakings with the potential to generate significant environmental effects and major public interest. Some recent examples include the Toronto York Spadina Subway Extension (TYSSE), Gardiner Expressway EA, and Allen Road Expressway EA. The Individual EA process includes development of a Terms of Reference, followed by an environmental assessment (identification/evaluation of alternatives, environmental effects, mitigation measures, and record of consultation). The Individual EA process requires approval by the Ministry of the Environment, and is estimated to take a minimum of 3-4 years for a project of this size.

The TPAP is a streamlined, proponent-driven, self-assessment process that does not require approval by the Minister of the Environment. Some recent examples of projects studied using this process include the Scarborough LRT, Eglinton Crosstown LRT, and Yonge Subway Extension (YSE). TPAP is a focused impact assessment process that requires a significant amount of pre-planning work (assessment of environmental effects, impact mitigation and management measures), including public consultation, to take place in advance of notification of study commencement. Once the public has been notified of the start of process, the proponent has 120 days to conduct public consultation and complete the Environmental Project Report (EPR). Following issuance of Statement of Completion, there is a 30 day review period, with very limited scope to consider amendments to the undertaking. Including pre-planning, this process is estimated to take approximately 2 years for a project of this size.

Both TTC and City staff agree that TPAP would be the preferred option to proceed with a study of this nature given the length of time necessary for project delivery.

7. Conclusion

The report outlines two options for Council's consideration with respect to rapid transit options for Scarborough. The first option recommends Council support the Scarborough LRT under the current Master Agreement. The second option recommends that if Council confirms support for the Scarborough Subway, the City Manager be authorized to amend the Master Agreement and enter into an agreement with Metrolinx with respect to funds allocated to the Scarborough LRT. If Council approves the subway option, staff recommend Council commit to property tax funding the City's share of constructing the Scarborough Subway, over and above the Provincial and Federal partnership funding.

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SIGNATURE

This report has been prepared in conjunction with the CEO of the TTC.

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ATTACHMENTS

Attachment 1- June 28, 2013 letter from Bruce McCuaig, President and CEO, Metrolinx
Attachment 2- City Planning—Comparison of Sheppard Transit Panel Criteria to Feeling
Congested Criteria
Attachment 3- SRT Conversion to Subway, High Level Estimate
Attachment 4- Transit Right of Ways and Technologies