

2

2007 RAPID TRANSIT NETWORK CONFIGURATION DRAFT UPDATE

The Rapid Transit Public/Private Partnership Steering Committee recommends the adoption of the recommendations contained in the following report, May 3, 2007, from the Vice President, York Region Rapid Transit Corporation:

1. RECOMMENDATIONS

It is recommended that:

1. Committee and Council receive the draft findings of the 2007 Rapid Transit Network Configuration Update report.
2. Staff be authorized to circulate the draft findings to the area municipalities for comment.
3. A workshop be scheduled with all members of Council to review the 2007 Network Report.
4. Staff be requested to bring back a final report in September 2007.

2. PURPOSE

The purpose of this report is to provide Committee and Council the draft 2007 Rapid Transit Network Configuration Update and to continue its efforts to seek support from the federal and provincial governments for the implementation of the York Region rapid transit system. Feedback from Committee, Council and local municipalities will be used to finalize the updated plan. Staff will return with the final update plan in September 2007 for Council's consideration.

3. BACKGROUND

In addition to the development of the original Rapid Transit Business Plan in October 2002, a detailed Network Configuration Plan was developed for Viva Phases 2 and 3 by York Consortium 2002 (YC2002), the private sector partner selected by Council in spring 2002. The draft Network Configuration Technical Report was presented to Council on June 19, 2003 and was subsequently refined to incorporate the comments of stakeholders. On September 10, 2003 Council approved in principle up to \$539 million (2003\$) as its 1/3 contribution toward the \$1.6 billion capital cost to implement Phase 2, conditional upon receiving matching financial commitments from both the Federal Government and the Province of Ontario over a period from 2005 to 2010.

The 2003 report documented the analysis that was used to determine the rapid transit configuration that would most efficiently serve York Region's ongoing growth and development. The analysis built on a series of Regional policies, including the Transportation Master Plan, Centres and Corridors Study, and Rapid Transit Plan. The rapid transit corridors and alignments originally proposed through the Transportation Master Plan were confirmed through subsequent environmental assessments (EAs), which confirmed that the initial system-wide configuration would be a bus rapid transit (BRT) network.

The EAs contemplated the potential for conversion of the BRT system to a fixed-guideway technology such as light rail transit (LRT), once ridership reached levels able to support the capital and operating costs of a fixed-guideway system. The 2003 report assumed that subway technology on the Vaughan North-South Link (Spadina line) would extend to York University by 2021. This segment was identified for a potential ultimate extension to Vaughan Corporate Center (VCC), a commitment that has since been made. The report recognized the Region's long-term plan for extension of the Yonge subway to Langstaff, and considered alternatives with and without the extension to assess whether it might be appropriate by 2021.

Computer demand modelling was used to evaluate the impacts of different rapid transit technologies on ridership for the 2021 horizon year and to reach conclusions about the ultimate network configuration. The overriding goal was to use the rapid transit technologies in a cost-effective manner that would significantly increase transit ridership, with a corresponding decrease in automobile congestion.

Various network configurations were developed and evaluated on the basis of six key factors:

- Estimated ridership in the year 2021.
- Capital and operating costs.
- Speed and reliability of service.
- Land use.
- Environmental, heritage and social impacts.
- Risk.

Sixteen configuration alternatives (combinations of technology and system segments) were considered and six were deemed to be the most promising (*see Council Attachment 1*). Of the six, the three "A" options assumed that the Yonge Street subway would not be extended any further than the current subway terminus at Finch station.

A-1: System-wide BRT.

A-2: BRT except for LRT from the Finch subway up Yonge Street to 19th Avenue.

A-3: A-2 plus LRT along Highway 7 from Yonge Street to the Markham Centre.

Three “B” options presumed that the Yonge Street subway would be extended north to the Richmond Hill Centre at Highway 7.

B-1: System-wide BRT.

B-2: BRT except for LRT from the Richmond Hill Centre (RHC) up Yonge Street to 19th Avenue.

B-3: B-2 plus LRT along Highway 7 from Yonge Street to the Markham Centre.

A six-step strategy for developing the York Region rapid transit system was subsequently recommended and approved by Council on September 10, 2003.

Step 1: Initiate the ‘*Quick Start*’ rapid bus project at a total cost of \$150 million. The intent of this project was to quickly establish a rapid transit presence on the major travel corridors in York Region. This project would respond to existing travel demand, encourage transit use, and lead transit-supportive development in the key corridors.

Step 2: Implement Network Alternative A-1 between 2005 and 2010, to bring full BRT to all corridors. The BRT corridors would be constructed to design standards that would facilitate conversion to fixed-guideway (LRT) technology when warranted. The network design would also include a master plan for the creation of a major intermodal hub at Langstaff Gateway (now called Richmond Hill Centre). Planning for the Vaughan North-South link would include property protection for the Spadina subway extension to the VCC based on the EA findings of the preferred subway alignment.

Step 3: Prior to 2011 a major review of the program would be undertaken to confirm that the underlying assumptions about growth (population, employment and other activities), in York Region have occurred and that ridership response has met expectations. The next decade of the evolution of the rapid transit network would proceed based on the determination of the length and timing of an extension of the Yonge subway.

Decision Point: If the major program review confirms that underlying assumptions regarding development (residential, employment, commercial, etc.) have occurred and that ridership has met or exceeded expectations, proceed to Step 4 in conjunction with implementation of a subway extension to Langstaff.

If it is determined that a subway extension to Langstaff will not be in place by 2021 or soon thereafter, activity would proceed directly to Step 4. It would also be appropriate to confirm the status of the extension of the Spadina subway at this point.

Step 4: Implement LRT in the Yonge corridor, between the end of the Yonge subway and 19th Avenue. The logic of this step will need to be revisited if the current ridership projections are confirmed. They suggest that an at-grade LRT even with 3-car trains will not be able to operate at a satisfactory level of service by 2031.

Step 5: Extend the LRT network to include the Highway 7 east corridor to Markham Centre as demand warrants.

Step 6: In the longer term, convert other surface rapid transit lines from BRT to LRT as demand warrants.

Since the adoption of the Network Configuration Plan in September 2003, significant progress has been made towards the implementation of rapid transit in York Region. Step 1 of the implementation strategy has been completed, and a four-corridor rapid bus network became operational between September 2005 and January 2006. The ridership projections that validated the original rapid transit strategy have thus far been exceeded system-wide.

On June 20, 2006, Council authorized staff to negotiate Phase 2-Y1 BRT planning and preliminary engineering work from Steeles Avenue to Richmond Hill Centre (RHC) and the work for the north Yonge EA from RHC to Newmarket and vicinity. Those negotiations were successfully concluded in September 2006. Council also authorized staff to move forward with the property and utility planning on Phase 2 BRT segments Y2 (Yonge Street from the RHC to Bernard) and H3 (Highway 7 from the RHC to Markham Centre). As part of this work YC2002 conducted an update of the original Network Configuration Plan.

4. ANALYSIS AND OPTIONS

This is an update of the status of the six-step strategy approved in 2003 (see *Council Attachment 2*):

Step 1 – Phase 1 delivered – We are on track to implement the Viva Network

The Region has deployed 90 state-of-the-art rubber-tired rapid transit vehicles in four corridors. The operation of these vehicles in mixed traffic is enhanced through the provision of queue jump lanes at congested intersections and transit signal priority measures throughout the network.

Step 2 – Phase 2

Step 2 of the rapid transit strategy (planning for Phase 2 on Yonge Street between Steeles Avenue and the Richmond Hill Centre Terminal, including rapidway design) is now underway. Capital construction approval has now been received from the federal and provincial governments. Construction will commence in 2008 and is expected to be completed by 2010. This update affirms the need to proceed with this surface-based solution as soon as possible to deal with the most congested segment of the system, to deliver solutions that promote long-lasting reurbanization and protection to this segment of Yonge Street, and to continue roll-out of BRT on the rest of the system (ie. All 67 km) on an incremental basis.

Step 3

The rapid transit office is undertaking the review contemplated in the 2003 study. All preliminary findings point strongly to supporting a future Yonge subway extension to Langstaff (Richmond Hill Centre).

Ridership estimates have now been made to the year 2031 across the rapid transit system, with some consideration of likely growth over the following 20 years. These projections indicate a solid and growing ridership on the Yonge Street corridor and confirm that congestion is expected to occur on Yonge Street, particularly south of Steeles Ave., after 2020, even with a rapidway in place.

The extension of the Yonge Street subway could occur in one or more phases. A first phase could see the subway extended to Steeles Ave., with a subsequent extension to the RHC. Alternatively, the entire extension from Finch Terminal to the RHC could be constructed at once. It is anticipated that, in either event, the subway can not realistically be completed to the RHC until 2018-2020 at the earliest.

To meet expected longer-term demand, two choices present themselves to address congestion on Yonge Street:

- 1) A subway extension to Steeles Ave. and Light Rail Transit (LRT) from Steeles Ave. north to the Richmond Hill Centre (RHC) and north towards Bernard Terminal, with an easterly extension along Highway 7 to the Markham Centre as demand warrants.
- 2) A one-phase or two-phase extension of the subway to the RHC – the two-phase alternative would extend to Steeles Ave. first and then north to the RHC. In either case, BRT in the Yonge corridor between Finch and the RHC would serve as a significant and useful intermediate stage. In the event the subway is not extended north of Steeles, the BRT could be converted to LRT as demand warrants. If the subway is extended to the RHC, the rapidway would remain in place, providing a highly desirable service environment for YRT buses to serve the denser spacing of surface station stops, as well as offering other transit service operators, such as GO Transit and the TTC, a highly effective means of navigating the Yonge Street corridor. Under any public or private contracting strategy the extension of the subway would take several years to plan and construct to the terminus at the RHC, as illustrated below. Immediate higher order rapid transit service is required to serve the needs of the travelling public and shape transit-supportive development in the corridor.

Stakeholder consultation	1 year
EA & Funding process	3-4 years
Design and construction	6-10 years
Commissioning	1 year
Total Time Required	11-16 years

A Yonge Street subway extension will require an Individual Environmental Assessment (EA) to support it. It is anticipated that the EA for the York Region segment above Steeles Ave. would take approximately three years to complete. The section of subway from Finch Ave. to Steeles Ave. in the City of Toronto will require a similar EA undertaking. It may be possible to combine this effort into one EA with both York Region and Toronto as the EA proponent.

The recent “Transit City” announcement by the City of Toronto identified a series of LRT lines to serve the long term transit needs of the city. The plan, other than recognizing the short term plans to put BRT on Yonge Street north of Finch Ave., does not address a subway expansion for this corridor. A discussion on these options is warranted prior to finalizing a network recommendation to Council.

This review has also concluded that there is a solid business case for Y1, Phase 2 BRT rapidways to be constructed now. These rapidways will continue to provide benefits after the subway extension to Richmond Hill Centre is implemented (*see Council Attachment 3*).

The 2007 Review has indicated that a comprehensive commuter park and ride strategy and implementation plan to support the rapid transit network should be developed. The strategy should identify park and ride demand along each segment of the network as it is implemented and support ridership growth on the network over time. The implementation plan should seek to identify land and/or business opportunities along each segment of the corridor to deliver the overall park and ride strategy.

Step 4

Step 4 will establish the dates for conversion of BRT rapidways north of the RHC to fixed-guideway (LRT). This will take place in conjunction with subway extension planning, once the choice is made as to the ultimate terminus of the Yonge subway extension.

Step 5

Step 5 will establish the dates for the conversion of BRT rapidways to LRT on Highway 7 from the Richmond Hill Centre Terminal to the Markham Centre. This step will likely occur following the subway extension and consideration of ridership growth in the system.

Step 6

Step 6 will examine conversion of the remaining BRT routes to LRT. YC2002 is determining the best network configuration from the ongoing Network Implementation Plan process. Step 6 studies will be carried out periodically to assess the emerging need for conversion to fixed-guideway technology, given the actual evolution of system ridership.

Key factors in the update steps include ridership growth on Viva and the continued expansion of population and employment in York Region. These will be key factors in the choice and timing of technology in the network. YRRTC and YC2002 and YRT are engaged in regular analysis to confirm that positive growth is occurring which informs future decisions. This information takes the form of the extensive data that are and will be available from Viva operations, from developing plans of partner transit providers and from regional stakeholders.

The Network Implementation Plan for the period 2007 to 2010 is clearly emerging

Several key events have unfolded or are emerging that will have a significant bearing on the updated Network Implementation Plan. One of those is the joint Toronto and York Region initiative to extend the Spadina Subway to the Vaughan Corporate Centre. This initiative has the financial backing of both the federal and provincial governments.

The federal and provincial governments have also both recently announced funding support for implementation of the Viva Phase 2 dedicated rapidways on Yonge Street from Steeles Ave. to the RHC (segment Y1), which is currently in the preliminary design stage. Other initiatives that are contemplated within the 2007 to 2010 timeframe include the Markham Centre Transitway, the Cornell Terminal, and the Langstaff Operations and Maintenance (O&M) facility.

Critical pieces are falling into place for subsequent Phase 2 components to 2014

The recent provincial and federal funding announcements will also advance the design of the Y2 and H3 rapidway segments of Phase 2, from the RHC northerly on Yonge to Bernard and easterly on Highway 7 to the Markham Centre, respectively.

EA for the Yonge Street corridor should commence as soon as possible

An EA process that will be required in advance of the Yonge Subway extension to Steeles and/or RHC and will take 3 to 4 years to complete. It is important to begin this activity as soon as possible.

Up to 2021 the need is clear to extend the rapidway system further along the major designated routes to the north, east and west

The improvement of travel times along the major arteries of the system is imperative to the continued success of the system and growth in ridership. The target is for all rapidways to be completed prior to 2021. While the rapidways are expanding, the Yonge Subway EA will be underway and funding commitments will be sought. The Phase 2 rapidway currently being planned for Yonge Street from Steeles Avenue to the RHC, will continue to operate in conjunction with any Yonge Subway extension, providing rapid surface service to emerging transit oriented development (TOD) near BRT surface stations, which are more frequently spaced than subway stations. In the meantime, Phase 2 BRT stations and rapidways, now being designed and constructed, will provide essential transit service in the Yonge Street corridor now, independent of any subway expansion plans as previously described.

The validity of Phase 3 beyond 2021 is confirmed

Phase 3 will advance during the period beyond 2021, following completion of all rapidways and the Yonge subway extension. During this phase, important choke points in the system will need to be relieved to ensure the robustness of the system by maintaining attractive travel times. This will result in increased ridership and congestion relief on Region roads. Two readily identifiable points of congestion will be through downtown Richmond Hill and the Highway 7/Highway 404 interchange. Possible actions include adding capacity through the conversion of the densest routes to Phase 3 technology (LRT or some other higher-order technology that may be available at that time). The issue of the need to grade-separate these and other locations will need to be addressed.

We will return to Committee and Council in September 2007 with the final updated Network Implementation Plan

A draft 2007 update report is attached to this report, and along with this report and presentations, workshops and dialogue, will be used to gather comments from all stakeholders. Based on input received from Committee and Council and local municipalities, the plan will be refined and a final Network Implementation Plan report will be provided to Committee and Council in September 2007.

5. FINANCIAL IMPLICATIONS

A solid business case has been prepared to substantiate the Phase 2 surface rapid transit investment on Yonge Street (Y1). The cost-benefit analysis prepared for the federal government funding submission showed a payback period of 3.86 years, representing a very immediate benefit to this expenditure. This benefit surpasses the excellent 8.1 year return on investment from Phase 1; a successful roll-out of early rapid transit in York Region. *Council Attachment 4* provides an overview of the TransDec model.

Whatever decisions are made regarding Yonge subway expansion, investments in BRT rapidways that improve transit service in the critical Finch to Richmond Hill Centre link will pay back benefits from the outset. Travel time savings and system-wide felt improvements as a result of a financial investment, valued conservatively at 1/10th of the cost of a subway over the next 10 to 15 years, will ensure the continued growth and viability of surface rapid transit in the most congested corridor in the rapid transit system. This investment continues beyond the arrival of a subway, providing continued surface segregated rapid transit to accommodate TOD growth now emerging on this section of Yonge Street and feeding more subway stops between the RHC and Steeles Ave. Provincial and federal dollars now provide a 2/3 funding contribution to Yonge Street revitalization that would otherwise take place with 100% Regional dollars.

Based on the input of all stakeholders, a financial summary of the 2007 network will be presented as part of the September 2007 report. Staff will also report in September on financial strategies to undertake the rapid transit network. These strategies will include,

amongst other things, government funding partners and opportunities for alternative financing through models such as Design, Build, Operate and Maintain and Finance (DBOM&F) and other public/private partnership models.

6. LOCAL MUNICIPAL IMPACT

The deployment of the rapid transit network to serve York Region municipalities is critical to the realization of the Smart Growth objectives established in Official Plan and Secondary Plan documents. The funding of the rapid transit network will assure the local municipalities and their constituents that growth will be accompanied by a robust rapid transit network.

7. CONCLUSION

This report provides the interim results of the Viva Network Implementation Plan update. It reviews and updates the original 2003 6-step network plan, including detailed discussion regarding key factors such as growth and subway extensions that are integral to establishing the go-forward strategy. The report concludes that the Network Implementation Plan for the period 2007 to 2010 is clearly emerging and that critical pieces are falling into place for subsequent Phase 2 components to 2014. Up to 2021, the need is clear to extend the rapidway system further along the major designated routes to the north, east and west and the validity of Phase 3 beyond 2021 is confirmed.

Feedback from Committee, Council and local municipalities will be used to finalize the updated plan, along with a financial overview of the reset of the rapid transit network. Staff will return with the final update plan in September 2007 and will seek Council's approval to pursue, based on its 2003 resolution, matching financial commitments from the federal and provincial governments to support the build-out of Phase 2 and Phase 3 and/or other strategies to undertake this work.

The Senior Management Group has reviewed this report.

(The attachments referred to in this clause are attached to this report.)