



ADMINISTRATIVE REPORT

Report Date: September 28, 2010
Contact: Jerry Dobrovolsky
Contact No.: 604.873.7331
RTS No.: 8301
VanRIMS No.: 08-2000-20
Meeting Date: October 5, 2010

TO: Standing Committee on Transportation and Traffic
FROM: General Manager of Engineering Services and Director of Planning
SUBJECT: TransLink's UBC Line Rapid Transit Study Shortlist of Alternatives

RECOMMENDATION

THAT Council support TransLink's recommended Rapid Transit Alternative Shortlist be brought forward for additional evaluation and analysis and further public consultation as part of the UBC Line Rapid Transit Study (the study). Noting that the shortlist includes options that would meet existing and projected demand for Central Broadway as well as provide alternatives for serving UBC.

CITY MANAGER'S COMMENTS

The City Manager recommends support for the Rapid Transit Alternative Shortlist being brought forward for further analysis and consultation by the study sponsors; TransLink and the Ministry of Transportation and Infrastructure. The results of the UBC Line Rapid Transit Study will support decision-makers at TransLink and the Province in identifying a preferred rapid transit solution for the Broadway corridor. Making a regional connection to the significant transit demand in Central Broadway is a key priority as identified and supported in the draft Regional Growth Strategy (RGS), September 2010).

COUNCIL POLICY

Transportation priorities (1997): Pedestrians, bicyclists, and transit users; access for goods movement; and less reliance on cars.

Principles for rapid transit provision: Council approved principles for the Millennium Line (1998) and Canada Line (2003), to provide City input in the planning stages of these rapid transit lines.

Rapid transit in the Broadway Corridor:

- *1997: Council approved the City Transportation Plan which includes a rapid transit line along the Broadway Corridor with possible extension to UBC. The line should serve the needs of city riders as well as others regional users, and should not result in a loss of local transit service.*
- *March 2000: (Phase II Commercial Drive West) Council recommended that the SkyTrain continue west from Vancouver Community College, via the False Creek Flats and Broadway to Granville Street as part of the Millennium Line Construction Program, with a rapid bus extension to UBC.*
- *April 2002: (Vancouver Transit Strategy) Council reaffirmed its support for the Millennium Line extension as a subway serving the Central Broadway Corridor to Granville Street.*
- *January 2008: Council passed a motion that the City of Vancouver opposes cut and cover construction for the completion of the Millennium Line through commercial, congested or confined rights-of-way.*
- *April 2010: Council approved Vancouver's rapid transit principles for the Broadway Corridor to guide staff involvement in the TransLink-led UBC Line Rapid Transit Study. At this time, Council also requested that staff report back at key study milestones including after the development and public review of TransLink's rapid transit alternative shortlist.*
- *2009: The Greenest City Action Team (GCAT) unveiled "Vancouver 2020 - A Bright Green Future: An Action Plan for Becoming the World's Greenest City by 2020" which includes targets for Greener Communities. This includes green mobility (majority of trips on foot, bicycle and public transit) supported by increased density and proximity to services and amenities.*
- *February 2010: Council adopted the long-term environmental goals recommended by the Greenest City Action Team (GCAT) in their report "Vancouver 2020 - A Bright Green Future: An Action Plan for Becoming the World's Greenest City by 2020". Relevant goals include eliminating dependence on fossil fuels, and making walking, cycling, and public transit preferred transportation options.*

PURPOSE

This report responds to Council's request for updates at "key milestones" in TransLink's UBC Line Rapid Transit Study, including after public review of the shortlisted alternatives. The report provides an overview of the UBC Line Phase 2 consultation, describes the alternatives presented to the public, and presents TransLink's recommended shortlist of alternatives to be brought forward for detailed analysis and further public consultation.

BACKGROUND**The Need for Rapid Transit**

The Broadway Corridor is served primarily by the 99 B-line; the busiest bus route in North America with over 50,000 passengers per day and the 9 which carries an additional 30,000 passengers per day. When all the bus routes serving the Broadway corridor are included, there is well over 100,000 daily passengers travelling the corridor. This high ridership has placed significant pressure on the transit system and improvements have not kept pace. Service is currently nearing capacity and buses are full. During the morning rush, approximately 2,000 passengers are passed up at the Broadway-Commercial station and travel times throughout

the day are unpredictable. Early analysis on the Evergreen Line project indicates that there will be a major increase in passenger volumes through this station in 2014, that require significant station improvements to accommodate the transfers. Without an extension to Central Broadway the number of passengers being passed up at this location will be further exacerbated.

Passenger volumes are expected to grow and the regional bottleneck at Broadway-Commercial will further be exacerbated when the Evergreen Line comes into service.

The Broadway Corridor

The Broadway corridor as defined in the study is roughly 500 metres north and south of Broadway/10th Avenue, from Commercial Drive to UBC. This corridor is a regionally important corridor connecting major population, employment and institutional centres. Over half of all transit trips to the corridor originate outside of Vancouver.

Figure 1. Study Area Map



Source: Study area boundary provided by TransLink

Rapid transit in the corridor has been a priority since the 1990s and is identified in the 2008 Provincial Transit Plan, TransLink's Transport 2040 (2008) and the City of Vancouver's Transportation Plan, (1997).

The Broadway corridor includes Central Broadway (from just east of Main Street to just west of Arbutus) and UBC, the top two transit destinations outside of downtown. Central Broadway is the second largest employment centre in the Province. Significant unbuilt capacity exists under current zoning and policy and even greater employment and population growth is expected in the corridor resulting from new planning initiatives now underway. These include the Metro Core Jobs & Economy Land Use Plan—which will significantly increase job capacity in Central Broadway—as well as the ongoing Central Broadway Planning Program, Mount Pleasant Community Planning Program and West Point Grey Community Vision. Based on existing zoning and policies, population and employment in the city portion of the corridor are expected to grow by 30% to over 230,000 by 2041.

The 2004 TransLink Trip diary survey indicates that 24 hour transit mode share for Central Broadway is in the range of 20%. In order to meet the Provincial target for Metro Vancouver of 22% transit mode share by 2031 this will require large population and employment centres like Central Broadway to have a major increase in transit ridership. It is anticipated that Central Broadway would need to achieve a 44% transit mode share by 2031, something that is not possible with the existing transit system. A high capacity, regionally connected, efficient system connecting Central Broadway and an extension to UBC will be required to meet these objectives.

The Study

The shortage of transit capacity and the additional future growth in the corridor has led TransLink and the Province (the sponsors) to initiate a study to evaluate rapid transit options in the Broadway corridor from Commercial Drive to UBC.

The UBC Line Rapid Transit Study is being led by TransLink and jointly funded by TransLink and the Province. The City of Vancouver, the University of British Columbia (UBC), the University Endowment Lands (UEL), and Metro Vancouver are closely involved as partner agencies. The study comprises three phases:

Phase 1 Shortlist Identification (Spring 2009 – Spring 2010) *Complete*

This phase developed a preliminary shortlist of six alternatives to be brought forward for more detailed analysis and development in Phase 2. Phase 1 included consultation with a representative group of corridor and city-wide/regional stakeholders.

Phase 2 – Option Development and Evaluation (Spring 2010 – Winter 2011) *Ongoing*

The study is currently in Phase 2 with the first round of public consultation to present the shortlist of alternatives complete. The shortlist of alternatives is now undergoing a more detailed analysis and further public consultation later this year (see Appendix B for the Executive Summary and consultation Overview from Translink's "Consultation Report on Recommended Shortlist of Rapid Transit Alternatives April 15 to May 21, 2010"). The results of the analysis and public consultation will support decision-makers at TransLink and the Province in identifying a preferred rapid transit solution for the corridor. This is anticipated in early 2011.

Phase 3 – Design Development and Evaluation (timing to be determined)

Beyond the scope of the current study, Phase 3 will advance the detailed design and business case for the preferred option. Although the timing of this phase is unknown, the Provincial Transit Plan calls for the UBC Line to be complete by 2020.

Study Relationship to Draft Regional Growth Strategy (RGS), September 2010

On September 3, 2010 Metro transmitted Draft #3 of the Regional Growth Strategy for a final round of comments (due by October 15, 2010). The new RGS when enacted will replace the current regional growth strategy, the Livable Region Strategic Plan (LRSP, 1996). Council has consistently supported the broad Goals and Strategies of earlier drafts, and staff has prepared a report with detailed comments on the latest RGS draft, targeted for consideration by Council's Planning and Environment Committee on October 7, 2010.

The draft RGS (Sept. 2010) proposes that there should be two priorities for the staging of rapid transit expansion within the region, as follows:

- **Priority 1:** the Evergreen Line connecting Coquitlam's urban centre to the Lougheed urban centre; and,
- **Priority 2:** connecting Surrey Metro Centre to other Urban Centres south of the Fraser; and, connecting the central Broadway area in Vancouver to the existing rapid transit network serving the eastern and southern parts of the region.

The draft RGS states that only after implementation of Priority 1 and Priority 2 could enhanced service linking the UBC campus and the western portion of the Broadway Corridor to the Metro Core (i.e. Central Broadway) be considered.

Metro has acknowledged that there has not been complete consensus on how transit investment priorities are addressed in the RGS, and Metro is working with TransLink and City staff to further refine the language in the Strategy. Staff believe it is premature to make conclusions about the relative priority of portions of rapid transit corridors currently under study. In addition to concerns that this approach ignores important technical information that will assist in understanding and prioritizing rapid transit investments, it also contributes to public uncertainty about the UBC Line Rapid Transit study and the merit of their participation.

DISCUSSION

This section is organized into two main parts. The first part presents the key themes heard from the public for rapid transit in the Broadway corridor, and the second presents an overview of TransLink's recommended shortlist of rapid transit alternatives.

The study began in June 2009 and TransLink and the study partners have had ongoing engagement with corridor and city-wide/regional stakeholders including resident groups, community associations, and business groups and organizations like the Board of Trade and the Urban Development Institute. In a separate but related process, the public was also asked to provide input on the City's Rapid Transit Principles for the Broadway corridor. The City principles are intended to guide City staff participation in the UBC line Rapid Transit Study and the future implementation of a rapid transit line. During the City's Rapid Transit Principles consultation a number of recurring themes were heard from the public. The following outlines four of the key themes.

1.0 Key Themes for Rapid Transit in the Broadway Corridor

There is strong public support for a long-term rapid transit solution in the Broadway Corridor that improves transit service and connectivity, helps achieve legislated environmental targets, and enhances the local community.

1.1 Delivers a long-term solution

The success of the Canada Line and the high daily ridership demonstrates the attractiveness of rapid transit. A high capacity rapid transit solution in the Broadway corridor will improve access to key local and regional destinations, encourage economic growth and connect major destinations, especially employment in Central Broadway. A high capacity line will also help support the targets in the Provincial Transit Plan to increase transit mode share for Metro Vancouver from 12% to 17% by 2020 and to 22% by 2030.

The Broadway corridor is a regionally important destination and the impacts of the broader transit network need to be considered when evaluating the rapid transit alternatives. For example the Evergreen Line will increase ridership and demand on the network and the solution for the Broadway corridor will need to consider this and respond especially at bottlenecks like Commercial-Broadway station.

During Vancouver's principle consultation the public noted numerous concerns about capacity. The public wants to ensure that the rapid transit solution identified for the Broadway corridor anticipates growth and delivers an appropriate level of capacity. This is supported in Vancouver's rapid transit principles under Transportation and Urban Development. TransLink's Phase 2 alternative analysis is expected to provide information on capacity and ridership for each of the shortlisted alternatives.

1.2 Supports Legislated Environmental Targets

The Province has legislated provincial targets to double transit ridership and reduce GHGs 33% by 2020. Additionally, TransLink and the City have set regional non-auto mode share targets of 50% by 2040 and 2020 respectively. All of these targets rely on a significant reduction in driving and a dramatic increase in transit capacity, walking and cycling. Today, the Broadway corridor has a large and growing concentration of jobs and residents, and is a major destination important to both local and regional interests. The corridor is a strategic opportunity to implement rapid transit with a guaranteed transit ridership and a transit growth potential unparalleled in the region. The public supports a rapid transit solution that achieves environmental targets, reduces carbon emissions, integrates with the local transit network and encourages walking and cycling.

Reducing GHG emissions and supporting targets is strongly supported in Vancouver's Rapid Transit Principles. The principles also address the need to integrate rapid transit with walking, cycling and local transit. During Phase 2, the UBC Line Rapid Transit study evaluation will identify and present the environmental benefits and impacts of each alternative.

1.3 Construction Impacts

The construction of the Canada Line has left a lasting negative impression on the public. While many see the benefits of the Canada Line and the attractiveness of reliable high capacity transit, there is still a lot of concern over construction impacts. A high level summary of the construction impacts for each of the shortlisted alternatives will be provided through the UBC Line Phase 2 evaluation. In Phase 3 - Design Development and Evaluation, the details of specific construction impacts for the preferred alternative will be presented and mitigation strategies identified.

1.4 Community Fit

During public consultation, many residents, business owners and organizations expressed concern about how the rapid transit solution would integrate into their neighbourhoods. There was an interest in connecting future rapid transit with walking, cycling, and maintaining local transit service, while not impacting the character of their communities.

Mitigating construction impacts and enhancing community fit are part of Transportation, Urban Development and Social/Community/Business themes included in Vancouver's Rapid Transit Principles. TransLink's Phase 2 evaluation will provide more detail and a greater understanding of the alternatives and how each alternative compares based on the themes identified in Vancouver's principles.

2.0 Rapid Transit Alternative Shortlist

This section provides a brief overview of TransLink's Phase 1 alternative evaluation and presents TransLink's recommended rapid transit alternative shortlist to be brought forward in Phase 2 for more detailed evaluation.

In Phase 1 TransLink conducted a high-level review of rapid transit alternatives for the Broadway corridor. The alternatives included three rapid transit technologies (for more detailed information on the technologies please see Appendix C for TransLink's Technology Fact Sheets):

Bus Rapid Transit (BRT) -	a bus service that operates in a reserved lane or on street-level dedicated right-of- way separated from traffic. This provides further separation than the B-Line at peak periods with no other vehicles travelling in the bus lane.
Light Rail Transit (LRT) -	a rail-based system that operates in a reserved lane or on a street-level dedicated right-of- way separated from traffic. The Portland Max or Seattle Link are LRTs,
Rail Rapid Transit (RRT) -	an automated rail-based system that must operate in a completely separate right-of-way. The Expo, Millennium and Canada Lines are all RRT systems.

The Phase 1 evaluation focused on identifying the best performing alternatives within each technology:

The alternatives that performed best in the high-level review share a number of characteristics:

- they serve major activity centres in the study area e.g. Central Broadway;
- they provide connections to existing rapid transit networks e.g. Canada Line, Millennium Line, Expo Line;
- they serve current and future centres of employment and population (e.g. Central Broadway); and
- they provide a direct route, minimizing travel time and cost.

From the high-level evaluation a shortlist of six alternatives emerged. From April 15th to May 22, 2010 TransLink presented their preliminary rapid transit shortlist to study stakeholders and the public through a series of 6 community workshops and an online forum and questionnaire. The consultation process was highly successful with close to 400 people participating in the workshops and 1,850 comments gathered. The online forums also provided a great deal of thoughtful commentary and dialogue. All of the comments received through the consultations and weekly summaries of the online discussions are available through TransLink's website at: bepartoftheplan.ca.

A brief description of the shortlisted alternatives and their key features is provided below. Appendix A includes illustrations depicting the routes and technologies for each of the shortlisted alternatives.

Please note: the alternatives at this stage are presented at a high-level only. The illustrations depict broad “felt-tip” lines on a map. Precise horizontal and vertical alignments (i.e. position within the street or whether it is at street-level, elevated or underground) and station locations have not yet been identified. These elements will be developed, detailed and presented as part of Phase 2 consultation this fall.

TransLink’s Recommended Alternative Shortlist:
(as presented to the public during the April/May study consultation)

Best Bus Alternative

The Best Bus alternative is a ‘low-cost’ approach that improves upon existing bus services on Broadway and parallel corridors. Improvement measures may include more frequent service, express buses directly to UBC, new vehicles, new routes, and low cost infrastructure improvements such as the implementation of transit signal priority or bus lanes. The Best Bus alternative will be a basis of comparison with the other shortlisted alternatives.

Bus Rapid Transit Alternative (BRT)

The BRT alternative is a direct bus route between Commercial-Broadway and UBC (via Broadway, 10th Avenue, and University Boulevard). The BRT alternative operates in its own lane with some degree of signal priority through intersections and greater separation from traffic than the current 99 B-Line.

The BRT alternative provides a connection to the existing rapid transit stations at Commercial-Broadway (Expo and Millennium Lines) and Broadway-City Hall (Canada Line) and serves major activity centres in the study area (e.g. Central Broadway, VGH).

Light Rail Transit Alternative 1 (LRT 1)

The LRT 1 alternative connects Commercial-Broadway and UBC via Broadway, 10th Avenue and University Boulevard. This alternative links to the Canada Line at Broadway-City Hall station. Like the BRT option, this option operates in its own lane with some degree of signal priority through intersections.

Within this alternative, there are two options identified for the section between Commercial-Broadway and Broadway/Main Street:

- Option A is a direct route that connects Commercial-Broadway to Main Street via Broadway; and
- Option B connects Commercial-Broadway to Broadway/Main Street via Great Northern Way and VCC-Clark station. While this route is longer than Option A, it connects to the VCC-Clark station and provides access to the Great Northern Way Campus.

Light Rail Transit Alternative 2 (LRT 2)

The LRT 2 alternative is similar to the LRT 1 alternative, but with an additional route between Main Street-Science World and Broadway/Arbutus along the south side of False Creek via the City’s downtown historic railway corridor. This additional Southeast False Creek route provides access to Granville Island and connects to both the Main Street station (Expo Line) and Olympic Village station (Canada Line).

Rail Rapid Transit Alternative (RRT)

The RRT alternative follows a direct route (Commercial-Broadway to UBC via Broadway, 10th Avenue, and University Boulevard) similar to the LRT 1 and BRT alternatives. This alternative operates completely in its own right-of-way with the highest degree of separation from traffic.

Within this alternative there are two options identified for the section between Commercial-Broadway and Broadway/Main Street:

- Option A connects Commercial-Broadway to Main Street directly via Broadway; and
- Option B is a shorter route that extends the Millennium Line from VCC-Clark station to Broadway/Main Street and provides access to the Great Northern Way Campus.

Combination Alternative (RRT/LRT)

The RRT/LRT combination alternative includes an RRT extension of the Millennium Line from VCC-Clark station to Arbutus Street via Broadway, and a LRT route from Main Street-Science World to UBC via Southeast False Creek, Broadway/Arbutus, 10th Avenue and University Boulevard.

The RRT section is an extension of the existing Millennium Line, and offers direct connections to the Expo Line (via the existing Millennium Line station at Broadway-Commercial) and to the Canada Line at Broadway-City Hall station. An RRT - LRT transfer point is located at Broadway/Arbutus.

The LRT section of this alternative is similar to the LRT 2 alternative which provides access to Granville Island and connects to both the Main Street station (Expo Line) and Olympic Village station (Canada Line).

Additional Alternatives

Through the workshops and online questionnaire, the public confirmed support for the 6 alternatives noted above, and suggested a number of additional options. The 3 most frequently mentioned were:

- A combination alternative extending RRT to Granville or Arbutus with a bus-based system to UBC;
- A combination alternative extending RRT to Arbutus with LRT from UBC to Downtown; and
- An alternative that considers parallel or multiple corridors.

TransLink has reviewed the additions suggested by the public and recommends that:

- As part of the detailed Phase 2 evaluation process, an RRT/BRT combination be reviewed and assessed to see if there is merit in adding some form of this combination to the shortlisted alternatives;
- A rapid transit alternative similar to LRT 2 and the Combination alternatives, but that connects Commercial Drive to UBC with an additional rapid transit connection to Downtown not be added to the shortlist, as it falls outside the scope of this study and doesn't explicitly meet study criteria of addressing the transit needs in the Broadway

Corridor. However, the downtown link will be considered through the Strategic Network Review, the Regional Rapid Transit Plan, and updates to Transport 2040. UBC Line Rapid Transit study alternatives will also be reviewed to ensure that future LRT expansion opportunities into the downtown are not precluded; and

- A new multiple parallel routes alternative not be added to the shortlist, since a multiple corridors approach is already being explored as part of the best-bus alternative.

Next Steps

Over the past few months, TransLink has started the evaluation of the shortlist of alternatives in collaboration with the City of Vancouver and other partner agencies through the project working groups, technical committees and steering committees. As this evaluation process moves forward they will also be assessing whether a modified RRT/BRT combination should be included. The alternatives are being assessed using a Multiple Account Evaluation (MAE). An MAE provides a comprehensive analysis of a wide range of factors to understand impacts, costs and benefits for the alternatives being considered. Alternatives are evaluated from a number of different perspectives or “accounts”. Specific accounts include: economic, environmental, financial, social and community, transportation, urban development, and deliverability.

In the fall TransLink will present initial designs of the shortlist as well as the results of the MAE for each of the alternatives and the public will begin to see how each alternative compares. Information requested during the shortlist consultation such as— specific alignments (both horizontal and vertical), station locations, costing, ridership and travel times will be provided.

Following the presentation in the fall TransLink will make any necessary adjustments to the alternatives and evaluation based on input received and will complete the final evaluation. In early 2011 TransLink will present a summary of the findings of the evaluation. This information will be used by decision makers to determine the best rapid transit solution for the corridor.

FINANCIAL IMPLICATIONS

There are no financial implications.

CONCLUSION

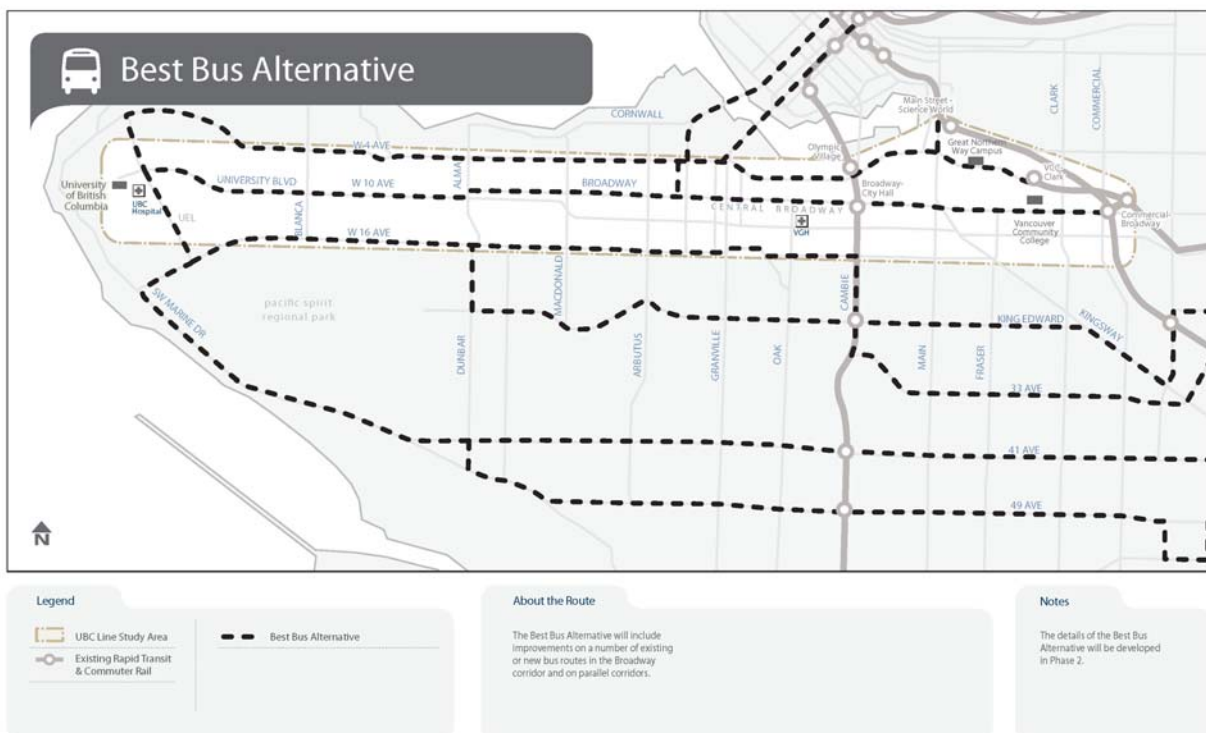
TransLink has shortlisted six rapid transit alternatives for the Broadway corridor. These alternatives will be brought forward for detailed analysis and further public consultation in the fall. Staff are recommending that Council support the six alternatives and the further examination of an RRT/BRT combination in collaboration with the study working groups, technical committees and steering committees.

* * * * *

TransLink's Recommended Alternative Shortlist: (as presented to the public during the April/May study consultation)

The following illustrates the six shortlisted alternatives presented to the public as part of TransLink's UBC Line Rapid Transit Study consultation, spring 2010. The illustrations depict broad "felt-tip" routes along the corridor for each alternative and rapid transit technology or combination of technologies. Precise horizontal and vertical alignments (i.e. position within the street or whether it is at street-level, elevated or underground) and station locations have not yet been identified. These elements will be developed, detailed and presented as part of Phase 2 consultation later this fall. For clarity within this report, TransLink's graphics have been converted to gray-scale. The original colour maps presented are available through TransLink's beartothepan.ca website.

www.translink.ca/en/Get-Involved/Be-Part-of-the-Plan/Alternatives.aspx.









TransLink's Consultation Report on Recommended Shortlist of Rapid Transit Alternatives April 15 to May 21, 2010

The TransLink led UBC Line Rapid Transit study is currently in Phase 2 with the first round of public consultation to present the shortlist of alternatives complete. The following Executive Summary and consultation Overview is taken from Translink's "Consultation Report on Recommended Shortlist of Rapid Transit Alternatives April 15 to May 21, 2010". The following provides a brief summary of the consultation process. For more information on the process and public feedback, please see the full report available through TransLink's bepartoftheplan.ca website:

www.translink.ca/~media/documents/get%20involved/bepartoftheplan/ubc/feedback%20reports/ubc%20line%20phase%201%20final%20consultation%20summary%20report.ashx

Version: 21 June 2010

Executive Summary

The five-week consultation on the recommended shortlist of rapid transit alternatives for the UBC Rapid Transit Line Study undertaken by TransLink from April 15 to May 21, 2010 involved multiple opportunities for stakeholders and the public to get information and make comments both offline (workshops) and online (website).

To raise awareness about the consultation and drive participation at the workshops and online, a number of communications activities took place to raise awareness and encourage participation in the UBC Rapid Transit Line Study consultation. This included information kiosks in high-traffic locations along the Broadway corridor, advertising in several community newspapers, two community email updates and direct phone calls to key groups such as Central Broadway businesses.

The TransLink "Be Part of the Plan" website offered comprehensive information to support the consultation including videos, fact sheets and a comprehensive overview of each alternative. The website also had links to an online discussion forum and questionnaire. The website had more than 30,000 page views throughout the consultation period, and more than 200 comments were posted on the online discussion forum.

Six consultation workshops took place at various locations in the community, attracting approximately 390 participants.

More than 1,850 comments were gathered and tracked throughout the consultation. This report summarizes common themes, requests for information and alternatives that emerged from the public consultation, as well as how TransLink will incorporate this input into the next phase of planning. All comments are available in the meeting minutes and on the online discussion forum at bepartoftheplan.ca.

Of the nine common themes that were tracked, the three leading themes were:

- Route/station design,
- Community impacts, and
- Improved transit service.

The public consultation specifically asked members of the public if they had any questions or concerns with the range of recommended alternatives serving as the starting point for more detailed evaluation in Phase 2. There were more than

Version: 21 June 2010

200 specific requests for information. The most requests for information were about specific route questions, followed by cost of the different alternatives and "Other" (including safety, traffic flow and environmental impact).

Several additional alternatives were suggested, in addition to the six outlined by TransLink. The most common suggestion was exploring the use of parallel corridors (such as 4th Avenue and 16th Avenue) to disperse demand and an option that extended rapid rail transit to Arbutus-Granville and a bus-based system to UBC.

Version: 21 June 2010

Overview

The Broadway corridor has been identified for rapid transit expansion since the 90s, and was recently confirmed a priority in the 2008 Provincial Transit Plan and Transport 2040, TransLink's long-term transportation strategy. The UBC Line will address growing demand, help reduce greenhouse gases, support community and economic growth, and contribute to a sustainable transportation system for the region.

Scheduled to be completed in 2011, the UBC Line Rapid Transit Study is a multi-phase technical study of the rapid transit service alternatives along the Broadway corridor from Commercial Drive west to UBC. Jointly funded by TransLink and the Province of B.C., the study will identify and evaluate the rapid transit technology and alignment alternatives, and determine the preferred alternative through rigorous evaluation. TransLink and the Province are working in partnership with the City of Vancouver, UBC, University Endowment Lands (UEL) and Metro Vancouver.

The three phases of the UBC Line Rapid Transit Study are:

- Phase I (Summer 2009 - Spring 2010): Identify shortlist alternatives.
- Phase II (Spring 2010 – Early 2011): Design development of the alternatives. Evaluate the alternatives.
- Phase III (To be determined): Design of the preferred alternative, phasing and timeline for implementation.

The alternatives for the UBC Line are being evaluated using a Multiple Account Evaluation (MAE) approach, which is used globally to evaluate potential transportation investments. An MAE provides a comprehensive analysis of a wide range of factors to understand impacts, costs and benefits for the alternatives being considered. Alternatives are evaluated from a number of different perspectives or "accounts". For the UBC Line study the accounts being used are based on global best practice and past local and provincial experience. The accounts identified include: economic, environmental, financial, social and community, transportation, urban development and deliverability considerations.

At the end of Phase 1, TransLink hosted a consultation on the recommended shortlist of rapid transit alternatives for the UBC Line Rapid Transit Study from April 15-May 21, 2010. Comments were collected and summarized in five weekly reports. This report summarizes the findings from those weekly reports.

Version: 21 June 2010

To raise awareness about the consultation and drive participation at the workshops and online, the following communications activities took place:

- **Information kiosks:** From April 19 to May 3, members of the consultation team were in local communities and neighbourhoods, including community shopping districts, SkyTrain stations, Vancouver General Hospital lobby, and on campus at UBC and Vancouver Community College. Information was also posted at community centres along the Broadway corridor. Team members handed out approximately 3,500 postcards with information about the workshops and website.
- **Advertising:** Ads in local community papers informed the public of the study and how to get involved in the workshops and website consultation. Ads were placed in *Ubyssy* (April 16), *Vancouver Courier* (April 30; May 7), *WestEnd* (April 29; May 6) and *The Province* (May 3; May 10).
- **Community email updates:** Two community updates were sent to more than 200 stakeholders, informing them of the workshops and website, and asking them to share this information with members of the community.
- **Direct outreach:** Consultation team members made phone calls to key groups, such as Central Broadway businesses, to ensure awareness and encourage participation in the consultation.

The TransLink website offered comprehensive information to support the consultation. This included:

- **Video:** An online video presented an overview of transportation challenges and opportunities.
- **Technology videos and fact sheets:** Three short video clips and fact sheets on each of the rapid transit technologies were available on the TransLink website to give the public an understanding of the technologies under consideration.
- **Overview of each alternative:** The TransLink website also provided information about each shortlist alternative, including a map, images and brief discussion about the alternative.

Version: 21 June 2010

Comments from the UBC Line Rapid Transit Study were collected from four sources:

1. **Online *Be Part of the Plan* Forum:** Information about the study, how the shortlist was derived and the six alternatives were presented on bepartoftheplan.ca, which attracted more than 30,000 page views. Each of the six alternatives listed in the study had its own discussion area in the online forum. More than 200 comments were posted over the five-week consultation period.
2. **Online questionnaire:** 2,298 people responded to a questionnaire posted on bepartoftheplan.ca. The comments collected from the open-ended questions ("What specifically should we consider about your community as we develop the alternatives?" and "Do you have any questions or concerns with this range of alternatives serving as the starting point for more detailed evaluation in Phase 2?") were tracked and tabulated.
3. **Consultation workshops:** Six workshops took place during the consultation period on the recommended shortlist: on April 15 and 22, May 4, 6, 11 and 13. Approximately 390 members of the public attended these workshops. Their feedback was gathered through meeting reports that listed all flipchart comments and roundtable report backs. In addition, approximately 90 people filled out individual Stakeholder Experience Feedback Forms.
4. **Buzzer blog:** There were 32 comments related to the UBC Line Rapid Transit Study on TransLink's Buzzer blog. Other external blogs also discussed the shortlist alternatives. The team monitored the discussions; however, the comments were not tracked for this report.

**TransLink's Technology Fact sheets:
(as presented to the public during the April/May study consultation)**

The following fact sheets describe the 3 rapid transit technologies, Bus Rapid Transit (BRT), Light Rail Transit (LRT), and Rail Rapid Transit (RRT being considered for the Broadway corridor as part of TransLink's UBC Line Rapid Transit Study. This information was developed and presented by TransLink and colour versions are available online through TransLink's bepartoftheplans.ca website.

www.translink.ca/en/Get-Involved/Be-Part-of-the-Plan/Technologies.aspx.

UBC Line Rapid Transit Study

Technology Overview



BUS RAPID TRANSIT

TransLink and the Province of B.C. are funding a study to look at options for rapid transit service along the Broadway corridor from Commercial Drive west to the University of British Columbia (UBC). A series of fact sheets have been developed to describe the rapid transit technologies being considered. This fact sheet focuses on bus rapid transit. A comprehensive technical study and thorough stakeholder and public consultation process will help determine the best rapid transit solution.

What is Bus Rapid Transit?

Bus Rapid Transit (BRT) is a driver-operated rapid transit technology using buses that can be powered by diesel, compressed natural gas (CNG), or diesel-electric engines. Electric trolley buses can also be used with the appropriate infrastructure. BRT can fit into a variety of street types:



Street-level reserved lane



Street-level fixed



Street-level dedicated



Tunnel (with sufficient ventilation)

BRT systems commonly operate at street level, in reserved, bus-only lanes. They can also have a dedicated, street-level right of way. BRT vehicles are separated from other road users, sharing space with other vehicles and pedestrians only at signalized intersections. In its full implementation, BRT resembles LRT but with buses rather than rail vehicles.

Key BRT Features

High-frequency service that typically ranges from every 2 minutes in peak periods to up to 15 minutes in off-peak periods. Dedicated lanes, widely-spaced stops and signal priority at intersections allow the system to achieve consistent journey times. Sophisticated traffic signal control gives BRT priority while minimizing the delay to other traffic.

Medium-capacity service at an average speed of 30 km/h, BRT can carry 2,000 to 3,000 passengers each hour in each direction. Higher capacity service can be provided if stations allow multiple buses to stop simultaneously and include passing lanes. These features require significantly more street space.

Unique branding sets BRT apart from regular and express bus service and makes the system easy to identify.

High-quality stop infrastructure that is designed to integrate into the communities the system serves. Stations may be equipped with shelters that feature electronic schedule information, closed-circuit TV for security, ticket machines and wayfinding information. Stops are typically spaced from 400 m to 1.5 km apart, depending on the adjacent land uses.

Off-bus ticketing allows for faster, more efficient boarding. Ticket machines are conveniently located at stops so tickets can be purchased before boarding.

BUS RAPID TRANSIT



Multiple door, level boarding allows for faster, more efficient boarding at multiple entrance points. Level boarding, sometimes with the use of ramps, makes the system universally accessible.

BRT vehicles

BRT vehicles are typically 12 m or 18 m articulated buses, accommodating approximately 100 people with half standing and half seated. Vehicles use low-floor, kneeling technology and/or ramps to facilitate level boarding for universal accessibility. Vehicles can be distinctively branded to improve community fit and distinguish them from other bus services.

Examples of BRT systems from around the world

A number of BRT systems have been developed around the world. For example, Ottawa's Transitway BRT system has been operating since 1983, and is one of the most extensive and successful implementations of BRT in North America. The Ottawa example operates like a bus highway, travelling on normal streets then routing on to the BRT route for increased speed and service.



A BRT stop in Eugene, Oregon



BRT in Los Angeles



Ottawa's BRT system

For Information

Colleen Sondermann, *TransLink*
1600-4270 Kingsway, Burnaby, B.C.
604.453.4687 or Colleen.Sondermann@translink.ca

UBC Line Rapid Transit Study

Technology Overview



LIGHT RAIL TRANSIT

TransLink and the Province of B.C. are funding a study to look at options for rapid transit service along the Broadway corridor from Commercial Drive west to the University of British Columbia (UBC Line). A series of fact sheets have been developed to describe the rapid transit technologies being considered. This fact sheet focuses on light rail transit. A comprehensive technical study and thorough stakeholder and public consultation process will help determine the best rapid transit solution.

Key LRT Features

High-frequency service that typically ranges from every 2 minutes in peak periods to up to 15 minutes in off-peak periods. Dedicated rights of way, widely-spaced stops in lower density areas and signal priority at intersections allow the system to achieve attractive and reliable journey times. Sophisticated traffic signal control gives LRT priority while minimizing the delay to other traffic.

High-capacity service at average speeds of 25-40 km/h, LRT typically can carry 6,000 to 10,000 passengers each hour in each direction.

High quality stop infrastructure that is designed to integrate into the communities the system serves. Stations may be equipped with shelters that feature electronic schedule information, closed-circuit TV for security, ticket machines and wayfinding information. Stops are typically spaced from 800 m to 1.5 km apart, depending on the adjacent land uses. Stops in highly-populated areas are often closely spaced, especially for LRT systems that operate at street level.

Improved accessibility with low-floor LRT vehicles that allow level boarding from slightly raised platforms. Retractable ramps are often used for level access for mobility devices.

Powered by electricity, keeping vehicle noise and point-of-use emissions low.

What is Light Rail Transit?

Light Rail Transit (LRT) is a driver-operated rail transit technology using trains of one or more vehicles that are powered by electricity from an overhead wire. LRT systems can fit into a variety of street types:



Street-level
fixed



Street-level
dedicated



Elevated



Tunnel

LRT can operate at street level in a protected right of way, at street level in a dedicated lane, above ground on an elevated guideway, or below ground in a tunnel. A system can use a combination of these vertical alignments to best suit a given corridor. A high level of separation from other traffic is typically provided, with other road users crossing the LRT tracks only at signalized intersections.

LIGHT RAIL TRANSIT



Safety features include traffic signal control and physical barriers to support the safe integration of LRT with other urban travel modes, including walking and cycling.

LRT vehicles

Modern light rail vehicles can range in length from 30 to 70 m, seating up to 90 people per vehicle and accommodating an additional 150 or more standees. Single vehicles can be coupled together to form higher capacity trains.

While many older LRT systems use high-floor vehicles and a range of means to provide accessibility, modern LRT systems use low-floor cars and station platforms only slightly higher than a normal curb. Low-floor cars have become the standard for new systems worldwide and are available from a range of manufacturers, with the trend being toward standard, modular designs that can be customized in appearance to local desires.

Streetcars are a lower-capacity and lower-speed variant of LRT, operating smaller cars typically with a lower degree of separation from other traffic. These factors combined with close stop-spacing make them convenient for short-distance trips but less suited for longer distance, higher demand corridors.

Examples of LRT systems from around the world

Hundreds of LRT systems are in operation around the world in cities such as Calgary, Portland, Houston, Dublin and Lyon. In addition, many historic systems are undergoing revitalization efforts to improve service with modern technology. There are just under 30 LRT systems operating in North America.



LRT branded to fit into the community in Montpellier, France



The LRT system in Lyon, France is universally accessible



An LRT train in Lyon, France

For Information

Colleen Sondermann, TransLink
1600-4270 Kingsway, Burnaby, B.C.
604.453.4687 or Colleen.Sondermann@translink.ca

UBC Line Rapid Transit Study

Technology Overview



RAIL RAPID TRANSIT

TransLink and the Province of B.C. are funding a study to look at options for rapid transit service along the Broadway corridor from Commercial Drive west to the University of British Columbia (UBC). A series of fact sheets have been developed to describe the rapid transit technologies being considered. This fact sheet focuses on rail rapid transit. A comprehensive technical study and thorough stakeholder and public consultation process will help determine the best rapid transit solution.

What is Rail Rapid Transit?

Rail Rapid Transit (RRT) is a driver-operated or driverless rapid transit technology using multiple-car trains powered by electricity that is collected from a third rail or overhead wire. RRT systems need to be fully separated from other traffic, requiring a dedicated right-of-way at street level within a fenced rail corridor, on elevated structures or in a tunnel.



Street-level
dedicated



Tunnel



Elevated

Key RRT Features

High-frequency service that typically ranges from every 90 seconds in peak periods to 10 minutes in off-peak periods.

High-capacity at average speeds of 40 km/h. Metro Vancouver's SkyTrain system can carry 10,000 to 25,000 passengers each hour in each direction, with other RRT systems around the world carrying significantly more passengers.

Reliable journey times are achieved because RRT systems operate completely separated from other traffic.

More complex stop infrastructure is required for RRT systems. Large stations are necessary to provide high platforms and separate pedestrians fully from the rail track. Stations provide a high degree of weather protection, and may be equipped with electronic schedule information, closed-circuit TV for security, ticket machines and wayfinding information. Faregates or turnstiles are often employed in stations to control access and enforce fares. Stops are typically spaced from 800 m to 2.5 km apart, depending on the land uses the system serves.

Multiple door, level boarding allows for faster, more efficient boarding at multiple entrance points. Level boarding, sometimes with the use of ramps, means the system is universally accessible.

Powered by electricity, keeping vehicle noise and point-of-use emissions low.

RAIL RAPID TRANSIT



RRT vehicles

RRT vehicles allow level boarding for universal accessibility. Additional vehicles can be coupled together to increase capacity at peak times.

RRT vehicles range from 12 m to 23 m in length, accommodating up to 200 people per vehicle. Vehicles normally have fewer seats and more standing space than other forms of rapid transit to allow greater capacity in corridors with many shorter trips but can be coupled to increase capacity.



Metro Vancouver's Expo Line

Examples of RRT systems from around the world

Metro Vancouver's Canada Line and SkyTrain are local examples of RRT systems, and are considered smaller RRT systems. While of an appropriate size for Metro Vancouver, other large-scale RRT systems are often referred to as the Subway, Metro or Underground and are found in major cities worldwide, including Toronto, Montréal, New York, Washington D.C., London, Paris, Berlin, Tokyo, Hong Kong and Beijing.



Metro Vancouver's Millennium Line



Metro Vancouver's Canada Line

For Information

Colleen Sondermann, *TransLink*
1600-4270 Kingsway, Burnaby, B.C.
604.453.4687 or Colleen.Sondermann@translink.ca



translink.ca/ubcline

