METROLINX

MEMORANDUM

To: Eglinton West LRT Community Working Group (CWG)

Cc: City of Toronto
Toronto Transit Commission (TTC)

From: Metrolinx Rapid Transit Project Planning

Date: Tuesday, April 10, 2018

Re: Questions Received About the 2016 Initial Business Case

This document provides responses to questions received from the CWG regarding the 2016 Initial Business Case.

1. **An amount of $17.36 is used for the value of time. Can Metrolinx provide numeric valuation of this amount and the validity of having a very low growth rate for this criterion over the course of the 60 year life-cycle.**

   The Value of Time figure of $17.36 per hour in $2017 used in the Eglinton West LRT Business Case is 2% inflated annually from a Value of Time figure of $16.36 in $2014, an estimate recommended in Metrolinx's Business Case Guidance to be applied in all projects within the GTHA.

   Jointly derived by Metrolinx and MTO's Transportation Economics Office, this Value of Time figure is comprised of the value of personal travel in Toronto (calculated as 50% of the gross, pre-tax median wage) and the value of business travel (equal to the full gross, pre-tax median wage), adjusted for the proportion of non-business travel (97%) relative to business travel (3%) in the GTHA using insights from the Transportation Tomorrow Survey.

   In addition to adjusting for inflation, the Value of Time, which is directly related to income, should also grow with median wage growth. Based on research from MTO (derived from Statistics Canada data) growth in Toronto's median wage has been close to zero over the last 30 years. So, a 0% growth rate was applied to the Value of Time.

2. **It would be useful to have more detail as to the capital cost estimates. In the calculation of capital costs, the grade separated option was the most expensive. What assumptions were used in these calculations as these would have had significant impact on the resulting BCR. Was cut and cover a consideration irrespective of the recent disposition of properties on the north side of Eglinton for private development.**

   Capital costs were estimated based on Eglinton Crosstown LRT pricing information. Cut and cover was considered between Mt. Dennis Station to east of Jane Street.

   Costing information is shown in Table 1. In addition to the per-kilometre and station costs shown in Table 1, additional cost allowances were included. These additional allowances include items such as expansion of the Eglinton Crosstown LRT Maintenance and Storage

Facility, treatment of contaminated soil, property allowances, and professional services, among other items.

Table 1: Breakdown of Capital Cost Estimates in 2016 Initial Business Case

Option	Per-Kilometre Cost[1] ($/km)	Per-Station Cost[2] ($/station)
1. At-Grade, Local Access (EA Approved) (14 stops on Eglinton)	$31,000,000	$3,450,000
2. At-Grade, Speed & Access Balance (8 stops on Eglinton)	$31,000,000	$3,450,000
3. At-Grade, Maximize Speed (3 stops on Eglinton)	$31,000,000	$3,450,000
4. Grade-Separated at Intersections (3 stops on Eglinton)	$44,000,000	$3,450,000 (at-grade) $10,000,000 (elevated) $11,500,000 (underground)
5. Fully Grade-Separated (3 stops on Eglinton)	$54,000,000 (elevated) $91,000,000 (underground)	$10,000,000 (elevated) $11,500,000 (underground)

[1] Includes trackwork, bridges, tunnels, roadworks, traffic signals. Based partially on Eglinton Crosstown LRT pricing information.

[2] Based on Eglinton Crosstown LRT pricing information. Does not include excavation or earthworks costs – these are covered in the per-kilometre cost.

3. **Unclear if any sensitivity analysis was conducted evaluating variations in trip generation, traffic distribution, modal split, time delay cost, etc. Can Metrolinx provide comment?**

   Sensitivity tests were conducted as part of this work. The analysis included a number of sensitivity tests with respect to the value of time and monetization of time. This is why the benefits are presented as a range.

   Costs are also presented as a range, but this is due to uncertainties in the costing exercise. Sensitivities with respect to trip generation, distribution and mode split were considered in the modelling work. Traffic modelling is inherently stochastic, meaning that it is partly based on probabilistic distributions. When conducting a traffic modelling exercise, a prudent modeller performs many iterations of the model and produces an average for the metrics of interest (e.g., travel times). By performing many model runs, the modeller is able to capture the inherent randomness within the aspects of trip generation, distribution, etc.

4. **Could Metrolinx provide comment as to how the future developments at Pearson Airport– for a mega-hub airport with an expansive multi-modal transportation centre were incorporated into the modelling? There is mention of potential impacts of this regional node as a major trip generator but little information describing its effects.**

   Metrolinx is working closely with the Greater Toronto Airports Authority (GTAA) to capture and integrate their plans for the future Regional Transportation Centre at Pearson Airport into planning work for the Eglinton West LRT and other projects. Because planning for changes at Pearson Airport is at a very early stage, Metrolinx does not yet have trip generation forecasts that might capture its effect. Metrolinx does have updated forecasts from GTAA for passenger air travel that are incorporated into Metrolinx's new model. This

model will be used for future Eglinton West LRT passenger forecasting. As planning at Pearson solidifies in terms of both growth in air travel as well as ground transportation network changes, we will incorporate those updates into the model as well.

5. **Have benchmark studies been undertaken comparing other municipal jurisdictions with similar characteristics of transit linking to a busy international airport? (Vancouver has their Skytrain. Montreal is embarking on their own RER link to the airport, and North American airports including Denver, Philadelphia, Chicago O'Hare, Portland, Washington and Newark to name a few, all have separate right of way transit to their respective airports. Why can't Toronto have the same?). The report is silent on any similar comparisons.**

   The Airport Area Transportation Study was complete in 2015. This study analysed gaps and opportunities with regard to transportation to and from the Airport area.

   Further, as noted above, Metrolinx is working closely with the Greater Toronto Airports Authority (GTAA) to capture and integrate their plans for the future Regional Transportation Centre at Pearson Airport into planning work.

   Metrolinx is highly aware of Pearson Airport as a major trip generator, and recognizing this, launched the UP Express in 2015. The UP Express connects Pearson Airport with downtown Toronto (as well as Bloor and Weston stations), and provides a direct transit link to the Airport. The Eglinton West LRT is another effort to provide a higher-order transit link to the Airport.

6. **The business case targets a 60 year life-cycle. Given the abundant historical data, one can likely predict capital and operating costs with some degree of accuracy and confidence (understanding that these are Class D estimates). The same confidence cannot be attributed to tripmaking forecasts which can widely swing the Business Case outcome. It is almost impossible to accurately estimate future demand and traffic growth for a 10 to 15 year planning horizon, never mind for a 60 year one. There are grave risks in getting this wrong (no room for three lanes each way along Eglinton for autos if demand outstrips capacity) for a 60 year timeframe. Can Metrolinx comment?**

   All forecasts contain risk and uncertainty. Forecasts are largely dependent on their inputs, which in many cases are also forecasted. While uncertainty is inherent in forecasting, a practitioner can take steps towards mitigating risks associated with uncertainty, such as:

   - Taking a conservative approach towards inputs which may present "worst-case scenarios" (to err on the side of caution); and/or

   - Extensive peer-review/consultation during and after the development of inputs, such as land use forecasts (population, employment).

   Business cases examine the differences (or net result) of the proposed project – in this case, various LRT options along the Eglinton corridor. The same inputs are used in the grade-separated LRT versus the at-grade LRT, and therefore consistency has been maintained. If a forecasted input is challenged, it must be challenged in both options – but it will have no

effect on the performance of the options relative to each other, since the same input has been used for both.

This project has used a conservative approach as well as extensive peer review and consultation to study and forecast the traffic impacts of grade separations along Eglinton. It is important to recognize that no forecast is completely accurate – however we are confident that the results of this work were produced using industry best practices, as well as sound and reasonable judgment by experienced professional practitioners.

7. **Has new technology been considered as part of the analysis? The advent of driverless cars and changes in travel as we become a more technology-based society will greatly change how we travel in the city, how we anticipate trip making and how we value transportation infrastructure.**

   These potential alternative futures have not been considered as part of the analysis. At this point, the timelines, impacts, and outcomes of new technologies are not fully understood and widely agreed-upon within the industry. Furthermore, the modelling infrastructure available is not able to accommodate these considerations.

   The Draft Final Regional Transportation Plan (RTP) considered six alternative future scenarios as part of a resiliency assessment (see Appendix 2B). Among other scenarios, the RTP considered future scenarios involving rapid adoption of emerging technologies, an on-demand economy, and a user-pay economy. These three scenarios pertain to the "new technologies" noted in the question. The analysis found that, under all six alternative scenarios, emphasizing transit operations and planning for transit-supportive land-use led to the best outcomes. In other words, regardless of these new technologies, cities and regions require transit infrastructure to support sustainable transportation and continued growth, development, and economic health.

8. **Was a similar Business Case conducted for the initial phase of the LRT where it is bored underground? It seems peculiar that one can justify a grade separated, underground solution up to Mount Dennis and then from there westward the economics for the adjoining Phase B of the project dictate a completely different solution.**

   The Environmental Assessment (EA) and earlier feasibility reports looked at the form the LRT should take. Section 2 of the EA provides some back ground. A key determinant is the width of the right-of-way.

   2.2.1 Renforth to Kennedy Station

   Following the endorsement of Transit City in March 2007, the Toronto Transit Commission conducted a study to investigate the feasibility of a surface LRT right-of-way along Eglinton Avenue. The limits of the project were from Renforth Avenue in the west and Kennedy Road in the east. The study was carried out to identify preliminary LRT surface right of way requirements as well as other major physical constraints that may impede the construction of a LRT line along Eglinton Avenue. Various conceptual subsurface configurations and station layouts were developed for the interfaces with the Yonge Subway line at Yonge Street and the Spadina Subway line at Allen Road. The study concluded that an LRT was feasible with engineered solutions required to overcome constraints.

The analysis revealed that there were three portions to the Eglinton Avenue corridor:

- *West segment (7.7 kilometres, Renforth Drive to Jane Street), predominant right of way width equal to or greater than 35 metres. Surface LRT can be designed through the section.*

- *Centre segment (12.6 kilometres, Jane Street to Leslie Avenue), predominant right of way width between 20 and 25 metres. The standard surface design LRT cannot be provided through this section; therefore an underground alignment is required.*

- *East segment (6.9 kilometres, Leslie Avenue to Kennedy Road), predominant right of way width equal to or greater than 35 metres. Surface LRT can be supported through this section.*

The report recommended that the minimum underground section extend from east of Black Creek Drive to east of Brentcliffe Road.

As part of the Transit Project Assessment, the limits of the underground alignment were studied further to evaluate whether further extensions of the underground section were warranted. A study, "Jane Street to Keele Street – An Evaluation of Vertical Alignment" which evaluates the west limit of the underground section is summarized in Section 2.2.10 and is included in Appendix K of this report.