THE BIG MOVE BASELINE MONITORING REPORT

APPENDIX C: BUILDING RAPID TRANSIT

September 2013
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**Introduction**

Building a regional rapid transit network is an essential component of transforming the region’s transportation network. The Big Move identified several rapid transit projects that will link every GTHA urban growth centre to the regional transit network. When fully implemented, the rapid transit network will total 1,725 kilometres of frequent and efficient transit service across the region.

Metrolinx prioritized these projects based on how the region is expected to grow over the next 25 years. The most important projects were described as the “Top Priority Transit Projects,” which is the focus of this chapter. Projects from the 15-year and 25-year plans are still in The Big Move, and will be advanced following implementation of the current priorities.

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These priority projects range in scope and are located throughout the GTHA. To date, more than $16 billion has been committed to projects that are in various stages of development and construction. For the Next Wave projects, there is still significant progress being made. These projects are in the planning phase of development, in preparation for funding commitments.

After planning work is complete, each project must obtain the necessary funding required to design and construct the service. This funding is currently based on government investment. Metrolinx has released an Investment Strategy that addresses recommendations for investment tools and for proposals to integrate transportation, growth and land use planning.
Purpose of This Appendix

The purpose of the Building Rapid Transit appendix is to provide an overview of the general process of delivering a transit project, and to document further detail on the progress in building the initial projects of the Regional Rapid Transit Network. This is a core Priority Action within The Big Move. Building Rapid Transit provides information on each of the First Wave and Next Wave projects.

The Process of Delivering each Project

The first step in delivering a rapid transit project is a series of planning studies to determine the vision, goals, location and broad concept of a corridor. These studies typically include early engineering feasibility analyses and estimating the cost of the project.

An environmental assessment (EA) is required for all large-scale infrastructure projects that have potential impacts on the environment. Certain projects that have more predictable environmental impacts or effects, and are more readily managed, can now follow a streamlined approach known as the Transit Project Assessment Process (TPAP).

Once funding is committed to a project, the design and engineering phase is completed, prior to construction. The time necessary to complete the construction of a transit project varies significantly in length depending on the scope, type, and construction approach of the project. An LRT project can take 4 years to build between 10 and 15 kilometres. Subway construction can take considerably longer to complete.
The Toronto-York Spadina Subway extension, for example, was announced and funded in 2006. Construction began five years later in 2011 and service will not commence until 2016. It is therefore important to understand that projects that have not yet begun construction are still making considerable progress. Progress on each of the projects is discussed in the following pages of this report.

First Wave Projects

Today, we are in the midst of the largest transit expansion program in a generation, with $16 billion invested in the First Wave regional rapid transit projects.
Mississauga Transitway

*A Highway 403 BRT project*

The Mississauga Transitway will be an 18-kilometre east-west busway that runs across Mississauga. Both MiWay and GO Transit will operate buses along the busway, which will connect Winston Churchill in the west to Renforth Drive in the east. Twelve stations will serve the BRT and provide key connection points between other routes and systems.

The planning and design stages of the project are complete. The eastern part of the corridor is currently under construction and the first four stations (Central Parkway, Cawthra Road, Tomken Road and Dixie Road) will open in late 2013. Construction of the remaining segments will begin by the end of 2013. Most of the project is expected to be complete by late 2015.

The Mississauga Transitway is an investment of $259 million. The federal government contributed $83 million through the Canada Strategic Infrastructure Fund. The City of Mississauga contributed $63 million. The Province of Ontario has provided $65 million to support the project, and is contributing another $48 million in GO Transit investments.

Union Pearson Express

*A rail link between Union Station and Pearson International Airport*

UP Express will operate on a 25-kilometre rail route. Twenty-two kilometres of the route will share Metrolinx’s upgraded Kitchener GO railway corridor, and a new rail spur, currently under construction, will connect the Kitchener line to Toronto Pearson Airport Terminal 1. Trains will depart Union Station and Toronto Pearson every 15 minutes and will make stops at Bloor and Weston GO stations.

The service will address a significant gap in airport-to-downtown travel in Toronto. Each year, more than five million cars travel between the airport and downtown, with this number expected to grow to nine million by 2020. This service is expected to remove 1.2 million car trips in its first year of operation alone.

All construction elements of the Union Pearson Express are underway, including upgrades to GO’s Kitchener rail line, and the connecting rail spur into Terminal 1 at Toronto Pearson. Service will commence in 2015 in time for the Pan/Parapan American Games.

The UP Express is funded with a full commitment from the Government of Ontario. The total cost for the project is $456 million.
Finch West LRT

A light rail transit line along Finch Avenue

The Finch West LRT line is an east-west transit route in Toronto. It is an 11-kilometre surface transit line that will extend from the planned Finch West station on the Spadina subway line, located at Keele Street, to Humber College.

The Finch West LRT is part of Metrolinx’s investment in rapid transit in Toronto. The LRT project will cost approximately $1 billion. As the major project funder, Metrolinx will own and be responsible for operation of the Finch West LRT.

There is currently a plan to extend the Finch West LRT to the Yonge Subway and to Pearson airport. Funding for these parts of the project has not been committed at this time.

Toronto-York Spadina Subway Extension (TYSSE)

An extension of the Spadina Subway to Vaughan Metropolitan Centre

The Toronto-York Spadina Subway Extension (TYSSE) will provide a critical 8.6-kilometre northern extension for the existing TTC subway system from Downsview Station to Vaughan Metropolitan Centre. This will be the first TTC rapid transit line to cross the City of Toronto boundary. The subway will connect to other regional rapid transit lines at Vaughan Metropolitan Centre, such as Brampton’s Züm and Viva’s Highway 7 Rapidway.

The 6.2-kilometre Toronto portion of the subway extension will connect Downsview Station to Steeles Avenue. The remaining 2.4-kilometre York Region portion will connect Steeles Avenue to Vaughan Metropolitan Centre. Six stations will be built along the extension and the TTC will continue to operate this line as part of its current service.

Planning and design stages of the project are now complete. The extension is currently under construction and service is expected to begin in 2016.

The TYSSE is a $2.6 billion, fully funded project, made possible through funding from three levels of government. In 2006, the Provincial government announced it would contribute $670 million, with an additional $200 million announced in 2007. The Federal government announced its $697 million commitment to the project through the Building Canada Fund in 2007. Both the City of Toronto and the Regional Municipality of York will provide the remaining funds, each contributing $526 million and $352 million, respectively.
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Appendix C: Building Rapid Transit

Eglinton Crosstown LRT
A light rail transit line across Eglinton Avenue from Mount Dennis to Kennedy Station

The Eglinton Crosstown LRT is a 19-kilometre east-west rapid transit line that will run along Eglinton Avenue from Mount Dennis (Weston Road) in the west to Kennedy subway station in the east. Approximately 10 kilometres of the central portion of the transit line will be tunneled underground. The remaining portion will continue on the surface eastward in a dedicated right-of-way, separate from traffic.

The Crosstown will reduce travel time along Eglinton and will link to 54 bus routes, three interchange subway stations and GO Transit. All Crosstown stations will accept the new PRESTO payment card, and the system, stations, and vehicles will be fully accessible.

Construction on the Crosstown is currently underway. In 2010, Metrolinx purchased four tunnel-boring machines. In 2011, construction began on the west launch site at Black Creek Drive and Eglinton Avenue, where the first tunnel boring machine was launched in spring 2013.

The Eglinton Crosstown project is fully funded as part of the $8.4 billion commitment from the Province of Ontario to transit expansion in Toronto. As the sole project funder, Metrolinx will own and be responsible for operating the LRT. The Crosstown project is the largest of the four LRT projects planned in Toronto with a total cost of approximately $5.2 billion (this figure includes project costs east of Ionview Road that had previously been accounted for in the Scarborough RT budget). The next phase of this project is to connect the Eglinton Crosstown to Toronto Pearson airport. Funding for this extension has not been committed.

Scarborough Rapid Transit (RT) Replacement and Extension
An upgrade and extension of the Scarborough rapid transit line

The Scarborough Rapid Transit project involves upgrading and extending the existing Scarborough RT. The current Scarborough RT first opened in 1985, and an upgrade of the system is necessary for it to continue operating.

Preliminary work has commenced on the replacement and extension of the existing Scarborough RT as per the signed November 2012 Master Agreement. The project is currently on hold based on Toronto City Council’s resolution of July 16, 2013.

Provincial funding of $1.48 billion remains available for the replacement of the Scarborough RT line.

Re-designing improvements required for Kennedy Station is being undertaken as part of the Eglinton Crosstown, and work is proceeding with this planning and design work.

In The Big Move, the replacement LRT is also planned to extend to Malvern Town Centre, approximately 1.5 kilometres north of the Sheppard East LRT. This extension is not yet funded and is not part of the scope of LRT work now on hold.
Sheppard East LRT
A light rail transit line along Sheppard Avenue

The Sheppard East LRT is a 13-kilometre transit line that will run along the surface of Sheppard Avenue from Don Mills Station to east of Morningside Avenue in Toronto. The project will include a new train yard at Conlins Road.

The Sheppard East LRT is part of Metrolinx’s investment in rapid transit in Toronto. In addition to Metrolinx’s contribution, the Federal government provided $333 million to the Sheppard East LRT project. The project will cost approximately $1 billion. As the major project funder, Metrolinx will own and be responsible for operation.

York Region VivaNext Rapidways
Bus rapid transit on Yonge Street and Highway 7 in York Region

York Region currently operates bus service along Highway 7 and Yonge Street in mixed traffic. Rapid transit in York Region will help shape communities and provide people with more transportation options. The new Viva ‘rapidways’ will be a BRT system where Viva vehicles will travel in dedicated bus lanes in the centre of the road for the majority of the route. The routes will also connect with other regional rapid transit lines, including GO Transit, Brampton’s Züm service and the Toronto-York Spadina Subway Extension.

Over 35 kilometres of new bus rapid transit service will be available on three significant corridors: east-west along Highway 7 and north-south along Yonge Street, with a small east-west route along Davis Drive in Newmarket. The rapidways will connect residents to important destinations in York Region, including the Southlake Regional Health Centre in Newmarket, the Toronto-York Subway Extension at Vaughan Metropolitan Centre, and a proposed transit-pedestrian mall in Markham Centre.

Construction is underway on the first 2.5 kilometres of rapidway that runs in the center median of Highway 7. On August 18, 2013, Viva rapid transit service began using the rapidway along Highway 7 from Bayview Avenue to Highway 404. An additional 3.9 kilometres of rapidway along Highway 7 from Highway 404 to Warden Avenue will open in 2014.

Total cost of the rapidway projects is $1.4 billion. The federal and municipal governments have each contributed $85 million; the balance is funded by the Province. Metrolinx will own the rapidway infrastructure and York Region Transit will own and operate the buses that use the corridor.
GO Transit Rail Service Expansion

A number of investments to enable expansion across the whole of the GO Transit network are underway.

The Georgetown South Project is a $1.2 billion investment currently underway at the south-east end of the Kitchener line. These improvements are necessary to expand service on the Kitchener line and operate UP Express.

Additional improvements underway in the First Wave includes two-way all-day service to James Street North Station in Hamilton, and increased peak service to Gormley Station on the Richmond Hill line.

Improvements are underway at Union Station as well. The revitalization of the train shed roof, concourse improvements between GO Transit and the TTC and improvements to the TTC subway station are all necessary to address expected growth in transit ridership in the region. The first phase of construction at Union Station began in January 2010 and the entire project is expected to be substantially complete by 2015.
Next Wave Projects

The Next Wave of regional rapid transit projects represents the next set of regional rapid transit projects to be advanced. These projects would result in an estimated $110 billion to $130 billion in growth to Ontario’s GDP, creating approximately 800,000 person years of construction and long term employment. Funding is needed to deliver the projects that generate these benefits. Together, the Next Wave projects would strengthen the regional network, further connecting various parts of the region.

Hamilton LRT

A light rail transit line from McMaster University to Eastgate Mall

The Hamilton LRT project is part of a long-term vision to connect key origins and destinations across Hamilton. The project will help revitalize Hamilton’s downtown core and improve public transit options in the city.

The 14-kilometre LRT line will extend from McMaster University in the west to Eastgate Square in the east. The corridor will run along Main Street and King Street, on a
combination of shared and exclusive at-grade track. Today, bus service operates in mixed traffic along the route.

The project is currently in the planning phase, with an EA approved in December 2011. Significant planning, design, and engineering work, made possible through Metrolinx Quick Wins funding, was undertaken collaboratively by the City of Hamilton and Metrolinx and resulted in the “Rapid Ready” report completed in February 2013.

The current cost estimate is approximately $1 billion for construction and implementation, and will be updated as engineering work continues.

**Dundas Street BRT**

*Bus rapid transit along Dundas Street in Halton Region, Peel Region and Toronto*

Dundas Street is a major east-west corridor in the GTHA, linking Toronto, Mississauga, and Halton Region. The proposed rapid transit route will play an important role in the movement of people and goods throughout the region and will provide residents an alternative to automobile travel. This project is intended to link with new development in Halton Region north of Dundas Street and to transform the street into an attractive corridor for pedestrians and cyclists.

The proposed rapid transit line would run approximately 40 kilometres along Dundas Street from Brant Street in Burlington to Kipling Station in Toronto and will provide important connections to the Mississauga City Centre, the University of Toronto at Mississauga campus and the Oakville Uptown Core at Trafalgar Road.

The Dundas Street BRT is currently in the planning phase. Within Halton Region, Class Environmental Assessment (EA) studies are underway for Dundas Street from Brant Street to Trafalgar Road, including widening the road, improving intersections, and implementing High Occupancy Vehicle (HOV) lanes. The HOV lanes can be used by both buses and carpoolers, and will promote transit usage while optimizing the use of the road. As demand for public transit grows, the HOV lanes can be converted to dedicated BRT lanes.

In 2008 the Province committed $57.6 million for the first phase, to improve bus services in the western portion of the Dundas corridor in Halton Region. The full BRT project is does not have committed funding.

**Hurontario-Main LRT**

*A light rail transit line along Hurontario and Main Streets*

The Hurontario-Main LRT is intended to provide a catalyst for economic and residential development along these corridors through Mississauga and Brampton. When the cities developed a plan for the corridor, LRT was identified as the best technical transit option to support the vision for a vibrant, modern street, which was supported by the technical results of the Metrolinx Benefits Case Analysis in 2010. Today, Brampton Züm and Mississauga MiExpress bus services operate along the route. The LRT service will move more people, faster, through these corridors than the existing bus services.
The Hurontario-Main LRT project is currently in the planning phase. In March 2010, the cities of Mississauga and Brampton completed a master plan, which is now informing the EA phase of the project, currently underway. This work will help determine the ultimate design and cost of building the LRT. In the coming months, the cities will be undertaking further public and stakeholder consultations through the Environmental Assessment process.

The Hurontario-Main LRT project is an unfunded project. The project is estimated to cost approximately $1.6 billion.

While this project does not have committed funding, some progress on this corridor has been made. The mixed-traffic bus service in the corridor was recently improved with the addition of Züm and MiExpress service. However, as Mississauga and Brampton continue to grow, it is anticipated that the existing bus services will not have adequate capacity to accommodate increased numbers of passengers, and higher-order transit will be required to serve the cities’ residents.

**Brampton Queen Street Rapid Transit**

*Rapid transit service along Queen Street from downtown Brampton to York University*

Brampton Queen Street Rapid Transit will be an enhanced dedicated-lane rapid transit service from Downtown Brampton to Airport Road, with potential to extend to York University and Vaughan Metropolitan Centre. Upgrading to a dedicated lane is a key component of Brampton’s long-term vision for the city, and will build on work already implemented by Züm.

Operated by Brampton Transit, the current Züm service began service along Queen Street in September 2010 and connects Downtown Brampton to the transit hub at York University, operating as “BRT Light” service – higher-speed, higher-quality bus service operating in mixed traffic. This current service also travels to Vaughan Metropolitan Centre, which is the future terminus of the Toronto-York Spadina Subway Extension. The currently operated service was funded by the Federal, Provincial, and Municipal governments, each contributing $95 million to the project for a total project cost of $285 million. After the completion of the Züm Queen project, remaining funds were allocated to introduce Züm service to other transit corridors in Brampton, including the Main Street/Hurontario Street service initiated in 2011.

Brampton’s current service on Queen Street is an excellent example of how the region has made progress on one of the top priority projects in The Big Move. Although dedicated transit lanes do not yet exist in this corridor, BRT Light is still considerably faster than regular bus service and is an important improvement to the regional transit network.

Funding to upgrade to a dedicated lane, for either BRT or LRT service, has not been committed at this time.
Relief Line

Improving Network Capacity

The Relief Line will provide relief to the Toronto transit system and provide residents with new rapid transit service into the downtown core from the surrounding inner suburbs. The line is also required to support the planned Yonge Subway extension to Richmond Hill. Many riders will shift to utilize the Relief Line, leaving room on the Yonge-University-Spadina line for those making trips from Midtown Toronto, Scarborough, North York, and York Region.

By 2031, it is projected that the Relief Line will serve up to 107 million riders. Several improvements are currently underway to improve capacity along the Yonge-University-Spadina line. In 2007, Metrolinx committed approximately $300 million to pay for the new signalling technology required to increase capacity on the Yonge-University-Spadina line. The new signalling system allows more trains to run each hour. To expand capacity even further, other changes are necessary, such as passenger-flow improvements at Bloor-Yonge station. These improvements will reduce train waiting times and improve passenger connections between the Yonge-University-Spadina and the Bloor-Danforth subway lines.

Further work is necessary to better define the scale and scope of the Relief Line, and Metrolinx is working in close collaboration with municipal partners to advance the project.

Metrolinx is currently undertaking a Relief Line Network Study that will examine several options, while considering how to leverage investment and provide net benefits to the region as a whole. The Relief Line Network Study is being coordinated with phase two of the TTC’s Downtown Rapid Transit Expansion Study to evaluate potential Relief Line alignments as well as work on the City of Toronto’s Official Plan review, with York Region also providing input.

The study will build on prior work completed by Metrolinx and the TTC, including phase one of the TTC’s Downtown Rapid Transit Expansion Study, the Union Station 2031: Demand and Opportunities Study, and multiple Benefits Case Analysis (BCA) reports related to the Yonge North and Relief Line projects.

Specific recommendations emerging from the study would be further refined through a Benefits Case Analysis (BCA), and be subject to any applicable environmental assessments, and necessary Metrolinx and government approvals, before being finalized. This project is currently unfunded.

Yonge North Subway Extension

An extension of the Yonge subway line to Richmond Hill

The 6-kilometre Yonge subway extension and capacity improvement project is part of the region’s plan to provide better transit service to its residents and connect Toronto to the Richmond Hill/Langstaff Gateway Urban Growth Centre. Located in both Toronto and York Region, the new subway extension will alleviate traffic congestion along Yonge
Street north of Finch Avenue, and is critical to support development at Richmond Hill/Langstaff Gateway. The result will be a major transit hub where transit riders will be able to make seamless and convenient connections to York VivaNext, GO and the TTC. However, the Yonge Subway line is currently near capacity. Several improvements are under way to expand capacity, and others need funding before the full extension of the line will be possible.

The Yonge subway extension does not have committed funding and the project is currently in the planning phase. An EA for the project was approved in April 2009, and additional planning work has been conducted through a Benefits Case Analysis completed in 2009 and supplemented with further analysis in 2013.

Until the subway extension is funded, BRT Light, operated by York Viva currently provides a link between Finch Station and the Richmond Hill/Langstaff Gateway Urban Growth Centre.

**Durham-Scarborough BRT**

*Bus rapid transit along Highway 2 from downtown Oshawa to Scarborough*

The proposed 36-kilometre Durham-Scarborough BRT will improve transportation by attracting more transit passengers and reducing traffic congestion on this important corridor between Scarborough and Oshawa. In addition to serving one of Durham’s busiest corridors – Highway 2 – it will also provide for a regional connection with Ellesmere Road in Scarborough, and important access to both Scarborough Town Centre and the Scarborough RT.

This project is intended as an evolutionary improvement upon the Durham Region Transit (DRT) Pulse service introduced in June 2013, which currently operates between Oshawa and the University of Toronto Scarborough campus. The proposed enhancements will improve service speed and quality, and are currently in the planning phase.

In 2008, the Province provided $82.3 million to expand the region’s bus fleet and pay for improvements to bus service and infrastructure in order to launch DRT Pulse. The full BRT project is anticipated to cost approximately $500 million, which is not currently committed.

**GO Transit Rail Service Expansion**

*More Two-Way All-Day and Rush Hour Service*

The GO network is the backbone of the regional rapid transit network, serving the entire region with fast and efficient regional service.

The Big Move plans to improve service on the GO network by providing two-way, all-day rail service on all of GO’s rail lines, and plans to extend the Lakeshore East and West lines.

Current two-way, all-day service on the Lakeshore lines already connect the areas of Burlington, Oakville, Toronto, Pickering and Oshawa. Expanding two-way, all-day service to all GO rail lines will bring fast and reliable regional transit service in and out of
downtown Toronto through the day, in the evenings and on the weekends. Specifically, new two-way, all-day service is planned between Union Station and:

- Meadowvale Station on the Milton GO line;
- Mount Pleasant Station on the Kitchener GO line;
- East Gwillimbury Station on the Barrie GO line;
- Richmond Hill Station on the Richmond Hill GO line; and
- Mount Joy Station on the Stouffville GO line.

In addition, the Lakeshore line, which already has two-way all-day service, will be extended to Hamilton in the west and to Bowmanville in the east.

For GO Transit to provide this new level of service, additional tracks and infrastructure improvements are required. While allowing for two-way, all-day service, these infrastructure investments will also enable more peak-period or rush hour service, which will mean more frequent train service for every GO rider.

**Express Rail on GO Lakeshore**

*Fast and efficient rail service from Hamilton to Oshawa*

The GO Lakeshore Express Rail project will provide more frequent, faster, and higher capacity service on the Lakeshore West and Lakeshore East lines by upgrading its existing trains from diesel to electric propulsion. This will mean service-level increase, and include shorter travel times for passengers and lower operating costs.

The long-term goal is a transformative level of service that will operate much more frequently than service today, allowing passengers to arrive at their departing station without having to consult a schedule. Exact details of the Express Rail service concept for the Lakeshore lines will be determined following further study.

The existing Lakeshore service carries more riders than any other line in the GO rail system, with local service operating in both directions throughout the day and on weekends. The Lakeshore Express Rail project is currently in the planning stage to determine how best to provide further service enhancements and faster service.

**Electrification of GO Kitchener line and UP Express**

The GO Kitchener line and UP Express are proposed for conversion to electric equipment. Using electric propulsion for these lines would mean faster travel times for passengers and lower operating costs. The EA study for electrification of UP Express is currently underway.

These First and Next Wave projects have been identified as the most important transit projects in the region. Metrolinx, regional, and municipal governments are making considerable progress in the implementation of these projects. Currently, many of these projects have committed funding and are underway.
The region is also making progress on those projects that have not received funding commitments. The Yonge corridor, for example, is undergoing capacity improvements that are needed before the extension can be built. These capacity improvements represent considerable time and financial resources and are a first step in improving service in the Yonge corridor. Other projects, such as DRT Pulse, have received funding for significant improvements to existing bus services. Therefore, while the full scope of these projects remains unfunded, the effects of these upcoming improvements on transit riders should not be underestimated.

For the remainder of the projects to move forward, funding is required. On May 27th, 2013, Metrolinx delivered an Investment Strategy to the Province of Ontario, including proposals for investment tools to support funding the Next Wave regional rapid transit projects, the integration of transportation, growth and land use planning, maximizing the value of public infrastructure investment, and optimizing system and network efficiency.