

**CITY OF HAMILTON**

**PUBLIC WORKS DEPARTMENT**  
**Transportation Division**

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| <b>TO:</b> Mayor and Members<br>General Issues Committee   | <b>WARD(S) AFFECTED:</b> CITY WIDE   |
| <b>COMMITTEE DATE:</b> February 25, 2013   |  |
| <b>SUBJECT/REPORT NO:</b><br>Rapid Ready - Expanding Mobility Choices in Hamilton (PW13014) - (City Wide)<br>(Outstanding Business List) |  |
| <b>SUBMITTED BY:</b><br>Gerry Davis, CMA<br>General Manager<br>Public Works Department   | <b>PREPARED BY:</b><br>Don Hull<br>Director of Transportation<br>(905) 546-2424, Extension 1860<br><br>Christine Lee-Morrison<br>Manager, Mobility Programs & Special<br>Projects<br>(905) 546-2424, Extension 6390<br><br>Justin Readman<br>Acting Manager, Rapid Transit<br>(905) 546-2424, Extension 1473<br><br>Jim Dahms<br>Manager, Transit Planning<br>(905) 546-2424, Extension 1858 |
| <b>SIGNATURE:</b>  |  |

**RECOMMENDATION**

- (a) That Report PW13014 be submitted, including Appendix A, "Rapid Ready - Expanding Mobility Choices in Hamilton (January 2013)", as the City of Hamilton's submission to Metrolinx in accordance with the Contribution Agreement between the City and Metrolinx, with the understanding that the funding requirements for Hamilton's public transportation program are:
- (i) \$800M capital and an upset net levy impact of \$3.5M operating for Light Rail Transit,
  - (ii) growth funding for the overall public transportation program, as summarized on Pages 43 and 44 of Appendix A to Report PW03014 (refer to Investment Plan Tab), necessary to support a successful Light Rail Transit system;

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- (b) That the Work Plan detailed in the Appendix A to Report PW03014 be used as the basis for future budget submissions;
- (c) That the Outstanding Business List item identified as Rapid Transit Maintenance & Storage Facility be removed from the General Issues Committee Outstanding Business List.

**Appendix A to Report PW13014 contains the full report: Rapid Ready - Expanding Mobility Choices in Hamilton (January 2013) and is not attached to this Report due to size and format.**

**The complete report is available for viewing in the Office of the City Clerk, City Hall, 71 Main St. W., 1<sup>st</sup> Floor or on the City of Hamilton website at: <http://www.hamilton.ca/CityDepartments/PublicWorks>**

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**EXECUTIVE SUMMARY**

**Strategic Direction**

Council's Strategic Plan assigns priority to improving the City's Transportation network, supporting multi-modal mobility, and encouraging interregional connections.

The goal is a transportation network that maximizes its contribution to quality of life with benefits that support a vibrant and equitable society, a complete and compact community form, a dynamic and efficient economy, and a healthy natural environment.

With the adoption of the Transportation Master Plan (2007) (TMP), an overriding transportation strategy was approved which is to rely on "active transportation" (walking, cycling, transit, car share, bike share, carpool, and inter-regional transit) alternatives to the automobile in combination with road capacity optimization (transportation demand management) to solve transportation problems, before looking to road expansion. A target was set for reducing the number of kilometres made by single occupant vehicles by 20%. Targets were also set to increase daily trips made by transit from 5% to 12% and walking and cycling from 6% to 15% and annual transit rides per capita from 40 to 80 - 100.

As discussed in the Rapid Ready report, a TMP Five-Year Review and update will be begin in 2013. At present, the TMP advocates extensive investment in active transportation, acknowledging that increased active transportation is an outcome essential to achieving Council's Vision for Hamilton. A primary objective of the proposed TMP update would be to receive direction from Council respecting a critical path for the further development of the Transportation program over the next five years, that being, whether to pursue a strategy of no investment, incremental investment subject to the availability of funding, or accelerated investment. For example, alignment of the transit ridership growth targets with the growth strategy is necessary to maximize the efficiency and effectiveness of human and financial resource allocation.

Not investing in active transportation poses future risks to the City. For example, not achieving transit mode share targets will result in increased traffic congestion and a greater need to invest more heavily in roads. Many municipalities are investing in public transit now as a key strategy to addressing unsustainable growth in road related costs. Additional issues including public health risks and public transportation's contribution to economic development are discussed in more detail in the full report.

This report sets out actions and investments Hamilton will have to make if it is going to realize its approved transportation strategy. Actions in the full report are grouped around three themes: growing the use of public transportation, creating supportive land uses and communities, and developing a seamless multi-modal transportation system. The rate of the investment is inextricably linked to the timing of successful achievement of the goals.

### **Light Rail Transit (LRT)**

This report provides Council with a detailed analysis of tangible and intangible benefits and costs (from existing consultant reports and other published sources) related to the - possible construction and implementation of an LRT system along the B-Line in Hamilton. If introduced today, LRT between the eastern Sub-Regional Service node (Eastgate) and western Major Activity Centre (McMaster) of the lower City would exhibit ridership performance in the mid-range of existing North American systems, such as San Francisco, Portland and Minneapolis.

With implementation of LRT, an increase between \$2.9 million (no increased ridership and 6.5 minute LRT headway) and \$3.5 million (assumes an 8% city-wide increase in ridership and a four minute LRT headway) in the transit portion of the City operating budget levy can be expected. There may be a need for some reduction in service frequency to fully utilize the available train capacity. This scenario also assumes the LRT system would be operated by the City of Hamilton and eighteen buses would be removed from service. There is expected to be an additional non-transit City operating budget levy impact in the order of \$8.7 million, due to costs such as snow removal, street lighting, parking enforcement and loss of parking revenue.

Construction and infrastructure capital requirements for LRT are estimated at approximately \$800 million (2011 dollars). It is believed that construction costs could be reduced by value engineering the B-Line.

In terms of financial benefits to the City, Canadian Urban Institute (CUI) estimates that three times the number of development projects are likely to occur along the corridor within the same timeframe with LRT as compared to without LRT (e.g. 108 projects versus 32). If that were to occur, there would be an associated tax benefit from new development estimated at \$22 million. Building permit fees and development charges (existing development exemptions removed) are estimated at \$30 million. The assessed value of existing properties along the corridor is expected to increase by \$29 million over a fifteen year period; however, this is a benefit to the property owner with no direct financial gain to the City.

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LRT may have an added financial benefit to the City as the implementation of LRT could help address the backlog of rehabilitation, replacement and reconstruction capital works needs in the corridor, which are not programmed in the future capital budget at this time, at an estimated value of up to \$79 million.

Potential exists for 6,000 construction jobs (provincial), 3,500 of which are expected to be in Hamilton. Potential also exists for 1,000 permanent jobs (provincial) with approximately 300 jobs in Hamilton to deliver regular operations and maintenance. B-Line LRT investment may result in an estimated increase of more than \$443 million in Ontario's GDP based on construction related jobs, employment related to the supply of goods and materials and induced benefits related to additional spending power.

Investments in public transportation such as LRT have a number of additional benefits. Active transportation including LRT can have direct health benefits and can help shape a city's built environment into a more walkable, complete and compact community. For example, individuals who walk an additional kilometre per day reduce their chances of becoming obese. Public transportation produces on average (per person) significantly lower emissions than driving. A reduction in car traffic (GTA) will lower emission rates, save lives and lower costs. High quality light rail systems are known to be attractive to tourists, commuters and residents and can significantly enhance a city's image.

For Hamilton to achieve a reduction in operating cost for LRT as compared to bus, as experienced by high performance LRT systems such as Calgary and Edmonton, requires:

- investment in Hamilton's public transportation support network (bus, cycle and pedestrian) to achieve a doubling of the existing transit ridership from the current 45 to over eighty rides per capita and a modal split increase from 6% to 12% guided by close adherence to Council's transportation related policies, most notably the Transportation Master Plan;
- realization of Places to Grow, the growth plan for the Greater Golden Horseshoe, which forecasts that by 2031, Hamilton's population will grow by 130,000 persons to 660,000 and 90,000 new jobs. Based on current trends, there will be 200,000 more car trips each day, along with significantly greater levels of congestion.

In summary, should Hamilton not implement LRT there are a number of potential significant benefits and opportunities that could be lost. The City could see additional development occur along the corridor and a financial benefit of approximately \$130M (reduction in backlog, building permits and tax benefits from development). A fundamental consideration of the benefits of this type of project, which aligns with the findings of the McMaster Institute of Transportation and Logistics study, is the ability for LRT to refocus growth within the community. This is in keeping with Places to Grow, the City of Hamilton Official Plan and the City of Hamilton Transportation Master Plan and allows the City to capitalize on existing infrastructure while achieving population and employment growth.

### **Expanding Mobility Choices in Hamilton - Getting Rapid Ready**

The essential action in preparation for high performance rapid transit is to improve overall public transit services. The proven approach is to increase service levels - frequency, duration and service area coverage. These investments will increase ridership, elevate the role of public transit in Hamilton, and generate a more attractive financial business case for rapid transit investment. And specific to Hamilton, there are additional preparations:

- Elevate the role of public transportation in the community. Perceptions exist that transit is a service for those without access to a car. Changing this perception, via a combination of increased service levels, priority on streets, operating speeds, reliability, customer service, marketing, branding, and infrastructure maintenance are essential to re-position Hamilton's public transportation network as viable and attractive.
- Continuing community engagement on how the city should grow around transportation. Decisions will be necessary to protect stable urban neighbourhoods and identify opportunities for intensification and redevelopment - particularly at planned key nodes of planned rapid transit lines. Applying approved policies, Council can provide the framework to encourage appropriate land uses around rapid transit corridors. It is important to create an environment of certainty for developers and property owners, reducing the level of risk and barriers for development.
- Develop a multi-modal "active transportation" network connecting transit, walking, cycling, inter-regional transportation, carpool, car share, bike share and park and ride. Creating barrier-free and accessible pedestrian environments will be a priority to respond to the mobility needs of an ageing population. Cycling plays a major role for medium distance travel by extending the catchment of transit by reducing trip time to/from bus stops and traversing the escarpment for example.
- Reconfigure the transit network by reorienting existing transit services to feed planned rapid transit corridors and new neighbourhoods to establish travel patterns in advance of implementation.
- Advancing plans for multi-modal transit hubs and mobility hubs to create seamless connections between local, rapid, and interregional transportation services is a major priority. Regional and intercity transit is important for linkages throughout the Greater Golden Horseshoe, and beyond. As the western gateway to the Greater Toronto and Hamilton Area, home of the second largest airport in the region and at the intersection of major rail and road corridors, transit will play a role in providing connections between and access to these linkages.

Hamilton is starting to see the impacts of the foundation established over the past decade. Change is occurring on all levels from the way the City departments are

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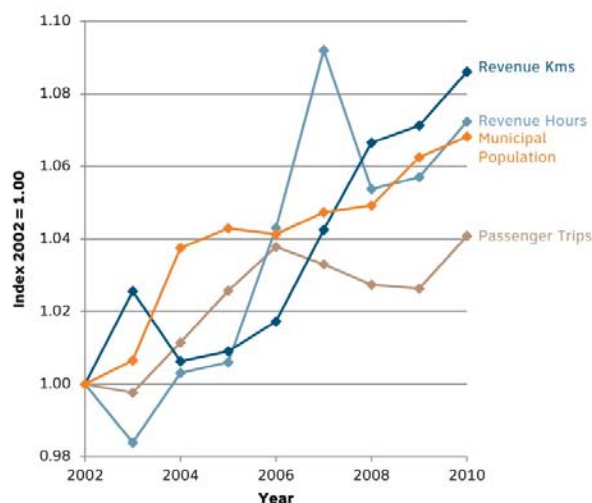
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organized to the way communities and transportation systems are being designed. Transportation and community planning is no longer done in silos, but in an integrated fashion. Evidence of this change at the City level is demonstrated by:

- a downtown that is recovering, witnessed by new construction, renovation, restoration and redevelopment;
- firm urban boundaries are being upheld, adhering to the policies of the Provincial Growth Plan;
- neighbourhood associations, citizens groups and advocacy groups freely voicing opinions because they believe their voices will be heard and that their contributions matter. An example is the success of coalitions such as Open Streets Hamilton which are creating events that promote multi-modal, healthy and vibrant streets.

To date, there have been some positive gains in transit ridership, but the annual rides per capita remains at just over 45. Some 55,000 transit service hours have been added between 2003 and 2010, but this has more or less been in line with population growth and directed toward alleviating overcrowding and bypassing. To achieve gains in active transportation mode use, the level of investment in transportation needs to greatly outpace the rate of population growth (see exhibit below).

EXHIBIT 5: City of Hamilton Population, Transit Service, and Ridership Change (Indexed to 2002)



source data: Canadian Urban Transit Association, 2002-10.  
Canadian Transit Factbook.

Progress is being made. There are many factors involved in transit growth, such as population, employment, urban form, and congestion levels. If Hamilton is to achieve its transportation targets, rapid transit is necessary.

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Hamilton's public transit service (HSR) has historically performed at the upper end of comparator municipalities in Ontario. The most strategic transit performance measure is Ridership/Capita and the greatest contributor to transit ridership is increased service levels (Revenue Service Hours/Capita). Beyond Ontario, Canadian cities with higher ridership than Hamilton include:

**Table 1 Comparable Revenue Service Hours per Capita (2011)**

| City     | Service Area Population | Sq. Km. | Gross Expenses | Active Fleet | Riders/ Capita | Rev. Service Hours/Capita |
|----------|-------------------------|---------|----------------|--------------|----------------|---------------------------|
| Winnipeg | 657,000                 | 222     | \$138M         | 545          | 72             | 2.00                      |
| Victoria | 360,000                 | 614     | \$92M          | 280          | 69             | 2.21                      |
| Quebec   | 563,000                 | 548     | \$181M         | 597          | 79             | 2.02                      |
| Hamilton | 480,000                 | 235     | \$72M          | 217          | 45             | 1.43                      |

All exceed 2.0 revenue service hours per capita. The proven most successful approach to transit ridership growth is to provide higher levels of service frequency and duration. For Hamilton, this equates to about 250,000 hours of new service to reach the 2.0 revenue service hours per capita range.

Winnipeg serves as a good example for forecasting in view of Hamilton's projected population of 660,000 by 2031 and similar geographic transit service area. Comparative data is provided in Table 2, below. Winnipeg has experienced steady ridership growth of 30% during the past decade through continuing incremental investment.

**Table 2 Hamilton - Winnipeg Comparison (2011)**

|   | Hamilton          | Winnipeg          |
|---|-------------------|-------------------|
| Service area population                 | 480,000           | 657,000           |
| Population density                      | 2,043 per sq. km. | 2,950 per sq. km. |
| CBD employment                          | 23,400            | 70,000            |
| Post-Secondary enrolment                | 38,000            | 50,000            |
| Annual Ridership;                       | 22 million        | 48 million        |
| Ridership/Capita                        | 45                | 72                |
| Annual Revenue Hours;                   | 0.73 million      | 1.24 million      |
| Revenue Service Hours/Capita            | 1.43              | 2.00              |
| Average Fare                            | \$1.60            | \$1.45            |
| Revenue/Cost Ratio                      | 51%               | 60%               |
| Municipal Operating Contribution/Capita | \$67              | \$61*             |

\* Note: The Province of Manitoba and City of Winnipeg share transit net operating cost 50/50.

The City of Winnipeg's Sustainable Transportation policy adopted five key goals to achieving a balanced and sustainable transportation system, not dissimilar to Hamilton:

- dynamically integrated with land use;

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- supports active, accessible and healthy lifestyle options;
- safe, efficient, and equitable for people, goods and services;
- well maintained infrastructure;
- financial sustainability.

Further, the City of Winnipeg undertook a number of strategic actions over the past decade towards growing their transit ridership that leads, yet to a large degree, parallels the path Hamilton is on:

- **Service Capacity.** Address capacity shortfall and improve the customer experience.
- **Service Level.** Incremental annual increased investment in service level expansion.
- **Reliability.** Improve schedule adherence through use of GPS technology.
- **Speed.** Increased transit operating speeds through transit priority measures such as: transit signal priority; queue jumps; reserved lanes; dedicated lanes for mall entry/exit; and traffic signal optimization.
- **Accessibility.** Street geometric improvements through seamless multi-modal connections. A network wide review of one-way and two-way traffic systems. The development and implementation of a “Complete Streets” strategy.
- **Enhanced Customer Service.** Implement new customer service and information tools and enhance existing ones.
- **Service Design.** Focus on enhancing downtown access, feeding rapid transit services and providing suburb-to-suburb connections.
- **Flexible fare collection.** Create an equitable, simple and intelligent fare system with incentives to increase ridership and mode split.
- **Quality Infrastructure.** Invest in transit infrastructure maintenance and asset management.

Hamilton, in comparison to Winnipeg, has completed a number of ridership growth and asset management initiatives:

- **Service Capacity.** Addressing overcrowding and bypass through Council’s 2011 Service Investment Plan (\$3M).
- **Governance and Structure.** New integrated Transportation program.
- **Customer Service.** A new auditory and visual bus stop announcement system to provide next stop announcements and new GPS system (\$4.7M).
- **Investment in Infrastructure.** Investment in Transit fleet since 2011 (\$14.4M) has resulted in reduced bus parts cost projected for 2012 to be in the order of (\$1.1M), improved emissions, and reduced requirement for Mechanics. MacNab Street Transit Terminal (\$9.4M).
- **Accessibility.** Improved accessibility for persons with disabilities; implementation of new Eligibility policy, computer-aided dispatch for ATS, Travel Training, Accessibility Plan in place and updated annually (Est. \$5.7M). Fleet is 100% low floor accessible and bike rack equipped.



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- Complete Streets and Transportation Demand Management. 140km of Cycling infrastructure in priority corridors. Bike storage facilities such as at Mohawk College and twenty schools. Smart Commute initiative in partnership with Metrolinx and neighbouring municipalities including fourteen employers with 87,000 employees. Community-based social marketing pilot program. Carshare pilot program. Transit integrated with cycling and walking path network.
- Safety and Security. Improved lighting at terminals and end-of-line loops, request stop program. On-board video surveillance on ATS/DARTS (\$0.6M).
- Financial Sustainability. Partnership(s) with Metrolinx to achieve efficiencies in vehicle procurement, parts procurement.

**Proposed 2013 Work Program**

The 2013 Transportation Division Work Plan is provided in detail in the “Rapid Ready” Appendix and summarized on Pages 43 and 44 (refer to Investment Plan Tab). This work plan will further advance work towards increasing mobility choice and transit ridership in Hamilton. It includes undertaking the TMP five year review including a complete streets strategy, improving transit service, creating an accessible transportation system, creating a refined transit customer experience, creating safe and convenient walking and cycling environments, integration with corridor and community planning and seamless multi-modal connections.

In addition, a 2013 Transportation Division Work Plan for LRT, is also provided in detail in the “Rapid Ready” Appendix and summarized on Pages 43 and 44 (refer to Investment Plan Tab). Items that would further LRT planning and could proceed prior to funding commitment are identified and include works such as vehicle optimization modelling, value engineering, additional geotechnical investigations, assist with preparing funding evaluation, bus network optimization and delivery model assessment strategy.

**Alternatives for Consideration - See Page 12**

**FINANCIAL / STAFFING / LEGAL IMPLICATIONS**

**Financial:**

The 2013 Transportation Division Work Plan items would be undertaken within approved 2013 capital and operating budgets, with the exception of LRT related studies. With respect to the 2013 budget for LRT, sufficient funds were approved in 2013 to support staffing related costs. However, no capital funding is approved for the studies themselves. Further reports to Council will be required in this regard.

Implementing the City’s strategic direction for transportation will require continued increased investment, particularly in transit. Between 2007 and 2010 the level of investment needed was investigated and recommended through the Transportation Master Plan (2007) and the Hamilton Street Railway Operational Review (March 2010).

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These documents have been considered in the preparation of the Rapid Ready Report and Transportation Division Investment Plan, Pages 43 and 44 (refer to Investment Plan Tab), of the Appendix.

**Staffing:**

There are no immediate staffing implications related to the 2013 Transportation Division work program identified in this report.

Should the City negotiate an agreeable funding announcement with Metrolinx, then additional resources would be required at that time.

**Legal:**

While staff has completed all of the deliverables required through the Contribution Agreement (CA) with Metrolinx, these documents have not been formally submitted. The City is required to submit these deliverables to Metrolinx/the Province based on the Contribution Agreement.

Exposure to an Ontario Human Rights complaint has been identified as a likely outcome of not being compliant with Accessibility for Ontarians with Disabilities Act (AODA). As per previous reports to Council (PW03128d, PW03128e and PW03128f) the City has an approved strategy and budget and is on track to achieve compliance prior to the 2017 deadline.

**HISTORICAL BACKGROUND**

The following is a chronological summary of the rapid transit initiative.

- Report PW09007, Council adopted the following vision statement for Rapid Transit:

Rapid Transit is more than just moving people from place to place. It is about providing a catalyst for the development of high quality, safe, sustainable and affordable transportation options for our citizens, connecting key destination points, stimulating economic development and revitalizing Hamilton. Rapid transit planning strives to improve the quality of life for our community and the surrounding environment as we move Hamilton forward.

The vision statement has been used to guide key decisions that have been made in the development of the Planning, Design and Engineering work for B-Line rapid transit.

- October 29, 2008 Report (PW08043D) direction to study rapid transit with Light Rail Technology as the preferred option.
- October 13, 2009, Contribution Agreement with Metrolinx for \$3 million in funding for Rapid Transit studies. The Contribution Agreement expired on March 31, 2012, and all works are complete.

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- February 19, 2010, Metrolinx Benefits Case Analysis (BCA) for Hamilton rapid transit presentation to Board of Directors.
- October 26, 2011, Report CM11016/PW11064/PED11154/ FCS11072 (Conventional, Rapid and Inter-Regional Transit: Technical, Financial and Land Use Considerations). Outlined the work required to allow Metrolinx to make a funding recommendation to its Board of Directors. Council direction to complete a triple bottom line evaluation of Light Rail Transit.
- January 11, 2012, staff issued a Notice of Completion for the B-Line Rapid Transit Project, which formally concluded the Environmental Assessment process for the B-Line.
- August 13, 2012, GIC approved: “That Report PW11064(a), respecting Rapid Transit Maintenance and Storage Facility and Spur Line, be referred back to staff. Metrolinx subsequently agreed to defer the requirements of an Environmental Assessment at this stage of the planning process.
- The completion of the 2012 work plan items will allow Infrastructure Ontario to complete its Value for Money (VFM) assessment and for Metrolinx to make a funding recommendation to its Board of Directors, anticipated to occur in May 2013.
- October 2011 Council direction to undertake a Light Rail Transit project Benefit and Cost Report, including the cost of not completing LRT and a triple bottom line analysis. Detail is provided in the “Rapid Ready” Appendix of this report.

### **POLICY IMPLICATIONS/LEGISLATED REQUIREMENTS**

An overarching goal is to ensure that every Hamilton resident has access to at least one sustainable transportation mode choice for their daily travel needs (walking, cycling, transit, car sharing, bike sharing, or carpooling). Public transportation must be recognized as a strategic priority, it is not possible to have a successful large city without a high functioning transit system. A complete review of all transportation related policy that this report aligns with is provided in the “Rapid Ready” Appendix. Not investing in public transportation poses a significant risk to the City. Not achieving modal share targets will result in increased congestion and associated delays and an even greater need to invest more in roads.

Strategic Objective 1.4 of the Corporate Strategic Plan which states:

Improve the City’s transportation system to support multi-modal mobility and encourage inter-regional connections. This includes Strategic Actions (i) Complete the design and develop an implementation and financial plan for the delivery of higher-order transportation and enhanced transit service, including all-day GO Transit service and rapid transit and (iii).

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Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the associated transportation demand management (TDM) plan.

In addition, this proposal aligns with the Corporate Vision “to be the best City in Canada to raise a child, promote innovation, engage citizens and provide diverse economic opportunities” and our Mission “we provide quality public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.”

#### **RELEVANT CONSULTATION**

As outlined in the Contribution Agreement between the City of Hamilton and Metrolinx, Rapid Transit staff has engaged regularly in community consultation with local residents, business owners, stakeholders, institutions, schools, property owners, agencies and utilities since the first phase of the Rapid Transit Feasibility Study was initiated in November 2007.

The “Rapid Ready” plan is the product of broad consultation of Transportation industry expertise and extensive (internal and external) stakeholder consultation.

#### **ANALYSIS / RATIONALE FOR RECOMMENDATION**

Rapid Ready - Expanding Mobility Choices (Appendix A) sets out the actions and investments Hamilton will have to make if it is going to realize its approved transportation strategy. The goal is a transportation network that maximizes its contribution to quality of life with benefits that support a vibrant and equitable society, a complete and compact community form, a dynamic and efficient economy, and a healthy natural environment. While progress is being made towards this end result, as detailed in the Executive Summary to this report, further investment is needed. If consistent action and increased investment is not taken toward this program, targets and goals will become increasingly difficult to meet and unrealistic. The overarching transportation strategy for the City, to rely on active transportation and travel demand management, in combination with road capacity optimization to solve transportation problems and the associated targets will need to be reconsidered.

#### **ALTERNATIVES FOR CONSIDERATION**

**Light Rail Transit Alternatives:** Do not submit the required outstanding Contribution Agreement deliverables to Metrolinx. This alternative would terminate the B-Line project from further advancement and would contravene the requirements of the Contribution Agreement. This alternative is not recommended.

**Transportation Division Work Plan:** Council could amend the proposed work plan.

#### **ALIGNMENT TO THE 2012 - 2015 STRATEGIC PLAN**

**Strategic Priority #1**

A Prosperous & Healthy Community

*WE enhance our image, economy and well-being by demonstrating that Hamilton is a great place to live, work, play and learn.*

**Strategic Objective**

- 1.3 Promote economic opportunities with a focus on Hamilton's downtown core, all downtown areas and waterfronts.
- 1.4 Improve the City's transportation system to support multi-modal mobility and encourage inter-regional connections.
- 1.5 Support the development and implementation of neighbourhood and City wide strategies that will improve the health and well-being of residents.
- 1.6 Enhance Overall Sustainability (financial, economic, social and environmental).

**Strategic Priority #2**

Valued & Sustainable Services

*WE deliver high quality services that meet citizen needs and expectations, in a cost effective and responsible manner.*

**Strategic Objective**

- 2.1 Implement processes to improve services, leverage technology and validate cost effectiveness and efficiencies across the Corporation.
- 2.2 Improve the City's approach to engaging and informing citizens and stakeholders.
- 2.3 Enhance customer service satisfaction.

**Strategic Priority #3**

Leadership & Governance

*WE work together to ensure we are a government that is respectful towards each other and that the community has confidence and trust in.*

**Strategic Objective**

- 3.1 Engage in a range of inter-governmental relations (IGR) work that will advance partnerships and projects that benefit the City of Hamilton.

**APPENDICES / SCHEDULES**

|                                |   |
|--------------------------------|---|
| Appendix A                     | Rapid Ready - Expanding Mobility Choices in Hamilton (January 2013)     |
| Appendix A Investment Plan Tab | 2013 Work Plan and 2013 to 2017 Transportation Division Investment Plan |

# *RapidReady* Expanding Mobility Choices in Hamilton



February 2013



***RapidReady***

Expanding Mobility Choices in Hamilton



Hamilton





# Acknowledgements

*Rapid Ready* was developed by the **Mobility Programs and Special Projects** branch at the City of Hamilton. This report could not be possible without the continued dedication, expertise, and input of City staff. The development of this report was supported by the consulting team at IBI Group.

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## Appendix A: Light Rail Transit

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| A1: | List of Associated Reports   |
| A2: | List of Planning, Design and Engineering Reports   |
| A3: | Hamilton B-Line Project Phasing Options  |
| A4: | LRT Benefits and Cost Report   |
| A5: | Comparative Summary of LRT Systems (CD)  |
| A6: | McMaster Institute of Transportation and Logistics: The North American Light Rail Experience: Insights for Hamilton (CD) |
| A7: | Community Impact & Economic Analysis of Light Rail Transit in Hamilton (CD)  |
| A8: | Rapid Transit Workplans  |

## Appendix B: Background Information

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| B1: | Review of Policy and Strategic Directions                         |
| B2: | HSR Operational Review Summary                                    |
| B3: | Background Paper on the Intersection of Transportation and Health |

## Appendix C: Mobility Programs and Special Projects Workplans

|        |  |
|--------|--|
| C1.1:  | Transportation Demand Management (TDM)   |
| C1.2:  | Smart Commute Hamilton   |
| C1.3:  | TDM and Land Use   |
| C1.4:  | Complete Street Strategy   |
| C1.5:  | Mobility Corporate Working Team  |
| C1.6:  | Transportation Master Plan Five-Year Review  |
| C1.7:  | Quick Wins Projects  |
| C1.8:  | Public Bike Share Transit System   |
| C1.9:  | Cycling Master Plan Administration and Implementation                                      |
| C1.10: | Pedestrian Mobility Master Plan Administration and Implementation                          |
| C1.11: | Transit Shelter Rehabilitation, Multi-Modal Integration, and Passenger Enhancement Program |
| C1.12: | Mobility Program Branding and Marketing  |



# Vision

Hamilton is changing – it anchors the western end of a fast-growing urban region and is attracting a growing number of new small businesses, entrepreneurs, and artists seeking the new urban frontier of the Greater Golden Horseshoe. Yet much of Hamilton stays the same – the majestic natural beauty of the escarpment, the amenities that make the city one of the best in which to raise a family, and a diverse mix of urban, suburban, and rural landscapes. How Hamilton moves around the city is changing too – new investment in transit and cycling, renewal of infrastructure, and changing attitudes toward multi-modal transport have created gains in positioning the city for the next leap: **rapid transit**.

Rapid Transit is generally defined as high frequency transit service operating in a dedicated corridor.

Over the past several years, the City of Hamilton, in partnership with Metrolinx, has advanced plans for light rail transit in the King-Main-Queenston Corridor across the city. In parallel, the city has initiated various plans and policies, reviewing transit operations, completing economic studies, and developing corridor land use plans to support rapid transit. From these initiatives, significant progress has been achieved on many fronts: **the city is becoming *Rapid Ready***.

This report is about continuing the route to get Hamilton Rapid Ready by:

- **reviewing and affirming the foundation** for rapid transit in Hamilton through the plans and policies in place or under development;
- **documenting progress** made by the City and its partners on various fronts and **setting targets** and milestones in getting Rapid Ready; and,
- identifying **action items** for the short term to continue advancing toward Rapid Ready.

CITY OF HAMILTON STRATEGIC PLAN 2012-2015  
STRATEGIC OBJECTIVE 1.4 :

Improve the City's transportation system to support multi-modal mobility and encourage inter-regional connections.

CITY-ADOPTED VISION FOR RAPID TRANSIT :

Rapid Transit is more than just moving people from place to place. It is about providing a catalyst for the development of high quality, safe, sustainable and affordable transportation options for our citizens, connecting key destination points, stimulating economic development and revitalizing Hamilton. Rapid transit planning strives to improve the quality of life for our community and the surrounding environment as we move Hamilton forward.

## a. Benefits

### HEALTHIER COMMUNITIES

Concerns are frequently raised that our dependence on automobiles is leading to sedentary lifestyles and less physical activity, resulting in increasing rates of obesity and other health conditions. Pollution related to congestion and auto use causes air quality issues, resulting in asthma and respiratory illness. Increased investment in transit can play a role in improving the overall health of the community by encouraging walking, reducing congestion and emissions, minimizing risk of personal injury from car accidents, and encouraging more social travel behaviour. In addition, transit and active transportation – walking and cycling – are complementary. Active transportation provides exercise, increases social contact, and also reduces congestion and pollution while providing a high degree of personal mobility provided that suitable and safe walking and cycling environments are available.

Transit is important for an age-friendly city – promoting “active ageing” through the provision of an inclusive and accessible urban environment and transportation services. An ageing population means reduced reliance on driving and an increased dependence on transit, specialized transit, and walking. It is also important on aspect of accessibility – in 2006, 20% of Hamilton’s population identified some form of physical or cognitive disability, a rate that increases with age. Improving transportation choices means easier access to community participation, civic engagement, access to amenities and services.

Reduced dependency on driving has other health benefits – lower obesity rates, improved cardiovascular health, and reduced risk of Type II diabetes and heart disease. Physical activity also enhances cognitive function in older adults and helps to fight depression.

FOR MORE ON THE HEALTH IMPACTS FROM TRANSPORTATION DECISIONS, REFER TO "Background Paper on the Intersection of Transportation and Health" ATTACHED IN APPENDIX B3.

### ECONOMIC DEVELOPMENT

Transit provides major economic benefits to our cities, with an economic benefit of over \$10-billion annually across Canada. Investment in transit creates jobs – capital projects create construction-related economic spin-offs while increased investment in transit service creates ongoing employment of operators, mechanics, and front-line customer service staff. Integrated with a multi-modal transportation program, congestion can be reduced in urban areas, which is estimated to cost the Greater Toronto and Hamilton area economy over \$6-billion annually in lost productivity and delays in the delivery of goods and services. In addition, expanded transportation choice reduces the cost of household transportation, increasing social equity and providing more disposable income which has innumerable positive benefits to the community. This includes opportunities to address ongoing poverty issues through the provision of employment and reduced household spending.

Hamilton experiences less of the congestion characteristic in many other areas of the Greater Golden Horseshoe and in part because of its transportation advantages and superior location, is becoming an increasingly attractive place to live and invest. However, growth threatens this advantage by increasing congestion – investing in alternative transportation can help minimize growth in congestion and keep the economy moving.

### A TRANSIT-ORIENTED COMMUNITY

As a fundamental driver of community well-being, public transportation must be recognized as a strategic priority and put at the centre of the community. Mobility should be a foremost consideration of elected officials and community stakeholders in decision making processes. Decisions and actions should strive to broaden the choice of modes, improve the seamless integration of modes and foster a more integrated approach to planning and design. The end goal is a future in which public transportation maximizes its contribution to quality of life with benefits that support a vibrant and equitable society, a complete and compact community form, a dynamic and efficient economy, and a healthy natural environment.

## b. Report Structure

### ENVIRONMENTAL BENEFITS


Investing in transit and other mobility options will have significant environmental benefits. These include direct benefits due to reduced emissions, but also indirect benefits such as facilitating more compact communities and reduced need to develop greenfield sites. A study of the B-Line Corridor estimated that air pollution costs could be reduced by some \$2 million annually if investments were made in rapid transit. Similar reductions could be expected for the suite of investments identified in this report.

### CITY IMAGE

It is not possible to have a successful city without a good transit system. Hamilton has made great strides in investing in the transit fleet. Taking the transit system to the next level, both in terms of service levels and amenities will have a significant impact on City image.

Great cities provide complete and balanced mobility options that promote a healthy, active lifestyle.

Transportation is a key element in the visitor experience, an efficient public transportation system can significantly enhance a city's reputation among travelers.

Throughout this document, references will be made to **Mobility Programs and Special Projects** work plans, which are attached as **Appendix C** in this document as indicated by this arrow: 

**Chapter 1: Status of Light Rail in Hamilton** summarizes progress and activity related to LRT planning in Hamilton and presents the 2013 work plan

**Chapter 2: Rapid Ready Essentials** will outline three key elements to becoming Rapid Ready and to improve integrated mobility in Hamilton

**Chapter 3: Foundation** outlines provincial and municipal policies that are advancing integrated mobility and rapid transit planning

**Chapter 4: Progress** summarizes recent progress and actions taken

**Chapter 5: Looking to the Future - The Role of The Transportation Master Plan** revisits the 2007 TMP targets, progress and identifies needs for a TMP update

**Chapter 6: Actions to Get Rapid Ready** identifies short-term actions that will increase transit use, encourage integrated mobility, and move the city toward readiness for rapid transit investment

**Chapter 7: Funding Requirements** outlines the capital and operating budget implications of the identified actions

Also attached to this report are three Appendix sections:

**Appendix A:** Light Rail Transit-related attachments and reports

**Appendix B:** includes a more in-depth review of national, provincial, and municipal policy, as well as an overview of the Hamilton Street Railway Operational Review. Also a Background Paper on the Intersection of Transportation and Health

**Appendix C:** Mobility Programs and Special Projects Workplans





MCMASTER

EASTGATE

# 1 Status of Light Rail Transit in Hamilton

## a. The Growing Case for LRT

A Council requirement of this Staff report is to provide a status update on the Rapid Transit program deliverables required by Metrolinx for them to undertake a Value-for-Money evaluation of Light Rail along the B-Line in Hamilton. These works are essentially complete and Staff is recommending submission of this report in its entirety as Hamilton's response to Metrolinx.

Light Rail Transit (LRT), if introduced today, between McMaster University and Eastgate Square would perform with ridership in the mid-range of existing North American Systems

A triple bottom line analysis of the B-Line LRT project indicates the following:

### Costs

- Project Capital is \$811 million - (plus/minus 20% \$649M to \$973M).
- City Capital costs is \$1.8 million (including aerial articulating device for the fire department).
- Day one stand alone Project Operating cost is \$14.5 million with an organizational structure of approximately 182 staff.
- Day One In-house Project Operating is a net levy increase of \$2.9 to \$3.5 million with the removal of redundant transit fleet and the use of in-house staff
- City Operating (over and above LRT operating) costs (e.g. winter control, parking, By-law services) = \$8.7 million.

### Benefits

#### FINANCIAL

- B-Line Corridor Capital Works – Reduction of scheduled and un-scheduled backlog capital works in the order of approximately \$79 million.
- The CUI Study found:
  - » That three times the number of developments were likely to occur (e.g. 108 projects vs. 32) within the same timeframe with LRT as compared to without LRT.
  - » Tax Benefit from new development by LRT estimated at \$22.4 million.
  - » Building permit fees and development charges (existing development exemptions removed) estimated at \$30.2 million.
  - » Residential property value premium estimated at \$29 million (net value = \$0). This uplift premium increases the property taxes paid by property owners benefiting from the LRT and reduces taxes for all other tax payers.
- Potential for 6,000 construction jobs (provincial); 3,500 directly in Hamilton<sup>1</sup>.
- Potential for 1,000 permanent jobs (provincial); 300 jobs in Hamilton to deliver regular operations and maintenance<sup>1</sup>.
- B-Line LRT investment may result in an estimated increase of more than \$443 million in Ontario's GDP<sup>1</sup>.
- Annual accident costs are expected to reduce by \$3.48 million over 22 years (Steer Davies Gleave).

## HEALTH

- Investments in public transportation such as LRT can help shape a city's built environment into a more walkable, complete and compact community (Metcalf and Higgins).
- Individuals who walked an additional kilometre per day reduced their chances of becoming obese by 5% compared to motorists driving an additional hour who are 6% more likely to become obese (Frank et al).

## ENVIRONMENT

- Public transportation produces on average (per person) 50 - 95% lower emissions than driving (Shapiro et al).
- A 30% - 50% reduction in car traffic (GTA) can lower emission rates and have the potential to save an estimated 200 lives and \$900 million per year (McKeown, D.).
- Auto-dependent communities require 20 to 50 times more space than transit-friendly communities, resulting in storm water management challenges (VTPI).
- LRT attracts a broader cross section of society and draws transit users from a broader distance than traditional bus transit.

## SOCIAL/TOURISM

- LRT has the potential to connect people living in downtown neighbourhoods with job opportunities and amenities, including health and social facilities
- In Hamilton, 17% of the existing population and 20% of employment opportunities are located within 800 metres of the B-Line Corridor. 80% of the city's population is serviced by HSR transit routes that connect directly with the B-Line (Steer Davies Gleave).
- High quality light rail systems have an iconic value that is attractive to tourists, commuters and residents because transportation is a key element in the visitor experience, an efficient public transportation system can significantly enhance a city's reputation among travelers.

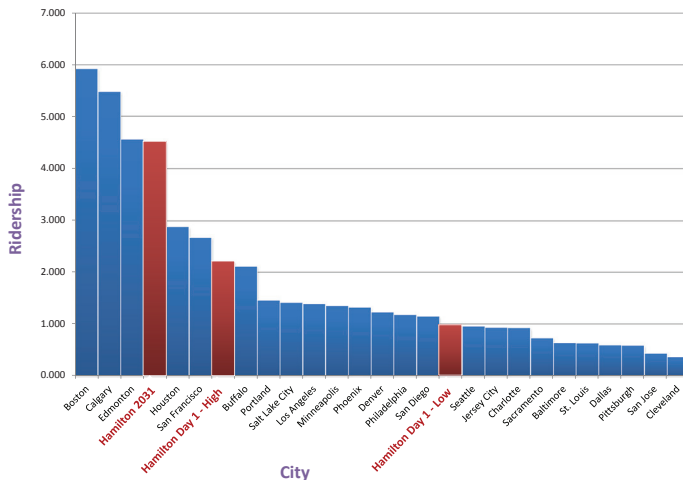
## b. Summary of 2012 Work Plan Activities

A significant amount of rapid transit work has been completed since 2007. In 2012, staff have worked on a number of strategic rapid transit priorities to advance the B-Line to a funding decision point. The preliminary design and engineering (PDE) and 2012 work plan items are required to be submitted to Metrolinx so that a funding decision can be made by its Board of Directors.

Work completed in 2012 included the following, which is provided in greater detail in Appendix A:

- The **LRT Benefit and Cost Report**, which outlines the estimated capital cost for the B-Line at \$811 million (2011 dollars) +/- 20%, based on 30% detailed design. The B-Line operating cost per passenger for LRT on day one ranges from \$0.95 to \$1.80, dependent on the day one level of ridership uptake compared to \$1.07 for the existing B-Line bus service. By 2031, LRT cost, per passenger, is estimated at a net revenue of (\$0.75) compared to a \$1.12 subsidy for bus only operation.
- A **comparison of the proposed B-Line LRT with other systems in Canada and the United States** showed that system performance as it relates to ridership would be mid range as compared to the other successful LRT systems on opening day and be one of the top-performing systems in 2031.
- Metrolinx has agreed to deferring an environmental assessment for the Maintenance and Storage Facility until a funding agreement is reached. The proposed cost of an MSF is within the range allocated in the capital budget estimates.
- An **Electromagnetic Field and Vibration Analysis** was also completed. Vibration mitigation would require an elevated level of vibration isolation in some areas (from encapsulated boot to floating slab). The cost for this is within range of the budget estimates.  
The results of the electromagnetic field mitigation study indicate that there are technical solutions available to mitigate electromagnetic field interference on the scanning electron microscope at McMaster University.

A comparison of projected LRT ridership in Hamilton with other systems across North America shows that Hamilton has potential to be one of the leading systems



- The **phasing analysis** demonstrates that the best initial investment in the B-Line is for the full line (McMaster University to Eastgate Square) followed by McMaster University to Queenston Traffic Circle as the second best initial investment option.
- Also in 2012, McMaster Institute of Transportation and Logistics released a report titled **The North American Light Rail Experience: Insights for Hamilton**. McMaster Masters Graduate Students and Dr. Krantzberg also published a journal article titled, **Light Rail Transit in Hamilton: Health, Environmental and Economic Impact Analysis**.

## c. Proposed 2013 Work Plan

The work completed since the start of rapid transit indicates that there is a business case for Light Rail Transit along the B-Line route. In order to continue to advance Light Rail Transit, as an ultimate goal, a proposed work plan has been outlined in this section. The work plan is structured to outline work that should be completed in the absence of a 2013 funding announcement as well as items that should be added immediately following a positive funding announcement.

### Activities identified for 2013 include:

1. LRT vehicle optimization modelling;
2. Value engineering of the B-Line/overhead power changes;
3. Additional geotechnical investigations;
4. Assist with preparing funding evaluation;
5. A-Line routing and technology development;
6. HSR network optimization;
7. Delivery model assessment strategy; and,
8. A-Line nodes and corridors study.

### Should funding for implementation of the LRT be forthcoming, additional work plan items for 2013 include:

9. Advanced B-Line utilities coordination;
10. early enabling works, including utility relocations in advance of a design-build contract;
11. environmental project report for the maintenance and storage facility (MSF);
12. property impact assessments
13. power substation site location; and,
14. development of specifications for B-Line LRT procurement process.

### Additional projects identified for 2014 include:

15. Development of land acquisition and expropriation process and commencement of B-Line land acquisition;
16. Neighbourhood parking strategies (phase 1 neighbourhoods including Queenston, Parkdale, Nash, and Eastgate);
17. B-Line land acquisition;
18. Survey work and establishment of project control line; and,
19. L, S, and T Line - BRT Light investigation and prioritization.

Continual advancement of Rapid Transit planning will ensure that Hamilton is in a strong position to implement LRT upon reaching an agreeable funding position. Continuation of work ensures that advancement of rapid transit lines continues, that project implementation is cost effective and provides the best solution for Hamilton as well as the region.

## 2 Rapid Ready Essentials

Building rapid transit requires more than simply constructing a right-of-way and running trains on it. Rapid transit can play a transformational role in how the city moves around and how the city grows provided that the conditions, policies, and plans are in place to maximize ridership, integration, and positive impacts on surrounding urban systems.

Rapid Ready focuses on three key ingredients that are necessary to support rapid transit investment: building an integrated transit network and growing ridership, creating supportive land uses and communities, and developing a seamless multi-modal transportation system.



### IMPROVING TRANSIT

Structuring the transit network around rapid transit corridors, increasing transit service, and improving the customer experience are essential to build ridership in anticipation of rapid transit and to position transit as a competitive mobility choice.



### SUPPORTIVE COMMUNITY PLANNING

Transit-supportive land uses and densities set within well-designed communities are important elements of rapid transit implementation. Planning how the city will grow and around rapid transit is necessary and engaging impacted neighbourhoods to shape this growth is essential.



### MULTI-MODAL INTEGRATION

Rapid transit will serve as the main transit spines in the city; however, it is just one aspect of expanded mobility choice. Integrating more travel options will maximize the impact of rapid transit and make it easier to get around the city.



## IMPROVING TRANSIT



The first key contributor to becoming Rapid Ready in Hamilton is **to invest in improving transit services and reconfigure the transit network in anticipation of rapid transit**. These early investments would increase ridership, elevate the role of public transit in Hamilton, and prepare customers for rapid transit implementation.

Increasing transit ridership in Hamilton should be a key component of a strategy to get Rapid Ready in order to **grow the market of transit riders that would be eventual rapid transit users**. This ensures that new rapid transit services are well utilized, increases transportation user benefits, and provides a more attractive financial business case for rapid transit investment. While there are many measures to increase transit ridership, the proven approach is **to provide more hours of service**. Increasing service makes transit more frequent and attractive to riders, with a direct correlation between revenue service hours per capita and transit ridership per capita.

Increasing municipal investment in transit service to build ridership will demonstrate that Hamilton is serious about public transit as a competitive travel choice.

In addition to investing in more service hours, transit can become Rapid Ready by **reconfiguring the network to prepare for rapid transit service**, by reorienting existing transit services to feed planned rapid transit corridors to establish travel patterns in advance of implementation. Taking a proactive approach to network changes, in conjunction with engagement of impacted communities, will help customers and residents understand, influence, and champion improvements to the transit network.

Finally, getting *Rapid Ready* means elevating of the role of public transit in Hamilton – making transit a competitive mobility choice that is central to the city’s communities. Currently, there are strong perceptions of public transit in Hamilton as not a choice, but a service relegated only to those who cannot drive. Changing this perception, through a combination of improved service, an enhanced customer experience, marketing, and branding are key to reposition transit as a viable and attractive choice. Giving transit greater priority on streets, making it faster and more reliable, will reinforce transit’s role in keeping Hamilton moving.



## SUPPORTIVE COMMUNITY PLANNING



A second key element for getting Hamilton Rapid Ready is to **continue the citywide discussion of how the city should grow around transit and rapid transit**. Over the past several years, this has included discussions on building forms, heights, densities, mixed-uses, heritage preservation, public space, and community services, among many others. Tough decisions will be necessary to protect stable urban neighbourhoods and identify opportunities for intensification and redevelopment – particularly at planned key nodes of planned rapid transit lines.

**Using a mix of tools**, such as the city's Official Plan, zoning bylaws, corridor studies, secondary plans, and urban design guidelines, Hamilton can shape land uses around the future rapid transit corridor. **Much of this work has begun**, such as the completion of the city's Urban Official Plan, the Transit Oriented Development Guidelines, and the Main King Queenston Corridor Strategy Study. These and other studies (such as existing downtown and Business Improvement Area (BIA) development incentives) explore incentives to encourage redevelopment and intensification at designated locations, while community benefit frameworks could ensure that benefits from new development and rapid transit are distributed on a wider scale.

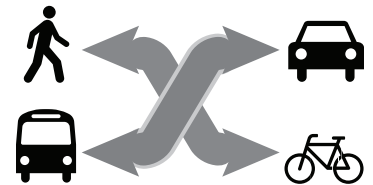
Developing the land use-planning framework along the rapid transit corridor would have major benefits, the greatest of which is the building of **community support and buy-in** for a renewed vision and plan. Also important is the environment of certainty it provides for developers and property owners, reducing the level of risk and barriers for development.

With careful guidance and inclusive community engagement, Hamilton's rapid transit corridors can evolve to become vibrant, transit-supportive, and rapid ready communities with safe and active linkages to and from rapid transit and throughout communities.

Engaging communities early and continuing the conversation on how rapid transit corridors should evolve and change are essential to integrating rapid transit with our neighbourhoods and future development.



## MULTI-MODAL INTEGRATION



A third component is to develop a multi-modal transportation system in Hamilton with connections to rapid transit by other modes, including park and ride, walking, cycling, and local and inter-regional transit. An essential first step is to **change the way city departments interact and make decisions around transportation**. This starts with reorganizing city departments around mobility management and developing working groups to tackle pressing and long-term multi-modal integration issues. This will allow rapid transit, when implemented, to integrate easily into the modal mix in the city.

**Improving pedestrian environments** in advance of rapid transit is essential. This means closing gaps in sidewalks and pedestrian linkages from transit stops to adjacent communities and destinations, calming traffic to increase safety, and improving pedestrian amenities and streetscapes to make a more pleasant walking environment. **Creating barrier-free and accessible pedestrian environments** will be a priority to respond to the mobility needs of an ageing population. **Cycling can also play a major role** for medium-distance travel. It can also extend the catchment of rapid transit and bridge the “last-mile” gap by providing reliable access to final destinations. Providing safe cycling routes coupled with secure bike parking, are two keys to encourage cycling to transit. In addition, public bike share transit

systems provide public fee-for-use bicycles to efficiently transport riders to major transit nodes.

It is recognized that a majority of trips in Hamilton will continue to be by car. However, from a rapid transit perspective, there are actions and strategies that can be taken in advance **to promote the shift of travel from car to transit and other modes**, such as developing park-and-ride facilities and allowing high-occupancy vehicle access to transit-only lanes. This could encourage changes in travel behaviour which could be a precursor to transit use. The key to these policies is to phase auto-related strategies in concert with improved transit services and implementation of rapid transit.

Multi-modal integration also looks at the role of regional and intercity transit, which in Hamilton’s context, is important for linkages throughout the Greater Golden Horseshoe, and beyond. As the western gateway to the Greater Toronto and Hamilton Area, home of the second largest airport in the region, and active port and at the junction of major rail and road corridors, rapid transit will play a role in providing connections between and access to these linkages. Advancing plans for multi-modal transit hubs and mobility hubs to create seamless connections between local, rapid, and interregional transportation services is a major priority.



## 3 Foundation

Substantial foundation has been laid in preparation for rapid transit in Hamilton, the result of years of planning on a master plan, corridor, and local scale. There are many policies and initiatives that are already in place that support Hamilton's objective for rapid transit, expanded mobility choice, and for more liveable, accessible, and inclusive communities.

**Exhibit 1** provides a timeline summary of many of the initiatives completed or in progress relating to the development of rapid transit and mobility initiatives in Hamilton.

This section provides a summary of these policies and initiatives at national, provincial, city, and corridor levels. Additional detail on these initiatives and policies can be found in **Appendix B1**.

### National-Level Initiatives

On the national level, the Canadian Urban Transit Association, which represents public transit systems across the country, has led research, policy development, and government lobbying efforts to improve public transit and create supportive urban systems. The centrepiece of CUTA's efforts is its national policy document - Transit Vision 2040 - and through exercising its efforts around its new vision statement: "to inspire and influence the evolution of integrated urban mobility."

### Provincial-Level Initiatives

The Province has provided substantial leadership over the past decade in advancing policy that encourages alternative transportation and more sustainable land use development patterns. Starting with the 2005 Provincial Policy Statement, Greenbelt Plan and the Growth Plan for the Greater Golden Horseshoe these policies have provided the foundation for municipalities to pursue reurbanization and intensification policies around transit.

The establishment of Metrolinx and the development of The Big Move has allowed for the advancement of a regional transit network, including the identification of rapid transit in Hamilton as a priority.

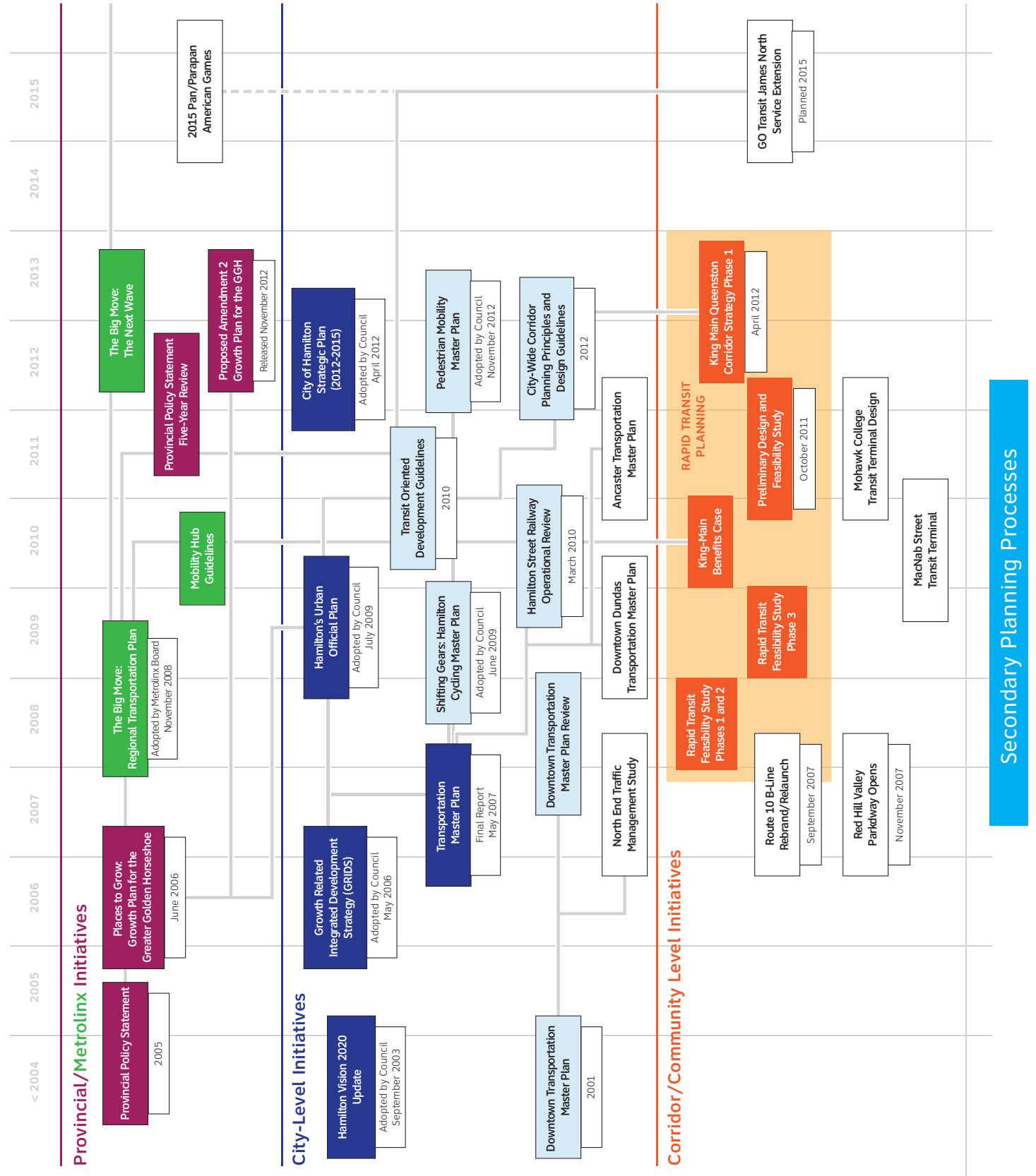
### City-Wide Initiatives

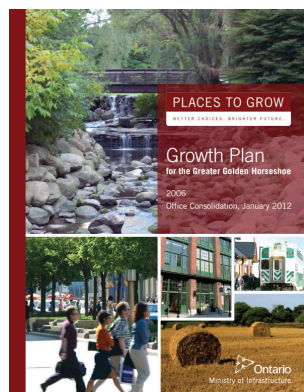
Hamilton has also taken a leadership role in adopting policies that promote sustainable transportation and land use since the adoption of the city's vision, which precipitated in city-wide plans and initiatives, such as GRIDS, the Transportation Master Plan, and a renewed Urban Official Plan. These initiatives have led to extensive progress in establishing a strong framework for integrated mobility and rapid transit.

### Corridor-Level Initiatives

With provincial support, the city has embarked on extensive planning on rapid transit corridors, notably in the King-Main-Queenston (B-Line) corridor, where much planning and design work has been completed. Other project-level initiatives for integrated mobility have also advanced over the past several years, creating momentum for further action and progress.

EXHIBIT 1: Timeline of Transportation Policy Initiatives





| Policy or Plan   | Improving Transit | Supportive Land Use | Multi-Modal Integration |
|--|-------------------|---------------------|-------------------------|
| <b>National Initiatives</b>  |                   |                     |                         |
| <p><b>Canadian Urban Transit Association - Transit Vision 2040</b></p> <p>The Canadian Urban Transit Association represents the collective knowledge of public transit providers from across Canada. CUTA Transit Vision 2040 defines a future in which public transit maximizes its contribution to quality of life with benefits that support a vibrant and equitable society, a complete and compact community form, a dynamic and efficient economy, and a healthy natural environment. Transit is widely recognized as an important part of the solution to national challenges such as climate change, public health, economic development, and safety and security.</p>   | ✓                 | ✓                   | ✓                       |
| <b>Provincial Initiatives</b>  |                   |                     |                         |
| <p><b>Places to Grow: Growth Plan for the Greater Golden Horseshoe</b></p> <p>The Growth Plan is the pre-eminent land use planning document in the Province of Ontario, which provides forecasts for population and employment growth in the Greater Golden Horseshoe (GGH) and sets policies for how municipalities will accommodate forecasted growth. Hamilton was forecast to grow from 510,000 residents in 2006 to 660,000 residents in 2031; and from 210,000 jobs to 300,000 jobs over the same period. The plan also designates Downtown Hamilton an urban growth centre, which recognizes it as an important urban node in the GGH and as such is allocated substantial growth. The Growth Plan sets policies on intensification, particularly in existing urban areas and near rapid transit. It also sets density targets for urban growth centres and intensification targets for municipalities. Hamilton's rapid transit plans are very much aligned with Growth Plan objectives.</p> <p><i>NOTE: The Province has released a proposed amendment of the Growth Plan to reflect population and employment forecasts to 2041, with projections for Hamilton at 780,000 people and 350,000 jobs.</i></p> | ✓                 | ✓                   | ✓                       |
| <p><b>The Big Move: Regional Transportation Plan for the Greater Toronto and Hamilton Area</b></p> <p>Adopted in 2008 by Metrolinx, The Big Move is a regional transportation plan for the Greater Toronto and Hamilton Area (GTHA), setting transportation policy and infrastructure planning to 2031 and aligned with Growth Plan objectives and policies. The Big Move proposes a network of rapid transit lines across the GTHA, and Hamilton's B-Line, A-Line, and Mohawk rapid transit corridors are included in the strategy. The B-Line was identified as a "Top 15" project by Metrolinx in The Big Move and was announced as part of the "next wave" projects in November, 2012 for funding upon finalization of the Investment Strategy in mid-2013.</p> <p>The Big Move also identifies multi-modal strategies, land use integration policies, including a network of mobility hubs, and provides guidance and policy support for transportation planning.</p>   | ✓                 | ✓                   | ✓                       |

| Policy or Plan  | Improving Transit | Supportive Land Use | Multi-Modal Integration |
|---|-------------------|---------------------|-------------------------|
| City-Wide Initiatives   |                   |                     |                         |
| <b>Hamilton Vision 2020 Update</b><br>Renewed in 2003, Hamilton's Vision 2020 sets out the over arching objectives that guide the planning, governance, and operations of the city. Specific to becoming Rapid Ready, the Vision includes a "Getting Around" component, where the statement: "An integrated transportation system serves the entire city in an affordable, efficient, and accessible way" is most representative of the goals and objectives of rapid transit in Hamilton.  | ✓                 | ✓                   | ✓                       |
| <b>Hamilton's Strategic Plan 2012-2015</b><br>The City's strategic plan confirms the city vision, mission, values, and strategic priorities, providing a direction for the planning of the city and the delivery of services. One of the strategic priorities, "Improve the City's transportation system to support multi-modal mobility and encourage inter-regional connections," is highly tied to the need to be Rapid Ready.   | ✓                 |                     | ✓                       |
| <b>Transportation Master Plan</b><br>The City of Hamilton's over arching transportation strategy is to rely on transit and travel demand management, in combination with road capacity optimization to solve transportation problems, before looking to road expansion. It is also recognized that adequate road infrastructure is essential for economic development and that strategies must reflect a balanced transportation network. The TMP also identified the city's rapid transit corridors, including those along King/Main and Upper James, which have served as the foundation for rapid transit planning. Also included in the TMP were strategy papers related to walking, cycling, and the road network, which guided the development of other modal master plans. | ✓                 |                     | ✓                       |
| <b>Growth Related Integrated Development Strategy (GRIDS)</b><br>GRIDS includes a growth management study and a collection of infrastructure-related master plans to determine where Hamilton should and will grow over the next 30 years, integrating land use, transportation, water, waste water, and stormwater planning into one project. The Transportation Master Plan is one of the plans under GRIDS, which set in motion the city's rapid transit and multi-modal initiatives. GRIDS also set nine directions to guide development, among which included development infill and intensification, expanded transportation options, and maximization of use of existing infrastructure.   | ✓                 | ✓                   |                         |

EXHIBIT 3: Hamilton Urban Official Plan - Urban Structure

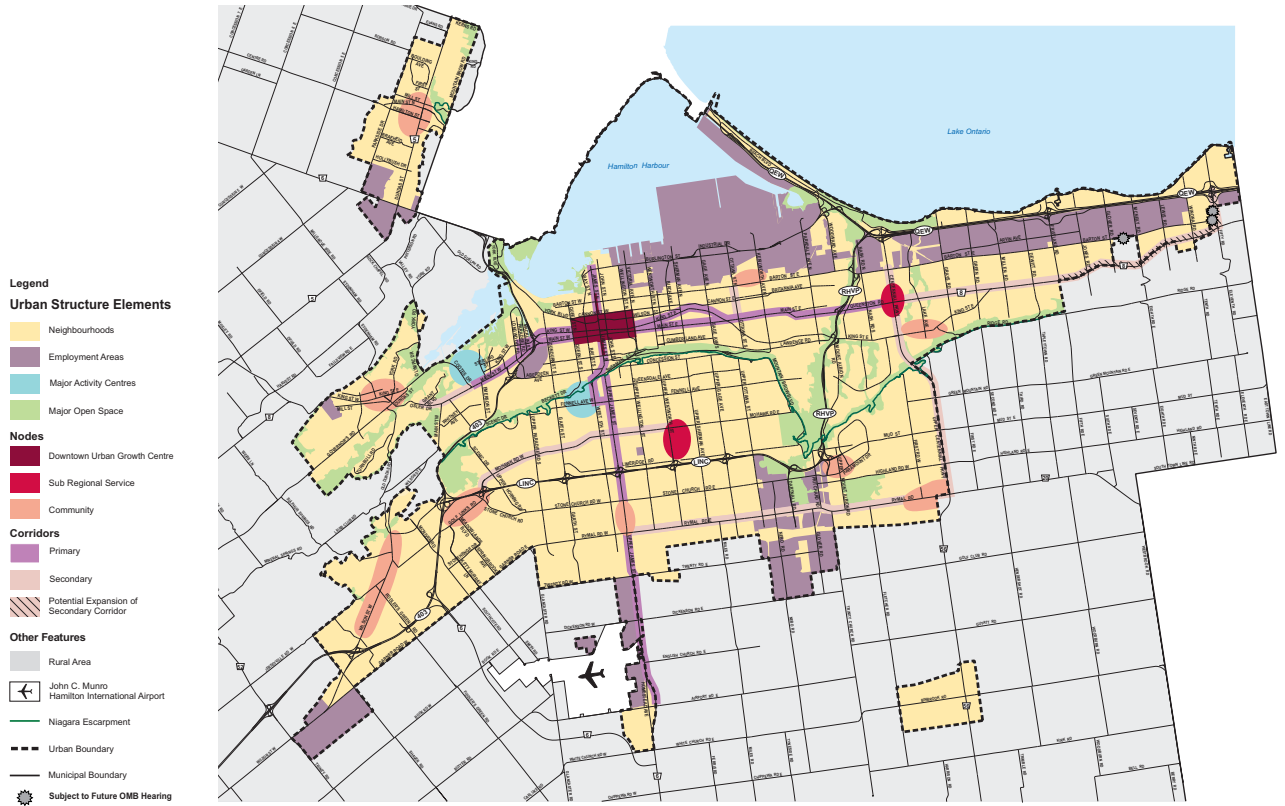
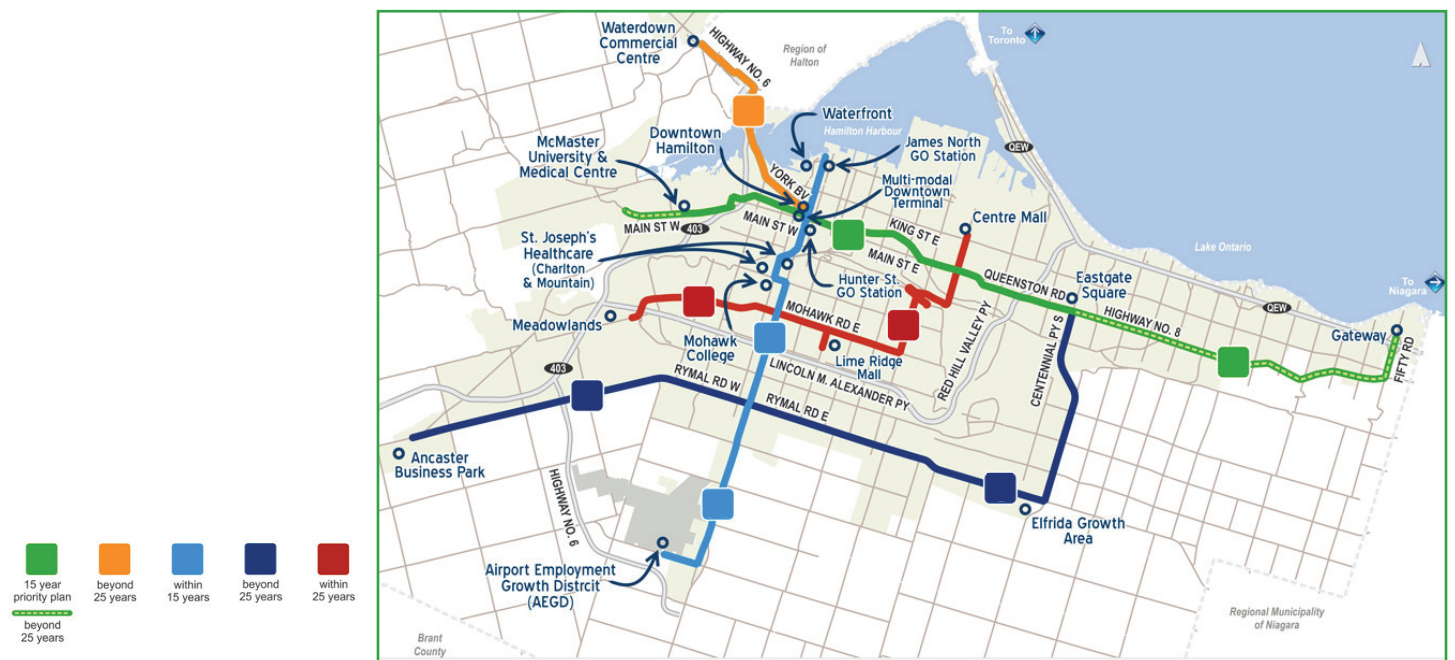
















EXHIBIT 2: Conceptual Rapid Transit Corridors



| Policy or Plan   | Improving Transit   | Supportive Land Use   | Multi-Modal Integration   |
|--|---|---|---|
|  |   |    |    |
| <p><b>Hamilton’s Urban Official Plan</b></p> <p>Hamilton’s Urban Official Plan was approved by City Council in 2009, replacing a number of Official Plans from pre-amalgamation and conforming to the Province’s Growth Plan for the Greater Golden Horseshoe. The Urban Official Plan will play a major role in getting Hamilton Rapid Ready from a land use, community development, and planning perspective, by providing policies in transit supportive land use and the creation of complete communities. The King-Main-Queenston and James-Upper James rapid transit corridors are identified as primary corridors in the plan, which will be a focus for intensification and infill development (see exhibit 3). Development would be supported by an Integrated Transportation Network, in which rapid transit plays a key role. The Urban Official Plan has clear policies for getting rapid ready, including policies on compatible and transit supportive land use, multi-modal integration (including park and ride), and increased transit services (Policies 4.4.1; 4.4.2, 4.4.10, 4.4.11, 4.4.12). <i>NOTE: The Hamilton Urban Official Plan is currently before the Ontario Municipal Board.</i></p> |    |    |    |
| <p><b>Shifting Gears – Hamilton’s Cycling Master Plan</b></p> <p>Shifting Gears is Hamilton’s Cycling Master Plan, which takes a holistic view at initiatives to encourage cycling as viable and attractive mode choice in the city. The plan includes policies regarding all aspects of cycling, from routes, to end-of-trip facilities, to education and promotion programs. From a Rapid Ready perspective, the cycling master plan proposes bikeway routes along rapid transit corridors to facilitate access to transit, continued support of bike racks on buses, and providing bike parking at rapid transit stations. Bike Share is also proposed as an approach to improve multi-modal integration.</p>   |   |    |    |
| <p><b>Pedestrian Mobility Master Plan</b></p> <p>Rather than proposing specific infrastructure projects, the Pedestrian Mobility Master Plan includes a toolkit of Context Sensitive Design applications that will encourage the provision of amenities within the right of way that make public transit, pedestrian movement and cycling effective alternative transportation modes including better access to interesting destinations, increased shade from trees, differing sidewalk widths, pedestrian plazas.</p>  |   |  |  |
| <p><b>Hamilton Street Railway Operational Review</b></p> <p>In 2010, Hamilton Street Railway completed an operational review of the entire transit system to identify challenges and opportunities in the route network and propose service enhancements to improve the operation, reliability, and attractiveness of transit service. The over arching theme of the report’s recommendations was the need to provide greater investment into transit service in Hamilton through an increase in service hours, reconfiguration of the route network, renewing transit branding and marketing, and investing in transit priority to improve operations and reliability. The Review also recommended enhanced express service along the A-Line and B-Line, as well as other designated major transit corridors. A summary of the HSR Operational Review is attached in Appendix B2.</p>   |  |   |  |
| <p><b>City-Wide Corridor Planning Principles and Design Guidelines</b></p> <p>In April 2012, the City of Hamilton adopted City Wide Corridor Planning Principles and Design Guidelines. The purpose of the Guideline is to provide a set of planning principles and implementing design guidelines for Corridors in the City of Hamilton. These principles and guidelines provide direction for new development, public realm investments and future planning studies along primary and secondary Corridors across the City.</p>   |   |  |  |

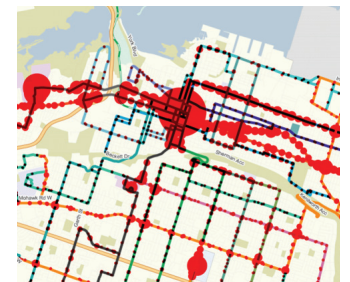
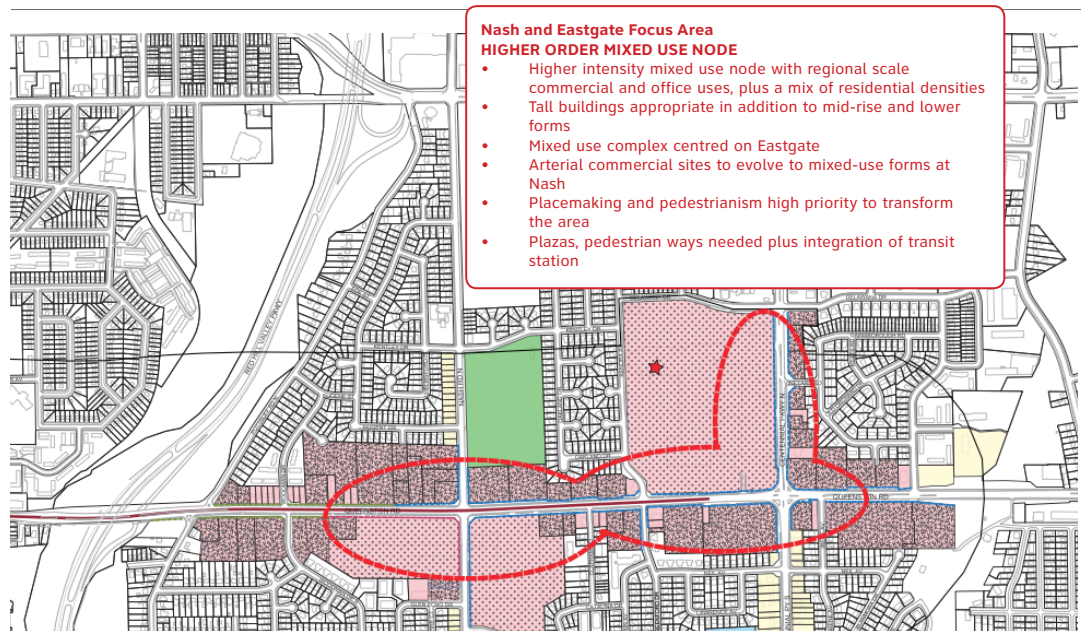


EXHIBIT 4: Excerpt from Main King Queenston Corridor Strategy Study



| Policy or Plan   | Improving Transit | Supportive Land Use | Multi-Modal Integration |
|--|-------------------|---------------------|-------------------------|
| Corridor-Level Initiatives   |                   |                     |                         |
| <p><b>Rapid Transit Feasibility Study Phase 1 to 3</b></p> <p>The Rapid Transit Feasibility Study for Hamilton was completed in three phases between 2008 and 2009. The Feasibility Study identified potential rapid transit technologies for the BLAST rapid transit network and assessed phasing strategies for implementation of rapid transit in the corridors. Other supportive studies were also completed on economic potential, community impacts, implementation guidance, and environmental impacts. Each phase also provided recommendations for supportive policies, including land use, transit system integration, quality of service, and travel demand management.</p> <p>The <b>Preliminary Design and Feasibility Study</b> for the B-Line was completed with the submission of the Environmental Project Report in October 2011. A notice of completion for the transit project assessment was submitted in early 2012.</p> | ✓                 | ✓                   | ✓                       |
| <p><b>Main King Queenston Corridor Strategy Study</b></p> <p>The purpose of the strategy is to guide future growth and change along the Main King Queenston Corridor, to identify appropriate transit-supportive land use and development patterns, and develop other strategies to support the revitalization of the corridor itself and improve and sustain the well being of the adjacent neighbourhoods.</p> <p>In April 2012 Council approved a “Focused Reurbanization” option for the Main King Queenston Corridor, which would promote the Corridor as a mixed use, transit oriented corridor and would provide the necessary direction to achieve the City’s intensification targets.</p>   | ✓                 | ✓                   | ✓                       |

## 4 Progress

Hamilton is starting to see the impacts of the foundation established over the past decade. Change is occurring on all levels from the way the City departments are organized to the way communities and transportation systems are being designed. Transportation and community planning is no longer done in silos, but in an integrated fashion. Evidence of this change at the City level is demonstrated by:

- A downtown that is recovering, witnessing new buildings being built and old one's being renovated and re-purposed;
- Tight urban boundaries that were defined and are being respected, upholding the principles of the Provincial Growth Plan;
- Neighbourhood associations, citizens groups and advocacy groups that are freely voicing opinions because they believe their voices will be heard and that their actions will matter. An example is the success of coalitions such as Open Streets Hamilton which are creating events that promote multi-modal, healthy and vibrant streets.

Transportation is closely tied to many of these changes. In 2007, when GRIDS was being undertaken, the City evaluated options to manage growth in-line with Places to Grow and the Greenbelt Plan. Without these policies the City may have continued to expand outward requiring the construction of new roads to serve this outward growth. As the City has chosen to grow from within as much as possible, in a nodes and corridors urban structure, investment in a multi-modal transportation system and managing demand is needed.

### RECENT ACTIONS AND SUCCESSES

**Launching the A-Line bus service**, which is a precursor to rapid transit in the Airport to Waterfront Corridor

Becoming one of the first transit systems in the country **with a 100% Low Floor Bus fleet**

**Bike racks on all buses** since 2007

Adding over **24,000 transit service hours** to the regular transit system as guided by the Service Investment Plan

Completion of the **MacNab Street Transit Terminal**, providing a new multi-modal transportation hub in the heart of downtown

Implementing a **travel training pilot** for DARTS

**Expanding accessible taxi plates**, with a further increase of 16 accessible taxis planned in 2013

**Computer-aided dispatch and vehicle tracking system for DARTS** in 2013

**Expanding cycling infrastructure in primary corridors**, including 10 km of new bike lanes and **new bike storage facilities** at Mohawk College and 20 schools (with funding from Metrolinx and MTO)

**Working with Mohawk College to implement a student pass**, which subsequently increased transit ridership to the college by 20%

Leveraging the **Smart Commute Initiative**, and **working with 14 major employers to enrol over 87,000 employees to date**; more than one-third of city's employment base

Initiating a **community based-social marketing campaign**, as a pilot project to be rolled out to other communities

Developing and **Open Streets** event to promote walking and cycling as normative behaviours.

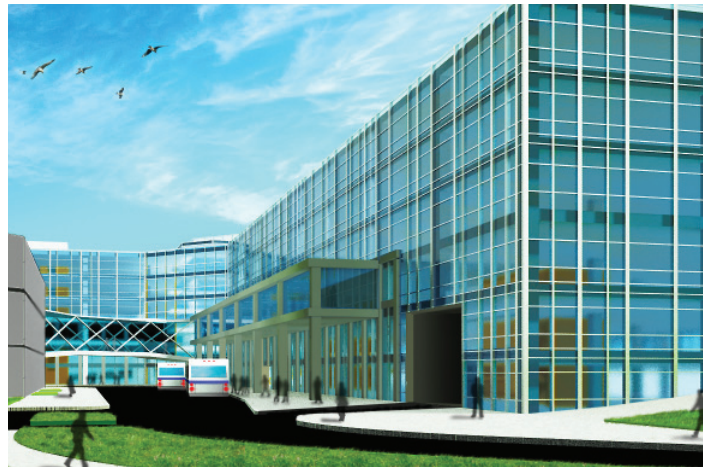


# Current Initiatives



## MACNAB STREET TRANSIT TERMINAL

New platforms and amenities at downtown terminal serving B-Line and A-Line



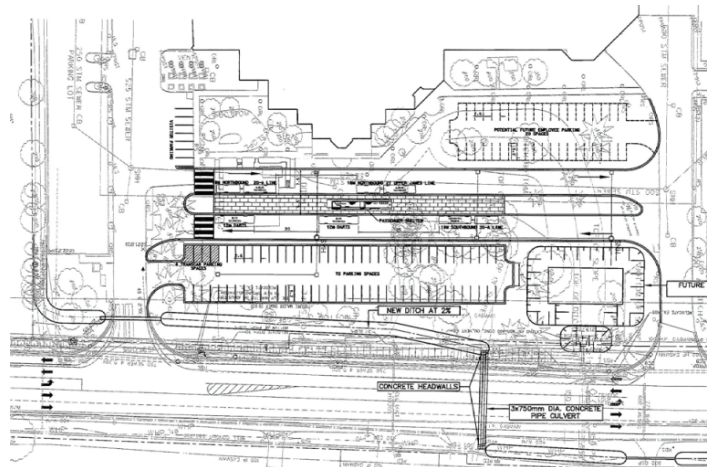
## MOHAWK MULTI-MODAL TRANSIT HUB

New transit hub serving the A-Line corridor and mountain bus routes, with integrated development and mobility hub features



## A-LINE/B-LINE ENHANCED STOPS AND SHELTERS

New platforms and amenities at downtown terminal serving B-Line and A-Line



## MOUNTAIN TRANSIT TERMINAL/PARK AND RIDE

New transit terminal and 72-space park and ride located at Mount Hope



**GO TRANSIT McMASTER UNIVERSITY TERMINAL**  
New bus terminal at McMaster University serving GO Transit



**GO TRANSIT JAMES NORTH STATION**  
Extension of Lakeshore West GO Transit rail service to James North Station scheduled for operation in Spring 2015. Station is currently in design phase.



**BIKE PARKING AT MUNICIPAL FACILITIES**  
Audit of bicycle parking at municipal facilities and providing bike racks where they are not available



**IMPROVING TRANSIT**



**SUPPORTIVE COMMUNITY PLANNING**



**MULTI-MODAL INTEGRATION**



**FUNDED BY QUICKWINS**



## 5 Looking to the Future: The Role of the Transportation Master Plan

### a. Targets

In 2007, the City adopted a Transportation Master Plan which set targets for reducing the number of kilometres made by single occupant vehicles, referred to as vehicle-kilometres of travel (VKT). This was a bold, but deliberate move which recognized that VKT is related to so many indicators from emissions, to personal travel costs, to congestion. The TMP established a clear path how this would be achieved. Reductions would be achieved by facilitating compact mixed use development and therefore shorter trips. In addition, a comprehensive suite of travel demand management (TDM) measures promoting carpooling, building facilities to encourage walking and cycling and increasing the share of trips made by transit all would limit VKT growth. Of course, rapid transit was central to the 2007 TMP and set the course for all of the work on rapid transit since.

For transit, the TMP expected transit's mode share to increase from 6% to 9% by 2011, increasing to 12% for the 2021-2031 period. This implied that the number of annual transit rides per capita (a common benchmark for transit usage) would increase from 40 rides per capita to 80-100 rides per capita in the longer term (2031). This was an aggressive goal, but rationalized to some extent by the fact that Hamilton did achieve these mode split levels in the 1980's. It also implied significant changes in

The Transportation Master Plan (TMP) sets targets and the framework for transport policy and investment over a 25-year period. Hamilton's TMP was approved in 2008.

### Transportation Master Plan Targets

#### Estimated Daily Vehicle Kilometres of Travel

|                    |                      |                     |
|--------------------|----------------------|---------------------|
| <b>4.8M</b>        | <b>4.3M</b>          | <b>3.8M</b>         |
| EXISTING<br>(2001) | SHORT TERM<br>TARGET | LONG TERM<br>TARGET |

#### Share of Daily Trips by Transit

|                    |                      |                     |
|--------------------|----------------------|---------------------|
| <b>5%</b>          | <b>9%</b>            | <b>12%</b>          |
| EXISTING<br>(2001) | SHORT TERM<br>TARGET | LONG TERM<br>TARGET |

#### Annual Transit Rides per Capita

|                    |                      |                     |
|--------------------|----------------------|---------------------|
| <b>40</b>          | <b>60</b>            | <b>80-100</b>       |
| EXISTING<br>(2001) | SHORT TERM<br>TARGET | LONG TERM<br>TARGET |

#### Share of Daily Trips by Walking or Cycling

|                    |                      |                     |
|--------------------|----------------------|---------------------|
| <b>6%</b>          | <b>10%</b>           | <b>15%</b>          |
| EXISTING<br>(2001) | SHORT TERM<br>TARGET | LONG TERM<br>TARGET |

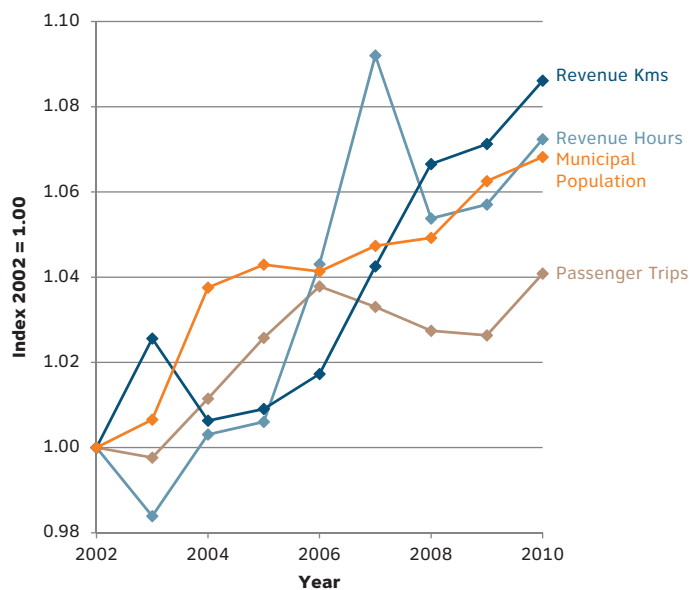
investment priorities, with a focus on transit.

To date, there have been some positive gains in ridership, but the annual rides per capita remains at just over 40. Hamilton has added some 55,000 transit service hours to the regular transit system between 2003 and 2010, but this has more or less been in line with population growth and necessary service area expansion. To achieve gains in ridership per capita and transit mode shares, the level of investment in transit; both in the amount and quality of service, needs to greatly outpace the rate of population growth.

Between 2011 and 2031, Hamilton is expected to add some 130,000 persons and 90,000 jobs. If current travel choices remain the same, Hamilton would see an additional 200,000 more car trips made each day, along with significantly greater levels of congestion, emissions and fuel use.

To put things into perspective, Hamiltonians currently spend about \$680-million annually on fuel for personal travel. Providing alternatives for people to make trips using modes other than private automobiles will have significant societal and economic benefits.

EXHIBIT 5: City of Hamilton Population, Transit Service, and Ridership Change (Indexed to 2002)



source data: Canadian Urban Transit Association, 2002-10. Canadian Transit Factbook.

## IMPLICATIONS OF NOT ACHIEVING TARGETS

Not investing in transit poses a significant risk to the City. The obvious risk is that not achieving mode share targets would result in increased congestion and associated delays and a greater need to invest more heavily in roads. A not so obvious risk is that Hamilton residents continue to be captive to automobiles and the financial burden that this comes with. Even if transit investments allow a household to manage with one car instead of two, this can translate into significant savings over time.

There are also risks in not addressing integrated mobility needs in response to changing demographics and an ageing population that will be increasingly dependent on getting around by transit or as a pedestrian. Negative impacts on health and community could result, particularly by limiting access to services and social activities.

Economically, besides the obvious risk of increased congestion on competitiveness, Hamilton could lose the opportunity to create walkable neighbourhoods proven to be key attractors to the creative industries that Hamilton wants to build its economy upon.

Essentially, Hamilton cannot afford to not invest in improving mobility. Investments made now will continue to pay dividends for many generations.

## b. What is required to get there?

Hamilton is at a critical point in its evolution towards a more sustainable city. Much progress is being made on transit, walking and cycling, but what will it take to get to the next level? The answer lies in rapid transit. As shown below, cities in Canada that have achieved at least 85 rides per capita all have some form of rapid transit. Although there are many factors involved, such as population, employment, urban form, and congestion levels, it can be concluded that if Hamilton is to achieve its transportation targets, rapid transit is necessary.

However, just building rapid transit alone will not get Hamilton where it needs to be. Cities that have or are moving towards rapid transit are also making significant increases in base transit service levels in advance of rapid transit. For example, London, Halifax, Winnipeg and Victoria have all significantly increased regular transit service levels over the past few years in advance of recent or pending investments in bus rapid transit or light rail transit. In the case of Winnipeg, a city which is similar in size as Hamilton, service hours per capita are about 40% greater than Hamilton. Winnipeg recently opened the first phase of its bus rapid transit system and continues to incrementally expand its transit system.

It would not be productive for Hamilton to build light rail while maintaining 30-minute headways on regular transit routes serving LRT. Perhaps more importantly, early and significant investments in base transit levels are required

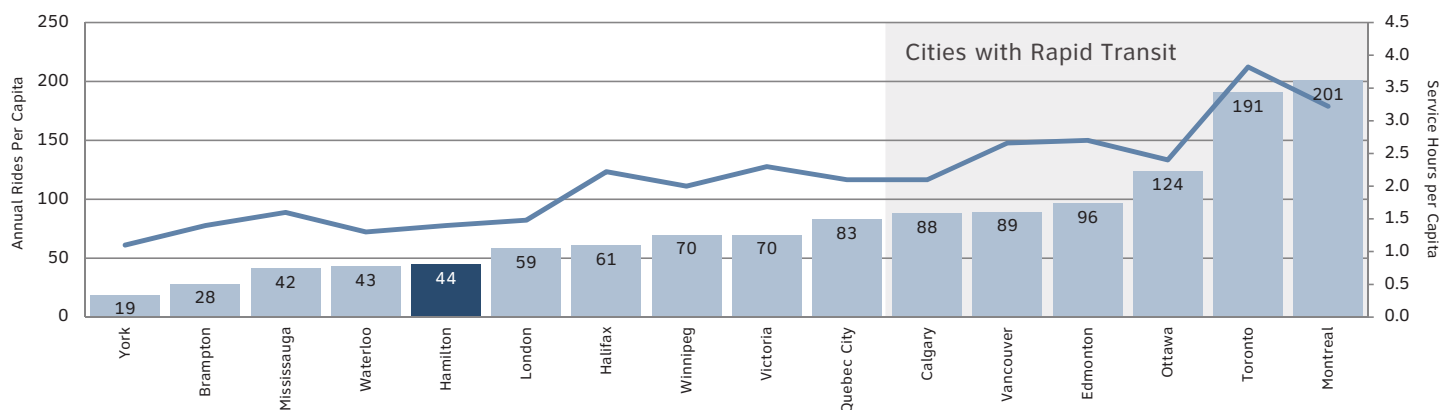
Several Canadian cities have higher per capita ridership without rapid transit, demonstrating an opportunity to increase ridership in the interim prior to LRT implementation in Hamilton.

Hamilton invests approximately 1.4 revenue service hours per capita, a level similar to its peers. However, cities with higher ridership, Winnipeg, Victoria, and Quebec City all exceed 2.0 hours per capita.

### KEY MESSAGES

- There is considerable room for increasing transit service in advance of rapid transit
- Increasing transit service hours can provide significant gains in transit ridership even without rapid transit
- Rapid transit is most productive with established ridership demand that justifies and can benefit from additional capacity

EXHIBIT 6: Ridership vs. Service Hours per Capita for Transit Systems Across Canada (2010)



source data: Canadian Urban Transit Association, 2010. Canadian Transit Factbook.

to build towards rapid transit.

## c. Reviewing the Transportation Master Plan

As reflected throughout this report, the City of Hamilton is at a pivotal point in the evolution of its transportation network. The City's Transportation Master Plan was adopted in 2007. Best practices are to review a master plan every five years to examine conditions and trends, measure achievements and progress, determine if the plan goals and objectives are still valid and update the plan as necessary. There are a number of mobility and transit planning elements in light of this report, recent Council directives, stakeholder input and LRT planning that should be considered through a publicly accessible Five Year Review process, including:

- the prioritization of projects and financial strategies;
- review of the rapid transit studies undertaken to date in the context of the proposed transit network and in light of other plan elements including the road network (auto travel), active transportation (cycling and pedestrian networks), travel demand management, the identification of planned transportation infrastructure (road and transit) and the protection of transportation right of ways;
- if there are additional projects (e.g. the S-Line - Ancaster Business Park to Eastgate via Centennial Road/Rymal Road), which should be prioritized, and could result in possible City requested adjustments to

the Metrolinx Regional Transportation Plan;

- the establishment of evaluation criteria as part of a transparent framework for assessing future transportation priorities, such as network connectivity, ridership, level of service, equity and accessibility, environmental sustainability, community impact, cost and constructability;
- a network wide review of one-way and two-way traffic systems;
- the development and implementation of a complete streets strategy as noted above; and,
- development of the Terms of Reference through the Mobility Corporate Working Team (MCWT).

In addition to the above, on September 12, 2012, Council approved the establishment of a Ward 1, Ward 2 and Ward 3 One-Way to Two-Way Street Study Group to study and report on possible one-way street conversions in the downtown area, specifically Cannon Street and Queen Street, to inform the requisite environmental assessments. As two-way conversions have potential system wide implications for the transportation network, it is proposed that this work be undertaken as an integral component of the Five Year Review. This will also allow the consideration of the complete streets approach as a mechanism to achieve the desired outcomes for the Ward 1, 2 and 3 communities. Furthermore, a complete streets demonstration project is recommended as part of this report and this initiative should be undertaken in coordination with the Working Group.

## i) Developing a Complete Streets Strategy C1.4

In May 2012, the City of Hamilton held a Transportation Summit: “Complete Streets” which brought together 140 community leaders, NGOs, City staff, concerned citizens and business leaders to discuss, brainstorm and monitor progress regarding transportation issues. As a result of the summit, the community made a number of recommendations to work towards complete streets. One of the recommendations is for a Complete Streets strategy as part of the Transportation Master Plan 5 Year Review.

According to Complete Streets for Canada, a complete street:

- is designed for all ages, abilities, and modes of travel;
- process is when safe and comfortable access for pedestrians, bicycles, transit users and the mobility-impaired is not an afterthought, but an integral planning feature;
- policy approach ensures that transportation planners and engineers consistently design and operate the entire street network for all road users, not only motorists;
- offers wide ranging benefits; and,
- is cost effective, sustainable, and safe.

Designing a complete street can be straightforward when right of way width, or public space, is not constrained. However, in most established urban areas, when designing Complete Streets, a balancing act is required in finding the space for all the desired users. The characteristics of a complete street are those that are often associated with two-way traffic flow vs. a one-way traffic flow, such as slower traffic, better walking environments and more liveable streets. The strategy should be focused on the outcome, not a specific traffic design or standard (e.g. one-traffic vs. two-way). Complete Streets can exist in different communities and along various roadways; there is no singular approach to Complete Streets.

A complete streets strategy would provide a decision making framework designed to achieve “a balanced transportation network” and is supported by Official Plan policy.







MY  
CONVENIENCE  
STORE

THE  
MAYOR'S  
OFFICE

WASH  
FRIDAY  
REQUES  
WASHED


10A B-LINE EXPRESS  
TO FORTUITA BOULEVARD

5011

## 6 Actions to Get Rapid Ready

Over the next few years, the City will continue to advance designs for Light Rail Transit in the King-Main-Queenston Corridor as well as accelerate plans for rapid transit in the A-Line corridor. Major investments will be required to bring these projects to fruition. In the interim, there are many things that are needed to get ready for these investments.

**Early and ongoing investments to enhance sustainable transportation infrastructure and facilitate multi-modal travel in Hamilton's Rapid Transit corridors will greatly improve the pay-back for major infrastructure investments when they are made.**

Throughout this section, references will be made to **Mobility Programs and Special Projects** work plans, which are attached as **Appendix C** in this document as indicated by this arrow: 



 **IMPROVING TRANSIT**



 **SUPPORTIVE COMMUNITY PLANNING**



 **MULTI-MODAL INTEGRATION**

### SEVEN KEY ACTIONS



**a. BUILDING A RAPID-READY TRANSIT NETWORK**  
Enhance and increase bus services, restructure the route network around rapid transit corridors



**b. CREATING AN ACCESSIBLE TRANSPORTATION SYSTEM**  
Transit and the transportation system will be fully accessible



**c. MAKING TRANSIT FASTER AND MORE RELIABLE**  
Transit must offer journey times competitive to driving to be an attractive choice



**d. CREATING A REFINED TRANSIT CUSTOMER EXPERIENCE**  
Provide customer service and amenities to make it easier and more attractive to use transit



**e. PROVIDING SAFE AND CONVENIENT WALKING AND CYCLING ENVIRONMENTS**  
Encourage walking and cycling for short- and medium-distance trips while creating strong linkages to transit



**f. INTEGRATING CORRIDOR AND COMMUNITY PLANNING**  
Planning for and building the city around transit



**g. DEVELOPING SEAMLESS MULTI-MODAL CONNECTIONS**  
Integrating different modes of transportation to maximize connections to transit.

## a. BUILDING A RAPID-READY TRANSIT NETWORK ●●

### Core Actions

The Rapid Transit network will draw riders from all parts of the city. Accordingly, the base transit network must be enhanced to firstly, build ridership in the rapid transit corridors, and secondly, feed the rapid transit network. This includes enhancements to service coverage, service span (hours of operation), service levels, and route structure.

It is anticipated that routes will be restructured over time. Light rail transit and bus rapid transit are ultimate goals and their implementation will require regular bus service restructuring. In preparation, the objective will be to increase bus service levels in the A-Line and B-Line corridors to emulate rapid transit. Examples of possible service improvements are:

#### King-Main-Queenston Corridor

1. **High frequency service on B-Line corridor routes:**  
ROUTE 1 KING/ROUTE 10 B-LINE : 5 minutes  
ROUTE 5 DELAWARE/ROUTE 51 UNIVERSITY: 7.5 minutes

Result will be a combined headway of 3 minutes or better in the entire B-Line corridor

2. **Additional service to/from Dundas.** This change will provide a reasonable level of service to the King Street and the Governors Road areas during all time periods and will help to avoid crush loads between Dundas, McMaster and Downtown Hamilton
3. **Service Enlacement to the future Centennial GO Station,** subject to the development of a park and ride and transit terminal facility at this location.
4. In the medium term, **ROUTE 51 UNIVERSITY will be extended to the Mohawk College Multi-Modal Transit Hub** to provide a direct connection from McMaster University to Mohawk College

#### James-Upper James Corridor

5. **Service span and service level improvements to ROUTE 20 A-LINE** along with restructuring to provide a high level of service in the James/Upper James corridor from the airport to the waterfront. Headways will be improved to 10 minutes.
6. **Extension of year-round ROUTE 20 A-LINE service to Hamilton's waterfront** (Pier 8) via Guise Street, also improving service to the future site of James North GO Station.

#### Other Service Improvements

7. **Expanded service coverage** in growth areas, where permitted by the street network
8. **Expanded span of transit service for Ancaster, Stoney Creek and Dundas** to provide service throughout the day, seven days a week
9. **Service enhancements in Waterdown to avoid circuitous routing** and improve connections to Aldershot GO, along with service span and service level adjustments
10. In the longer term, implementing a **new service between Waterdown and Downtown Hamilton**
11. **Extension of ROUTE 21 UPPER KENILWORTH to Heritage Greene** via Mud Street and Pritchard Road
12. In the long term, establish an express bus service link to provide fast east/west service between peripheral nodes on the escarpment.

EXHIBIT 7: Summary of Major Transit Enhancement Concepts



### Fleet and Facility Requirements

13. **An additional 100 buses over the longer term will be required** to execute the improved service levels. As a result, **a new transit garage will be required** to accommodate the additional fleet. This would be located in the lower city, and ideally located close to the future LRT maintenance facility so that administrative functions could be co-located. It is also proposed that the University Plaza terminal be closed and **a new terminal be established at a linkable west end location**. By 2015, the new multi-modal hub at Mohawk College is expected to be complete, enabling further restructuring of A-Line corridor routes.

### Supporting Initiatives

14. **Improving connections to outer communities**, including service span improvements for Glanbrook TransCab and a new service to Binbrook.
15. **Definition of a Frequent Transit Network**, which would serve to highlight important routes connecting the various nodes in the City. Tentatively, referred to as "Go-To corridors", these routes would operate at consistent headways and for consistent duration and would be readily understood by the public. **A pilot of a Go-To Corridor is proposed.**
16. **Public Bike Share transit system** to feed Rapid Transit corridor through multi-modal connections.

## b. CREATING AN ACCESSIBLE TRANSPORTATION SYSTEM ●●●

### Core Actions

Ensuring the transportation system is accessible to all is important to create equality of opportunity and the freedom to move around the city for work, school, leisure, and to perform simple day-to-day tasks. Hamilton has a strong foundation of accessible transit services - DARTS, accessible taxis, and a highly accessible conventional transit system all work together as a family of services.

Increasing the accessibility of the transportation system is especially important in response to an ageing population and to meet the needs of persons with disabilities, of which Hamilton has a higher than average proportion in its population. These needs are coupled with expanded legislation for accessibility, namely the Accessibility for Ontarians with Disabilities Act, and the associated Integrated Accessibility Standards. These set out legislated requirements for transportation service, built environment, and customer service with the goal of a more barrier-free environment by 2025. However, many of the requirements of the AODA and the IAS have a more immediate impact, such as accessibility requirements for conventional and specialized transit services - some standards were for immediate implementation, while others come into effect in 2017.

### CUTA Vision 2040: Focus on serving customers with mobility challenges

*The anticipated growth in the volume of seniors and persons with disabilities using transit demands a major response. The industry will seek to maximize the attractiveness of conventional services to seniors and persons with disabilities, in order to reduce the cost burden of specialized services. Transit systems may develop initiatives related to fares, customer education and travel training, staff sensitivity training, more accessible vehicles and structures, and the efficient concurrent operation of conventional and specialized services. Travel training programs help people with disabilities use regular transit.*



## Actions toward accessibility

1. Implementation of AODA legislation, as above, implementation period follows Council's Strategic policy and budget considerations
2. The 2013 AODA Integrated Accessibility Standard requires harmonization between specialized and conventional transit services with respect to hours of service, fare structures, as well as notification of service delays for the specialized service. The City of Hamilton will meet the legislated time frames.
3. In advance of the AODA requirement of 2017 the City of Hamilton implemented on November 1, 2012 a new eligibility policy for specialized (DARTS) transit. Eligibility for DARTS service is now based on a person's functional abilities (e.g. physical, cognitive, and sensory), and on their environment as to whether they are able to use regular HSR bus service. The five-year impact of demand growth results in a requirement for approximately \$5.7M in new annual operating requirements. The implementation of the new eligibility policy, well in advance of the requirement, highlights Council's priority, through the Corporate Strategic Plan, to implement the AODA, by committing to providing equitable, affordable, and accessible transportation to all Hamilton residents, inclusive of all forms of functional mobility.
4. Review of major bus stops and terminal for compliance with Integrated Accessibility Standards as it relates to accessible bus stop and terminal design.
5. Retrofit buses with automatic pre-boarding vehicle announcements, as required by the Integrated Accessibility Standards, by January 1, 2017
6. **DARTS MDT's**  
The City has awarded a contract to supply, install, test, and commission a turnkey Computer Aided Dispatch and Automatic Vehicle Location (CAD/AVL) System, for the DARTS operation. It is anticipated that the implementation will be completed by mid-2013 at an approximate cost of \$750,000. DARTS expects to derive from the CAD/AVL System Improved vehicle utilization, a reduction in manual data entry and most importantly real time tracking and monitoring of vehicles based on schedule.
7. **Accessible Taxi**  
AODA is vague regarding the number of accessible taxi cabs that are required however it is clear in that the City must determine the approach, program and measure the need for on-demand accessible taxicabs. In this regard the City of Hamilton approved 16 accessible taxicab plates for 2013.
8. **Travel Training**  
The City of Hamilton has implemented a 2 year pilot to travel train cognitive disabled passengers on the HSR. Additionally the HSR does mobility training and as part of the new eligibility process the City has a 5 year contract to teach passengers that do not qualify for DARTS unconditionally, how to use the HSR.
9. **Conduct accessibility audits of major transit stop areas** and prioritize improvements to improve universal access
10. **Identify locations for pick-up and drop-off connections between specialized transit (DARTS) and conventional transit services at key transit nodes** and provide convenient waiting, drop-off, and pick-up areas to allow for seamless connections between the two systems

## c. MAKING TRANSIT FASTER AND MORE RELIABLE ●

### Core Actions

A modern, attractive and cost-effective public transit system includes service that people can depend on and one that gets them to their destination as quickly as possible. When transit vehicles are caught in general traffic, the attractiveness and efficiency of the service can be significantly reduced. Transit Priority Measures give transit vehicles priority over general traffic. Completely segregated transit lanes provide the highest level of service, and are reflective of the ultimate plans for rapid transit in the City, including LRT along the Main, King, Queenston corridor. This section provides actions to make transit faster and more reliable - increasing attractiveness of service and encouraging greater ridership.

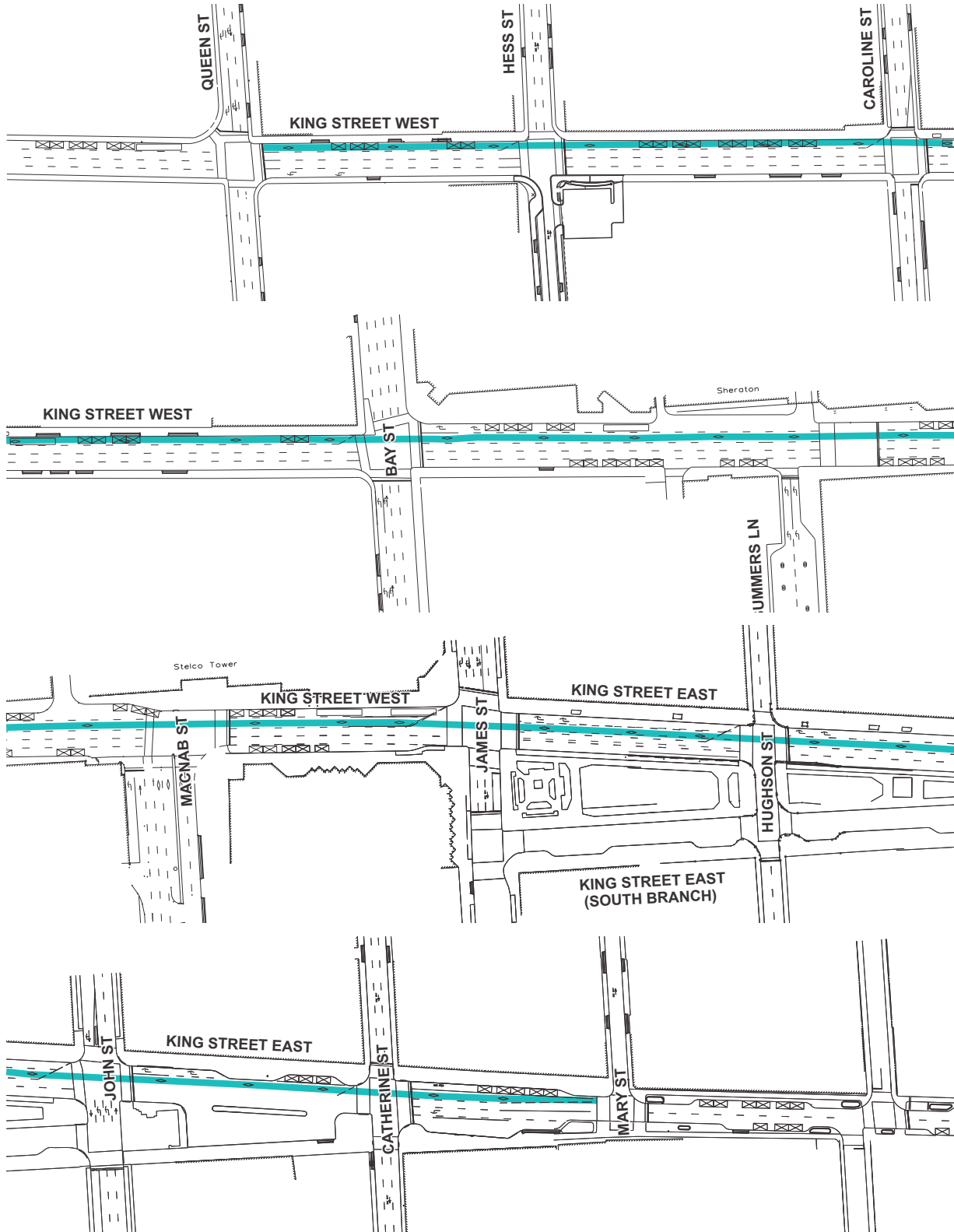


#### King Street Bus-Only Lanes Pilot Project

1. In order to begin to introduce transit priority in Hamilton, staff have evaluated 21 route segments of the B-Line & A-Line for appropriateness to pilot a transit only lane. Criteria was established for comparison of route segments, including average travel speeds, schedule adherence, existing and projected intersection level of service and number of HSR trips. King Street from Mary Street to Queen Street was determined to be best location for a trial pilot project for bus-only lanes. The design includes a one year pilot project with the following components:
  - » Utilization of one westbound travel lane for all day dedicated transit only purposes.
  - » Beginning at Mary Street, the second lane from the northerly curb would be dedicated, allowing for parking, loading, bus stops and right turns in the northerly curb lane. No new right turn restrictions are necessary.
  - » Short term on street parking in the southerly lane from James Street to Bay Street (e.g. in front of the Ellen Fairclough building) and in the northerly lane in front of the Sheraton Hotel would not be impacted.
  - » At Bay Street, the dedicated transit lane transitions to the northerly curb lane. This does require removal of the parking and loading in this lane. However, the plan includes the relocation of parking and loading to the southerly curb lane, with no to minimal net loss in parking. Loading provision on the south side may be an inconvenience to businesses on the north side of the street; however solutions can be investigated with the business community (e.g. loading along side streets).
  - » Two through general purpose lanes throughout the alignment.

Next steps, following approval of this report, are to refine the design, investigate signal priority at James, develop a communications plan, develop a monitoring plan, implementation in summer 2013 and reporting back to Council with results. This project would be fully funded from Metrolinx Quick Wins.

EXHIBIT 8: King Street Transit-Only Lanes (Queen Street to Mary Street) Concept





### James-Upper James Corridor

Improving transit operations in the James-UpperJames corridor is a priority to provide a high quality north-south transit spine, connecting the waterfront, downtown, upper city, and the airport. The corridor also connects to the Mohawk-Upper James mobility hub and the future James North GO Station. Actions in this corridor include:

2. **Implementing transit priority measures on Upper James** at Mohawk Road, Stone Church Road, and Rymal Road through the development of queue-jump lanes and transit signal priority
3. **Conducting an Upper James transit corridor study** to establish the need for other priority measures to enhance A-Line service. Implement recommendations from this study in the medium and long term
4. **Improve transit operations on James Street North**, either through intersection treatments or through selective removal of on-street parking to eliminate bottlenecks
5. **Improve transit operations on James Street South by removing on-street parking**
6. In the longer term, **provide transit signal priority on James Street North and South**. Potential locations include St. Josephs Drive, Hunter Street, York Street, and Barton Street. Coordinate with a city-wide transit signal priority program (see supporting initiatives)
7. Conduct feasibility study for the long-term **conversion of James Mountain Road to a two-way, bus-only roadway**

EXHIBIT 9: Example of Transit-Only Access to Transit Terminal in Quebec City



## Supporting Initiatives

8. Initiate a **City-wide Transit Signal Priority Program** to improve transit operations throughout the city, starting with a study on identifying locations where transit priority would benefit transit operations most, establishing guidelines and framework for implementation
9. Establish need and develop **transit-only accesses at major transit terminals, including Eastgate Square and Limeridge Mall** to improve operations and reduce delay

## d. CREATING A REFINED TRANSIT CUSTOMER EXPERIENCE ●

### Core Actions

Creating a high quality traveller experience on transit is important to increase the awareness, visibility, and attractiveness of transit. In addition, integrating all modes in the marketing and positioning of travel choices is highly important to build support for, and to encourage the choice of transit, walking, cycling, and other TDM measures to accommodate travel demand.

#### Marketing and Branding

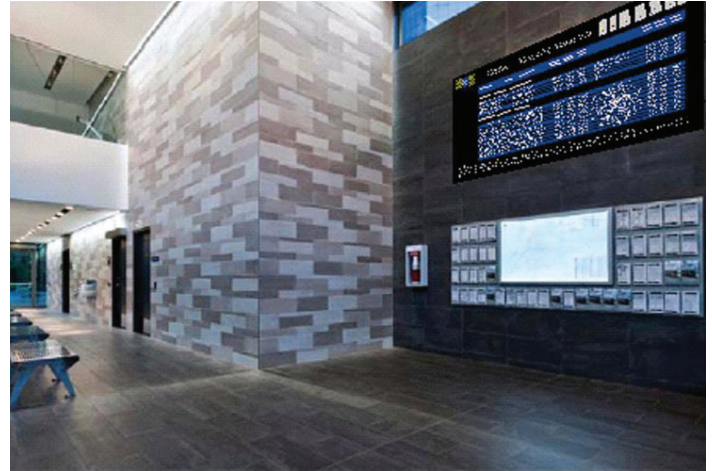
1. Develop an integrated branding strategy for mobility in Hamilton, which will include a new brand and identity for Hamilton Street Railway **C1.12** →
2. Implement a marketing strategy to position transit and integrated mobility as attractive and competitive travel choices **C1.12** →

#### Customer Service and Information

3. Implement service information displays at MacNab Street Transit Terminal, as approved in 2012 and funded by Quick Wins. **C1.7** →
4. Implement real-time transit service information program with open data feed and displays at transit terminals, major transit nodes, and busy stops

#### Bus Stops and Passenger Amenities

5. Complete design and implementation of enhanced A-Line and B-Line bus stops and shelters, including expansion to all A-Line and B-Line stops in the medium term **C1.7** →
6. Complete PRESTO implementation on both conventional and specialized transit, expand availability of PRESTO customer service at major transit terminals



### Supporting Initiatives

7. Conduct audit of existing transit shelters and complete a rehabilitation program for deficient shelters **C1.11** →
8. Expand provision of bus shelters across city (a separate report has been submitted on this item) **C1.11** →
9. Maintain high standard of fleet renewal and condition to maximize recent investment in achieving one of the newest fleets in the country
10. Continued fleet conversion from a 40-foot to 60-foot articulated bus fleet to provide more capacity and seating on busy routes
11. Continued partnership with Metrolinx for regional coordination of fare products and to realize savings through group procurement
12. Program of continuous improvement for vehicles and facilities
13. Develop a fare and customer loyalty strategy to maximize opportunities afforded by PRESTO and fare integration with GO Transit and other transit agencies
14. Sustainable transportation and transit routing smart phone application



## e. PROVIDING SAFE AND CONVENIENT WALKING AND CYCLING ENVIRONMENTS ●●









### Core Actions

Implementing the City's cycling and pedestrian mobility master plans will play a large role in providing more mobility choices and creating strong linkages with transit and rapid transit corridors. Increasing overall investment in walking and cycling infrastructure will be important, as will integration with built form, education and awareness programs. Some core actions to achieve safer and more convenient walking and cycling environments include:

1. **Continue implementation of the Cycling Master Plan** and increase annual investment in cycling infrastructure **C1.9** →
2. **Endorse the Pedestrian Mobility Plan;** implementation actions within, upon approval of separate forthcoming report **C1.10** →
3. Aim to providing secure, high quality, weather protected **bike racks at selected B-Line and A-Line stops**
4. **Wayfinding signage for both cyclists and pedestrians** in the downtown and in proximity to rapid transit nodes and stops
5. Pursue a bike-sharing program focused on rapid transit nodes and downtown. A pilot of this program has been identified for funding through Quick Wins (a separate report is being submitted on this item) **C1.8** →

6. **Identifying and accelerate development of bikeway connections** to rapid transit corridors and in the downtown, including the implementation of the following bikeway projects:
  - Victoria Avenue (Escarpment to Burlington St.)
  - Gage Avenue (Escarpment to Burlington St.)
  - Bay Street to James North GO Station
  - Upper James multi-use trail
7. **Identify opportunities for pilot segregated bike lanes**, in conjunction with the review of the Transportation Master Plan
8. Introduce the **Escarpment-Climber bus pass** to maximize use of A-Line corridor routes
9. **Conduct walkability audits and implement targeted sidewalk improvements in rapid transit corridors**, for example, providing sidewalks and pedestrian facilities on Upper James Street from Malton Drive to Airport Road

## Supporting Initiatives





10. **Review zoning and development guidelines** to encourage or require the provision of bicycle parking and facilities at workplaces
11. **Review deficiencies in bike parking at municipal facilities** and provide parking where it is currently deficient (a separate report has been submitted on this item)
12. Continue and expand the **School Travel Planning program** to encourage active transportation and transit use to school 
13. **Align coordinated furniture study with rapid transit corridor planning** to ensure a consistent streetscape and urban design
14. **Continue to support the Hamilton Cycling Committee** 
15. **Continue active transportation marketing and educational programs** as part of overall integrated mobility marketing and branding   
16. **Adopt Complete Streets policy** to prioritize sustainable modes and inform decision making processes  
17. **Establish Pedestrian Mobility Advisory Committee** 

## f. INTEGRATING CORRIDOR AND COMMUNITY PLANNING ●

### Core Actions

1. **Complete the next phase of the Main King Queenston Corridor Strategy Study** including detailed actions and implementing planning documents
2. **Develop an Upper A-Line corridor strategy** following similar process as the Main King Queenston Corridor Strategy Study. Integrate corridor strategy with planning of the Mohawk-Upper James and Hamilton-LIUNA Mobility Hubs
3. **Develop a station area planning study for Centennial GO Station**
4. **Adopt zoning by-law amendments** for B-Line and A-Line corridors to facilitate transit-oriented development
5. **Finalize and implement Urban Official Plan**
6. **Develop new/enhance development incentives**

### Supporting Initiatives


7. Establish a corporate working team for integrated mobility to coordinate decisions around mobility, land use, and other municipal decision-making  C1.5
8. Better integrate TDM and land use through joint projects and inter-departmental working groups.  C1.3
9. Integrate transit and TDM into land use decision-making/ Require TDM statements in Traffic Impact Studies; develop and enforce a TDM checklist for development applications  C1.3
10. Continue engagement with Business Improvement Areas to encourage travel demand management in retail areas  C1.1

## g. DEVELOPING SEAMLESS MULTI-MODAL CONNECTIONS

### Core Actions

1. **Advance development of park and ride at site of future Centennial GO Station** to serve as a hub for GO Transit buses, HSR buses. This site would replace the existing park and ride site at Barton Street and Nash Road
2. **Introduce regular Lakeshore West GO Bus service to east Hamilton at Centennial Station** in advance of GO Rail service with connecting bus services to Niagara Region (in partnership with Metrolinx/GO Transit)
3. **Integrate feeder route service with BURLINGTON TRANSIT 101 EXPRESS Service** – explore extension of BURLINGTON TRANSIT 101 EXPRESS to James North GO Station (in partnership with Burlington Transit)
4. **Identify location of transit terminal near McMaster University/west Hamilton** for future integration with Burlington Transit service and interregional bus services to Brantford, Waterloo Region, and other destinations
5. **Provide active transportation connections to GO Transit stations and stops** where currently deficient, such as Aldershot Station, and where new stations are planned, such as James North Station and Centennial Station

### Supporting Initiatives

6. **Work with the Ministry of Transportation to develop new carpool parking lots and amenities** on the Queen Elizabeth Way at Centennial Parkway (potentially integrated with Centennial GO Station) and on Highway 403 at Meadowlands
7. **Explore opportunities for fare integration** between HSR and GO Transit and Burlington Transit
8. Continue coordination with Metrolinx in the development of a **regional traveller information portal**
9. **Continue partnership with Metrolinx to implement Smart Commute** and engage employers on developing workplace TDM programs 
10. **Conduct community-based or individual social marketing programs for TDM** to encourage multi-modal travel choices 

## 7 Funding Requirements

The city has achieved much progress with the one-time funding received to date - Metrolinx Quick Wins funding, for example, has produced substantial returns in new and improved transit facilities. Much of the planning associated with rapid transit in the King Main Queenston corridor has been supported by the Provincial government. In addition, municipal support for integrated mobility and rapid transit initiatives has continued, creating momentum and showing significant progress.

While it is recognized much foundational and planning work has been completed for rapid transit, a gap remains between where we are today and where rapid transit will take us to the future. Bridging these gaps with the actions identified in this report will make Hamilton more ready for rapid transit when the funding becomes available; however, further funding commitments are required.

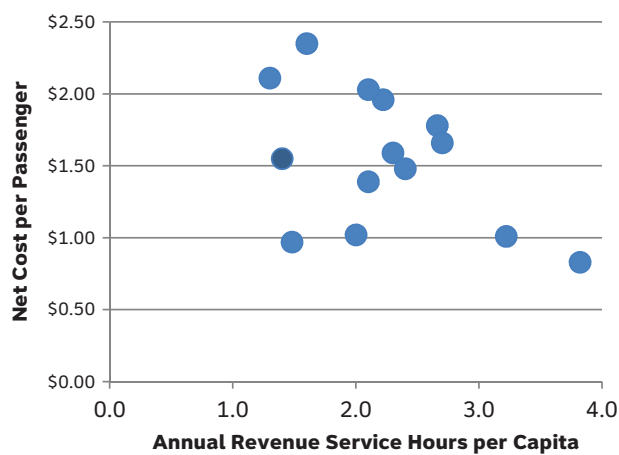
The following tables summarize the short- and long-term capital and operating implications of the actions described in this report and the associated work plans. Within these actions, some have received or are budgeted to receive funding commitments. Approximately \$5.4-million worth of initiatives and actions are shown to have budgeted commitments and fall under existing funding envelopes, such as Quick Wins.

In total, approximately \$155-million of additional short-term capital funding commitments are identified in the actions in this report. Over a five-year period, this represents approximately \$30-million in additional capital funding annually, a level of investment consistent with the recommendations of the Transportation Master Plan, which recommended an investment of \$12-million annually in transit alone. It is an achievable level of capital investment for substantial gain.

Of the unfunded actions, opportunities for continued support from Metrolinx are identified for actions that have a regional transportation benefit or are consistent with the furthering of policies and plans identified in The Big Move and The Next Wave. Approximately \$107-million of the initiatives could be candidates for funding partnerships with Metrolinx.

### Optimizing Transit Service Investment: An Opportunity

Net Cost per Passenger Decreases as Per Capita Service Hours Increase



source data: Canadian Urban Transit Association

Additional to identified capital funding needs, a significant increase in transit service is requested in the form of a \$45-million increase in transit investment each year compared to existing levels. This would result in a substantial increase in service hours, provide higher frequency service across the transit network, and encourage ridership increases to levels that can justify further investment into rapid transit. The proposed investment would increase the number of service hours per capita to approximately 2.0.

While a large figure, evidence shows that increasing investment in transit service hours optimizes overall financial performance of a transit system, as evidenced in the chart above. As revenue hours per capita increases, the net cost per passenger decreases, meaning each dollar of transit investment goes further.

| Initiative/Action  | 2013 Work Pla   | Five-Year Capital Funding Needs (2013-2017) |             | Short-Term Operating Budget Needs (to 2017) Annual | Metrolinx Funding Opportunity |   |
|--|---|---|-------------|--|-------------------------------|---|
|  |   | Funded                                      | Unfunded    |  |                               |   |
| <b>Rapid Transit</b>   |   |   |             |  |                               |   |
| 1.c.1  | LRT Vehicle Optimization Modelling  | ●   |             | \$80,000   | ●                             |   |
| 1.c.2  | Value Engineering of B-Line   | ●   |             | \$40,000   | ●                             |   |
| 1.c.3  | Additional B-Line Geotechnical Investigations                                     | ●   |             | \$20,000   | ●                             |   |
| 1.c.4  | Assist with preparing funding evaluation  | ●   | Internal    |  |                               |   |
| 1.c.5  | A-Line Routing and Technology Development   | ●   |             | \$100,000  | ●                             |   |
| 1.c.6  | HSR Network Optimization  | ●   |             | -  |                               |   |
| 1.c.7  | Delivery Model Assessment Strategy  | ●   |             | \$200,000  | ●                             |   |
| 1.c.8  | A-Line Nodes and Corridors Study  | ●   |             | -  |                               |   |
| 1.c.16   | Neighbourhood Parking Strategy (Phase 1 – Queenston, Parkdale, Nash and Eastgate) |   |             | \$200,000  | ●                             |   |
| 1.c.19   | L, S and T Line BRT Light Investigation and Prioritization                        |   |             | -  |                               |   |
| <b>Work Plan Items Subject to Project Funding Commitment</b> |   |   |             |  |                               |   |
| 1.c.10   | Early enabling works (utility relocates before design build contract)             | ●   |             | TBD  |                               |   |
| 1.c.11   | Environmental Project Report (MSF)  | ●   |             | \$400,000  | ●                             |   |
| 1.c.12   | Conduct property by property impact assessment (B-Line)                           | ●   |             | \$25,000   | ●                             |   |
| 1.c.13   | Power Substation Site Selection   | ●   |             | \$40,000   | ●                             |   |
| 1.c.14   | Specifications for B-Line LRT Procurement Process-staff support                   | ●   |             | -  |                               |   |
| 1.c.15   | Develop Land Acquisition/Expropriation Process                                    |   |             | -  |                               |   |
| 1.c.17   | B-Line Land Acquisition   |   |             | \$120,000  | ●                             |   |
| 1.c.18   | Survey Work and Establishment of Project Control Line                             |   |             | -  |                               |   |
| <b>Total - Rapid Transit</b>                                 |   |   |             | <b>\$1,225,000</b>                                 |                               |   |
| <b>Transportation Master Plan Review</b>                     |   |   |             |  |                               |   |
| 5.c.   | <b>Five-Year Review of Transportation Master Plan</b>                             | ●   |             | <b>\$250,000</b>                                   |                               |   |
| 5.c.i.   | Development of Complete Streets policy  |   |             | \$20,000   |                               |   |
| <b>Improving Transit Service</b>                             |   |   |             |  |                               |   |
| 6.a.1-4  | King-Main-Queenston Corridor  |   |             | \$4,712,000  | \$7,750,000                   | ● |
| 6.a.5-6  | James-Upper James Corridor  |   |             | \$5,807,000  | \$4,040,000                   | ● |
| 6.a.7-12,14  | Other Service Improvements  |   |             | \$14,612,000                                       | \$10,360,000                  |   |
| 6.a.15   | Systemwide Route Restructuring  |   |             | \$22,385,000                                       | \$22,620,000                  |   |
| 6.a.13   | Transit Fleet Expansion (100 buses)   |   |             | \$50,000,000                                       |                               | ● |
| 6.a.13   | Maintenance and Storage Facility (Bus)  |   |             | \$25,000,000                                       |                               | ● |
| <b>Creating an Accessible Transportation System</b>          |   |   |             |  |                               |   |
| 6.b.1-3,6-8  | ATS AODA Compliance   | ●   | \$850,000   | \$4,850,000  |                               | ● |
| 6.b.4  | Review and Retrofit Stops and Terminals to Meet AODA Standards                    |   |             | \$500,000  |                               | ● |
| 6.b.5  | Retrofit buses for automated pre-boarding announcements                           |   |             | \$500,000  |                               |   |
| 6.b.9  | Accessible Audits of Major Transit Stop Areas                                     |   |             | \$100,000  |                               | ● |
| 6.b.10   | Develop Accessible/Specialized Transit Drop-Offs at RT Corridor Nodes             |   |             | \$100,000  |                               | ● |
| <b>Making Transit Faster and More Reliable</b>               |   |   |             |  |                               |   |
| <b>King-Main Corridor Improvements</b>                       |   |   |             |  |                               |   |
| 6.c.1  | King Street Bus-Only Lane   | ●   | \$300,000   |  |                               | ● |
| <b>James Street-Upper James Corridor Improvements</b>        |   |   |             |  |                               |   |
| 6.c.2-3  | Upper James Corridor Transit Priority and Service Improvements                    |   |             | \$500,000  |                               | ● |
| 6.c.4  | James Street North Operational Improvements                                       |   |             | \$100,000  |                               | ● |
| 6.c.5  | James Street South Operational Improvements                                       |   |             | \$50,000   |                               | ● |
| 6.c.7  | James Mountain Road - Transit-only Roadway Feasibility Study                      |   |             | \$100,000  |                               | ● |
| <b>City-Wide Improvements</b>                                |   |   |             |  |                               |   |
| 6.c.8  | Transit Signal Priority Program   |   |             | \$5,000,000  |                               | ● |
| 6.c.9  | Limeridge Mall Terminal Bus-Only Access   |   |             | \$200,000  |                               |   |
| <b>Creating a Refined Transit Customer Experience</b>        |   |   |             |  |                               |   |
| 6.d.1  | Branding Strategy   | ●   |             | \$1,000,000  |                               |   |
| 6.d.2  | -Implementation of Branding Strategy  |   |             | \$2,500,000  |                               |   |
| 6.d.2  | Marketing Strategy and Initiatives  |   |             | \$1,000,000  |                               |   |
| 6.d.3  | MacNab Street Terminal Customer Information and Service Improvements              | ●   | \$565,000   |  |                               |   |
| 6.d.4  | Real-Time Transit Information Displays and Open Data Feed                         |   |             | \$1,000,000  |                               |   |
| 6.d.5  | A- and B-Line Enhanced Bus Stops and Shelters Phase 1                             | ●   | \$1,400,000 |  |                               | ● |
| 6.d.5  | A- and B-Line Enhanced Bus Stops and Shelters Phase 2                             | ●   |             | \$2,000,000  |                               | ● |
| 6.d.6  | Completion of PRESTO implementation   | ●   | Funded      |  |                               | ● |
| 6.d.7  | Bus Shelter Rehabilitation Program  | ●   | \$255,000   |  |                               |   |
| 6.d.8  | Bus Shelter Expansion Program   | ●   |             | \$1,500,000  |                               |   |
| 6.d.13   | Fare and Customer Loyalty Strategy  |   |             | \$25,000   |                               |   |



| Initiative/Action   | 2013 Work Pla   | Five-Year Capital Funding Needs (2013-2017) |                    | Short-Term Operating Budget Needs (to 2017) | Metrolinx Funding Opportunity |
|---|---|---|--------------------|---|-------------------------------|
|   |   | Funded                                      | Unfunded           | Annual                                      |                               |
| <b>Safe and Convenient Walking and Cycling Environments</b> |   |   |                    |   |                               |
| 6.e.1   | Cycling Master Plan Implementation  | ●   |                    | \$2,200,000                                 |                               |
| 6.e.2   | Pedestrian Mobility Plan  | ●   | \$50,000           | \$375,000                                   |                               |
| 6.e.3   | Enhanced bike parking at B-Line/A-Line Bus Stops  |   |                    | \$100,000                                   | ●                             |
| 6.e.4   | Cycling Wayfinding Signage in RT Corridors  |   |                    | \$50,000                                    | ●                             |
| 6.e.4   | Downtown Pedestrian and Cycling Wayfinding Strategy and Implementation                      | ●   | \$100,000          | \$150,000                                   | ●                             |
| 6.e.5   | Pilot Bike Share Program  | ●   | \$1,600,000        |   | ●                             |
| 6.e.6   | Downtown Bike Network Expansion   |   |                    | \$750,000                                   |                               |
| 6.e.7   | Priority Bikeway Connections to Rapid Transit Corridors                                     |   |                    | \$150,000                                   | ●                             |
| 6.e.8   | Escarpment-Climber Transit Pass   | ●   |                    | <i>No Capital Impact</i>                    |                               |
| 6.e.9   | Walkability Audits and Sidewalk Improvements in Rapid Transit Corridors                     |   |                    | \$1,000,000                                 | ●                             |
| 6.e.10  | Bicycle Parking and Facilities at Workplaces, Retail, and Destinations                      | ●   |                    | <i>Non-City Cost</i>                        |                               |
| 6.e.11  | Bike Parking at City Facilities   | ●   | \$16,000           |   |                               |
| 6.e.15  | Active Transportation Marketing and Education Program                                       | ●   |                    | <i>Included Above</i>                       |                               |
| <b>Corridor and Community Planning</b>                      |   |   |                    |   |                               |
| 6.f.1   | Complete Main King Queenston Corridor Strategy Study (P&ED Lead)                            |   |                    | <i>No Capital Impact</i>                    | ●                             |
| 6.f.2   | Upper A-Line Corridor Strategy Study, including Mohawk-James Mobility Hub Study (P&ED Lead) |   |                    | \$200,000                                   | ●                             |
| 6.f.3   | Centennial GO Station Area Planning Study (P&ED Lead)                                       |   |                    | <i>No Capital Impact</i>                    | ●                             |
| 6.f.4   | Adopt Zoning Bylaw Amendments for RT Corridors (P&ED Lead)                                  |   |                    | <i>No Capital Impact</i>                    |                               |
| 6.f.5   | Finalize and Implement Urban Official Plan (P&ED Lead)                                      |   |                    | <i>No Capital Impact</i>                    |                               |
| 6.f.6-7   | Corporate Working Team for Integrated Mobility (MPSP lead)                                  | ●   |                    | <i>No Capital Impact</i>                    |                               |
| 6.f.8   | Develop TDM Guidelines/Checklist for Development Applications (MPSP lead)                   | ●   |                    | \$80,000                                    |                               |
| 6.f.9   | BIA Engagement for TDM (MPSP lead)  | ●   |                    | \$75,000                                    |                               |
| <b>Seamless Multi-Modal Connections</b>                     |   |   |                    |   |                               |
| 6.g.1   | Centennial GO Station Park and Ride Lot and Regional Transit Terminal                       |   |                    | \$5,000,000                                 | ●                             |
| 6.g.2   | Introduction of GO Bus Service at Centennial GO Station                                     |   |                    | <i>No Capital Impact</i>                    | ●                             |
| 6.g.3   | Integration of B-Line and Burlington Transit 101/Route 1 Service                            |   |                    | <i>No Capital Impact</i>                    | ●                             |
| 6.g.4   | Hamilton West Interregional Transit Terminal Location Study                                 |   |                    | \$75,000                                    | ●                             |
| 6.g.5   | Active transportation links to GO Transit stations and stops                                |   |                    | \$250,000                                   | ●                             |
| 6.g.6   | MTO Carpool Lot Expansion (403 Meadowlands and QEW East Hamilton)                           |   |                    | \$300,000                                   | ●                             |
| 6.g.7   | Fare Integration Policy with Burlington Transit   |   |                    | <i>No Capital Impact</i>                    |                               |
| 6.g.8   | Regional Traveller Information Portal (Metrolinx-lead)                                      |   |                    | <i>No Capital Impact</i>                    | ●                             |
| 6.g.9   | Employer-Engagement Process (Smart Commute)   |   |                    | \$1,400,000                                 | ●                             |
| 6.g.10  | Community-Based Social Marketing (TDM) - Pilot 4 neighbourhoods                             |   |                    | \$200,000                                   | ●                             |
| <b>Total</b>  |   |   | <b>\$5,386,000</b> | <b>\$155,916,000</b>                        | <b>\$44,770,000</b>           |

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## **Appendix A: Light Rail Transit**

- A1: List of Associated Reports
- A2: List of Planning, Design and Engineering Reports
- A3: Hamilton B-Line Project Phasing Options
- A4: LRT Benefits and Cost Report
- A5: Comparative Summary of LRT Systems (CD)
- A6: McMaster Institute of Transportation and Logistics: The North American Light Rail Experience: Insights for Hamilton (CD)
- A7: Light Rail Transit in Hamilton: Health, Environmental and Economic Impact Analysis (CD)
- A8: Rapid Transit Workplans

# A1. List of Associated Reports

## **RAPID TRANSIT FEASIBILITY PHASE 1**

- Phase 1 Rapid Transit Feasibility Report
  - » Assessment of Rapid Transit Technologies
  - » Description of Representative Alignments
  - » Estimated Capital Costs
  - » Transit Supportive Development Policies
  - » Ontario Environmental Assessment Act

## **RAPID TRANSIT FEASIBILITY PHASE 2**

- Phase 2 Rapid Transit Feasibility Report
  - » Terms of Reference: Preliminary Design Analysis and Environmental Project Report
  - » Staging Analysis
  - » Niagara Escarpment Crossing Functional Investigation
  - » Traffic Operations Analysis

## **RAPID TRANSIT FEASIBILITY PHASE 3**

- Acoustic Assessment Report
- Air Quality Assessment Report
- Stage 1 Archeologically Assessment
- Cultural Heritage Assessment Report: Built Heritage Resources and Cultural Heritage Landscapes
- Community Impact & Economic Analysis of Light Rail Transit
- Economic Potential Study
- Functional Planning Analysis: B-Line Corridor
- Hydrogeology Report
- Water Resources Memo
- LRT Underground (Subsurface) Impact Study
- Maintenance Facility – Site Assessment Study
- Light Rail Technology Overview & Analysis
- Terrestrial and Avian Ecology Report

## **RAPID TRANSIT FEASIBILITY STUDY PHASE 1, 2 & 3 OVERALL SUMMARY**

## **METROLINX BENEFITS CASE ASSESSMENT**

#### **RAPID TRANSIT FEASIBILITY STUDY PHASE 4**

- McMaster University: LRT alignment and stop locations
- Rapid Transit Transition Study
- Parking and Loading Study
- Accessibility Implications Analysis
- Analysis of Innovation Park Options
- Preliminary Design Study
- Preliminary Assessment of LRT Operations
- A-Line BRT Feasibility Study
- B-Line Opportunity and Challenges Study
- Hamilton LRT – Underground Life Cycle Assessment Report
- B-Line Value Uplift Study

#### **HAMILTON RAPID TRANSIT 70% DESIGN REPORT: PREPARATION OF ENGINEERING DRAWINGS FOR CONSTRUCTION COST ESTIMATE SUMMARY REPORT**

#### **MAKING THE CASE:**

- Transportation Case Review – Working Paper
- B-Line Funding, Financing and Procurement Options – Final Working Paper
- Making the Case Summary Document

## A2. List of Planning, Design and Engineering Reports

### **A-LINE REPORTS:**

- Acoustic and Air Quality Report
- Built Heritage & Cultural Landscapes Inventory
- Consultation Report
- Economic Potential Report
- Initial Feasibility & Opportunities Report
- LRT Feasibility Assessment
- Natural Environment Inventory & Impact Identification
- Record of Public Consultation
- Stage 1 Archaeological Assessment
- Utilities Assessment Report

### **A AND B LINE REPORTS**

- System Design Guide
- Integrated Transit System Operations Plan

### **B-LINE REPORTS:**

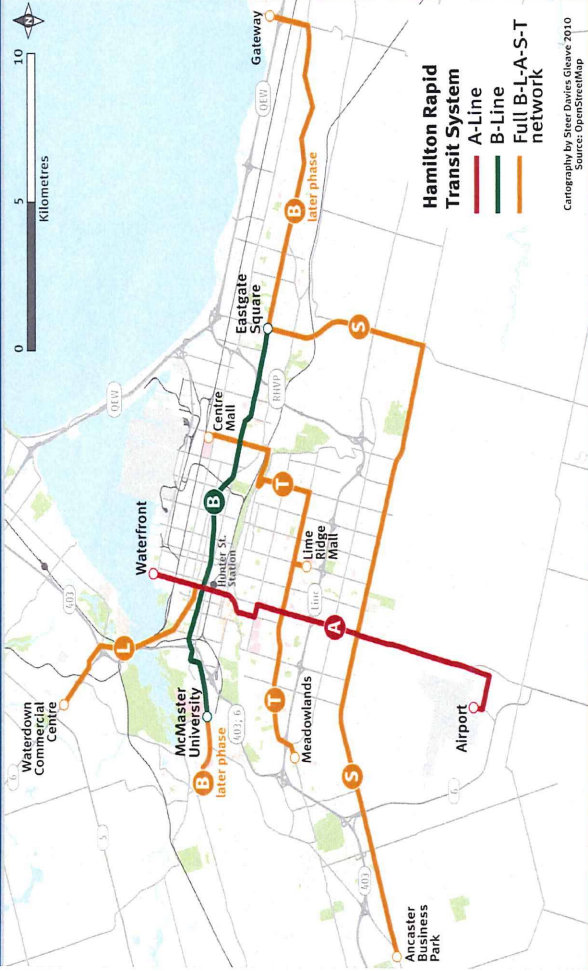
- Construction Phasing Strategy & Traffic Management Report
- Cost Estimate Report
- Environmental Project Report
  - » Appendix A
  - » Appendix B
  - » Appendix C
- Highway 403 Bridge Crossing Options
- Maintenance and Storage Facility Requirements and Location Analysis
- Post Consultation Alignment Changes Memo
- Preliminary Drainage Report
- Preliminary Operations & Maintenance Plan
- Project Constraints Assessment
- Project Implementation Plan
- Red Hill Valley Parkway Structural Design Brief
- Risk Assessment Report
- Safety and Security Plan
- Signalling System Design Brief
- Structural Assessment Design Brief
- Track Plan Report
- Trackwork Design Brief
- Traction Power Design Brief
- Traffic Lane Widths Report
- Utility Strategy Guidelines

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## **Appendix A: Light Rail Transit**

A3: Hamilton B-Line Project Phasing Options





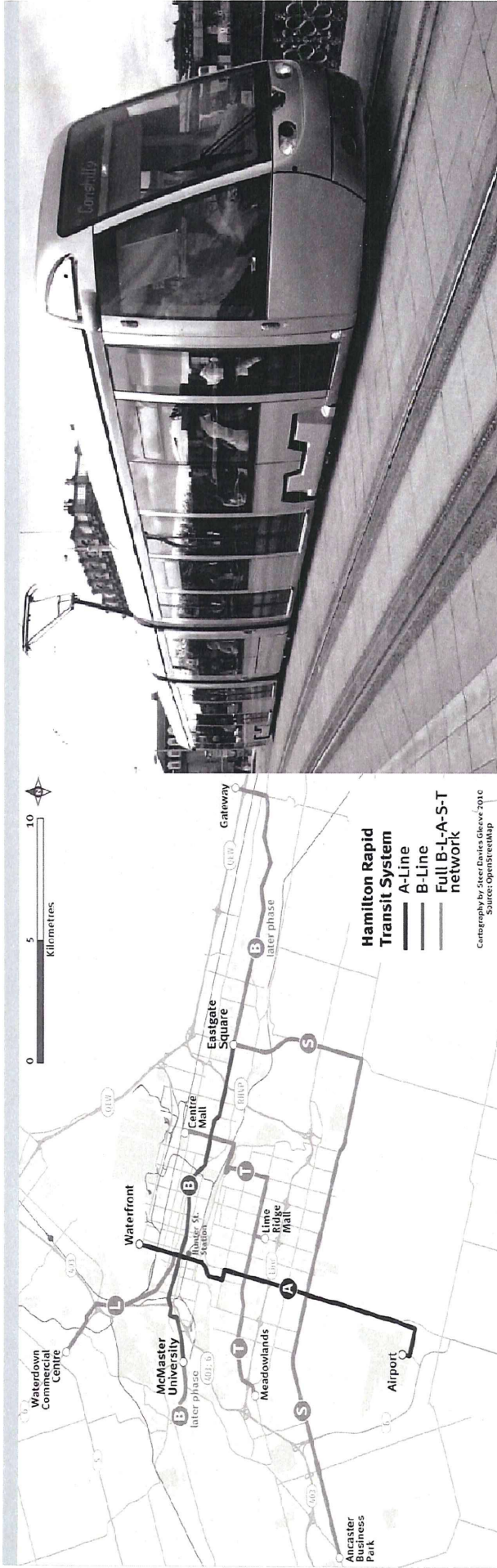
# Hamilton B-Line Project Phasing Options

December 11, 2012





**Hamilton**  
Public Works



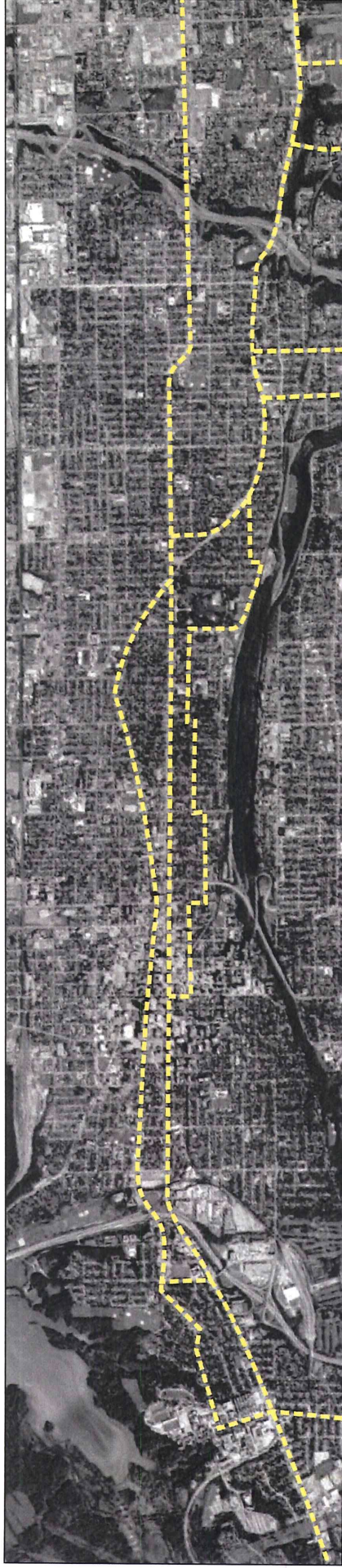
# Phasing Scenarios

December 11, 2012



**Hatch Mott  
MacDonald**

## Scenario A: Business as Usual



HSR bus routes: 1, 1A, 5 group, 10, 10A, 51, 52, 55, 55A, 58

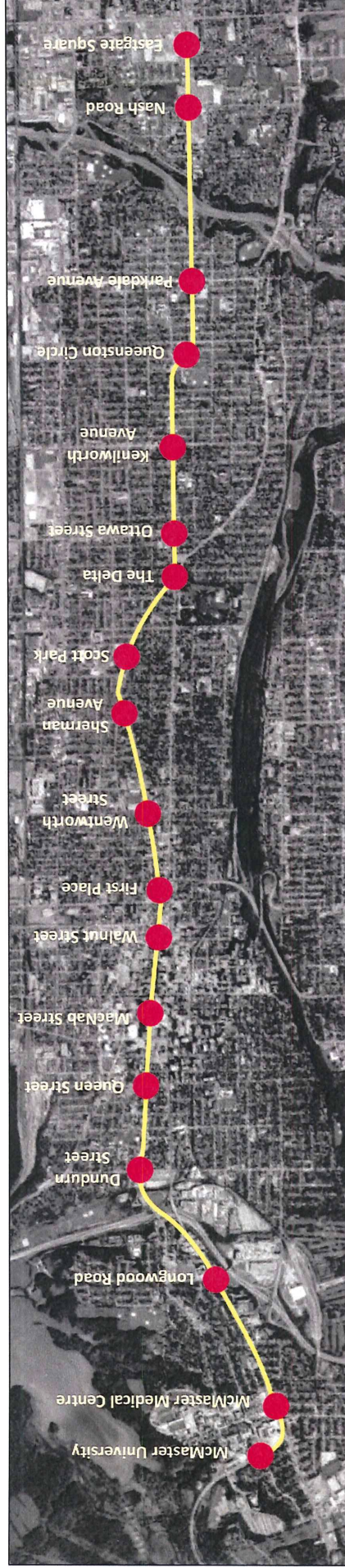
### West anchor: McMaster University

- Major employment and service area (hospital) and educational institution
- Market driven by students, teaching staff, medical staff and hospital visits

### East anchor: Eastgate Square

- Planned Sub-Regional node, major commercial centre and higher density residential
- Market driven by consumers and employees

## Scenario B: TPAP Approved B-Line



Length: 13.8\* km

### West anchor: McMaster University

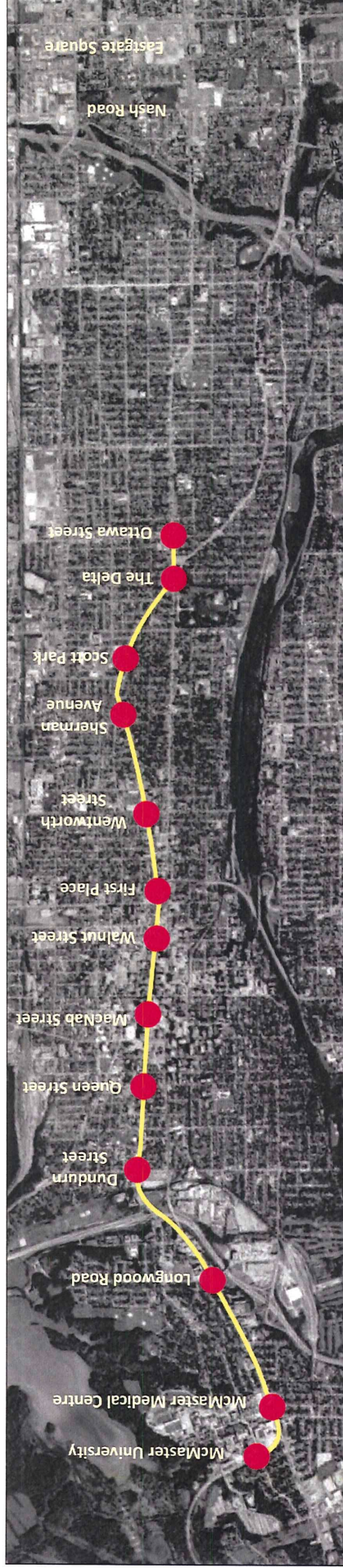
- Major employment and service area (hospital) and educational institution
- Market driven by students, teaching staff, medical staff and hospital visits

### East anchor: Eastgate Square

- Planned Sub-Regional node, major commercial centre and higher density residential
- Market driven by consumers and employees

\*Source: Hamilton Rapid Transit Preliminary Design and Feasibility Study (September 2011), Table 4.1

## Scenario C: McMaster to Ottawa



Length: 9.1\* km

### West anchor: McMaster University

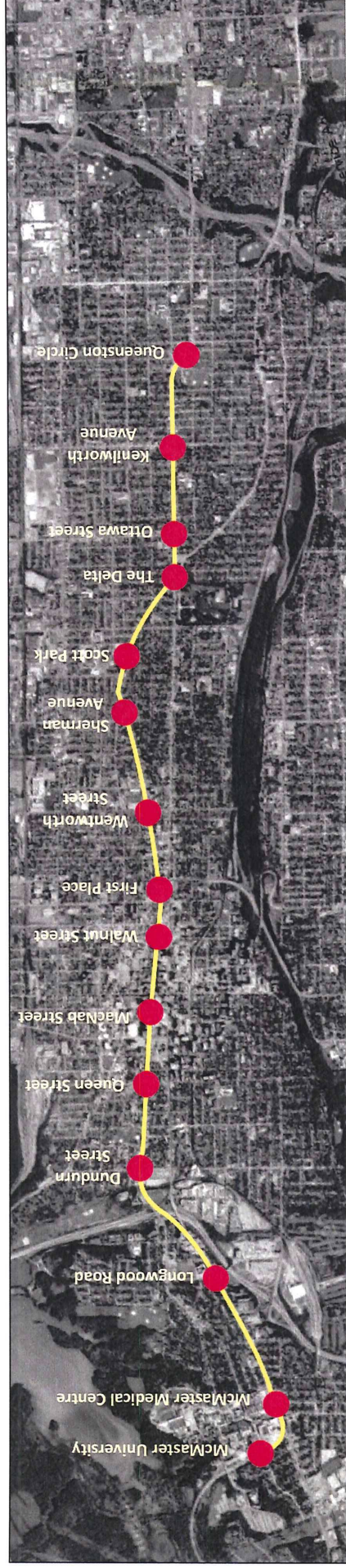
- Major employment and service area (hospital) and educational institution
- Market driven by students, teaching staff, medical staff and hospital visits

### East anchor: Ottawa Street

- Established Business Improvement Area (BIA) for textile and home décor
- Market driven by consumers and employees

\*Source: Hamilton Rapid Transit Preliminary Design and Feasibility Study (September 2011), Table 4.1

## Scenario D: McMaster to Queenston Circle



Length: 10.8\* km

### West anchor: McMaster University

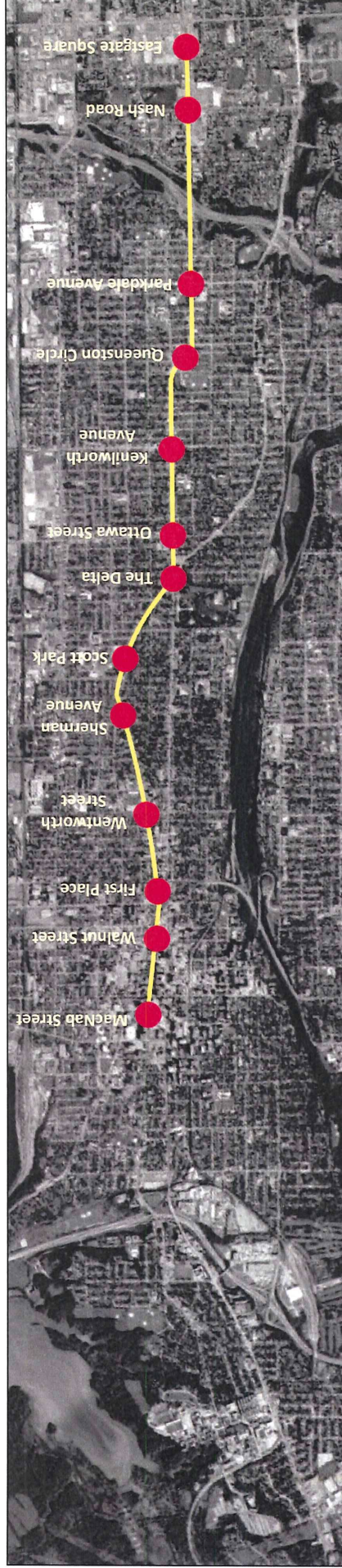
- Major employment and service area (hospital) and educational institution
- Market driven by students, teaching staff, medical staff and hospital visits

### East anchor: Queenston Circle

- Major residential area with some commercial developments
- Market driven by consumers, employees and residents

\*Source: Hamilton Rapid Transit Preliminary Design and Feasibility Study (September 2011), Table 4.1

## Scenario E: Downtown to Eastgate Square



Length: 9.2\* km

### West anchor: Downtown (MacNab Street)

- Major employment area, commercial, civic and entertainment centre
- Market driven by employees and consumers

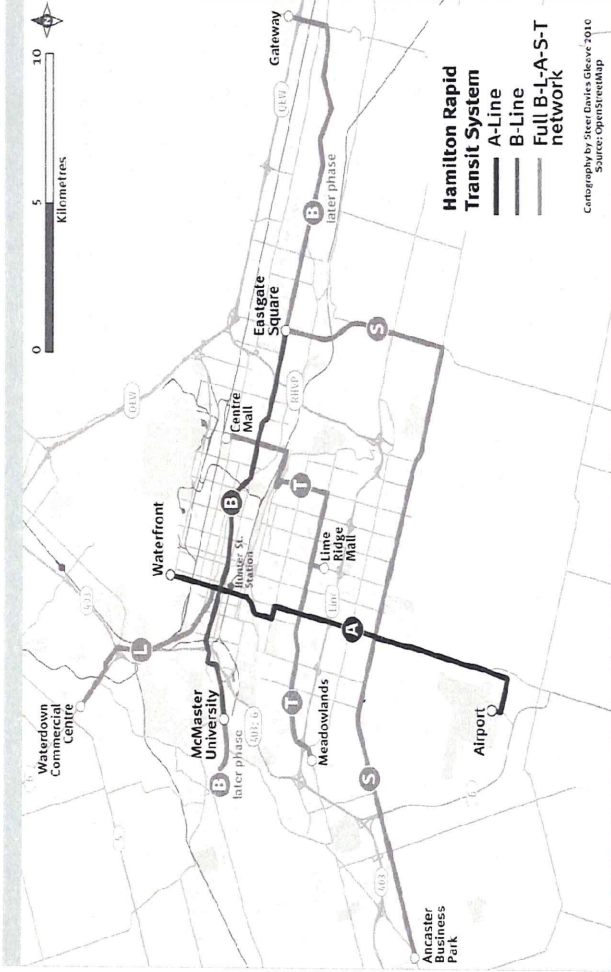
### East anchor: Eastgate Square

- Planned Sub-Regional node, major commercial centre and higher density residential
- Market driven by consumers and employees

\*Source: Hamilton Rapid Transit Preliminary Design and Feasibility Study (September 2011), Table 4.1



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# Multiple Accounts Evaluation

December 11, 2012



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MacDonald

## Multiple Accounts Evaluation – B-Line Phasing

### Goal:

To develop a Multiple Account Evaluation (MAE) process:

- to identify the advantages, disadvantages and trade-offs involved with each phasing alternative under consideration, and;
- to inform and assist in the decision-making process utilizing quantitative and qualitative assessments for defined evaluation criteria.



## Scenario A: Business as Usual (For Reference Only)

### *Hamilton King-Main Benefits Case (February 2010)*

- A MAE was undertaken for the following options with a comparison to the Do Nothing option:
  - Option 1: Full BRT
  - Option 2: Full LRT
  - Option 3: Phased LRT
- Report recommendations:
  - Option 2 provides the greatest benefits in all the accounts and supports the City of Hamilton's broader objectives to revitalize, redevelop and reshape the B-Line corridor
  - ***Option 2 (Full LRT) to be carried forward for further review***

**Scenario A will not be included in this comparative analysis as the original Benefits Case Study did not indicate that it should be carried forward for further review.**





# MAE Accounts

## Definition:

- Financial Account
- User Benefit Account
- Environmental Account
- Economic Development and Growth Account
- Social Account
- Urban Development Account

- An account of measures that take into consideration the revenue and expenditure implications.
- An account of measures that take into consideration the benefit to the transportation user.
- An account of measures that take into consideration the impacts to community / social environment.
- An account of measures that take into consideration the increased tax revenue and increased employment opportunities along the B-Line corridor.
- An account of measures that take into consideration the benefits / impacts to the social fabric and the community adjacent to the B-Line corridor.
- An account of measures that take into consideration the benefits / impacts development opportunities.

## Measures:

- Capital costs
- Operating costs
- Cost effectiveness
- Travel time cost
- Air quality (GHG)
- Accessibility to employment areas
- Increased DC revenues
- Community accessibility and connectivity
- LRT construction mitigation
- Reurbanization potential
- Regional transit connectivity





# Financial Account Measure #1

## Effectiveness of Capital Cost Investment

Capital costs required to implement the phasing scenario inclusive of infrastructure (vehicles and maintenance centre), construction, design, management and administration, insurance, property and contingencies.

- Inputs:**
- B-Line LRT capital cost estimate / phasing scenario
  - Total scenario LRT kilometres
  - EMMIE model peak period LRT Station boardings (includes transfers)
  - Annual ridership (boardings)/ phasing scenario

- Annual Ridership Adjustments:**
- Peak period to annual factor: 909
  - LRT ridership uptake - TPAP
    - Bus network update +16%
    - Vehicle operating costs + 4%
    - Parking charges +16%
    - LRT quality benefits +37%
    - Revised growth opportunities +47%

**Measure:**  
*Capital cost / Annual passenger km*





# Financial Account Measure #1

## Capital Cost Estimate

| Capital Cost Items                                   | SCENARIO B<br>TPAP   | SCENARIO C<br>McMaster to<br>Ottawa Street | SCENARIO D<br>McMaster to<br>Queenston Circle | SCENARIO E<br>Downtown to<br>Eastgate Square |
|--|----------------------|--|---|--|
| Length of LRT Service (km)                           | 13.8                 | 9.1  | 10.8  | 9.2  |
| Preparatory works                                    | \$95,578,021         | \$63,026,086                               | \$74,800,190                                  | \$63,718,681                                 |
| Guideway   | \$79,811,694         | \$50,329,450                               | \$60,161,326                                  | \$41,107,796                                 |
| Trackwork and stations                               | \$115,586,465        | \$84,590,225                               | \$96,988,721                                  | \$84,590,225                                 |
| Systems  | \$90,750,250         | \$57,842,556                               | \$71,021,935                                  | \$60,500,167                                 |
| Maintenance facility                                 | \$48,480,143         | \$48,480,143                               | \$48,480,143                                  | \$48,480,143                                 |
| Vehicles   | \$110,000,000        | \$72,536,232                               | \$86,086,957                                  | \$73,333,333                                 |
| <b>Total Construction Cost (2011 \$)</b>             | <b>\$540,206,573</b> | <b>\$376,804,692</b>                       | <b>\$437,539,271</b>                          | <b>\$371,730,344</b>                         |
| Design and management (.22)                          | \$120,431,493        | \$82,897,032                               | \$96,258,640                                  | \$81,780,676                                 |
| Property allowance (.06)                             | \$34,557,000         | \$22,608,282                               | \$21,876,964                                  | \$22,303,821                                 |
| <b>Total Estimate Before Contingencies (2011 \$)</b> | <b>\$695,195,066</b> | <b>\$482,310,006</b>                       | <b>\$555,674,874</b>                          | <b>\$475,814,841</b>                         |
| Contingencies (17%)                                  | \$116,190,893        | \$81,992,701                               | \$94,464,729                                  | \$80,888,523                                 |
| <b>Total Estimate With Contingencies (2011 \$)</b>   | <b>\$811,385,959</b> | <b>\$564,302,707</b>                       | <b>\$650,139,603</b>                          | <b>\$556,703,364</b>                         |





# Financial Account Measure #1

## 2031 LRT Annual Ridership Estimates

| Annual Ridership                               | SCENARIO B<br>TPAP | SCENARIO C<br>McMaster to<br>Ottawa Street | SCENARIO D<br>McMaster to<br>Queenston Circle | SCENARIO E<br>Downtown to<br>Eastgate Square |
|--|--------------------|--|---|--|
| <b>Peak Period Boardings</b>                   | <b>10,154</b>      | <b>6,947</b>                               | <b>8,122</b>                                  | <b>7,588</b>                                 |
| Base annual ridership (peak period *909)       | 9,229,986          | 6,314,823                                  | 7,382,898                                     | 6,897,492                                    |
| <b>Base Annual Ridership (M)</b>               | <b>9.2</b>         | <b>6.3</b>                                 | <b>7.4</b>                                    | <b>6.9</b>                                   |
| Bus network update                             | 0.16               | 0.16                                       | 0.16  | 0.16   |
| Vehicle operating costs                        | 0.04               | 0.03                                       | 0.03  | 0.03   |
| Parking charges                                | 0.16               | 0.11                                       | 0.08  | 0.06   |
| LRT quality benefits                           | 0.37               | 0.24                                       | 0.29  | 0.25   |
| Revised growth                                 | 0.47               | 0.31                                       | 0.37  | 0.31   |
| <b>Total Uplift Factor</b>                     | <b>1.20</b>        | <b>0.85</b>                                | <b>0.93</b>                                   | <b>0.80</b>                                  |
| 2031 annual forecast ridership (M)             | 20,305,969         | 11,655,882                                 | 14,258,344                                    | 12,427,307                                   |
| Adjusted 2031 annual forecast ridership (0.93) | 18,884,551         | 10,839,970                                 | 13,260,260                                    | 11,557,396                                   |
| <b>2031 Annual Ridership (M) - boardings</b>   | <b>18.9</b>        | <b>10.8</b>                                | <b>13.3</b>                                   | <b>11.6</b>                                  |

Note: Annual ridership includes transfers.





# Financial Account Measure #1

**LRT Capital Costs (2011 \$) / 2031 Annual Passenger KM**

|   | SCENARIO B<br>TPAP | SCENARIO C<br>McMaster to<br>Ottawa Street | SCENARIO D<br>McMaster to<br>Queenston Circle | SCENARIO E<br>Downtown to<br>Eastgate Square |
|---|--------------------|--|---|--|
| <b>Capital costs (2011 \$) / 2031 Annual passenger km</b> | <b>\$8.39</b>      | <b>\$9.43</b>                              | <b>\$8.76</b>                                 | <b>\$10.49</b>                               |
| <b>% Change in relation to TPAP</b>                       |                    | <b>12%</b>                                 | <b>4%</b>                                     | <b>25%</b>                                   |
| Capital costs   | \$811,385,959      | \$564,302,707                              | \$650,139,603                                 | \$556,703,364                                |
| Annual LRT passenger km                                   | 96,736,325         | 59,812,927                                 | 74,229,149                                    | 53,071,783                                   |
| Annual LRT passengers (boardings)                         | 18,900,000         | 10,800,000                                 | 13,300,000                                    | 11,600,000                                   |



## Financial Account Measure #2

### Effectiveness of Operating Cost Investment

Costs required to operate the phasing scenario .

#### Inputs:

- Annual 2031 LRT operating costs
- Annual 2031 bus operating costs
- LRT scenario passenger km (includes transfers)
- Bus scenario passenger km

#### Assumptions:

- Gross cost per passenger:
  - \$2.93 per boarding passenger (B-Line specific 2012 cost)

#### Measure:

*LRT + bus operating costs / annual passenger km*





# Financial Account Measure #2

## 2031 Operating Cost Estimate

| 2031 Operating Cost Item per Annum  | SCENARIO B<br>McMaster to<br>Eastgate Square | SCENARIO C<br>McMaster to<br>Ottawa Street | SCENARIO D<br>McMaster to<br>Queenston Circle | SCENARIO E<br>Downtown to<br>Eastgate Square |
|---|--|--|---|--|
| Labour costs (admin, operations, maintenance)                                 | \$17,905,963                                 | \$10,238,955                               | \$12,607,426                                  | \$10,995,889                                 |
| Vehicle maintenance costs   | \$587,454                                    | \$335,917                                  | \$413,621                                     | \$360,750                                    |
| Track maintenance / rail replacement  | \$125,206                                    | \$82,563                                   | \$97,987                                      | \$83,471                                     |
| Power costs   | \$726,480                                    | \$479,055                                  | \$568,549                                     | \$484,320                                    |
| Cost for parts for maintenance of catenary and TPSS                           | \$89,157                                     | \$58,792                                   | \$69,775                                      | \$59,438                                     |
| Cost for parts for maintenance of communication and fare collection equipment | \$44,578                                     | \$25,491                                   | \$31,387                                      | \$27,375                                     |
| Office supplies   | \$53,970                                     | \$53,970                                   | \$53,970                                      | \$53,970                                     |
| 10% insurance, rates, property taxes, etc.                                    | \$1,953,281                                  | \$1,953,281                                | \$1,953,281                                   | \$1,953,281                                  |
| <b>2031 LRT Operating Costs</b>   | <b>\$21,486,089</b>                          | <b>\$13,228,024</b>                        | <b>\$15,795,996</b>                           | <b>\$14,018,494</b>                          |
| Bus Operating Costs   | \$5,975,839                                  | \$24,330,203                               | \$17,073,827                                  | \$29,879,197                                 |
| <b>Total 2031 LRT and Bus Operating Costs</b>                                 | <b>\$27,461,928</b>                          | <b>\$37,558,228</b>                        | <b>\$32,869,823</b>                           | <b>\$43,897,691</b>                          |

Note: Bus operating costs are reflective of stops between McMaster University and Eastgate Square along the B-Line LRT alignment.





## Financial Account Measure #2

### 2031 B-Line LRT + Bus Operating Cost / Passenger km

|  | SCENARIO B<br>TPAP  | SCENARIO C<br>McMaster to<br>Ottawa Street | SCENARIO D<br>McMaster to<br>Queenston Circle | SCENARIO E<br>Downtown to<br>Eastgate Square |
|--|---------------------|--|---|--|
| Annual 2031 LRT operating costs                                | \$21,486,089        | \$13,228,024                               | \$15,795,996                                  | \$14,018,494                                 |
| Annual 2031 bus operating costs                                | \$5,975,839         | \$24,330,203                               | \$17,073,827                                  | \$29,879,197                                 |
| <b>Total (LRT + bus) operating costs</b>                       | <b>\$27,461,928</b> | <b>\$37,558,228</b>                        | <b>\$32,869,823</b>                           | <b>\$43,897,691</b>                          |
| Annual LRT passenger kms                                       | 96,736,325          | 59,812,927                                 | 74,229,149                                    | 53,071,783                                   |
| Annual bus passenger kms                                       | 4,110,729           | 17,957,365                                 | 10,254,486                                    | 30,332,104                                   |
| <b>Total (LRT + bus) passenger kms</b>                         | <b>100,847,054</b>  | <b>77,770,292</b>                          | <b>84,483,635</b>                             | <b>83,403,887</b>                            |
| <b>2031 LRT and bus operating costs / Annual passenger kms</b> | <b>\$0.27</b>       | <b>\$0.48</b>                              | <b>\$0.39</b>                                 | <b>\$0.53</b>                                |

Note: Bus operating costs are reflective of stops between McMaster University and Eastgate Square along the B-Line LRT alignment.





## Financial Account Measure #3

### Cost Effectiveness of B-Line Service

Annual forecast revenue for the 2031 horizon year based on forecast ridership compared to the annual operating costs.

#### Inputs:

- 2031 B-Line Corridor LRT and bus annual ridership (includes transfers)
- 2031 B-Line Corridor LRT and bus annual operating costs
- Average ridership fare

#### Assumptions:

- Annual B-Line corridor fare revenue (annual boardings \* \$2.05)

#### Measure:

*Annual passenger revenue / Annual operating cost*





## Financial Account Measure #3

### Cost Effectiveness of B-Line Service

| B-Line Corridor   | SCENARIO B<br>TPAP | SCENARIO C<br>McMaster to<br>Ottawa Street | SCENARIO D<br>McMaster to<br>Queenston Circle | SCENARIO E<br>Downtown to<br>Eastgate Square |
|---|--------------------|--|---|--|
| Annual LRT passengers (boardings)                             | 18,900,000         | 10,800,000                                 | 13,300,000                                    | 11,600,000                                   |
| Annual LRT passengers less transfers (77% of total boardings) | 14,553,000         | 8,316,000                                  | 10,241,000                                    | 8,932,000                                    |
| Annual bus passengers (stops on B-Line LRT alignment only)    | 1,400,000          | 5,700,000                                  | 4,000,000                                     | 7,000,000                                    |
| <b>2031 total passengers (less transfers)</b>                 | <b>15,953,000</b>  | <b>14,016,000</b>                          | <b>14,241,000</b>                             | <b>15,932,000</b>                            |
| Average fare  | \$2.05             | \$2.05                                     | \$2.05  | \$2.05                                       |
| LRT and bus annual revenue                                    | \$32,703,650       | \$28,732,800                               | \$29,194,050                                  | \$32,660,600                                 |
| Annual 2031 LRT and bus operating costs                       | \$27,461,928       | \$37,558,228                               | \$32,869,823                                  | \$43,897,691                                 |
| <b>2031 LRT and bus revenue / operating costs ratio</b>       | <b>1.19</b>        | <b>0.77</b>                                | <b>0.89</b>                                   | <b>0.74</b>                                  |





## Financial Account Summary

| Financial Account Summary                             | SCENARIO B<br>TPAP | SCENARIO C<br>McMaster to<br>Ottawa Street | SCENARIO D<br>McMaster to<br>Queenston Circle | SCENARIO E<br>Downtown to<br>Eastgate Square |
|---|--------------------|--|---|--|
| LRT capital cost (2011 \$) / 2031 Annual passenger km | \$8.39             | \$9.43                                     | \$8.76  | \$10.49                                      |
| Measure #1 Ranking                                    | 1                  | 3  | 2   | 4  |
| 2031 LRT + bus operating cost / Annual passenger km   | \$0.27             | \$0.48                                     | \$0.39  | \$0.53                                       |
| Measure #2 Ranking                                    | 1                  | 3  | 2   | 4  |
| 2031 LRT + bus revenue / Annual operating costs       | 1.19               | 0.77                                       | 0.89  | 0.74   |
| Measure #3 Ranking                                    | 1                  | 3  | 2   | 4  |
| <b>Total Measure Ranking</b>                          | <b>3</b><br>Best   | <b>9</b>                                   | <b>6</b><br>2nd Best                          | <b>12</b>                                    |

# Community Accounts

## Definition:

- User Benefit Account
- Environmental Account
- Economic Development and Growth Account
- Social Account
- Urban Development Account

## Measures:

- > Travel time cost
- > Air quality (GHG)
- > Accessibility to employment areas
  - > Increased DC revenues
- > Community accessibility and connectivity
  - > LRT construction mitigation
- > Reurbanization potential
  - > Regional transit connectivity

- An account of measures that take into consideration the benefit to the transportation user.
- An account of measures that take into consideration the impacts to community / social environment.
- An account of measures that take into consideration the increased tax revenue and increased employment opportunities along the B-Line corridor.
- An account of measures that take into consideration the benefits / impacts to the social fabric and the community adjacent to the B-Line corridor.
- An account of measures that take into consideration the benefits / impacts development opportunities.

## Community Accounts Summary

| Scenario                                    | User Benefit Account | Environmental Account | Economic Development Account | Social Account | Urban Development Account | Overall Community Account |
|---|----------------------|-----------------------|------------------------------|----------------|---------------------------|---------------------------|
| Scenario B:<br>McMaster to Eastgate Square  | 1                    | 1                     | 1                            | 2              | 1                         | 1                         |
| Scenario C:<br>McMaster to Ottawa Street    | 3                    | 4                     | 2                            | 4              | 4                         | 4                         |
| Scenario D:<br>McMaster to Queenston Circle | 2                    | 2                     | 2                            | 3              | 3                         | 2                         |
| Scenario E:<br>Downtown to Eastgate Square  | 4                    | 3                     | 3                            | 1              | 2                         | 3                         |

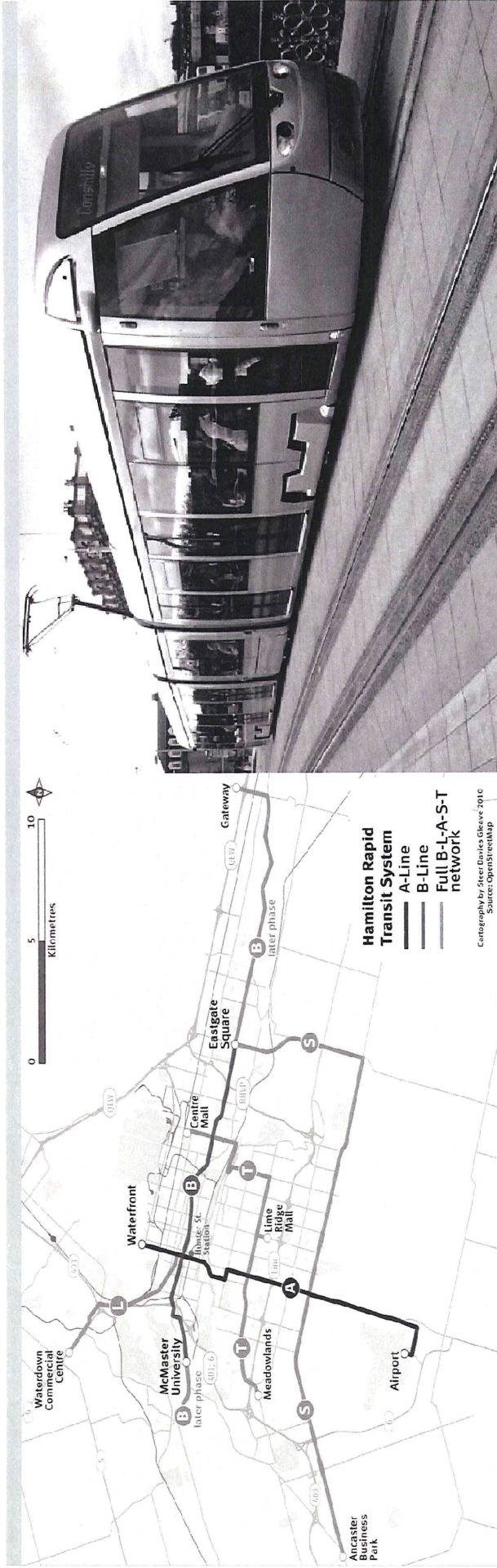
**Legend:**

1 – Best      2 – Good      3 – Average      4 – Poor





Hamilton  
Public Works



# MAE Summary

December 11, 2012



# Multiple Accounts Evaluation Summary Table - Financial

| Scenario                                    | Capital Account | Operating Account | Cost Effectiveness Account | Overall Financial Account |
|---|-----------------|-------------------|----------------------------|---------------------------|
| Scenario B:<br>McMaster to Eastgate Square  | 1               | 1                 | 1                          | 1                         |
| Scenario C:<br>McMaster to Ottawa Street    | 3               | 3                 | 3                          | 3                         |
| Scenario D:<br>McMaster to Queenston Circle | 2               | 2                 | 2                          | 2                         |
| Scenario E:<br>Downtown to Eastgate Square  | 4               | 4                 | 4                          | 4                         |

**Legend:**

1 – Best      2 – Good      3 – Average      4 – Poor



# Multiple Accounts Evaluation Summary Table - Community

| Scenario                                    | User Benefit Account | Environmental Account | Economic Development Account | Social Account | Urban Development Account | Overall Community Account |
|---|----------------------|-----------------------|------------------------------|----------------|---------------------------|---------------------------|
| Scenario B:<br>McMaster to Eastgate Square  | 1                    | 1                     | 1                            | 2              | 1                         | 1                         |
| Scenario C:<br>McMaster to Ottawa Street    | 3                    | 4                     | 2                            | 4              | 4                         | 4                         |
| Scenario D:<br>McMaster to Queenston Circle | 2                    | 2                     | 2                            | 3              | 3                         | 2                         |
| Scenario E:<br>Downtown to Eastgate Square  | 4                    | 3                     | 3                            | 1              | 2                         | 3                         |

**Legend:**

1 – Best      2 – Good      3 – Average      4 – Poor



## LRT Phasing – Overall Evaluation

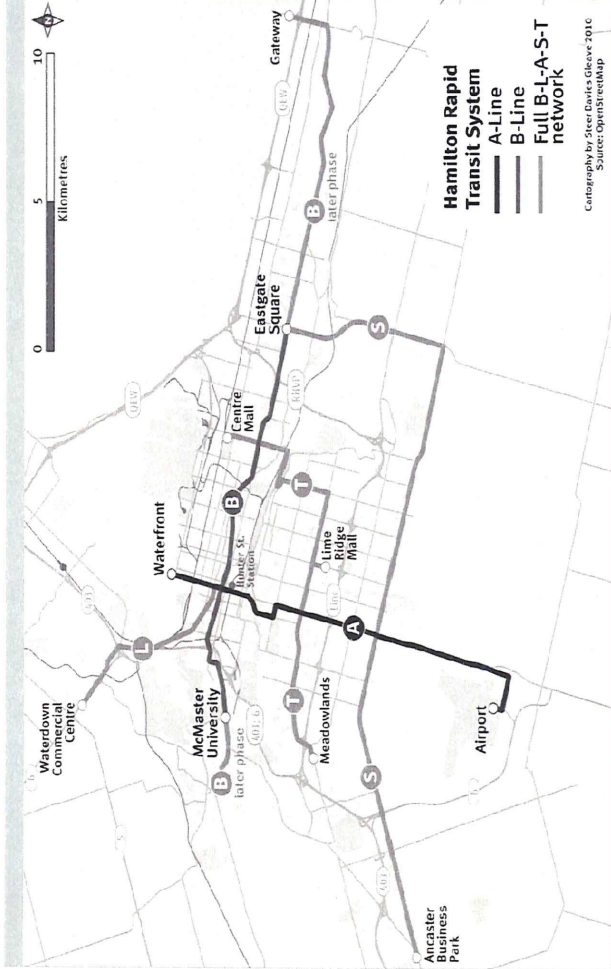
| Scenario                                    | Financial Accounts | Community Accounts | Overall MAE Ranking |
|---|--------------------|--------------------|---------------------|
| Scenario B:<br>McMaster to Eastgate Square  | 1                  | 1                  | 1                   |
| Scenario C:<br>McMaster to Ottawa Street    | 3                  | 4                  | 3                   |
| Scenario D:<br>McMaster to Queenston Circle | 2                  | 2                  | 2                   |
| Scenario E:<br>Downtown to Eastgate Square  | 4                  | 3                  | 3                   |

**Legend:**

1 – Best      2 – Good      3 – Average      4 – Poor



Hamilton  
Public Works



# Thank You

December 11, 2012



Hatch Mott  
MacDonald

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# Appendix A: Light Rail Transit

A4: LRT Benefits and Cost Report



# City of Hamilton – LRT Benefit and Cost Report

Prepared by: City of Hamilton Rapid Transit Staff

Date: January 30, 2013

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## **Appendix A – Day One Operating Budget Impacts with/without LRT**

## **Appendix B – 2031 Operating Budget Impacts with/without LRT**

## **Appendix C – Canadian Urban Institute Report (CD)**

## 1.0 Executive Summary

This report is provided to update Council on a motion emerging from the October 13, 2011 General Issues Committee meeting (Report CM11016/PW11064/PED11154/FCS11072), in which staff received direction to:

- Undertake a complete Light Rail Transit (LRT) project Benefit and Cost Report including the cost of not completing LRT and a triple bottom line analysis;
- Provide a full review of capital costs;
- Provide a recommended funding request to Metrolinx for capital and operating costs for LRT vs. the City's existing HSR bus system including the cost per passenger.

This report will provide Council with a full breakdown of tangible and intangible benefits and costs (from existing consultant reports and other published sources) related to the possible construction and implementation of an LRT system along the B-Line in Hamilton.

The report also provides an overview of the LRT Phasing Strategy which focuses on several construction/implementation scenarios for the B-Line and related current activities. The report responds to Council's request for further updated financial impact information on the costs and benefits associated with an LRT system for Hamilton.

The City's Transportation Master Plan reflects the approved nodes and corridors land use structure for the City and relies on aggressive transit improvements and an urban fabric with a high degree of connectivity. Rapid Transit is a key element for implementing the City's growth strategy and land use structure.

Hamilton's current ridership in the B-Line corridor and its projected ridership growth, requires the development of a Rapid Transit system to ensure efficient and effective connectivity for citizens who want to move throughout the city and connect to inter-regional travel modes. Successful planning for higher order transit (i.e.: LRT, BRT) must be completed through an integrated approach which includes planning for other travel modes (walking, cycling, conventional transit, cars, goods movement), land use planning and financial analysis.

This report presents a summary of the work completed to date categorized by costs and benefits (Financial, Health, Environment, Social/Tourism).



## Summary of Costs & Benefits (Full B-Line LRT McMaster to Eastgate)

### Costs

- Project Capital is \$811 million - (plus/minus 20% \$649M to \$973M).
- City Capital cost is approximately \$1.8 million (includes articulated aerial device – Fire Department).
- Day One Stand-Alone Project Operating is \$14.5 million with an organizational structure of approximately 182 staff.
- Day One In-house Project Operating is a net levy increase of \$2.9 to \$3.5 million with the removal of redundant transit fleet and the use of in-house staff.
- City Operating costs (over and above LRT operating) are approximately \$8.7 million (e.g. winter control, parking, By-law services).
- Day One Startup: System-Wide Bus and LRT Net operating cost per passenger ranges from \$2.13 (no increase in ridership) to \$2.00 (with increase ridership). Current Bus System-Wide costs: \$2.00 per passenger.
- Day One Startup: B-Line only LRT Net operating cost per passenger ranges from \$1.80 (no increase in ridership) to \$0.45 (with increase ridership). This assumes an 8% increase in ridership plus the transfer of two-thirds of all passengers on the B-Line corridor route to the LRT (based on industry consultants). The \$1.80 cost per passenger assumes no ridership growth and the transfer of one-third of the King and Delaware passengers to LRT. Current B-Line only Bus costs = \$1.07 per passenger.
- Future Projections - Year 2031, indicates a Bus and LRT system may cost approximately \$7million less than the Bus only system, utilizing the existing fleet sizes. Net operating cost per passenger estimates are \$2.28 per passenger for the existing Bus system compared to \$1.51 per passenger for the Bus and LRT system. Net operating cost per passenger along the B-Line only are estimated at \$1.12 per passenger for the existing Bus system compared to \$(0.75) per passenger for the Bus and LRT system.

## Benefits

### Financial:

- B-Line Corridor Capital Works – a reduction of scheduled and unscheduled backlog of capital works in the order of approximately \$79 million.
  
- The Canadian Urban Institute (CUI) Study found:
  - that three times the number of developments were likely to occur (e.g. 108 projects vs. 32) within the same timeframe *with LRT* as compared to *without LRT*<sup>1</sup>
  - Tax Benefit from new development by LRT estimated at \$22.4 million.<sup>2</sup>
  - Building permit fees and development charges (existing development exemptions removed) estimated at \$30.2 million.<sup>3</sup>
  - Residential property value premium estimated at \$29 million (Net Value \$0). This uplift premium increases the property taxes paid by property owners benefiting from the LRT and reduces taxes for all other tax payers.<sup>4</sup>
  
- Potential for 6,000 construction jobs (provincial); 3,500 directly in Hamilton.
  
- Potential for 1,000 permanent jobs (provincial); 300 jobs located in Hamilton to deliver regular operations and maintenance.
  
- B-Line LRT investment may result in an estimated increase of more than \$443 million in Ontario's GDP.
  
- Annual accident costs are expected to reduce by \$3.48 million over 22 years.

### Health

- Investments in public transportation such as LRT can help shape a city's built environment into a more walkable, complete and compact community.
  
- Individuals who walk an additional kilometre per day reduce their chances of becoming obese by 5%, compared to motorists driving an additional hour daily who are 6% more likely to become obese.

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<sup>1</sup> Hamilton B-Line Value Uplift and Capture Study, Canadian Urban Institute, June 2010, page 44

<sup>2</sup> Hamilton B-Line Value Uplift and Capture Study, Canadian Urban Institute, June 2010, page 66

<sup>3</sup> Hamilton B-Line Value Uplift and Capture Study, Canadian Urban Institute, June 2010, page 68

<sup>4</sup> Hamilton B-Line Value Uplift and Capture Study, Canadian Urban Institute, June 2010, page 69

## **Environment**

- Public transportation produces on average (per person) 50-95% lower emissions than driving.
- A 30%-50% reduction in car traffic (GTA) can lower emission rates and have the potential to save an estimated 200 lives and \$900 million per year.
- Auto-dependent communities require 20-50 times more space than transit-friendly communities, resulting in storm water management challenges.

## **Social/Tourism**

- LRT has the potential to connect people living in downtown neighbourhoods with job opportunities and amenities, including health and social facilities.
- Investment in LRT and transit can help reduce poverty by providing economical transportation options.
- In Hamilton, 17% of the existing population and 20% of employment opportunities are located within 800 metres of the B-Line Corridor. 80% of the city's population is serviced by HSR transit routes that connect directly with the B-Line.
- High quality light rail systems have an iconic value that is attractive to tourists, commuters and residents because transportation is a key element in the visitor experience. An efficient public transportation system can significantly enhance a city's reputation among travelers.

In conclusion, Light Rail Transit along the B-Line is a worthwhile investment. The benefits captured within this report have used conservative values (i.e. worst case scenario values to ensure that the benefits are cautious rather than optimistic). Summed up the City of Hamilton should see a direct benefit of approximately \$130M (reduction in backlog, building permits and tax benefits from development).

In addition, there are a number of spin off benefits associated with the construction of LRT. The Benefits Case Assessment estimates that 3500 temporary jobs will be created in Hamilton during the construction period and 300 permanent jobs. This also affects Ontario's Gross Domestic Product providing a value of \$443 million.

Health, Environment and Social Tourism are difficult to quantify without extensive and costly studies. This report recognizes that LRT does provide benefits within these areas and offers enhanced quality of life for residents.

A fundamental consideration of the benefits of this type of project, which aligns with the findings of the McMaster Institute of Transportation and Logistics study, is the ability for LRT to refocus growth within the community. This is in keeping with Places to Grow, the City of Hamilton Official Plan and the City of Hamilton Transportation Master Plan and allows the City to capitalize on existing infrastructure while achieving population and employment growth.

## 2.0 The Rapid Transit Vision

In January 2009 (Report PW09007), Hamilton City Council adopted the following vision statement for Rapid Transit:

*Rapid Transit is more than just moving people from place to place. It is about providing a catalyst for the development of high quality, safe, sustainable and affordable transportation options for our citizens, connecting key destination points, stimulating economic development and revitalizing Hamilton. Rapid transit planning strives to improve the quality of life for our community and the surrounding environment as we move Hamilton forward.*

Council also directed that the Rapid Transit vision statement be applied as the guiding principle behind the planning for and delivery of a rapid transit system for Hamilton. As such, this vision statement has been used to guide decisions made in the development of the Planning, Design and Engineering work for B-Line Rapid Transit.

## 3.0 City of Hamilton Strategic Plan – 2012–2015

### OUR Vision

To be the best place in Canada to raise a child, promote innovation, engage citizens and provide diverse economic opportunities.

### OUR Mission

WE provide quality public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

### OUR Values

**Honesty** - WE are truthful and act with integrity.

**Accountability** - WE are responsible for our actions ensuring the efficient, cost effective and sustainable use of public resources.

**Innovation** - WE are a forward thinking organization that supports continuous improvement and encourages creativity.

**Leadership** - WE motivate and inspire by demonstrating qualities that foster effective decision making and promote success at all levels.

**Respect** - WE treat ourselves and others as we would like to be treated.

**Excellence** - WE provide municipal services through a commitment to meeting and exceeding identified standards.

**Teamwork** - WE work together toward common goals, through cooperation and partnership.

**Equity** - WE provide equitable access to municipal services and treat all people fairly.

**Cost Consciousness** – WE must ensure that we are receiving value for taxpayer dollars spent.

## 4.0 History of Rapid Transit in Hamilton

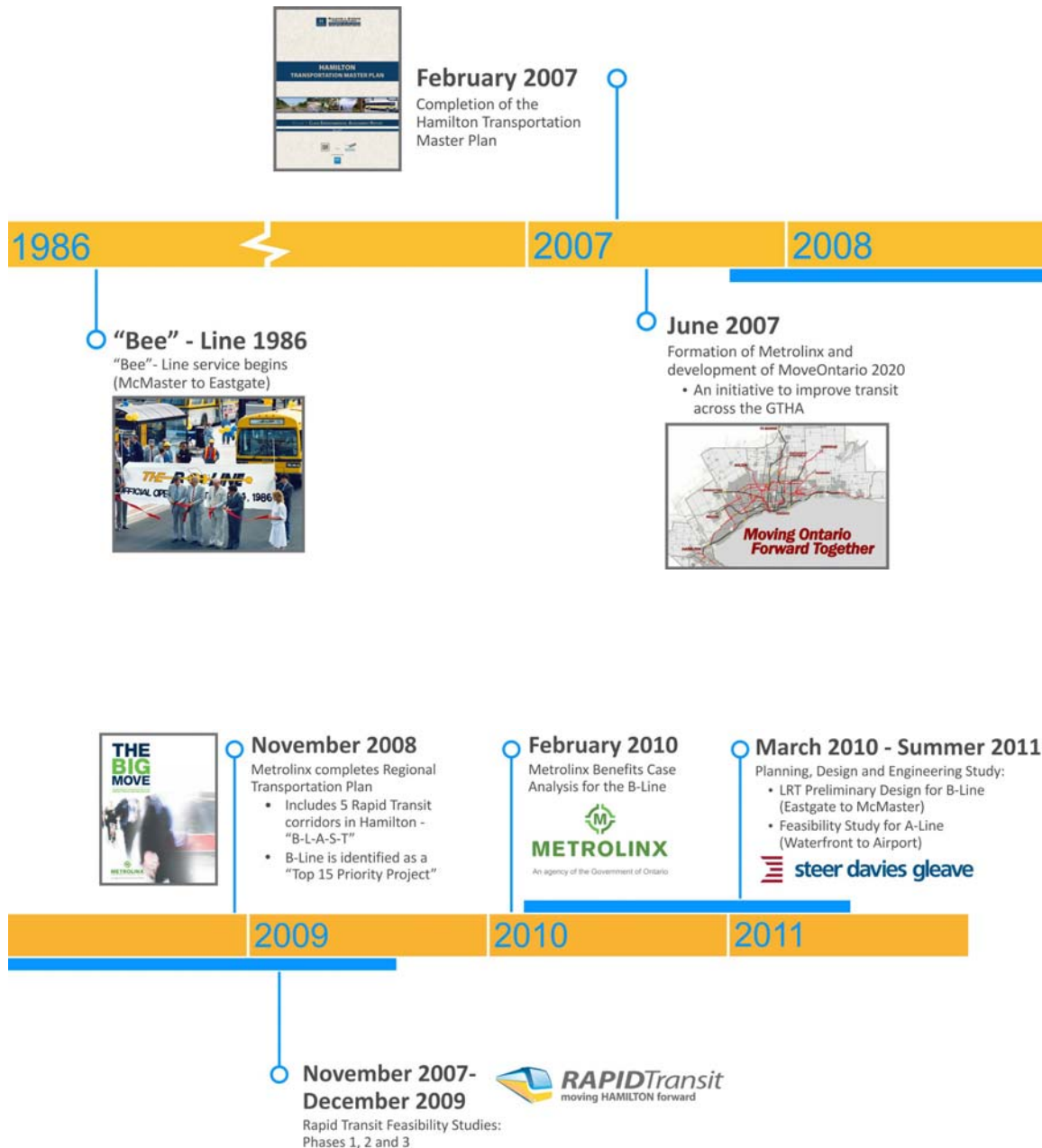


Figure 1 – Rapid Transit Timeline

## 5.0 What is Light Rail Transit and What Can it Do?

For Hamilton, Rapid Transit is more than just a transit project; it is a community shaping initiative and potentially the largest capital project the City will have ever constructed.

Modernized public transportation (including LRT) is a key, corporate strategic priority that supports the concept of community building and economic development while enhancing connections to the Greater Toronto Hamilton Area (GTHA) through improved transportation networks and linkages to the planned GO Transit expansions at James Street North and Confederation stations.

LRT infrastructure includes the following features:

- Electrically-powered, clean and green vehicles with no emissions at street level
- Bi-directional
- Provides predictable journey times
- Operates in dedicated transit lanes
- Offers a smooth, comfortable and quiet ride
- Fully accessible; level boarding with easy access for all
- High capacity
- Affordable
- Reliable – can operate even in heavy snow or icy conditions
- Integration with the current streetscape

LRT also provides a platform for future investments such as upgraded water and sewer infrastructure, roads, utilities, and public realm contributing to quality of life benefits.

In addition, LRT supports the City's Strategic Priority of becoming *A Prosperous & Healthy Community* and enhancing Hamilton's image, economy and well-being by demonstrating that Hamilton is a great place to live, work, play and learn.

This will be accomplished through a *Corporate Strategic Objective* that commits to improving the City's transportation system to support multi-modal mobility and encourage interregional connections. As such, the *Strategic Actions* will focus on the following:

- Complete the design and develop an implementation and financial plan for the delivery of higher order transportation and enhanced transit service including all-day GO Transit service and rapid transit
- Develop an integrated, multi-modal, public transportation program including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the associated transportation demand management (TDM) plan
- Develop a strategy to enhance conventional transit service levels within the A Line and B Line corridors

## 6.0 LRT – Stimulating the Economy

**LRT is often a catalyst for stimulating the economy** through investment in infrastructure. LRT has been found to stimulate the economy by:

- **Increasing land value** – In Hamilton, the increase is estimated from 8% to 14% within 800m of the B-Line, particularly within close proximity to station areas.<sup>5</sup>
- **Increasing assessment value** – High value, high density, mixed use land parcels may produce higher assessment which can assist in paying for capital and operating costs of the system.
- **Creating jobs** – In the initial design and construction stage and in the ongoing operations and maintenance phase. Estimates show that some 6,000 construction jobs would be created with more than 1,000 (provincial) permanent jobs (300 local) associated with regular operations and maintenance.<sup>6</sup>
- **Encouraging urban development** – Permanence of an LRT line allows both riders and developers to have a vision, plan ahead and helps create compact urban communities with confidence in long term viability.
- **Attracting private investment** – Focused on building new neighbourhoods and renewing those in need of improvement. Studies show that LRT may support local economic development attracting more consumers to local businesses.<sup>7</sup>

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<sup>5</sup> Metrolinx Benefits Case Analysis, February 2010, Land Value Changes, page 43

<sup>6</sup> Hamilton Rapid Transit Initiative: Economic Potential Study, March 2009, page 3

<sup>7</sup> Metrolinx Benefits Case Analysis, February 2010, Land Use Shaping, page 46



## LRT has the potential to help Revitalize Hamilton by:

- **Supporting the concept of “community building” which will eventually lead to:**
  - A more attractive downtown core
  - A waterfront that continues to serve the growing needs of the community
  - Inner-city neighbourhoods that benefit from revitalization
  - Better integration and focus between the City and community groups
- **Increasing potential and concentration of community development** that will revitalize Downtown Hamilton resulting in a greater increase in property values and greater potential for economic spin-offs
- **Stimulating mixed-use, higher density communities** within walking distance of a transit stop making it convenient to travel to a multitude of destinations by walking, cycling or using public transit instead of a car.
- **Increasing populations and employment densities** adjacent to the LRT line specifically in the vicinity of LRT stations
- **Reducing auto traffic** in the downtown core
- **Transforming our community through spurring economic activity** by creating unique streetscapes that support adjacent neighbourhoods
- **Contributing to vibrant streets** where all road uses can co-exist
- **Promoting new development and investment** along its key corridors
- **Supporting opportunities to redevelop and intensify** existing developments
- **Attracting new residents and skilled workers** to develop creative and knowledge-based industries

## LRT can potentially improve Quality of Life by:

- **Making Hamilton more accessible** – LRT will be located within 800 metres of 20% of Hamilton residents and employment<sup>8</sup>
- **Offering time savings** of \$647 million annually for existing transit users, new transit users and auto users<sup>9</sup>
- **Offering competitive journey times and reliability**
- **Increasing passenger comfort**
- **Increasing public access** to employment areas, residential properties, commercial districts and municipal services, increasing the connectivity and vibrancy of urban areas
- **Connecting Hamilton’s priority neighbourhoods** to more employment, educational, healthcare, recreational and cultural opportunities (as outlined in the Code Red Study<sup>10</sup>)
- **Encouraging healthier lifestyles** by promoting walking & cycling as regular daily commutes

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<sup>8</sup> Hamilton Rapid Transit Initiative: Economic Potential Study, March 2009, page 2

<sup>9</sup> Metrolinx Benefits Case Analysis, February 2010, Travel Time Savings, page 33

<sup>10</sup> The Hamilton Spectator, Code Red Special Report, May 11, 2010

- **Reducing collisions** as a result of declining automobile use with estimated savings of \$18 million over a 30-year period<sup>11</sup>
- **A more reliable transit service** where riders do not need to consult a schedule, making their journey more convenient

**LRT will lead to Environmental Benefits by:**

- **Reducing air pollution** from vehicle emissions and greenhouse gases
- **A transit rider creating 65% fewer greenhouse gas emissions** compared to an auto user based on the same trip<sup>12</sup>
- **Decreasing total vehicle use**
- **Reducing the number of annual automobile traveled kilometres** by 17 million in 2021<sup>13</sup>
- **Contributing to clear air** helping meet Hamilton's Clean Air and Green House Gas emissions targets<sup>14</sup>
- **Reducing noise pollution**

**LRT will Connect Key Destination Points by:**

- **Improving public access** to employment areas, residential properties, commercial districts and municipal services with the provision of faster, more frequent service (see figure 2).
- **Providing choice of travel modes** that support and interconnect to each other at the local level (trails, cycling and walking) and interregional transportation (GO Transit).

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<sup>11</sup> Metrolinx Benefits Case Analysis, February 2010, Safety Benefits, page 34

<sup>12</sup> The Benefits of LRT Expansion in Edmonton, City of Edmonton, June 2010, page 4

<sup>13</sup> Metrolinx Benefits Case Analysis, February 2010, Greenhouse Gas Emissions, page 39

<sup>14</sup> Corporate Air Quality & Climate Change Strategic Plan Phase II, Clean Air Hamilton



Figure 2 – A-Line and B-Line Corridors

## 7.0 B-Line Corridor – McMaster to Eastgate

Hamilton's B-Line is identified as a "Top 15 Priority Project" in the Metrolinx Transportation Plan, "*The Big Move*." Metrolinx completed a Benefits Case Analysis (BCA) demonstrating full LRT (starting with the B-Line) as the option that would generate the highest benefits for Hamilton and also be capable of accommodating the long-term travel demand growth in the corridor. Full LRT is also the highest cost option. While full BRT may cost considerably less to build and can generate a strong benefits-cost ratio, the benefits of BRT are less extensive as compared to the potential benefits of LRT.

A \$3 million Planning, Design and Engineering (PDE) study was initiated in March 2010, funded by Metrolinx. The study produced the preliminary design for an LRT B-Line (see Figure 3 for study area) and a Preliminary Feasibility Study for the A-Line (Waterfront to Airport). The PDE study was completed in October 2011 and, in January 2012, staff completed the Environmental Process for rapid transit along the B-Line Corridor.



Figure 3 – B-Line LRT McMaster to Eastgate

## 8.0 Hamilton's Rapid Transit Network

### BLAST Network

Hamilton has focused its rapid transit planning (BRT/LRT) on a city-wide system referred to as B-L-A-S-T. This system includes five corridors (please see map of the B-L-A-S-T network – Figure 4.)

The B-Line corridor is the first part of the City of Hamilton's rapid transit network. As part of the network, the A-Line would be the next line to develop operating from the Waterfront to the Airport.

The Planning, Design and Engineering (PDE) Study initiated in March 2010 included the pre-feasibility study for the A-Line, completed in March 2012. It is anticipated that a full feasibility study and Benefits Case Analysis for the A-Line will be completed in Q4 2013.

The City of Hamilton is committed to applying a strategic, forward thinking approach to all public transportation initiatives. Completing the A-Line in conjunction with the B-Line would create a strong connection between Hamilton's interregional network connections (GO), Downtown, McMaster University, Mohawk College and the East end including Confederation. This strategic approach would significantly enhance the following benefits of LRT in Hamilton by:

- Stimulating the Economy
- Revitalizing Hamilton
- Improving Quality of Life
- Increasing Environmental Benefits
- Connecting Key Destination Points

Hamilton' current ridership in the B-Line corridor and its projected ridership growth, requires the development of a Rapid Transit system to ensure efficient and effective connectivity for citizens who want to move throughout the city and connect to interregional travel modes. Successful planning for rapid transit must be completed through an integrated approach which includes planning for other travel modes (walking, cycling, conventional transit, car sharing, bike sharing , park-n-ride, cars, goods movement), land use planning and financial analysis.

The City of Hamilton's public transportation network is comprised of five major components:

- Interregional integration (GO bus and rail, Burlington Transit, Niagara Region)
- Conventional HSR transit
- Specialized transit ATS/DARTS
- Rapid Transit
- Active Transportation (Walking, Cycling, Bike Share)

All network components, including Light Rail Transit, must be integrated to the greatest extent possible to provide the most effective and seamless public transportation system for the citizens of Hamilton.



Figure 4 – BLAST Network

## 9.0 Background

The Official Plan (glossary) defines Higher Order Transit as:

*Transit that generally operates in its own dedicated right-of-way, outside of mixed traffic where possible, and therefore can achieve a speed and frequency of service greater than conventional transit. Higher order transit can include heavy rail (i.e.: subways), light rail transit and buses in dedicated rights-of-way and is typically referred to as rapid transit (Growth Plan, 2006).*

### Chronology

**In 2007**, the Province of Ontario announced that, through its MoveOntario 2020 Plan, Hamilton had emerged as a short-term candidate for Rapid Transit funding. Since then, evolving and shifting funding priorities have impacted the momentum of Rapid Transit development in Hamilton and other Greater Toronto and Hamilton Area (GTHA) municipalities.

**At its October 7, 2008** meeting, the Public Works Committee approved a recommendation directing staff to study rapid transit with Light Rail Technology as the preferred option. Hamilton City Council endorsed Report PW08043D on **October 29, 2008**, approving the following recommendation:

- a) Request Metrolinx to undertake the appropriate benefits case analysis required in order to include the functional design, detailed design and construction of the B-Line Rapid Transit Corridor for the City of Hamilton in their 2009-2013 five year capital budget utilizing Light Rail Technology;
- b) Request Metrolinx to undertake the Rapid Transit Feasibility Study (Phase 3) in order to continue the planning and design for the A-Line Rapid Transit Corridor utilizing Light Rail Technology in conjunction with the design and construction of the B-Line Rapid Transit Corridor for the City of Hamilton as part of their 2009-2013 capital budget with design and construction funds to be included in a future five year capital budget;
- c) Continue its undertaking of required rapid transit initiatives studies and an aggressive public consultation program for rapid transit in Hamilton.

**On April 1, 2009**, the Province of Ontario included \$3 million in the Provincial Budget for the City of Hamilton to study Light Rail Transit on the B-Line and to determine the feasibility of rapid transit (either LRT or BRT) on the A-Line. Hamilton was the only municipality to receive such funding.

**On October 13, 2009**, Hamilton City Council gave its approval for the City of Hamilton to enter into a Contribution Agreement with Metrolinx for \$3 million in funding for Rapid Transit studies and for the General Manager of Public Works

and the City Treasurer to be authorized and directed to negotiate and sign the final terms of the Agreement in a form acceptable to the City Solicitor. (Report # PW09088).

**On February 19, 2010**, Metrolinx presented its Benefits Case Analysis (BCA) for Hamilton rapid transit to its Board of Directors.

Although the BCA identified full LRT as the highest cost option, it also noted that LRT in Hamilton would generate the highest transportation user benefits comprised of travel time savings, ridership attraction and overall qualitative travel experience. LRT also carries a stronger potential to reduce greenhouse gas emissions and generate more significant economic development impacts including employment, income, and Gross Domestic Product growth for the city and region. The BCA also identifies LRT as having greater potential to shape land uses and uplift land values along the King-Main corridor.

**On September 22, 2011**, a joint Metrolinx/City of Hamilton meeting was held for the purpose of providing a status update on the Planning, Design and Engineering (PDE) study and project benefit and cost report (Making the Case). At this meeting, Metrolinx indicated that it was encouraged with Hamilton's progress on the Rapid Transit initiative and urged the City to complete the work plan outlined for 2012. This work provides further necessary information allowing Metrolinx to put forth a positive recommendation stating that Hamilton's Rapid Transit initiative has reached a maximum state of implementation readiness.

**On October 26, 2011**, City Council approved recommendations in the report: *Conventional, Rapid and Inter-Regional Transit: Technical, Financial and Land Use Considerations* (CM11016/PW11064/PED1154/FCS11072). Included in the amended recommendations, Council directed staff to complete the project benefit and cost report including the cost of not doing LRT and a triple bottom line analysis and also that, in its report back, staff include firm capital costs and a recommended funding request to Metrolinx for capital and net change in operating costs in LRT vs. the existing HSR bus system including the cost per passenger. Also on October 26, 2011, staff presented the City of Hamilton contributions to the Rapid Transit initiative.

City of Hamilton Contributions to the Rapid Transit Initiative: The Rapid Transit Initiative began in 2008. Since that time, the City of Hamilton has spent over \$5,000,000. City Capital expenditures total approximately \$2 million which included earlier Rapid Transit Feasibility studies for the A&B Line, preliminary assessment of LRT Operations, economic potential study, development opportunities & model development. Operating expenditures have totalled approximately \$3 million which included staffing and resources of the rapid transit office. Yearly Rapid Transit budgets have been submitted to Council for approval, since 2008.

**In January 2012**, staff completed the Environmental Process for rapid transit along the B-Line corridor.



## 10.0 Triple Bottom Line

Economic/Financial

### Project Capital

The following table provides the Capital Cost estimate for LRT on Hamilton's B-Line as prepared by consultant, Steer Davies Gleave. Cost estimates were prepared in February 2012, based on 2011 dollars.

|                               | <b>TOTALS (\$2011)</b> |
|-------------------------------|------------------------|
| Preparatory Works             | \$ 95,578,021          |
| Guideway                      | \$ 79,811,694          |
| Trackwork & Stations          | \$115,586,465          |
| Systems                       | \$ 90,750,250          |
| Maintenance Facility          | \$ 48,480,143          |
| Vehicles                      | \$110,000,000          |
| <b>Construction Sub-total</b> | <b>\$540,206,573</b>   |
| Design & Management           | \$120,431,493          |
| Property Allowance            | \$ 34,557,000          |
| <b>Sub-total</b>              | <b>\$695,195,066</b>   |
| Contingency (17%)             | \$ 116,190,893         |
| <b>Total</b>                  | <b>\$811,385,960</b>   |

**Figure 5 – Project Capital**

On October 26, 2011, City Council was presented with Project Capital Estimates totaling approximately \$875.5 million. The updated Project Capital estimates are approximately \$811.4 million. The reduction of approximately \$64.1 million is primarily due to \$27million in construction costs, \$16million in Design & Mgmt, \$20million in Contingency.

As summarized in the Steer Davies Gleave Cost Estimate report, the estimates pertain to the construction of a 13.8 kilometre LRT system from McMaster University to Eastgate Square on dedicated and shared right of way. Figures include construction of power sub-station buildings, power distribution through a catenary system, guideway, construction of an 'LRT only' bridge at the 403 crossing, modifications or removal of the skywalk pedestrian bridge (as required) and structural reconditioning of the Red Hill Valley Parkway bridge. The route accounts for eighteen LRT stops which include terminal stops at McMaster and Eastgate. Each cost category is described in detail below:

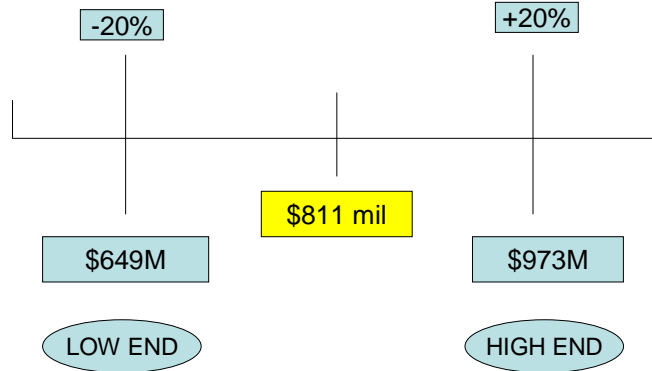
- **Preparatory Works:** Includes the removal of existing pavement surfaces along the corridor for the construction of the guideway, relocation of signs,

signal heads, controllers, etc. Also includes cost estimates to remove/relocate/install all structures for municipal services (water, sanitary & storm water) and the relocation of infrastructure for hydro, communications and gas.

- **Guideway:** This item includes the concrete guideway, guideway curb, track cross gutter drain and weep drain. In addition, the LRT-only bridge (at the 403 crossing) and structural reconditioning of the Red Hill Valley accounts for approximately \$14.5 million of the cost estimate.
- **Trackwork & Stations:** Includes cost of installing embedded track for the guideway and all special trackwork for the system. This includes an allowance for the guideway connection from a Maintenance Storage Facility to the main line (approximately 1.25 km). Also includes the cost for the construction of all eighteen stops (side running and centre) and the termini at McMaster and Eastgate.
- **Systems:** Includes the installation of the guideway electrical cable and catenary poles, major modification of 69 existing signals, construction of a system wide communications duct bank and street lighting. This also provides an allowance for the construction and equipping of seven (7) traction power sub stations buildings. This estimate also includes signaling, communications and fare equipment (ticket vending/validation machines).
- **Maintenance Facility:** A Maintenance Storage Facility is not defined in the preliminary engineering phase of the project. Therefore, this cost estimate is presented at a higher level and will be confirmed during the next phase of the project.
- **Vehicles:** Includes the provision of 22 low floor light rail vehicles and is based on a recent procurement cost of light rail vehicles for Metrolinx.
- **Design & management:** Includes the cost for final design, construction administration, insurance, permits, surveys, testing, investigation, inspection, and startup based on the consultant's best estimate.
- **Property Allowance:** The purchase or lease of real estate may be required. This is an estimated cost of the property requirements for the construction of the project and is based on property values in Hamilton.
- **Contingency:** An overall price contingency is provided at approximately 17% of total costs.

These cost estimates are based on preliminary engineering at 30% detailed design and, as such, are subject to a plus/minus variance of 15% to 20%. Taking this into account, the Project Capital costs in 2011 dollars are estimated to range from \$649,108,768 to \$973,663,152 (as illustrated below).

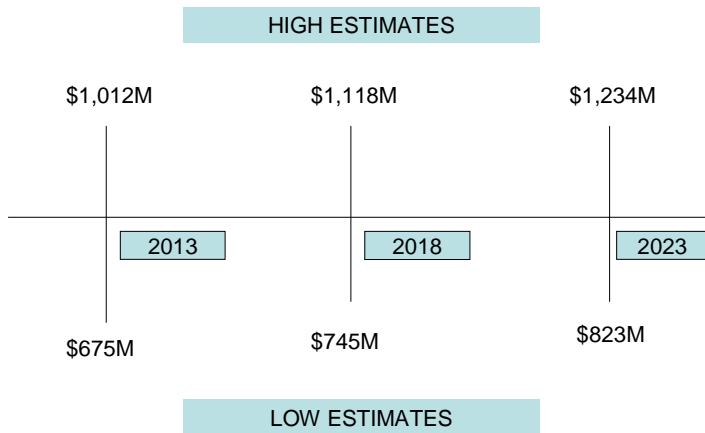
### Range of Project Capital Costs in 2011 dollars



**Figure 6 - Range - Project Capital Costs**

Depending on the timing of construction, these figures would increase based on rate of inflation (assuming 2% annually) by a range of \$675 million in 2013 to \$1.2 billion in 2023 (as illustrated below).

### Range of Project Capital Costs due to Construction Startup



**Figure 7 – Range of Project Capital Costs - Construction Startup**

A recent example of another LRT system and its respective Project Capital Costs include:

**Waterloo LRT/BRT Project:**

19km of LRT + 17km of BRT = \$818 million (in 2014 dollars)

While the breakdown of costs remains confidential at this time, it is expected that a significant amount of the \$818 million is related to Waterloo Region's LRT. Assuming \$750 million (in 2014 dollars) is LRT related, this equates to approximately a cost of \$39.5 million per kilometre (in 2014 dollars).

Capital cost estimates provided for a Hamilton B-Line LRT system seem to be high in comparison to other systems. Assuming that \$811M (2011 dollars) is a reasonable estimate, a 13.8km LRT line would equate to \$860M in 2014 (based on 2% inflation), approximately \$61 million per kilometre. When considering the lower end estimate of \$675M (2013 dollars) and the respective increase to \$689M (2014 dollars), the resulting \$49 million per kilometre remains relatively high compared to other systems.

Included in the 2013 rapid transit work plan is an opportunity to undertake a Value Engineering assessment to review capital cost estimates. This evaluation may uncover savings not already accounted for in the current capital cost estimates. For example, a Value Engineering assessment undertaken by the Region of Waterloo for its LRT system resulted in a project cost savings of approximately 18%.

With the introduction of an LRT system on Hamilton's B-line corridor, there may be changes in the service delivery of other City services which could result in additional City capital costs of approximately \$1.8 million (as identified in report CM11016/PW11064/PED11064/FCS11072.) Much of the additional cost would be dedicated to the purchase of an articulated aerial device for the Hamilton Fire Department valued at approximately \$1.5 million. The remaining \$300,000 would be dedicated to such anticipated services as enhanced litter control and concrete curb repairs.

## **11.0 B-LINE Corridor Capital Works – Status Quo**

LRT capital cost estimates include the removal of existing pavement surfaces along the corridor and the removal/relocate/install of municipal sewer and water services. LRT roads will have a life cycle of 35 years and LRT subsurface infrastructure will have a life cycle of 50 years. Assuming that all capital works associated with the implementation of Hamilton's LRT B-Line are funded by other levels of government, a reduction in the overall backlog of City rehabilitation, replacement and reconstruction needs along the corridor would be realized.

Due to budget constraints, all City capital works noted below are not necessarily programmed within the capital budget. The budget is determined based on risk assessment. However, these capital works are part of the overall backlog of rehabilitation and reconstruction needs contributing to the accumulation of the City's infrastructure deficit annually. The following summary is provided in order to quantify the backlog of capital works that would be reduced.

### **Roadworks**

Capital works associated with Roads are identified as either road resurfacing or road reconstruction.

To determine which capital work is necessary on a segment of road, an overall condition index (OCI) is determined. The need for a road reconstruction is triggered when an OCI index of 0 to 20 is identified. When the OCI index is between 21 and 60, road resurfacing is required.

There are 157 road segments on the B-Line corridor, or approximately 58.6 lane kms. At present, ninety segments (or 35.3 lane kilometres) require road resurfacing. City staff recognizes that the B-Line corridor is a main artery in downtown Hamilton with significant road usage.

Within a 35 to 50-year period, it is anticipated that one (1) road reconstruction of the entire B-Line corridor would potentially be addressed. As noted in the chart below, this equates to approximately a \$38.1 million reduction in backlog of City road works.

### **Sewer mains**

Capital works associated with Sewer mains are identified as either sewer Cured in Place Pipe (CIPP) Lining or sewer replacement.

Sewer main conditions are assessed by using a closed circuit television (CCTV) video. There are five condition levels : 1 (very good) through to 5 (critical). When a sewer main has a condition level of 3, 4 or 5, sewer lining is recommended provided that no capacity upgrades are required. A condition level-5 may require

full sewer replacement, depending on the severity of the structural defects that could prevent the installation of a liner.

There is approximately 37 kilometres of sewermain along the B-Line corridor. At present, 4 kilometres of sewermain have a need for full replacement. Once a sewer is replaced or relined, the life expectancy of that sewermain increases to the original 50 year life span. It is presumed that the remaining 33 kilometres of sewermain will require, at the very least, a relining over a 50-year period. These costs are illustrated in the chart below.

### Watermains

Watermain capital works is primarily a replacement. Watermain conditions are determined by reviewing and analyzing the break history, pipe material and age of the infrastructure.

There is approximately 37 kilometres of watermain along the B-Line corridor. It is the assumption of City staff that, over a 50-year period, at least 19 kilometres of watermain (approximately half of the total kilometres) will have a need for replacement. The chart below quantifies the reduction in backlog that would be addressed.

| <b>CAPITAL WORKS</b> | <b>UNIT COST (2011 \$s)</b> | <b>LANE KMS OR KMS</b> | <b>Reduction in Backlog</b> |
|----------------------|-----------------------------|------------------------|-----------------------------|
| <b>ROADS</b>         |                             |                        |                             |
| Reconstruction       | \$650,000 / lane km         | 58.6 lane kms          | \$38.1 M                    |
| <b>SEWER</b>         |                             |                        |                             |
| CIPP Lining          | \$325,000 / km              | 33 kms                 | \$10.7 M                    |
| Replacement          | \$1,625,000 / km            | 4 kms                  | \$ 6.5 M                    |
| <b>WATER</b>         |                             |                        |                             |
| Replacement          | \$1,250,000 / km            | 19 kms                 | \$23.7 M                    |
|                      |                             | <b>TOTAL</b>           | <b>\$79 M</b>               |

Figure 8 – Reduction in Backlog

As stated above, not all City Capital works noted are programmed within the Capital budget. However, these capital works are part of the overall backlog of rehabilitation, replacement and reconstruction needs accumulating and adding to the City's annual infrastructure deficit. The implementation of the LRT B-Line system will potentially address the future backlog of capital work totaling an estimated \$79 million (in 2011 dollars).

## 12.0 LRT Project Operating Costs / Cost per Passenger

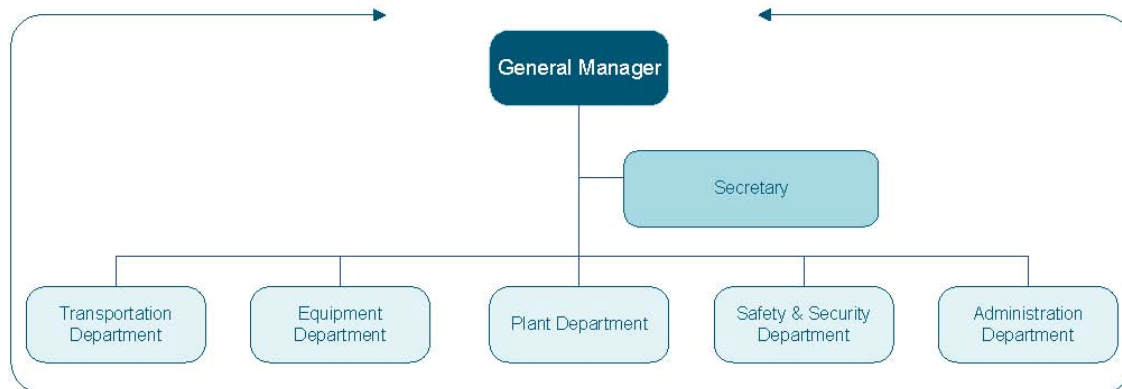
### LRT Project Operating Costs

A Preliminary Operations and Maintenance plan for the 13.8 kilometre LRT system along the B-line corridor was completed by Steer Davies Gleave.

The report highlights a preliminary organizational structure and estimated costs associated with labour, maintenance, power for the vehicles and the LRT system. This information is based on typical operations and maintenance practices used worldwide. The preliminary operations and maintenance plan assumes the LRT system is a direct operating division of the City of Hamilton.

The preliminary organizational structure identifies approximately 182 staff members. Current existing staff may be qualified to carry out some of the functions identified, therefore, reducing the number of staff required for the LRT. However, for the purposes of conservative costing, a stand alone structure has been maintained.

As illustrated below, the organizational structure is broken down into five departments that report to a General Manager.



**Figure 9 – Organizational Structure**

The General Manager's Office provides management direction, coordinates the activities of the Operations and Administration departments and is responsible for the performance of all aspects of the transit service. FTE = 2.

The Transportation Department is responsible for operating LRT vehicles and monitoring and controlling service from the Control Centre. FTE = 86.

The Equipment Department is responsible for vehicle maintenance and servicing. On a scheduled basis, all vehicles will undergo preventive maintenance, safety tests, major overhauls and inspections. Maintenance staff will handle LRT vehicle problems during revenue service. FTE = 27.

The Plant Department will look after the maintenance of all fixed assets including stops, tracks/right-of-way, offices and yards. FTE = 29.

The Safety and Security Department is responsible to ensure the safety and security of all passengers and staff of the transit system and its facilities. It will oversee the auditing, quality assurance and environmental monitoring for the transit system. FTE = 17.

The Administration Department will provide financial management, revenue collection, legal, human resources, procurement, marketing and IT support.

In summary, the report identifies a total operations and maintenance cost of approximately \$14,459,522 annually to include labour, maintenance, and power for the LRT vehicles and the LRT system.

| <b>COST ITEM</b>   | <b>PER YEAR<br/>(\$2011)</b> |
|--|------------------------------|
| Labour Costs   | \$ 12,050,200                |
| Vehicle Maintenance Costs  | \$ 395,340                   |
| Track Maintenance  | \$ 84,260                    |
| Power Costs  | \$ 488,900                   |
| Cost for parts for maintenance of Catenary and TPSS                          | \$ 60,000                    |
| Cost for parts for maintenance of Communications & fare collection equipment | \$ 30,000                    |
| Office Supplies  | \$ 36,320                    |
| <b>SUB-TOTAL</b>   | <b>\$ 13,145,020</b>         |
| 10% (Contingency -insurance, rates, property taxes, etc)                     | \$ 1,314,502                 |
| <b>TOTAL</b>   | <b>\$ 14,459,522</b>         |

The Labour component is primarily driven by the Transportation department accounting for 50% of the labour costs equating to \$6,045,000. Eighty six employees will work shifts seven days a week and provide services to meet the traveling demand of the public.

To accommodate a 4-minute headway for morning and afternoon peak periods, 22 LRT vehicles are required (19 operational, 3 stand-by spares). Non-labour maintenance costs per vehicle are estimated at \$17,970 per year.

Various components of the track system will need to be replaced at different periods of time. A Track Maintenance annual budget of \$84,260 will ensure the track is continuously maintained. If the track is neglected and maintenance deferred, higher costs will be incurred in a shorter time frame. This will result in replacement costs having to be capitalized.



Annual Power consumption costs are made up of a total of three components including:

- Traction Power Consumption
- Stop Power Consumption
- Maintenance Storage Facility Power Consumption

Based on estimated kWh for each component and published rates from Horizon Utilities, the resulting estimate is \$488,900 per year for Power Costs.

Similar to track maintenance, it is important that scheduled inspections and periodic replacements are carried out annually for the maintenance of the catenary, communications and fare equipment systems. If these systems are well maintained on an annual basis, replacement costs can be accommodated within the operations and maintenance budget.

### **Operating Budget Impacts and Operating Cost per Passenger**

To determine estimated financial impacts LRT would have on the operating budget, staff prepared a comparable analysis of the existing Bus system (HSR) vs. Bus and LRT system.

The analysis included the following assumptions:

- LRT system is operated by the existing Transportation Division of the City of Hamilton
- Existing staff will be utilized where possible
- 18 buses are removed from service

As illustrated in Table-1, (Day 1 – Existing Ridership with LRT - LOW), the BUS column reflects current HSR expenditures and revenue actuals projected for 2012 with a net levy impact of \$44M (excluding Gas Tax Revenues). The current system-wide ridership is approximately 22 million. This results in a system-wide net operating cost per passenger of \$2.00. On the existing bus B-Line route only, a net operating cost per passenger is estimated at \$1.07. The detailed analysis can be found in Appendix A.

The BUS and LRT column represents the implementation of an LRT system along the B-Line corridor including HSR bus route integration on Day 1. This scenario accounts for an LRT headway of 6 minutes and a shift of one third of service hours and riders from the King and Delaware routes to the B-Line route. This results in a decrease to the operating costs for both the King and Delaware lines, and an increase to the operating cost of the B-Line route.

Assuming total ridership remains the same, the gross and net levy will increase by \$2.9 million. With a higher net levy compared to the existing bus system (i.e. \$44M to \$46.9M), the resulting net operating cost per passenger for both system-

wide and B-line-Only have increased to \$2.13 and \$1.80 respectively. The detailed analysis is provided in Appendix A.

It is worth noting that, if a decision is made to redeploy the 18 buses to other routes within the network, there would be an increase of \$6 million in gross operating costs. This figure does not include revenue from ridership which would occur and, to some degree, offset these costs.

**TABLE 1**  
**DAY 1 – EXISTING RIDERSHIP WITH LRT - (LOW)**

|  | <b>Existing<br/>BUS<br/>Service</b> | <b>BUS &amp; LRT</b> | <b>VARIANCE</b> | <b>%<br/>VARIANCE</b> |
|--|-------------------------------------|----------------------|-----------------|-----------------------|
| <b>GROSS EXPENDITURES</b>                            | \$79M                               | \$81.9M              | \$2.9M          | 3.6%                  |
| <b>REVENUES *</b>                                    | (\$35M)                             | (\$35M)              | (\$0)           | 0%                    |
| <b>NET LEVY</b>                                      | \$44M                               | \$46.9M              | \$2.9M          | 6.5%                  |
| <b>Ridership</b>                                     | 22 M                                | 22 M                 | 0 M             | 0%                    |
| <b>Net Operating Cost per passenger(System wide)</b> | \$2.00                              | \$2.13               | \$0.13          | 6.5%                  |
| <b>Net Operating Cost per passenger(B-Line only)</b> | \$1.07                              | \$1.80               | \$0.73          | 68%                   |

\* Average Fare rate per passenger \$1.59 and does not include Gas Tax monies  
Note: Assumes the existing \$6million bus B-Line costs are NOT redeployed.

Public transportation industry consultants have stated that two-thirds of ridership from the existing B-Line corridor can be expected to transfer to the LRT B-Line causing an immediate 8% city-wide ridership increase to potentially occur with the implementation of an LRT system.

As illustrated in Table-2, (Day 1 – Increase Ridership with LRT HIGH) these assumptions result in an increase of approximately 1.8 million riders. With the increased ridership along the B-Line, an LRT headway of 4 minutes would be implemented. This results in a net levy impact of \$3.5M or 7.9% increase to the current existing HSR Budget. Net operating cost per passenger system-wide remains the same as existing cost per passenger \$2.00, and the B-Line-Only net operating cost per passenger equates to \$0.45. The detailed analysis is provided in Appendix A.

**TABLE 2  
DAY 1 – INCREASE RIDERSHIP WITH LRT - (HIGH)**

|   | <b>Existing<br/>BUS<br/>Service</b> | <b>BUS &amp; LRT</b> | <b>VARIANCE</b> | <b>% VARIANCE</b> |
|---|-------------------------------------|----------------------|-----------------|-------------------|
| <b>GROSS<br/>EXPENDITURES</b>                                 | \$79M                               | \$85.3M              | \$6.3M          | 7.9%              |
| <b>REVENUES *</b>   | (\$35M)                             | (\$37.8M)            | (\$2.8M)        | 8.0%              |
| <b>NET LEVY</b>   | \$44M                               | \$47.5M              | \$3.5M          | 7.9%              |
| <b>Ridership</b>  | 22 M                                | 23.8 M               | 1.8 M           | 8.0%              |
| <b>Net Operating Cost<br/>per passenger<br/>(System wide)</b> | \$2.00                              | \$2.00               | \$0             | 0%                |
| <b>Net Operating Cost<br/>per passenger(B-Line<br/>only)</b>  | \$1.07                              | \$0.45               | \$(0.62)        | (58%)             |

\* Average Fare rate per passenger \$1.59

Note: Assumes the existing \$6million bus B-Line costs are NOT redeployed.

The above-noted analysis provides an estimate of net operating budget impacts and net operating cost per passenger for Day 1 with LRT for two ridership scenarios (Low & High). In summary, a Bus and LRT system would result in a system wide net operating cost per passenger ranging from \$2.00 to \$2.13 compared to the existing system-wide net operating cost per passenger of \$2.00. The LRT B-Line-Only would result in a net operating cost per passenger ranging from \$1.80 to \$0.45, compared to the existing B-Line-Only net operating cost per passenger of \$1.07. Net levy impacts on Day 1 would also range from \$2.9 million (no increased ridership) to \$3.5 million (increase in ridership).

While Table 1 and Table 2 examine a Day 1 scenario, it is also important to consider the future operations of the system. Table 3 compares the Existing Bus system and Bus and LRT system to year 2031. Gross Expenditures for each were inflated by 2% annually to year 2031. Revenues were determined by the ridership projections for 2031. The existing average Fare rate per passenger of \$1.59 has been increased by 40% to \$2.23 based on a 10-year historical average increase of 20%. The detailed analysis is provided in Appendix B. For the Bus system, consultant Hatch Mott McDonald recommended 16% ridership growth over the 20 year period which equates to less than 2% a year. For the Bus and LRT system, 2031 ridership projections were provided by Consultants

Steer Davies Gleave. The LRT ridership estimate includes a 30% uplift based on optimizing routes to complement LRT, 31% uplift based on quality and reliability associated with LRT and an additional 30% based on growth (assuming full 2031 GRIDS growth is achieved).

**TABLE 3  
FUTURE 2031 – INCREASE RIDERSHIP WITH LRT**

|   | <b>BUS - 2031</b> | <b>BUS &amp; LRT- 2031</b> | <b>VARIANCE</b> | <b>% VARIANCE</b> |
|---|-------------------|----------------------------|-----------------|-------------------|
| <b>GROSS EXPENDITURES</b>                             | \$115M            | \$126.6M                   | \$11.6M         | 10%               |
| <b>REVENUES*</b>                                      | \$(56.8M)         | \$(75.3M)                  | \$(18.5M)       | 32.5%             |
| <b>NET LEVY</b>                                       | \$58.2M           | \$51.3M                    | \$(6.9M)        | (11.9%)           |
| <b>Ridership</b>                                      | 25.5M             | 33.9M                      | 8.4M            | 32.9%             |
| <b>Net Operating Cost per passenger (System wide)</b> | \$2.28            | \$1.51                     | \$(0.77)        | (33.7%)           |
| <b>Net Operating Cost per passenger(B-Line only)</b>  | \$1.12            | \$(0.75)                   | \$(1.87)        | (167%)            |

\* Estimated Average Fare per passenger \$2.23 in 2031 (based on 10-year history of rate increases)

The results indicate that a combined Bus and LRT system would operate at a lower net levy impact in year 2031, compared to existing Bus service in year 2031. Net operating cost per passenger for both system-wide and B-Line is also significantly lower. Consultants have reported that LRT will bring a greater increase in ridership to the system.

**Other City Cost Impacts:** With the implementation of a B-Line LRT system, consideration must be given to operating implications of all other divisions and City Departments. Winter control, street tree trimming, street lighting, water and sewer and parking/By-law services all contribute to the approximate \$8.7 million city operating cost implications from other areas (as identified in report CM11016/PW11064/PED11064/FCS11072) . These proposed changes would require Council approval and proceed through the normal operating budget process.

### **Ridership**

The chart below shows LRT daily ridership displayed by TRK index. (**TRK index =daily ridership/route length (km) / 1000**)

Therefore, as illustrated in the chart below, Day 1 LRT ridership in Hamilton is within range of the majority of successful LRT systems. This analysis shows that B-Line LRT is viable from a ridership perspective.

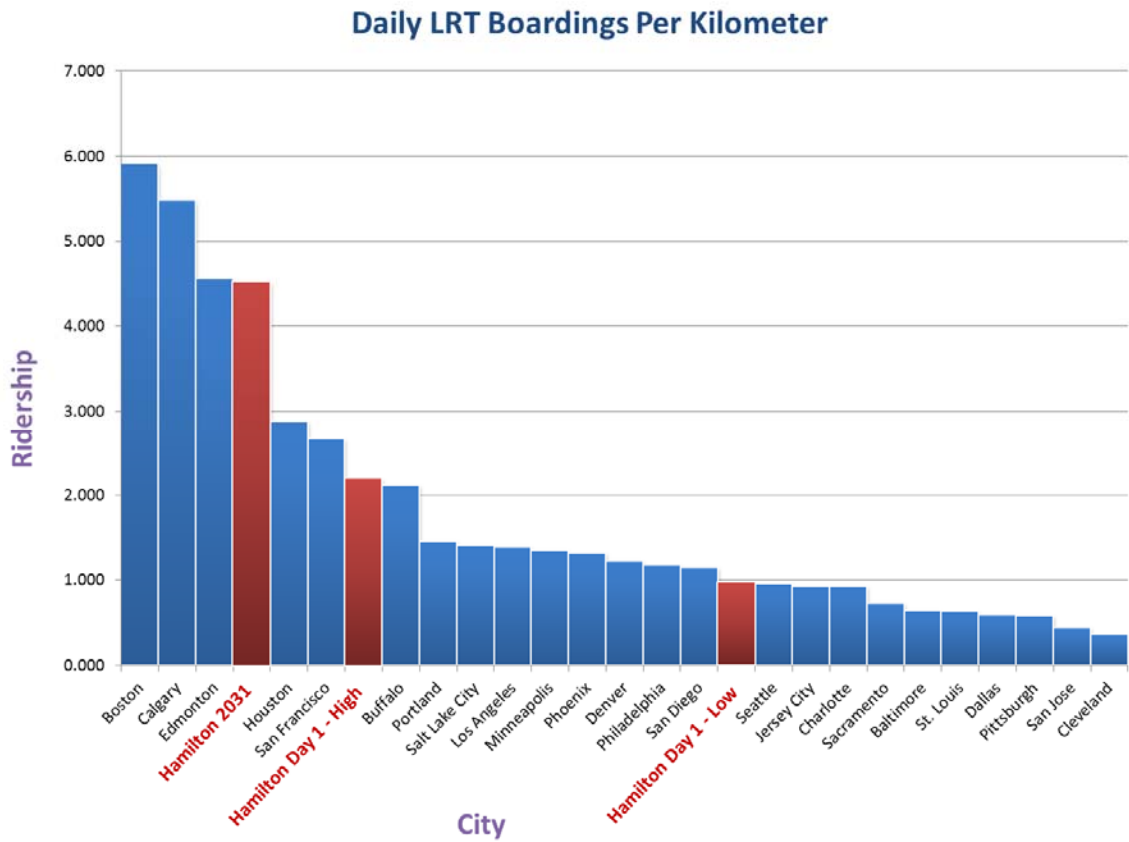


Figure 10 – LRT Boardings

## 13.0 Hamilton B-Line LRT Phasing Alternatives Analysis

As part of the 2012 Rapid Transit Work Plan, staff received direction to undertake an evaluation of phasing options for Hamilton's B-Line LRT initiative to inform and assist Council in the decision making process related to B-Line LRT phasing alternatives.

The analysis will outline the advantages, disadvantages and trade-offs associated with a number of phasing alternative scenarios including:

- Scenario A - Business as Usual - Bus Routes: 1, 1A, 5 group, 10, 10A, 51, 52, 55, 55A, 58
- Scenario B - TPAP Approved – McMaster University to Eastgate Square – 13.8 km
- Scenario C - McMaster University to Ottawa Street – 9.1 km
- Scenario D - McMaster University to Queenston Circle – 10.8 km
- Scenario E – Downtown (MacNab Street) to Eastgate Square – 9.2 km

McMaster to Downtown option was not included since it does not connect to the potential Maintenance Storage Facility which was assumed to be 330 Wentworth Street North.

A multiple accounts evaluation (MAE) approach was applied including an assessment and evaluation of specific measures related to Community Benefits Account (User, Environmental, Economic Development, Community, and Urban Development) and Financial Considerations Account (e.g. Capital Costs, Operating Costs, Cost Effectiveness).

Findings from the MAE analysis show that Scenario B–McMaster University to Eastgate Square received the highest ranking for both the Community and Financial Accounts. Following closely behind is Scenario D–McMaster University to Queenston Circle.

Details of the Hamilton B-Line LRT Phasing MAE analysis and findings are included in the attached staff reports.

## 14.0 Economic Uplift

### Land Value and Property Taxes

LRT is considered to be one of the fundamental elements in the successful redevelopment of downtown cores in urban centres. As identified in the Canadian Urban Institute's (CUI) Hamilton B-Line Value Uplift and Capture Study (June 2010, see *Appendix C*), private investment often follows public investment. The fixed nature of LRT lines and stations attract investment by developers which often results in new infill development for mixed use, commercial or residential purposes. The heightened development supports regeneration by bringing people back to the core to live, work, learn and play. Revitalizing the core will attract creative talents by offering a high quality of life at a relatively low cost of living.

LRT stations in downtown cores often attract more office and retail development. According to the City of Hamilton Office Study (December 2009), the office vacancy rate in Hamilton was 15% and, while demand for office space has been strong, that is not the case in the downtown core. While neighbouring municipalities have experienced growth in their occupied space, Hamilton has struggled. Therefore, in order to compete, Hamilton needs to build amenities such as LRT to offer an urban form that will attract new office tenants.

Three of the key drivers supporting office development include:

- Clustering of services
- Economic factors (i.e.: competitive lease rates, operating costs, taxes)
- Amenities (i.e.: access to services, good quality housing, and recreational opportunities.)

LRT would contribute to these main drivers by enhancing mobility and making such amenities more accessible.

As noted in the Hamilton B-Line Value Uplift and Capture Study, "*higher order transit has the potential to enhance the value of land and lead to economic development along the transit corridor.*" The greatest increase in land value is focused on properties located within a reasonable walking distance from the station (e.g. 5 minute walk, 400m from station) and properties that are visible from the transit line. Conservative estimates indicate a 10-to-20% value premium for real estate located within easy access to the station.

To estimate an uplift value for Hamilton, the CUI study identified vacant and underused parcels of land within 400 metres of the B-line, likely to be redeveloped. This analysis included both vacant public and private parcels of land (e.g. surface parking lots).

Researchers identified prototypes of typical Hamilton buildings and determined future development potential for each of the vacant or underused parcels of land. A workshop was held with the participation of a wide cross section of City staff and Councillors to obtain feedback on the likelihood and timing of development.

The analysis of the development potential on the identified properties determined:

- 32 development projects were likely to proceed along the B-line corridor *without LRT*
- 108 development projects were likely to proceed along the B-line corridor *with LRT*

Three times the number of developments are likely to occur within the same timeframe *with LRT* than *without LRT*. Given current market conditions in Hamilton, it was determined that 60% of these developments would be residential buildings and 40% non-residential.

The study also shows that, over the coming 15 years, approximately 2.1 million square feet of development is likely to occur *without LRT*, compared to 5.7 million sq.ft of development that is likely to occur *with LRT*. The difference equates to 3.6 million square feet of additional development that could occur with a City of Hamilton public investment in LRT.

The two figures below highlight the difference in property tax assessment for the two scenarios, *Without LRT* and *With LRT*.

Figure 7 - Distribution of New Taxable Assessment "Without LRT" Per Square Metre

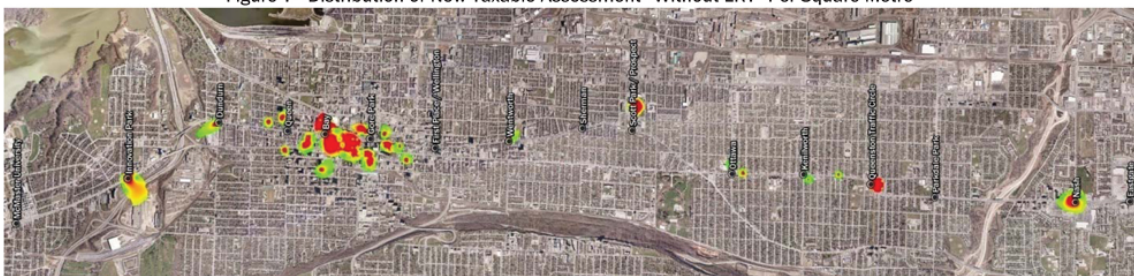


Figure 8 - Distribution of New Taxable Assessment "With LRT" Per Square Metre



Figure 11 – CUI - Distribution of New Taxable Assessment “With” and “Without” LRT<sup>15</sup>

<sup>15</sup> CUI Analysis, page 46, Figures 7 & 8



More recently, the City's Planning and Economic Development Department analyzed the potential for the properties along the corridor to transform into a different built form consistent with recent land use policy directions for the Main-King-Queenston corridor. Phase one of the Main-King Queenston Corridor Study (2012) looked at the properties within 400m on either side of the corridor and estimated that with a transformation of the properties to an appropriate built form (generally, multi-story mixed use buildings), the corridor would accommodate approximately a 1.2 million square feet increase in commercial space and 11.4 million square feet increase in residential space throughout the corridor (not including Downtown). These estimates assumed a certain percentage of the building stock would redevelop within the planning period (to 2031).

The CUI analysis was a more conservative approach, estimating 3.6 million square feet, compared to 12.6 million square feet estimated by the Main, King Queenston Corridor Strategy. The City's development estimates are considered optimistic and may not occur within the 2031 period as it is recognized that redevelopment and transformation will require more than the construction of an LRT line. Pace of redevelopment will be affected by market trends, the demand for residential and commercial, availability of suitable sites for redevelopment along the corridor. A multifaceted strategy would have to be in place to encourage and facilitate intensification and development along the corridor.

To illustrate, note the more detailed work completed by the City's Planning and Economic Development Department Nodes and Corridors study compared to the CUI Value Uplift and Capture Study:

To illustrate

Dundurn:

CUI:

Total New Floor Space = 228, 110 sq. ft

### # 3 DUNDURN

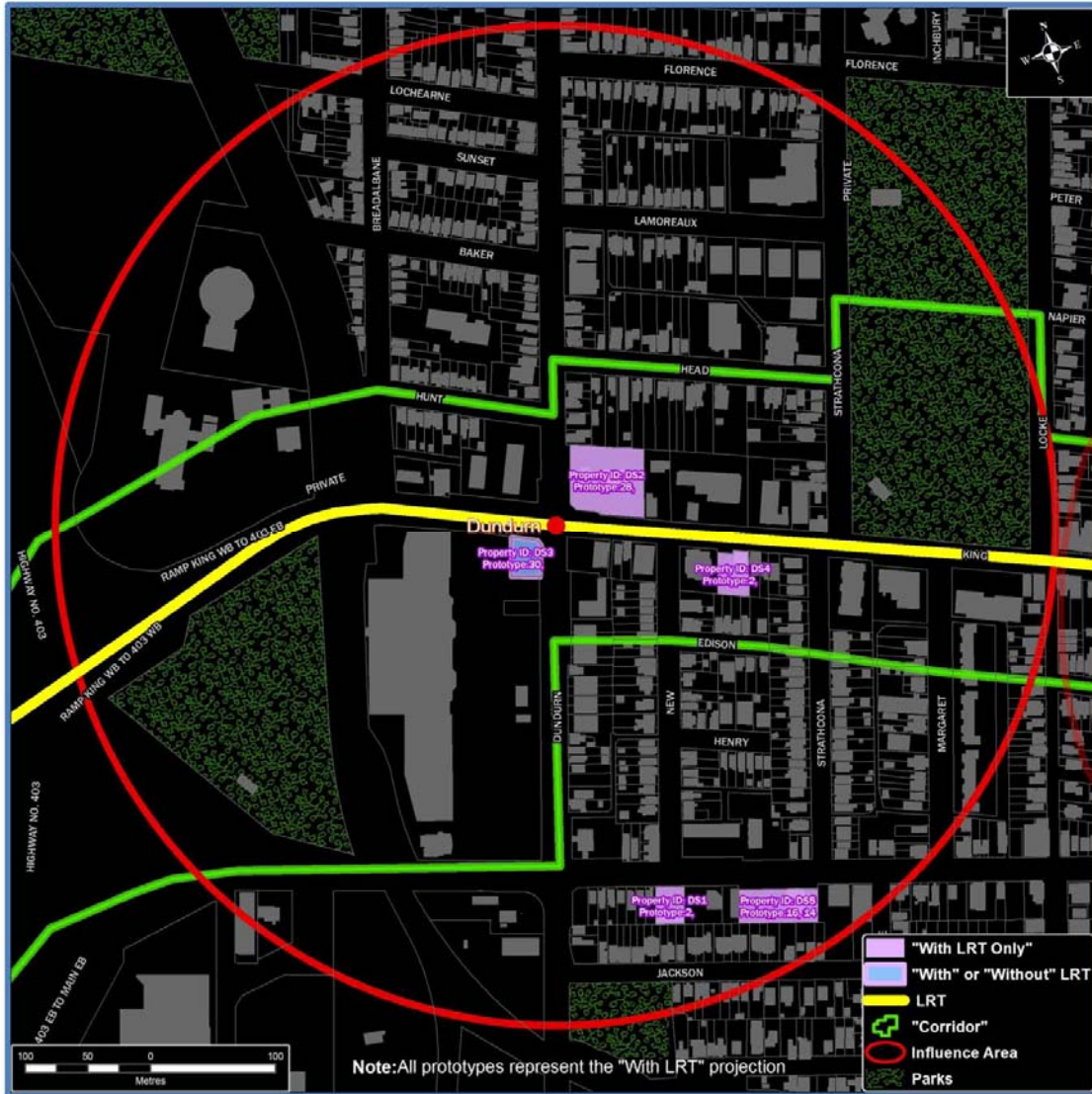


Figure 12 – Total New Floor Space CUI – Dundurn

City of Hamilton: Total New Floor Space = 1,309,179 sq. ft



Figure 13 - Total New Floor Space – City Of Hamilton

To illustrate:

Nash Road:

CUI: Total New Floor Space = 184,600 sq. ft.

### # 15 NASH

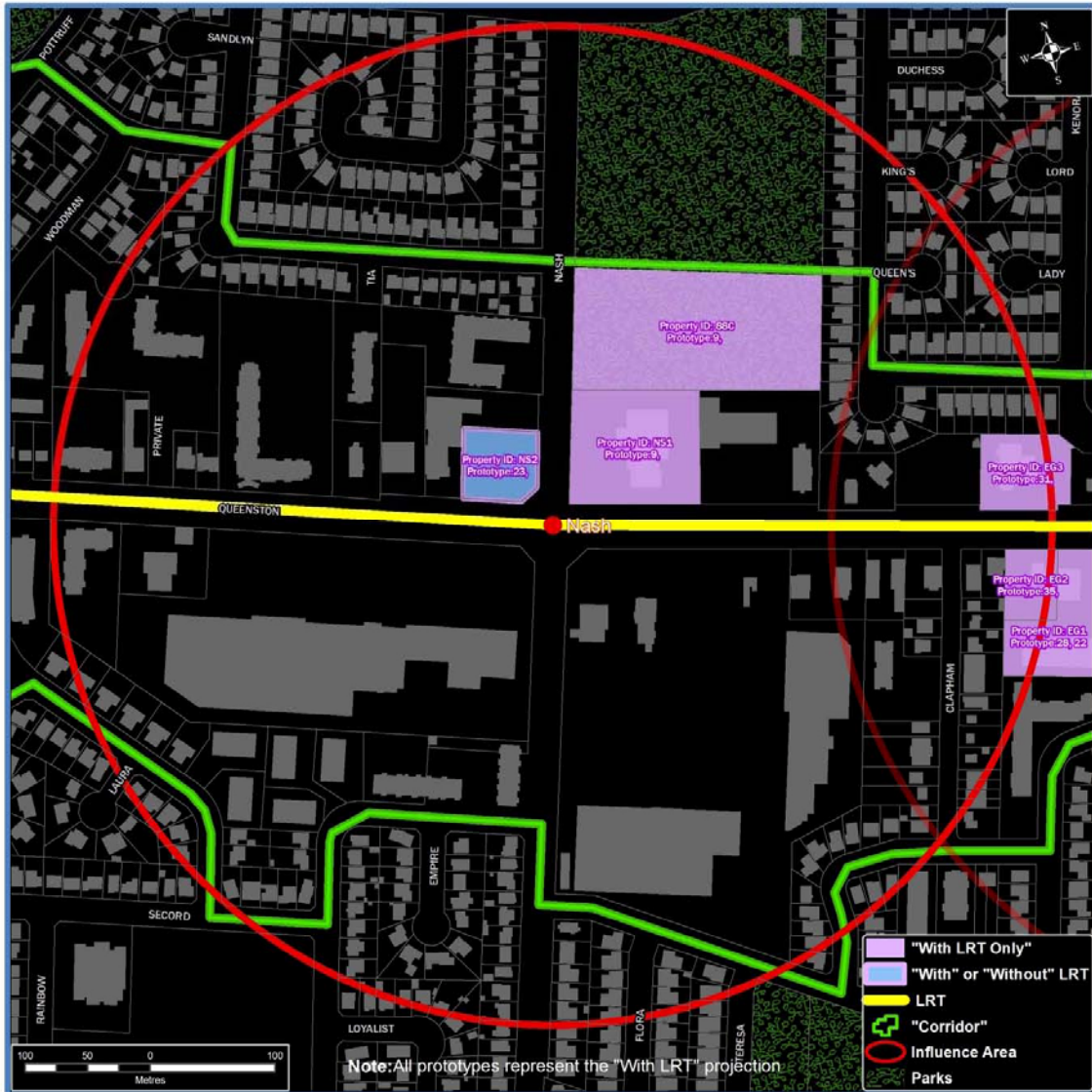


Figure 14 – Total New Floor Space CUI – Nash

City of Hamilton Total New Floor Space = 2,208,740 sq. ft.

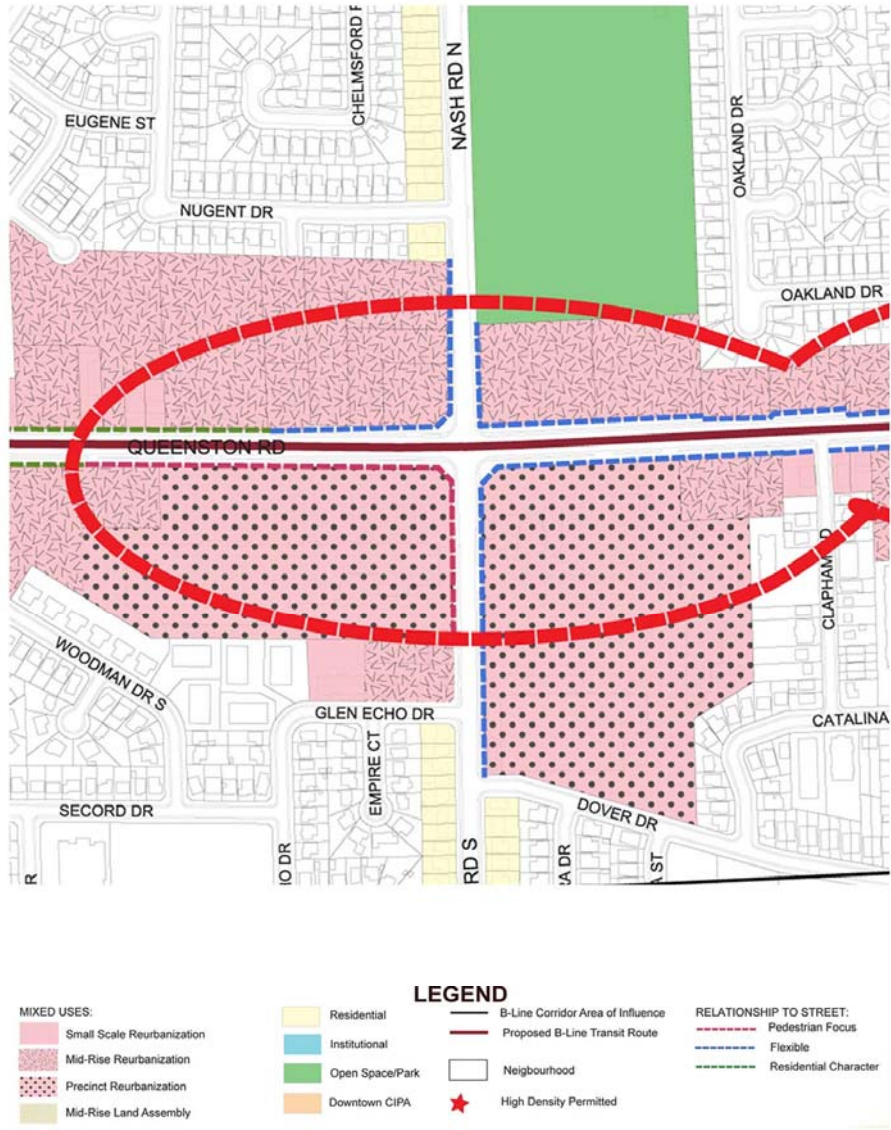


Figure 15 – Total New Floor Space City of Hamilton – Queenston

As noted previously, the CUI study shows very conservative development projections. CUI also used a conservative approach when determining the revenue estimates generated by the additional development.

CUI summarizes the estimates of the financial benefits of the B-line as follows:

Estimate of B-Line Financial Benefits

| <b>Source of additional tax benefit for Hamilton (based on 3.6 million sq. ft.)</b>                                   | <b>Amount over 15 years</b> |
|---|-----------------------------|
| Tax Benefit from new development by LRT on evaluated vacant and underused parcels (New Tax \$s collected by the City) | \$22.4 million              |
| Building permit fees and development charges for this new development (New \$s collected by the City)                 | \$30.2 million              |
| LRT value premium – Homeowner Benefit \$29 million  | Net Value \$0               |
| <b>TOTAL</b>  | <b>\$52.6 million</b>       |

The increase in taxable assessment and tax benefit resulting from new development (by location in the corridor) indicated that approximately 71% of the uplift occurred within a one block range for a total of \$16 million. The remaining \$6.4 million was beyond 1-block but within a 400 metre radius for a total of \$22.4 million.

Building permit fees and development charges for the new development equates to approximately \$30.2 million. This model assumed that existing development charge exemptions in the City of Hamilton were discontinued.

An LRT value premium was also calculated on properties within 400 metres of an LRT line because of its increased accessibility relative to other properties elsewhere in the City. This uplift premium increases the property taxes paid by the property owners benefiting from the LRT and reduces the taxes for all other taxpayers.



Blue = 2% LRT premium

Purple = 4% LRT premium

Figure 16 – LRT Premium areas

Of the \$29 million of LRT value premium, 60% is attributed to properties located within a 1-block depth (4% premium).

A total of **\$52.6 million** is an estimate of the financial benefits of the development potential of a B-line LRT system, based on the 3.6 million square foot increase in development as shown in the CUI study, *not* the City of Hamilton's estimates.

The Hamilton B-line Value Uplift and Capture study suggests that, over time, LRT stations would become the focus of new development and economic activity, similar to what has occurred in Portland, Dallas and Minneapolis.

It is worth noting that "The North American Light Rail Experience: Insights for Hamilton" report, prepared by the McMaster Institute for Transportation & Logistics (MITL) concludes that LRT itself is "a tool to guide development more than a generator of development. Even in favourable locations, ridership increases and new developments associated with light rail may proceed slower than anticipated. Planning incentives will likely be necessary to induce new investment along the route. To that end, the City of Hamilton is currently engaged in land use planning in advance of rapid transit and appears to be adhering to sound principles for the most part." MITL also concluded that light rail transit has the potential to succeed in Hamilton under the right set of circumstances.

## 15.0 Employment Growth

As stated previously, LRT is often a catalyst for stimulating the economy through investment in infrastructure. This includes job creation in both the initial design and construction stage and in the ongoing operations and maintenance phase.

Estimates show that approximately 6,000 construction jobs (provincial) would be created with the implementation of a B-Line system, 3,500 directly in Hamilton. Approximately 1,000 jobs (provincial) would be created to deliver regular operations and maintenance, including 300 jobs in Hamilton.<sup>16</sup>



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<sup>16</sup> Hamilton Rapid Transit Initiative: Hamilton Economic Potential Study

Employment generated by the LRT initiative would create further increases in spending which could have local (Hamilton) and provincial impacts. As noted in the *A-Line Economic Potential Impact* study (Steer Davies Gleave), such spending permeates through the economy by way of direct, indirect and induced impacts:

- Direct impact relates to the direct spending and employment created in each industry (i.e.: on-site construction jobs, rolling stock manufacturing jobs).
- Indirect impact relates to the spending and employment created in other industries further down the chain that would produce materials and services required for direct inputs.
- Induced impacts relate to additional spending generated by both direct and indirect impacts from higher wages and employment.

According to the *Hamilton Rapid Transit Initiative: Economic Potential Study*, a B-Line LRT investment is estimated to result in an increase of more than \$443 million in Ontario's GDP.



## 16.0 Health

Investments in public transportation such as LRT can help shape a city's built environment into a more walkable, complete and compact community. Transit friendly communities have positive impacts on human health. For instance, a 2009 study states that *"80% of cardiovascular diseases and type 2 diabetes along with 40% of cancers could be avoided if major risk factors associated with the environment were eliminated."*<sup>17</sup>

In fact, for each additional hour spent in a car per day, the likelihood of a person becoming obese increased by 6%.<sup>18</sup> By contrast, people who each walked an additional kilometre per day reduced their chances of becoming obese by 5%.

According to Statistics Canada, the number of overweight and obese people in Hamilton is higher on average than levels in similar cities. This has become an increasingly greater public concern and is impacting the health care system.



In 2010, another study was conducted both before and after the construction phase of the Charlotte North Carolina Light Rail Line. The study concluded that *"public transit systems can generate positive health impacts by encouraging greater numbers of users to walk to station stops and maintain more physically active lives on top of the general transportation benefits accrued."*<sup>19</sup>

According to the 2010 Hamilton B-Line Benefits Case Assessment completed by Metrolinx, annual accident costs are expected to be reduced by \$2.48 million over a period of 22 years, primarily because transit is found to be a safer mode of travel compared to driving. Upon further evaluation, Steer Davies Gleave estimates this cost savings to rise to \$3.48 million during the 2008 to 2031 evaluation period.

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<sup>17</sup> Metcalfe, O., & Higgins, C. (2009). Healthy public policy – is health impact assessment the cornerstone? *Public Health*, 123, 296-301

<sup>18</sup> Frank, L., Andresen, M., & Schmid, T. (2004). Obesity relationships with community design, physical activity and time spent in cars. *American Journal of Preventative Medicine*, 27(2), 87-89.

<sup>19</sup> MacDonald JM, Stokes RJ, Cohen DA, Kofner, A, Ridgeway GK. The Effect of Light Rail Transit on Body Mass Index and Physical Activity. *American Journal of Preventative Medicine*. 2010. 39(2)105-112.

## 17.0 Environment

Light rail transit has the ability to improve air quality by shifting mode choice from single occupancy vehicles to transit. Data collected by Clean Air Hamilton indicates that particulate matter and other toxins are most highly concentrated along roadways and intersections than compared to any other locations elsewhere in the city. This shows that transportation traffic in Hamilton contributes either as much or more significantly to air pollution than does surrounding industry. These emissions are directly related to acute and chronic heart disease.

According to Shapiro et al 2002, *“Moving a person a given distance by public transportation produces, on average, only about 5% as much carbon monoxide, less than 10% as much volatile organic compounds, and nearly half as much carbon dioxide and nitrogen oxides, as moving a person the same distance by private automobile, SUV, or light truck.”*<sup>20</sup>

In terms of energy intensity, automobiles including cars, sport utility vehicles and light trucks required an average of 5,255 British Thermal Units (BTUs) per passenger mile, while transit BTUs ranged from 911 to 1,612 for heavy rail, light rail and commuter rail in 1998.<sup>21</sup>

In the Toronto area, taxpayers pay approximately \$2.2 billion in mortality related issues arising from traffic pollution. A 30% to 50% reduction in car traffic can lower emission rates, saving an estimated 200 lives and \$900 million per year.<sup>22</sup>

According to Topalovic et al. 2012, local transit can reduce total vehicle use by 2% to 12%. However, LRT combined as an integral part of *“transportation planning, commute trip reduction, smart growth policy and parking management may be able to reduce total vehicle use by 18 to 58%.”*<sup>23</sup>

According to the Victoria Transportation Policy Institute (VTPI 2007)<sup>24</sup>, auto-dependent communities require 20 to 50 times more space than transit-based communities. That means 66 to 80% of the land must be devoted to roads and parking facilities. This pavement deflects rain water causing storm surges which places a large burden on the sewer system. This infrastructure also requires constant maintenance (resurfacing, lining, replacement and dredging), impacting the overall municipal budget.

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<sup>20</sup> Shapiro RJ, Hassett KA, Arnold FS. Conserving Energy and Preserving the Environment: The Role of Public Transportation. Washington, DC: APTA: 2002;2. Available at: <http://www.apta.com/research/info/online/Shapiro.cfm> Accessed October 21, 2012

<sup>21</sup> Zimmerman R. Mass Transit Infrastructure and Urban Health. Journal of Urban Health: Bulletin of the New York Academy of Medicine, Vol. 82, No.1. 2005

<sup>22</sup> McKeown, D. (2007). Air pollution burden of illness from traffic in Toronto: Problems and solutions. Toronto: Public Health Office.

<sup>23</sup> Topolovic, P., Carter, J., Topolovic, M., Krantzberg, G. Light Rail Transit in Hamilton: Health, Environmental & Economic Impact Analysis. Soc Indic Res DOI 10.1007/s1 1205-012-0069-x

<sup>24</sup> VTPI. (2007). Transportation Costs and Benefit Analysis. Retrieved from the Victoria Transportation Policy Institute, <http://www.vtpi.org/tca>.

## 18.0 Social / Tourism

Within the Greater Golden Horseshoe area, Downtown Hamilton has been found to have the highest level of social need (dark purple as outlined in figure 17).

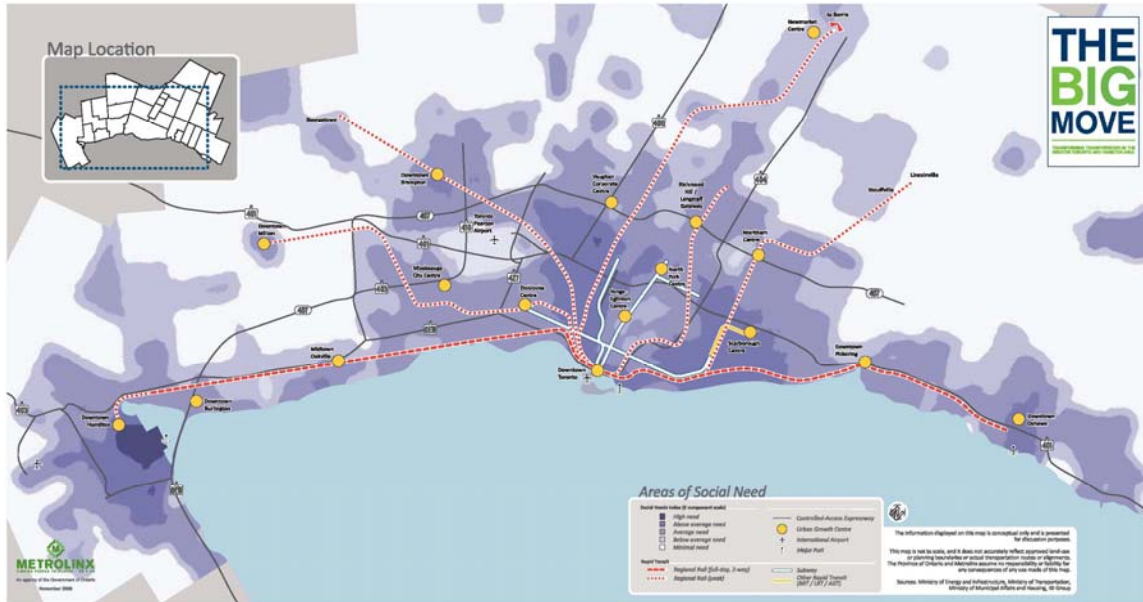


Figure 17 – Big Move Areas of Social Need Map

| Category   | Corridor | Hamilton | GTHA  | Ontario | Canada |
|--|----------|----------|-------|---------|--------|
| Government transfers as a proportion of total income | 20.6%    | 12.9%    | 9.3%  | 9.8%    | 11.1%  |
| Population over 65                                   | 14.8%    | 14.2%    | 12.2% | 13.6%   | 13.7%  |
| Single Parents                                       | 23.6%    | 14.7%    | 14.2% | 15.8%   | 15.9%  |
| No High School certificate                           | 38.5%    | 28.7%    | 24.1% | 22.2%   | 25.5%  |
| Low Income   | 35.6%    | 16.2%    | 12.4% | 14.7%   | 15.3%  |
| Unemployment rate                                    | 10.4%    | 5.8%     | 5.2%  | 6.4%    | 6.6%   |

**Comparison of Social Need Indicators (Source: Hamilton Rapid Transit Initiative: Economic Potential Study)**

The proposed LRT corridor scores high in each category with the exception of population over 65 relative to the entire City of Hamilton, Greater Toronto and Hamilton Area, Ontario and Canada. Figures for the corridor are based on areas within an 800 metre radius of the proposed LRT route.

LRT has the potential to connect people living in downtown neighbourhoods with job opportunities and amenities, including health and social facilities which can lead to improved quality of life and accessibility benefits.

Access to high quality public transportation also increases travel reliability and can help reduce overall household transportation expenditures by reducing the need for multiple household vehicles. In 2011, the Canadian Automobile Association estimated the average annual cost of auto ownership to be approximately \$12,000 inclusive of insurance, depreciation, financing and costs for fuel and maintenance.

Low income or disadvantaged populations can be vulnerable when inadequate transportation options are available. This is because of greater dependence on automobile travel and ownership of older vehicles, which strengthens the need for a strong, integrated local and regional transportation system.<sup>25</sup>

The proposed B-Line route connects a number of key destinations within the City. These include:

- McMaster University
- McMaster Innovation Park/West Hamilton Innovation District
- Westdale
- Locke Street
- Downtown/Central Business District
- Copps Coliseum
- Hamilton Farmers' Market
- Hamilton Public Library Central Branch
- Jackson Square
- International Village
- Ivor Wynne Stadium
- Ottawa Street
- Eastgate Square, and
- A number of existing neighbourhoods.

In Hamilton, 17% of the existing population and 20% of employment opportunities are located within 800 metres of the B-Line corridor. In addition, 80% of the city's population is serviced by HSR transit routes that connect directly with the B-Line.

*"In order to attract new urbanite companies, Hamilton will have to respond to the needs of young graduates, who, through focus groups and web-based survey, shared their frustrations with the car dependant nature of the city and a lack of transit facilities and opportunities for active transportation."*<sup>26</sup>

The City Manager of Cincinnati, Ohio summarized this by saying, "...today, young, educated workers move to cities with a sense of place and if businesses see us laying rail down on a street, they'll know that it is a permanent route that

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<sup>25</sup> Murakami E, Young J. Daily travel by persons with low income. In: Proceedings from the Nationwide Personal Transportation Survey Symposium, October 29-31, 1997. Washington, DC: U.S. DOT; 1999:69

<sup>26</sup> Topolovic, P., Carter, J., Topolovic, M., Krantzberg, G. Light Rail Transit in Hamilton: Health, Environmental & Economic Impact Analysis. Soc Indic Res DOI 10.1007/s1 1205-012-0069-x

*will have people passing by 7 days a week...Cincinnati has to compete with other cities for investment...talent and for a place of national prominence.”<sup>27</sup>*

Research conducted by Richard Florida, professor and head of the Martin Prosperity Institute at the Rotman School of Management (University of Toronto) indicates that a number of strategies are required to attract and retain the creative workforce. These include downtown core renewal, heritage building preservation, smart growth, inner urban investment, space conversion, park and trail design, efficient rapid transit and growth in the entertainment sector.

Further, the 2012 study authored by Topolovic et al states that *“sustainable development is no longer just the right thing to do; it is a business decision motivated by financial interests and the need for community well being, and that the evidence indicates that LRT can be a key enabler of downtown renewal and sustainable urban planning and would therefore help to attract the creative class.”*

The report analysis also recommends *“that LRT be considered as:*

- *A viable and desirable transit option;*
- *A catalyst for transit oriented, high density, mixed use development;*
- *An economically sound investment opportunity, providing a return on investment to property owners, businesses and the municipality and;*
- *A catalyst for social change; improving the health, environment, sustainability and connectivity of the community.*

*These recommendations hold true provided that supportive Smart Growth and Transit Oriented Development policies are in place and that there is significant population, transit ridership and development potential to warrant the investment in the corridor of interest.”<sup>28</sup>*



<sup>27</sup> Driehaus, B. (2008). Downtowns Across the US See Streetcars in Their Future. New York Times. Retrieved from: <http://www.nytimes.com/2008/08/14/US/14streetcar.html>

<sup>28</sup> Topolovic, P., Carter, J., Topolovic, M., Krantzberg, G. Light Rail Transit in Hamilton: Health, Environmental & Economic Impact Analysis. Soc Indic Res DOI 10.1007/s1 1205-012-0069-x

## 19.0 LRT – Image • Connectivity • Community Pride

High quality light rail systems often have an iconic value that is attractive to tourists, commuters and residents. While bus routes can sometimes be difficult for domestic and international visitors to navigate, LRT networks are often perceived to be simpler and more reliable, largely because routes are permanent and highly visible. Because transportation is a key element in the visitor experience, an efficient public transportation system can significantly enhance a city's reputation among travelers.



*Photographs courtesy of Dan Banko*

Surrounded by nature, Hamilton is rich in history and culture. Exceptional in its distinctive urban feel and vibrant arts and culture, Hamilton has deep roots and a proud history. In order to create a livable city, people must first feel a sense of pride in where they live.<sup>29</sup>



<sup>29</sup> Shaker, P., Centre for Community Study, Hamilton and the Creative Class

## **20.0 Conclusion - The Cost of Not Implementing LRT**

The benefits captured within this report have used conservative values (i.e. worst case scenario values to ensure that the benefits are cautious rather than optimistic). Summed up the City of Hamilton should see a direct benefit of approximately \$130M (reduction in backlog, building permits and tax benefits from development).

In addition, there are a number of spin off benefits associated with the construction of LRT. The Benefits Case Assessment estimates that 3500 temporary jobs will be created in Hamilton during the construction period and 300 permanent jobs. This also affects Ontario's Gross Domestic Product providing a value of \$443 million.

Health, Environment and Social Tourism are difficult to quantify without extensive and costly studies. This report recognizes that LRT does provide benefits within these areas and offers enhanced quality of life for residents.

A fundamental consideration of the benefits of this type of project, which aligns with the findings of the McMaster Institute of Transportation and Logistics study, is the ability for LRT to refocus growth within the community. This is in keeping with Places to Grow, the City of Hamilton Official Plan and the City of Hamilton Transportation Master Plan and allows the City to capitalize on existing infrastructure while achieving population and employment growth.

DAY 1 - TODAY PROJECTIONS

| Bus Only - DAY 1 - TODAY              |               |  |
|---------------------------------------|---------------|--|
| <b>Annual Service Hours</b>           |               |  |
| King                                  | 63,040        | Annual service hours based on % of daily service hours per route               |
| Del                                   | 100,864       |  |
| B-Line                                | 32,465        |  |
| Univ                                  | 25,846        |  |
| Dun                                   | 2,522         |  |
| St. Cr. Cent                          | 17,336        |  |
| St. Cr. Loc                           | 7,880         |  |
| HSR B-Line Corridor                   | 249,953       |  |
| HSR Non-B-Line Corridor               | 480,047       |  |
| HSR System Wide                       | 730,000       | Based on HSR Budgetted hours   |
| <b>Annual Operating Costs</b>         |               |  |
| King                                  | \$ 6,822,107  | Annual Operating Costs based on % of totals from above                         |
| Del                                   | \$ 10,915,371 |  |
| B-Line                                | \$ 3,513,385  |  |
| Univ                                  | \$ 2,797,064  |  |
| Dun                                   | \$ 272,884    |  |
| St. Cr. Cent                          | \$ 1,876,079  |  |
| St. Cr. Loc                           | \$ 852,763    |  |
| HSR B-Line Corridor                   | \$ 27,049,655 |  |
| HSR Non-B-Line Corridor               | \$ 51,950,345 |  |
| HSR System Wide                       | \$ 79,000,000 | Based on 2012 Restated Budget/Projected Actuals                                |
| <b>Annual Ridership (passengers)</b>  |               | <b>Increase in Gross Cost over Bus only</b>                                    |
| King                                  | 3,080,000     | Based on actual % of ridership per route X system wide passengers              |
| Del                                   | 2,860,000     |  |
| B-Line                                | 1,320,000     |  |
| Univ                                  | 1,320,000     |  |
| Dun                                   | 88,000        |  |
| St. Cr. Cent                          | 440,000       |  |
| St. Cr. Loc                           | 110,000       |  |
| HSR B-Line Corridor                   | 9,218,000     |  |
| HSR Non-B-Line Corridor               | 12,782,000    |  |
| HSR System Wide                       | 22,000,000    | Based on IBI report - Services review  |
| <b>Annual Revenue</b>                 |               |  |
| King                                  | \$ 4,900,000  | Based on actual % of ridership per route X system wide revenues                |
| Del                                   | \$ 4,550,000  |  |
| B-Line                                | \$ 2,100,000  |  |
| Univ                                  | \$ 2,100,000  |  |
| Dun                                   | \$ 140,000    |  |
| St. Cr. Cent                          | \$ 700,000    |  |
| St. Cr. Loc                           | \$ 175,000    |  |
| HSR B-Line Corridor                   | \$ 14,665,000 |  |
| HSR Non-B-Line Corridor               | \$ 20,335,000 |  |
| HSR System Wide                       | \$ 35,000,000 | Based on 2012 Restated Budget(less Gas Tax Rev.)                               |
| rate per passenger                    | \$ 1.59       |  |
| <b>NET COST - TOTAL (System Wide)</b> | \$ 44,000,000 |  |
| <b>Gross Cost per Passenger</b>       |               |  |
| King                                  | \$ 2.21       | Annual Operating Cost / Annual passengers per route                            |
| Del                                   | \$ 3.82       |  |
| B-Line                                | \$ 2.66       |  |
| Univ                                  | \$ 2.12       |  |
| Dun                                   | \$ 3.10       |  |
| St. Cr. Cent                          | \$ 4.26       |  |
| St. Cr. Loc                           | \$ 7.75       |  |
| HSR B-Line Corridor                   | \$ 2.93       |  |
| HSR Non-B-Line Corridor               | \$ 4.06       |  |
| HSR System Wide                       | \$ 3.59       |  |
| <b>Net Cost per Passenger</b>         |               |  |
| King                                  | \$ 0.62       | Annual Operating Cost - Annual Revenue per route / Annual passengers per route |
| Del                                   | \$ 2.23       |  |
| B-Line                                | \$ 1.07       |  |
| Univ                                  | \$ 0.53       |  |
| Dun                                   | \$ 1.51       |  |
| St. Cr. Cent                          | \$ 2.67       |  |
| St. Cr. Loc                           | \$ 6.16       |  |
| HSR B-Line Corridor                   | \$ 1.34       |  |
| HSR Non-B-Line Corridor               | \$ 2.47       |  |
| HSR System Wide                       | \$ 2.00       |  |

| BUS & LRT - DAY 1 (Low)  |               |  |
|--|---------------|--|
| Transfer of 1/3 service hours from Delaware & King TO B-line             |               |  |
|  |               |  |
|  | 42,026        | Reduced by 1/3   |
|  | 67,242        | Reduced by 1/3   |
|  | 93,600        | As per SDG report - Capital/Operating pg. 10   |
|  | 25,846        |  |
|  | 2,522         |  |
|  | 17,336        |  |
|  | 7,880         |  |
|  | 256,453       |  |
|  | 480,047       |  |
|  | 736,500       |  |
|  | \$ 5,002,879  | 80% DIRECT COSTS REDUCED BY 1/3  |
|  | \$ 8,004,606  | 80% DIRECT COSTS REDUCED BY 1/3  |
|  | \$ 11,205,646 | Reduced from \$14.5million. Reduced 22 vehicles to 16 vehicles. Increased headway from 4 mins to 6 mins. |
|  | \$ 2,797,064  |  |
|  | \$ 272,884    |  |
|  | \$ 1,876,079  |  |
|  | \$ 852,763    |  |
|  | \$ 30,011,921 |  |
|  | \$ 51,950,345 |  |
|  | \$ 81,962,266 |  |
|  | \$ 2,962,266  |  |
|  | 2,053,330     | Reduced by 1/3 & transferred to B-Line   |
|  | 1,906,670     | Reduced by 1/3 & transferred to B-Line   |
|  | 3,300,000     | B-Line + 1/3 from Delaware & King  |
|  | 1,320,000     |  |
|  | 88,000        |  |
|  | 440,000       |  |
|  | 110,000       |  |
|  | 9,218,000     |  |
|  | 12,782,000    |  |
|  | 22,000,000    |  |
|  | \$ 3,266,662  |  |
|  | \$ 1,638,000  |  |
|  | \$ 5,250,000  |  |
|  | \$ 2,100,000  |  |
|  | \$ 140,000    |  |
|  | \$ 700,000    |  |
|  | \$ 175,000    |  |
|  | \$ 14,665,000 |  |
|  | \$ 20,335,000 |  |
|  | \$ 35,000,000 |  |
|  | \$ 1.59       |  |
|  | \$ 46,962,266 |  |
|  | \$ 2,962,266  |  |
|  | \$ 2.44       |  |
|  | \$ 4.20       |  |
|  | \$ 3.40       |  |
|  | \$ 2.12       |  |
|  | \$ 3.10       |  |
|  | \$ 4.26       |  |
|  | \$ 7.75       |  |
|  | \$ 3.26       |  |
|  | \$ 4.06       |  |
|  | \$ 3.73       |  |
|  | \$ 0.85       |  |
|  | \$ 2.61       |  |
|  | \$ 1.80       |  |
|  | \$ 0.53       |  |
|  | \$ 1.51       |  |
|  | \$ 2.67       |  |
|  | \$ 6.16       |  |
|  | \$ 1.66       |  |
|  | \$ 2.47       |  |
|  | \$ 2.13       |  |
| NOTE:<br>INCREASE IN HEADWAY FROM 4 - 6 MINS<br>NO INCREASE IN RIDERSHIP |               |  |

| BUS & LRT - DAY 1 (High)  |               |  |
|---|---------------|--|
| Per SDG Assumptions: 2/3 of ridership from all routes TO B-Line Only route +8% city wide increase |               |  |
|   |               |  |
|   | 42,026        | Reduced by 1/3   |
|   | 67,242        | Reduced by 1/3   |
|   | 93,600        | As per SDG report - Capital/Operating pg. 10                         |
|   | 25,846        |  |
|   | 2,522         |  |
|   | 17,336        |  |
|   | 7,880         |  |
|   | 256,453       |  |
|   | 480,047       |  |
|   | 736,500       |  |
|   | \$ 5,002,879  | 80% DIRECT COSTS REDUCED BY 1/3                                      |
|   | \$ 8,004,606  | 80% DIRECT COSTS REDUCED BY 1/3                                      |
|   | \$ 14,500,000 | As per SDG   |
|   | \$ 2,797,064  |  |
|   | \$ 272,884    |  |
|   | \$ 1,876,079  |  |
|   | \$ 852,763    |  |
|   | \$ 33,306,275 |  |
|   | \$ 51,950,345 |  |
|   | \$ 85,256,620 |  |
|   | \$ 6,256,620  |  |
|   | 1,108,800     | 1/3 of Bus only + 8% city wide increase                              |
|   | 1,029,600     | 1/3 of Bus only + 8% city wide increase                              |
|   | 7,112,113     | Bus Only + 2/3 of routes + 8% city wide incr.                        |
|   | 475,200       | 1/3 of Bus only + 8% city wide increase                              |
|   | 31,680        | 1/3 of Bus only + 8% city wide increase                              |
|   | 158,400       | 1/3 of Bus only + 8% city wide increase                              |
|   | 39,600        | 1/3 of Bus only + 8% city wide increase                              |
|   | 9,955,393     |  |
|   | 13,804,560    | Bus only +8% increase system wide                                    |
|   | 23,759,953    |  |
|   | \$ 1,764,000  | Above ridership #s X \$1.59 per passenger which is based on Bus Only |
|   | \$ 1,638,000  |  |
|   | \$ 11,314,726 |  |
|   | \$ 756,000    |  |
|   | \$ 50,400     |  |
|   | \$ 252,000    |  |
|   | \$ 63,000     |  |
|   | \$ 15,838,126 |  |
|   | \$ 21,961,800 |  |
|   | \$ 37,799,926 |  |
|   | \$ 1.59       |  |
|   | \$ 47,456,695 |  |
|   | \$ 3,456,695  |  |
|   | \$ 4.51       |  |
|   | \$ 7.77       |  |
|   | \$ 2.04       |  |
|   | \$ 5.89       |  |
|   | \$ 8.61       |  |
|   | \$ 11.84      |  |
|   | \$ 21.53      |  |
|   | \$ 3.35       |  |
|   | \$ 3.76       |  |
|   | \$ 3.59       |  |
|   | \$ 2.92       |  |
|   | \$ 6.18       |  |
|   | \$ 0.45       |  |
|   | \$ 4.30       |  |
|   | \$ 7.02       |  |
|   | \$ 10.25      |  |
|   | \$ 19.94      |  |
|   | \$ 1.75       |  |
|   | \$ 2.17       |  |
|   | \$ 2.00       |  |
| NOTE:<br>Increase in Ridership based on SDG assumptions   |               |  |



APPENDIX B

| 2031 PROJECTIONS                      |                      | \$79 Mil Exp & \$35mil Rev   |                 |
|---------------------------------------|----------------------|--|-----------------|
|                                       |                      | Bus Only - DAY 1 - TODAY   |                 |
| <b>Annual Service Hours</b>           |                      |  |                 |
| King                                  | 63,040               | Annual service hours based on % of daily service hours per route               |                 |
| Del                                   | 100,864              |  |                 |
| B-Line                                | 32,465               |  |                 |
| Univ                                  | 25,846               |  |                 |
| Dun                                   | 2,522                |  |                 |
| St.Cr. Cent                           | 17,336               |  |                 |
| St.Cr. Loc                            | 7,880                |  |                 |
| HSR B-Line Corridor                   | 249,953              |  |                 |
| HSR Non-B-Line Corridor               | 480,047              |  |                 |
| HSR System Wide                       | <b>730,000</b>       | Based on HSR Budgetted hours   |                 |
| <b>Annual Operating Costs</b>         |                      |  |                 |
| King                                  | \$ 6,822,107         | Annual Operating Costs based on % of totals from above                         |                 |
| Del                                   | \$ 10,915,371        |  |                 |
| B-Line                                | \$ 3,513,385         |  |                 |
| Univ                                  | \$ 2,797,064         |  |                 |
| Dun                                   | \$ 272,884           |  |                 |
| St.Cr. Cent                           | \$ 1,876,079         |  |                 |
| St.Cr. Loc                            | \$ 852,763           |  |                 |
| HSR B-Line Corridor                   | \$ 27,049,655        |  |                 |
| HSR Non-B-Line Corridor               | \$ 51,950,345        |  |                 |
| HSR System Wide                       | <b>\$ 79,000,000</b> | Based on 2012 Restated Budget/Proj. Actuals                                    |                 |
| <b>Annual Ridership (passengers)</b>  |                      |  |                 |
| King                                  | 3,080,000            | Based on actual % of ridership per route X system wide passengers              |                 |
| Del                                   | 2,860,000            |  |                 |
| B-Line                                | 1,320,000            |  |                 |
| Univ                                  | 1,320,000            |  |                 |
| Dun                                   | 88,000               |  |                 |
| St.Cr. Cent                           | 440,000              |  |                 |
| St.Cr. Loc                            | 110,000              |  |                 |
| HSR B-Line Corridor                   | 9,218,000            |  |                 |
| HSR Non-B-Line Corridor               | 12,782,000           |  |                 |
| HSR System Wide                       | <b>22,000,000</b>    | Based on IBI report - Services review  |                 |
| <b>Annual Revenue</b>                 |                      |  |                 |
| King                                  | \$ 4,900,000         | Based on actual % of ridership per route X system wide revenues                |                 |
| Del                                   | \$ 4,550,000         |  |                 |
| B-Line                                | \$ 2,100,000         |  |                 |
| Univ                                  | \$ 2,100,000         |  |                 |
| Dun                                   | \$ 140,000           |  |                 |
| St.Cr. Cent                           | \$ 700,000           |  |                 |
| St.Cr. Loc                            | \$ 175,000           |  |                 |
| HSR B-Line Corridor                   | \$ 14,665,000        |  |                 |
| HSR Non-B-Line Corridor               | \$ 20,335,000        |  |                 |
| HSR System Wide                       | <b>\$ 35,000,000</b> | Based on 2012 Restated Budget/Proj. Actuals                                    |                 |
| rate per passenger                    | \$                   | <b>1.59</b>  | current average |
| <b>NET COST - TOTAL (System Wide)</b> | \$                   | <b>44,000,000</b>  |                 |
| <b>Gross Cost per Passenger</b>       |                      |  |                 |
| King                                  | \$ 2.21              | Annual Operating Cost / Annual passengers per route                            |                 |
| Del                                   | \$ 3.82              |  |                 |
| B-Line                                | \$ 2.66              |  |                 |
| Univ                                  | \$ 2.12              |  |                 |
| Dun                                   | \$ 3.10              |  |                 |
| St.Cr. Cent                           | \$ 4.26              |  |                 |
| St.Cr. Loc                            | \$ 7.75              |  |                 |
| HSR B-Line Corridor                   | \$ <b>2.93</b>       |  |                 |
| HSR Non-B-Line Corridor               | \$ 4.06              |  |                 |
| HSR System Wide                       | \$ 3.59              |  |                 |
| <b>Net Cost per Passenger</b>         |                      |  |                 |
| King                                  | \$ 0.62              | Annual Operating Cost - Annual Revenue per route / Annual passengers per route |                 |
| Del                                   | \$ 2.23              |  |                 |
| <b>B-Line</b>                         | <b>\$ 1.07</b>       |  |                 |
| Univ                                  | \$ 0.53              |  |                 |
| Dun                                   | \$ 1.51              |  |                 |
| St.Cr. Cent                           | \$ 2.67              |  |                 |
| St.Cr. Loc                            | \$ 6.16              |  |                 |
| HSR B-Line Corridor                   | \$ <b>1.34</b>       |  |                 |
| HSR Non-B-Line Corridor               | \$ 2.47              |  |                 |
| HSR System Wide                       | \$ <b>2.00</b>       |  |                 |

| Bus Only - 2031                       |                       |
|---------------------------------------|-----------------------|
| <b>Annual Service Hours</b>           |                       |
| King                                  | 63,040                |
| Del                                   | 100,864               |
| B-Line                                | 32,465                |
| Univ                                  | 25,846                |
| Dun                                   | 2,522                 |
| St.Cr. Cent                           | 17,336                |
| St.Cr. Loc                            | 7,880                 |
| HSR B-Line Corridor                   | 249,953               |
| HSR Non-B-Line Corridor               | 480,047               |
| HSR System Wide                       | <b>730,000</b>        |
| <b>Annual Operating Costs</b>         |                       |
| King                                  | \$ 9,938,522          |
| Del                                   | \$ 15,901,635         |
| B-Line                                | \$ 5,118,339          |
| Univ                                  | \$ 4,074,794          |
| Dun                                   | \$ 397,541            |
| St.Cr. Cent                           | \$ 2,733,094          |
| St.Cr. Loc                            | \$ 1,242,315          |
| HSR B-Line Corridor                   | \$ 39,406,239         |
| HSR Non-B-Line Corridor               | \$ 75,681,844         |
| HSR System Wide                       | <b>\$ 115,088,083</b> |
| <b>Annual Ridership (passengers)</b>  |                       |
| King                                  | 3,572,800             |
| Del                                   | 3,317,600             |
| B-Line                                | 1,531,200             |
| Univ                                  | 1,531,200             |
| Dun                                   | 102,080               |
| St.Cr. Cent                           | 510,400               |
| St.Cr. Loc                            | 127,600               |
| HSR B-Line Corridor                   | 10,692,880            |
| HSR Non-B-Line Corridor               | 14,827,120            |
| HSR System Wide                       | <b>25,520,000</b>     |
| <b>Annual Revenue</b>                 |                       |
| King                                  | \$ 7,953,053          |
| Del                                   | \$ 7,384,978          |
| B-Line                                | \$ 3,408,451          |
| Univ                                  | \$ 3,408,451          |
| Dun                                   | \$ 227,230            |
| St.Cr. Cent                           | \$ 1,136,150          |
| St.Cr. Loc                            | \$ 284,038            |
| HSR B-Line Corridor                   | \$ 23,802,351         |
| HSR Non-B-Line Corridor               | \$ 33,005,169         |
| HSR System Wide                       | \$ 56,807,520         |
| rate per passenger                    | \$ <b>2.23</b>        |
| <b>NET COST - TOTAL (System Wide)</b> | \$ <b>58,280,563</b>  |
| <b>Gross Cost per Passenger</b>       |                       |
| King                                  | \$ 2.78               |
| Del                                   | \$ 4.79               |
| B-Line                                | \$ 3.34               |
| Univ                                  | \$ 2.66               |
| Dun                                   | \$ 3.89               |
| St.Cr. Cent                           | \$ 5.35               |
| St.Cr. Loc                            | \$ 9.74               |
| HSR B-Line Corridor                   | \$ <b>3.69</b>        |
| HSR Non-B-Line Corridor               | \$ 5.10               |
| HSR System Wide                       | \$ 4.51               |
| <b>Net Cost per Passenger</b>         |                       |
| King                                  | \$ 0.56               |
| Del                                   | \$ 2.57               |
| <b>B-Line</b>                         | <b>\$ 1.12</b>        |
| Univ                                  | \$ 0.44               |
| Dun                                   | \$ 1.67               |
| St.Cr. Cent                           | \$ 3.13               |
| St.Cr. Loc                            | \$ 7.51               |
| HSR B-Line Corridor                   | \$ <b>1.46</b>        |
| HSR Non-B-Line Corridor               | \$ 2.88               |
| HSR System Wide                       | \$ <b>2.28</b>        |

| BUS & LRT - Year 2031                 |                      |
|---------------------------------------|----------------------|
| <b>Annual Service Hours</b>           |                      |
| King                                  | 42,026               |
| Del                                   | 67,242               |
| B-Line                                | 93,600               |
| Univ                                  | 25,846               |
| Dun                                   | 2,522                |
| St.Cr. Cent                           | 17,336               |
| St.Cr. Loc                            | 7,880                |
| HSR B-Line Corridor                   | 256,453              |
| HSR Non-B-Line Corridor               | 480,047              |
| HSR System Wide                       | <b>736,500</b>       |
| <b>Annual Operating Costs</b>         |                      |
| King                                  | \$ 7,434,015         |
| Del                                   | \$ 11,894,423        |
| B-Line                                | \$ 21,546,237        |
| Univ                                  | \$ 4,156,290         |
| Dun                                   | \$ 405,492           |
| St.Cr. Cent                           | \$ 2,787,755         |
| St.Cr. Loc                            | \$ 1,267,162         |
| HSR B-Line Corridor                   | \$ 49,491,374        |
| HSR Non-B-Line Corridor               | \$ 77,195,480        |
| HSR System Wide                       | \$ 126,686,854       |
| <b>Annual Ridership (passengers)</b>  |                      |
| King                                  | 1,286,208            |
| Del                                   | 1,194,336            |
| B-Line                                | 14,553,000           |
| Univ                                  | 551,232              |
| Dun                                   | 36,749               |
| St.Cr. Cent                           | 183,744              |
| St.Cr. Loc                            | 45,936               |
| HSR B-Line Corridor                   | 17,851,205           |
| HSR Non-B-Line Corridor               | 16,013,290           |
| HSR System Wide                       | <b>33,864,494</b>    |
| <b>Annual Revenue</b>                 |                      |
| King                                  | \$ 2,863,099         |
| Del                                   | \$ 2,658,592         |
| B-Line                                | \$ 32,394,978        |
| Univ                                  | \$ 1,227,042         |
| Dun                                   | \$ 81,803            |
| St.Cr. Cent                           | \$ 409,014           |
| St.Cr. Loc                            | \$ 102,254           |
| HSR B-Line Corridor                   | \$ 39,736,782        |
| HSR Non-B-Line Corridor               | \$ 35,645,583        |
| HSR System Wide                       | \$ 75,382,365        |
| rate per passenger                    | \$ <b>2.23</b>       |
| <b>NET COST - TOTAL (System Wide)</b> | \$ <b>51,304,489</b> |
| <b>Gross Cost per Passenger</b>       |                      |
| King                                  | \$ 5.78              |
| Del                                   | \$ 9.96              |
| B-Line                                | \$ 1.48              |
| Univ                                  | \$ 7.54              |
| Dun                                   | \$ 11.03             |
| St.Cr. Cent                           | \$ 15.17             |
| St.Cr. Loc                            | \$ 27.59             |
| HSR B-Line Corridor                   | \$ <b>2.77</b>       |
| HSR Non-B-Line Corridor               | \$ 4.82              |
| HSR System Wide                       | \$ 3.74              |
| <b>Net Cost per Passenger</b>         |                      |
| King                                  | \$ 3.55              |
| Del                                   | \$ 7.73              |
| <b>B-Line</b>                         | <b>\$ (0.75)</b>     |
| Univ                                  | \$ 5.31              |
| Dun                                   | \$ 8.81              |
| St.Cr. Cent                           | \$ 12.95             |
| St.Cr. Loc                            | \$ 25.36             |
| HSR B-Line Corridor                   | \$ <b>0.55</b>       |
| HSR Non-B-Line Corridor               | \$ 2.59              |
| HSR System Wide                       | \$ <b>1.51</b>       |

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# Appendix A: Light Rail Transit

A8: Rapid Transit Workplans



## 2013 Workplan

### Program

Light Rail Transit B-Line

### Context and Purpose

The B-Line has been identified as a 15-year priority project within the Big Move (2008). Significant advancement has been made on the B-Line with the completion of the Environmental Project Report and Planning, Design and Engineering work; however, additional work is required to advance the project to an implementation ready project. Some items may only be taken forward pending a funding recommendation from the Metrolinx Board and are noted below.

### Responsibility

Director of Transportation, Manager of Mobility Programs and Special Projects, Manager of Rapid Transit

### Activities

- **LRT Vehicle Optimization Modeling** – optimization of LRT headways to maximize operational efficiencies
- **Value engineering of the B-Line** – A value engineering exercise will critically evaluate the costing and the items included in the LRT implementation plan. Other municipalities have been able to trim implementation costs by approximately 18 percent. Value engineering is a process where key city and technical staff review the plans through a series of workshops and determine the level of implementation detail outlined in the design plates to evaluate elements that can be reduced in scope or refined for overall cost reductions.
- **Modifications to the Overhead Power Supply Design** – Mitigation measures required for the Scanning Electron Microscope at McMaster may allow for the removal of overhead power at locations along the B-Line. Further work is required to determine where the overhead power supply could be removed and the cost savings
- **Advanced B-Line Utilities Coordination** – while consultation has occurred with utilities full agreements will be required and utility coordination requires a significant amount of lead time.
- **Additional B-Line Geotechnical Investigations** – to confirm areas that are missing borehole logs to minimize financial risk during the bid process.
- **Early enabling works (utility relocates before design build contract)** – Advanced utilities coordination can also save costs where utilities that are up for relocation prior to LRT construction are placed out of the LRT construction impact zone.
- **Environmental Project Report and Consultation (Maintenance Storage Facility)** – Completion of this component is required to obtain approvals for the construction of the facility.
- **Conduct property by property impact assessment (B-Line)** – general land-take requirements have been identified along the B-Line. This component further refines the land impact.
- **Power substation site selection** – The B-Line Environmental Project Report has identified general alignments for power substations. Further work is required to determine the exact location within the ranges provided.
- **Delivery model assessment strategy** – Infrastructure Ontario is completing a value for money exercise. The City of Hamilton should conduct its own assessment to ensure that Hamilton's interests are protected in the preferred delivery model.

### Internal Linkages

- Mobility Corporate Working Team
- SMT
- Divisions/Departments as required to support program areas
- Ward Councillors

### Timelines

- **LRT Vehicle Optimization Modeling** – 4 months, Q1
- **Value engineering of the B-Line** – 4 months, Q1
- **Advanced B-Line Utilities Coordination** – 6 months, Q1
- **Modifications to the Overhead Power Supply Design** – 8 months, Q2
- **Additional B-Line Geotechnical Investigations** – 2 months, Q2
- **Early enabling works (utility relocates before design build contract)** – Ongoing
- **Environmental Project Report and Consultation (Maintenance Storage Facility)** – 7 months, starting Q3
- **Conduct property by property impact assessment (B-Line)** – 2 months, Q3
- **Power substation site selection** – 6 months, Q3
- **Delivery model assessment strategy** – 6 months, Q3

### City Strategic Plan Link

- **1.4 Improve the City's transportation system to support multi-modal mobility and encourage inter-regional connections.**
  - **i)** Complete the design and develop an implementation and financial plan for the delivery of higher-order transportation and enhanced transit service, including all-day GO Transit service and rapid transit
  - **iii)** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the associated transportation demand management (TDM) plan
  - **iv)** Develop a Land Use Strategy, Urban Design Guidelines and implementation plans for the lands surrounding the James Street GO Station and along the A and B-line transit corridors
  - **v)** Development of a strategy to enhance conventional transit service levels within the A Line and B Line corridors

### Budget Impact

**Staff Resource (Full time as well as partial staff support to administer the program), consulting (\$500,000 – to be approved through staff reports to Council)**

### Resources Required

- 1 FTE to manage the programs
- External consultants for technical components
- Assistance from 3 existing FTE's

### Performance Criteria

- **Maintain strong partnership with Metrolinx/Province**
- **Successful completion of 2013 work plan elements**
  - **LRT Optimization Report**
  - **Value Engineering Report**
  - **B-Line Utilities Memo Report**
  - **Overhead Power Modifications Report**
  - **Geotechnical Report and Borehole Logs**
  - **Terms of Reference Document for MSF Transit Project Assessment Process**
  - **Property Impact Assessment Document**
  - **Power Substation Location Report**
  - **Delivery Model Assessment Report**

## 2013 Workplan

### Program

Rapid Transit A, L, S, T Lines

### Context and Purpose

The A-Line has been identified as a 15-year project within the Big Move (2008), while the L, S, and T lines are each identified as 25 year + projects.

### Responsibility

Director of Transportation, Manager of Mobility Programs and Special Projects, Manager of Rapid Transit

### Activities

- **A-Line Technology and Route Development** – Feasibility study identified general routing and evaluated BRT and LRT technology and pros and cons. Further refinement is required following Council Reporting to determine the preferred technology for the A-Line
- **HSR Network Optimization to support integrated transit and future BLAST Rapid Transit** – Routing modifications are required to support rapid transit. Existing bus routes will be evaluated using systems optimization techniques to determine route modifications and headways to maximize system efficiency.

### Internal Linkages

- Mobility Corporate Working Team
- SMT
- Divisions/Departments as required to support program areas
- Ward Councillors

### Timelines

- **A-Line Routing and Technology Development** – 12 months, Q3
- **HSR Network Optimization to support integrated transit and future BLAST Rapid Transit**– 12 months, Q2

### City Strategic Plan Link

- **1.4 Improve the City's transportation system to support multi-modal mobility and encourage inter-regional connections.**
  - **i)** Complete the design and develop an implementation and financial plan for the delivery of higher-order transportation and enhanced transit service, including all-day GO Transit service and rapid transit
  - **iii)** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the associated transportation demand management (TDM) plan
  - **iv)** Develop a Land Use Strategy, Urban Design Guidelines and implementation plans for the lands surrounding the James Street GO Station and along the A and B-line transit corridors
  - **v)** Development of a strategy to enhance conventional transit service levels within the A Line and B Line corridors

**Budget Impact**

**Staff Resource (Full time as well as partial staff support to administer the program), consulting (\$100,000)**

**Resources Required**

- 1 FTE dedicated to managing the programs

**Performance Criteria**

- **A-Line Technology and Route Development Report**
- **System Optimization Report**

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## **Appendix B:** Background Information

- B1: Review of Policy and Strategic Directions
- B2: HSR Operational Review Summary
- B3: Background Paper on the Intersection of Transportation and Health





## **Appendix B1 Review of Policy and Strategic Directions**

### **A. National and Provincial Policy and Strategic Directions**

#### **Transit Vision 2040**

CUTA Transit Vision 2040 defines a future in which public transit maximizes its contribution to quality of life with benefits that support a vibrant and equitable society, a complete and compact community form, a dynamic and efficient economy, and a healthy natural environment. Vision 2040 communicates transit's contribution to quality of life, the nature of change likely to take place in our community by 2040, the implications these changes will have for transit, and strategic directions for actions that can maximize transit's contribution to our quality of life. This Vision is based on current trends and the wisdom of stakeholders both inside and outside the transit industry. Transit is widely recognized as an important part of the solution to national challenges such as climate change, public health, economic development, and safety and security. On September 29, 2009 Council endorsed the following:

#### **Transit Vision 2040 (PW09081) (City Wide) (Item 7.2)**

- (a) That the Canadian Urban Transit Association (CUTA) - Transit Vision 2040 (6 Focus Areas and 27 Strategic Directions), as identified in Appendix "A" attached hereto, be endorsed;
- (b) That the Transit Division Operations Plan strategic initiatives that support Transit Vision 2040, Council's Strategic Plan, Public Works Business Plan, Transportation Master Plan, and the Transit Division Ridership Growth and Asset Management Plan, as identified in Appendix "A" attached hereto, be endorsed.

#### **The Big Move (2008)**

In 2008, Metrolinx released the "The Big Move", a Regional Transportation Plan (RTP) for the Greater Toronto and Hamilton area (GTHA). Increasing transit and access to transit is a primary focus of the (RTP). The plan outlines priority areas for future and existing transit. The RTP identified new rapid transit lines for Hamilton running east-west and north-south in the City, coinciding with the corridors identified in Hamilton's new Urban Official Plan. The Big Move was directed in part by several 'green papers' highlighting best practices in various aspects of transportation planning. One of these papers focused on the integration between land use and transit. To facilitate development of transit in GTHA the Big Move highlights the need to integrate transportation and land use. Further more, the Plan itself conforms to and implements many provincial land use related policy documents such as the Provincial Policy Statement 2005 and the Growth Plan for the Greater Golden Horseshoe.

The Big Move is a regional transportation plan that contains multi-modal solutions such as rapid transit, road and highway projects for the greater Toronto and Hamilton area (GTHA). It includes a \$50 billion capital expansion plan and the Province of Ontario has, to

date, committed \$9.5 billion to support implementation of the first phase of the plan. Metrolinx is currently developing an investment strategy to identify methods to further funding of the proposed infrastructure. Under the Metrolinx Act the investment strategy is scheduled for completion by June 2013. This was the subject of an earlier report to Council (report No.) The B-Line has been identified as a 15-year priority project, the A-Line in the 15-year plan and the T-Line in the 25 year plan.

The Big Move also imagines a future in which key transit stations become mobility hubs, where transportation modes, including rapid transit, local transit, specialized transit, cycling and accessible pedestrian networks come together seamlessly.

## BLAST Network

For Hamilton, the Big Move identified five projects that are recommended for implementation over the next 25+ years. These included the two projects identified as part of MoveOntario 2020 (B-Line and A-Line), in addition to three corridors which are referred to as the T-Line, S-Line and L-Line. In Hamilton, the full system is referred to as “B-L-A-S-T”. The corridor limits and timeline for implementation, as per the RTP, of each line is described below:

- “B-Line” - Top 15 Priority Project
  - Main/King Corridor – University Plaza to Fifty Road (Metrolinx RTP identifies short term implementation for McMaster University to Eastgate Square)
  - This corridor connects the downtown to major educational, retail, civic and institutional facilities
- “A-Line” – 15 years
  - James/Upper James - Waterfront to Airport (Metrolinx RTP identifies short term implementation from Downtown to Airport)
  - This corridor connects to major recreational, mobility hubs, Downtown, civic industrial, retail, institutional and Airport facilities
- “T-Line” – 25 years
  - Hamilton Mohawk – Centre Mall to Meadowlands (using Mohawk Road)
  - This corridor connects the major retail segments of the city as well as industrial uses
- “S-Line” – 25+ years
  - Hamilton Centennial Road/Rymal Road – Eastgate Square to Ancaster Business Park
  - This corridor connects industrial and retail facilities
- “L-Line” – 25+ years
  - Connection between Waterdown and Downtown Hamilton (Metrolinx RTP identifies this corridor as part of the extension of Dundas Street into Waterdown)
  - This corridor connects civic, retail and the Downtown facilities.

**Exhibit 1: BLAST Rapid Transit Network**



**Mobility Hub Guidelines**

The Mobility Hub Guidelines developed by Metrolinx have been prepared to guide planning and development at mobility hubs in the GTHA. The City of Hamilton has three Mobility Hubs as identified in The Big Move: James St. North, Downtown Hamilton and Mohawk at Upper James, which shall all be subject to these guidelines. These guidelines focus on the factors that contribute to creating successful mobility hubs, and address topics such as transit station design, station circulation and access, transit customer information and wayfinding, land use and urban design surrounding rapid transit stations, and funding and implementation.

**MTO Transit Supportive Guidelines**

The Transit Supportive Guidelines include transit-supportive principles and strategies to promote development patterns that make transit less expensive, less circuitous and more convenient and to enhance the service and operations characteristics of transit systems to make them more attractive to potential transit users. These guidelines provide an

important reference for the City of Hamilton in their planning and decision-making processes. Overall these guidelines provide direction on the following:

- Create a transit-supportive community structure
- Retrofit existing built-up areas to make existing development more transit supportive
- Coordinate transit and land use decisions to minimize the need for trips and enhance access to transit services
- Create a regional and local street and block pattern that supports efficient transit service and maximizes connectivity
- Create complete streets that supports and balance the needs of all users
- Employ a range of targeted strategies and programs to encourage increased transit ridership
- Locate and design transit stations and stops to enhances accessibility and user comfort
- Create a transit-supportive urban form
- Develop a family of transit services that cater to different patterns of land use and commuting needs
- Integrate amenities and services to enhance user convenience and comfort.

### **Provincial Policy Statement (2005)**

The Provincial Policy Statement, 2005 was issued under the authority of the Planning Act, and provides direction on matters of provincial interest related to land use planning and development. It promotes a provincially ‘policy-led” planning system in which municipal Official Plans and any planning decisions are consistent with the objectives and details of the provincial policy. The PPS encourages:

- A high level of Connectivity within and among transportation systems and modes
- land use pattern, density and mix of uses that minimize the length and number of vehicle trips and support the development of viable choices and plans for public transit and other alternative transportation modes, including commuter rail and bus
- The integration of transportation and land use considerations
- the protection of corridors and rights-of-way for transportation and transit

### **Places to Grow: Growth Plan for the Greater Golden Horseshoe. (2006)**

The Growth Plan takes the PPS policy framework and outlines more specific policy direction for the Greater Golden Horseshoe. The Growth Plan is based on a series of guiding principles which are aimed at building compact, complete and vibrant communities; managing growth to support a strong competitive economy; making more efficient and effective use of infrastructure; protecting and enhancing our natural resources including land, air and water. The Growth Plan encourages that the transportation system within the GGH will be planned and managed to:

- provide connectivity among transportation modes for moving people and for moving goods

- offer a balance of transportation choices that reduces reliance upon any single mode and promotes transit, cycling and walking
- be sustainable, by encouraging the most financially and environmentally appropriate mode for trip-making
- offer multi-modal access to jobs, housing, schools, cultural and recreational opportunities, and goods and services
- provide for the safety of system users.

The City's Official Plan and Transportation Master Plan must conform to the Growth Plan.

### **Ontario Coroner's "Pedestrian Death Review" (2012)**

The Ontario Coroner's "Pedestrian Death Review" was released in 2012. Key report recommendations including the following:

- Adopting a "complete streets" approach to guide the development of new communities and re-development of existing communities;
- The Province of Ontario should develop a Walking Strategy for Ontarians;
- The Ministry of Transportation (MTO), as a stakeholder in developing the above strategy should solicit feedback regarding opportunities and barriers in policy and legislation such as the Highway Traffic Act.
- All municipalities in the Province of Ontario should review the collision history of the road before initiating road reconstruction or resurfacing to proactively seek to improve pedestrian safety.
- The Ministry of Transportation should create an educational body with representatives from both governmental and non-governmental organizations

Hamilton is well positioned to meet all of the municipal-related recommendations identified by Coroner's Report. The City's Pedestrian Mobility Plan provides a complete streets approach to road design and is intended to be applied through the routine accommodation of road reconstruction, resurfacing and new road construction projects. In addition, the Hamilton Strategic Road Safety Program (HSRSP) currently includes a review of all pedestrian collisions and is currently in development of an education and awareness campaign aimed at distracted and aggressive drivers in order to improve road safety in the City. Pedestrian education is also a key component of the HSRSP.

The City is a ready and willing partner with the Ministry of Transportation to any program developed by the Ministry to improve pedestrian safety and to be an active participant in any undertakings by the Ministry relating to pedestrian activity.

### **Ontario Coroner's "Pedestrian Cycling Review" (2012)**

The Ontario Coroner's "Cycling Death Review" was released in June 2012. Key report recommendations include:

- Adoption of a "complete streets" approach – focused on the safety of all road users – for the benefit of communities throughout Ontario,

- Development of an Ontario Cycling Plan to guide the development of policy, legislation and regulations and the commitment of infrastructure funding to support cycling in Ontario,
- Creation of a cycling safety public awareness and education strategy, including drivers giving adequate space to cyclists,
- Promotion of the use of bike helmets for cyclists of all ages, and
- Prioritizing the development of paved shoulders on provincial highways.

Hamilton is “on track” with the actions as identified in the Coroner’s report, given the “Share the Road” education campaign designed by the Hamilton Cycling Committee, the reintroduction of CAN-BIKE courses through the Recreation Division, the City’s Strategic Road Safety Program, and past expansion of the cycling network across the City; but there are projects as identified in the Council approved cycling master plan that are not proceeding because of a lack of Council support. Such decisions against cycling infrastructure are suggested to be reconsidered.

## **B. City of Hamilton Policy and Strategic Directions**

### **Vision 2020**

One of the themes of Vision 2020’s was “Changing Our Mode of Transportation”. This theme identified two transportation related goals:

- To develop an integrated sustainable transportation system for people, goods and services, which is environmentally friendly, affordable, efficient, convenient, safe, and accessible.
- To encourage a shift in personal lifestyle and behaviour towards transportation choices that enhance personal health and fitness, save money, and have the lowest environmental cost.

### **Corporate Strategic Plan objective 1.4 (iii)**

Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the associated transportation demand management (TDM) plan

- Conventional, Rapid and Inter-Regional Transit: Technical, Financial and Land Use Considerations (CM11016/PW11064/PED11154/FCS11072) October 13 2011

### **Urban Hamilton Official Plan & Growth Related Integrated Development Strategy (GRIDS)**

GRIDS was a planning process that identified a broad land use structure, associated infrastructure, economic development strategy and the financial implications for a growth to serve Hamilton for the next 30 years. It provided the basis for growth and development in the City, as defined in the new Rural and Urban Official Plans.

Policies of the Urban Hamilton Official Plan encourage development around transit and land use and transportation planning integration. In general, the future urban structure described in the Urban Hamilton Official Plan refines the nodes and corridors identified in GRIDS, the City's growth management strategy. The urban structure policies outline the relationship between a more compact urban form and transit within the urban nodes and corridors structure of the City.

This Plan recognizes the relationship between the transportation network and its impact on quality of life and economic development potential. The integrated transportation network will offer a greater range of transportation mode choice. An improved and efficient transportation network is a key component of *complete communities* - creating the vital link between activities and land uses throughout the City. Improved mode choice can be accomplished through a better balance between the competing needs of the street network including cars, transit, *active transportation*, goods movement and parking. A balanced integrated transportation network shall contribute to vibrant streets where pedestrians and cyclists feel comfortable and can co-exist with traffic on the street, improving health and quality of life.

#### Nodes and Corridors Urban Structure

The foundation for future growth and development in the City of Hamilton is based on a Nodes and Corridors structure. The urban system includes a number of key focal points of activity known as nodes, well connected by a series of corridors. These are key areas for intensification in the approved growth concept, intended to include a broad mix of land uses including higher-density residential uses, retail, institutional and recreational uses. Corridors are also identified as the locations for higher order transit services, linking the nodes together and facilitating the movement of people from place to place. The nodes and corridors urban structure is contained within the Urban Official Plan (adopted 2009 and approved in 2011, under appeal).

The location of Nodes and Corridors are identified by Schedule E of the OP (see page 6 of Appendix A). The following Nodes form part of the urban structure:

- Downtown Urban Growth Centre
- Limeridge Sub-Regional Service Node
- Eastgate Sub-Regional Service Node
- Waterdown Community Node
- Dundas Community Node
- Ancaster Community Node
- Meadowlands Community Node
- Rymal and Upper James Community Node
- Heritage Green Community Node
- Eflrida (Rymal Road East) Community Node
- Stoney Creek Community Node
- Centre Mall Community Node
- Mohawk College/St. Joseph's Hospital (Mountain Campus) Major Activity Centre



- McMaster University/ McMaster University Medical Centre Major Activity Centre

The Nodes are connected by the following network of Urban Corridors:

- Main-King-Queenston Primary Corridor – West of the Downtown Urban Growth Centre (UGC) includes Main Street West from McMaster University at approximately Cootes Drive and King Street West from Longwood Road, both to Queen Street. East of the UGC includes King Street East and Main Street East to the Delta. East of the Delta, includes Main Street East to the Queenston traffic Circle and then Queenston Road to the Eastgate Sub-Regional Service Node at Centennial Parkway.
- James - Upper James Primary Corridor – Includes James Street north and south of the UGC to the escarpment and James Mountain Road up the escarpment. Above the escarpment, includes West 5<sup>th</sup> Street to Fennell Avenue, Fennell Avenue from West 5<sup>th</sup> Street to Upper James Street and Upper James Street from the escarpment to Airport Road.
- Main/Osler Secondary Corridor - Includes Osler Drive/Main Street West from west of Grant Boulevard to approximately Cootes Drive.
- Highway 8 Secondary Corridor - Includes Highway 8 from the Eastgate Sub-Regional Service Node at Centennial Parkway to Fruitland Road. A Potential expansion of the Secondary Corridor has been identified along Highway 8 from Fruitland Road to Fifty Road and northerly to the future multi-modal transit hub.
- Centennial – Upper Centennial Secondary Corridor - Includes Centennial Parkway from north of Barton Street to the escarpment and Upper Centennial above the escarpment to the Eflrida (Rymal Road East) Community Node.
- Rymal Road Secondary Corridor - Includes Rymal Road from the Rymal and Upper James Community Node to the Eflrida (Rymal Road East) Community Node.
- Mohawk Road Secondary Corridor - Includes Mohawk Road West from the Linc/Meadowlands Community Node to the Limeridge Sub Regional Service Node at Upper Wentworth Street.
- Ottawa Street Secondary Corridor – Includes Ottawa Street from Main Street East to the Centre Mall Community Node at Barton Street.

The above noted Corridors correspond generally with the Potential Rapid Transit Line (B.L.A.S.T.) network on Appendix B of the Official Plan. The Urban OP, established the City's corridors as a significant opportunity for creating vibrant pedestrian and transit oriented places through investment in infrastructure, residential intensification, infill and redevelopment and careful attention to urban design. Policy E.2.4.13 of the Official Plan specifically states that *Corridor studies or secondary planning shall be*

*undertaken for the Urban Corridors to provide greater direction on mix of uses, heights, density, built form and design.*

#### **Transportation Policy Papers 2004**

The City of Hamilton Transportation Master Plan sets out the long term approach to providing transportation services in the City. A series of Policy Papers were prepared as the basis for the City-wide Transportation Master Plan. These were developed in conjunction with the Growth Related Integrated Development Strategy (GRIDS) and adopted by Council in May, 2006. The Transportation Master Plan was developed as three distinct phases. The first phase consisted of the technical calibration of the existing transportation model to reflect current transportation conditions in Hamilton. The second phase focused on the development of 23 policy papers in the following areas: Travel Demand, Urban Development, System Performance, Infrastructure Planning and Infrastructure Financing. The Policy Papers were endorsed by Council on November 24, 2004.

#### **Transportation Master Plan 2007**

The third phase of the planning process was the development of the Transportation Master Plan (TMP) itself. The TMP was approved by Council in May, 2007.

##### Strategic Transportation Solution

The City of Hamilton overriding transportation strategy is to rely on transit and travel demand management, in combination with road capacity optimization to solve transportation problems, before looking to road expansion. It is also recognized that adequate road infrastructure is essential for economic development and that strategies must reflect a balanced transportation network.

The following table summarizes the objectives and guiding principles adopted as part of the TMP.

Targets for transportation demand were established that reflect long standing direction of the City of Hamilton to reduce its environmental impacts while increasing mode choice and accessibility for its residents. These strategic targets, summarized in the table below, are based on significantly increasing the portion of trips made by public transit, walking, cycling, as well as reducing trips through travel demand management. Near term targets are reflected of the 2011 horizon and long term targets are reflective of the 2021-2031 timeframe.

**Exhibit 2: Transportation Master Plan Objectives and Principles**

| <b>In 2031, the City of Hamilton's transportation system will:</b> |  |
|--|--|
| <b>Objective 1</b>   | <b>Offer safe and convenient access for individuals to meet their daily needs</b>  |
| Principle 1(a)   | Transportation facilities and services should be safe, secure and barrier-free   |
| Principle 1(b)   | Each transportation mode should have an acceptable level of service  |
| Principle 1(c)   | Non-travel alternatives and shorter trips should be encouraged   |
| <b>Objective 2</b>   | <b>Offer a choice of integrated travel modes, emphasizing active transportation, public transit and carpooling</b>   |
| Principle 2(a)   | Alternatives to single-occupant vehicle travel should be practical and attractive  |
| Principle 2(b)   | Transportation facilities and services should be continuous and seamlessly integrated  |
| Principle 2(c)   | The health benefits of active lifestyles should be recognized and promoted   |
| <b>Objective 3</b>   | <b>Enhance the liveability of neighbourhoods and rural areas</b>   |
| Principle 3(a)   | Transportation facilities should reflect and complement their community context  |
| Principle 3(b)   | Noise and other undesirable impacts of traffic on residential areas should be minimized  |
| <b>Objective 4</b>   | <b>Encourage a more compact urban form, land use intensification and transit-supportive node and corridor development Investment in transit-supportive land uses should be encouraged by quality public transit services and facilities Transportation facilities should meet current needs while remaining adaptable to those of the future Zoning, urban design and parking management strategies should minimize land consumed by automobile travel</b> |
| <b>Principle 4(a)</b>  |  |
| <b>Principle 4(b)</b>  |  |
| <b>Principle 4(c)</b>  |  |
| <b>Objective 5</b>   | <b>Protect the environment by minimizing impacts on air, water, land and natural resources</b>   |
| Principle 5(a)   | The use of greenspace for new infrastructure should be minimized   |
| Principle 5(b)   | Transportation technologies and behaviours should reduce energy consumption and air emissions  |
| Principle 5(c)   | The impacts of surface water runoff from transportation facilities should be minimized   |
| <b>Objective 6</b>   | <b>Support local businesses and the community's economic development</b>   |
| Principle 6(a)   | The efficiency of goods movement to, from and within the City should be maximized  |
| Principle 6(b)   | Businesses and institutions should remain accessible to employees and visitors   |
| <b>Objective 7</b>   | <b>Operate efficiently and be affordable to the City and its citizens</b>  |
| Principle 7(a)   | Maximum value should be extracted from existing facilities and services  |
| Principle 7(b)   | Decisions should take into account the life-cycle costs of transportation facilities and services  |
| Principle 7(c)   | Transportation funding opportunities involving other governments, the private sector and individual users should be considered   |

**Exhibit 3: Transportation Master Plan Targets**

|  | Current Situation (based on 2001 data) | Potential Near Term Scenario (based on a goal of reducing auto vehicle-kilometres by 10% compared to 2001) | Potential Long Term Scenario (based on a goal of reducing auto vehicle-kilometres by 20% compared to 2001) |
|--|--|--|--|
| Estimated daily vehicle kilometres of travel by Hamilton residents | 4.8 million km                         | 4.3 million km   | 3.8 million km   |
| Share of daily trips made by single-occupant drivers               | 68%                                    | 58%  | 52%  |
| Share of daily trips made by using municipal transit               | 5%                                     | 9%   | 12%  |
| Share of daily trips made by walking or cycling                    | 6%                                     | 10%  | 15%  |
| Annual transit rides per capita (City-wide) <sup>(1)</sup>         | 40                                     | 60   | 80-100   |

<sup>(1)</sup> Based on total residents within City boundaries, including residents outside primary service areas. Excludes GO Transit ridership.

**Plan Elements**

*Public Transit*

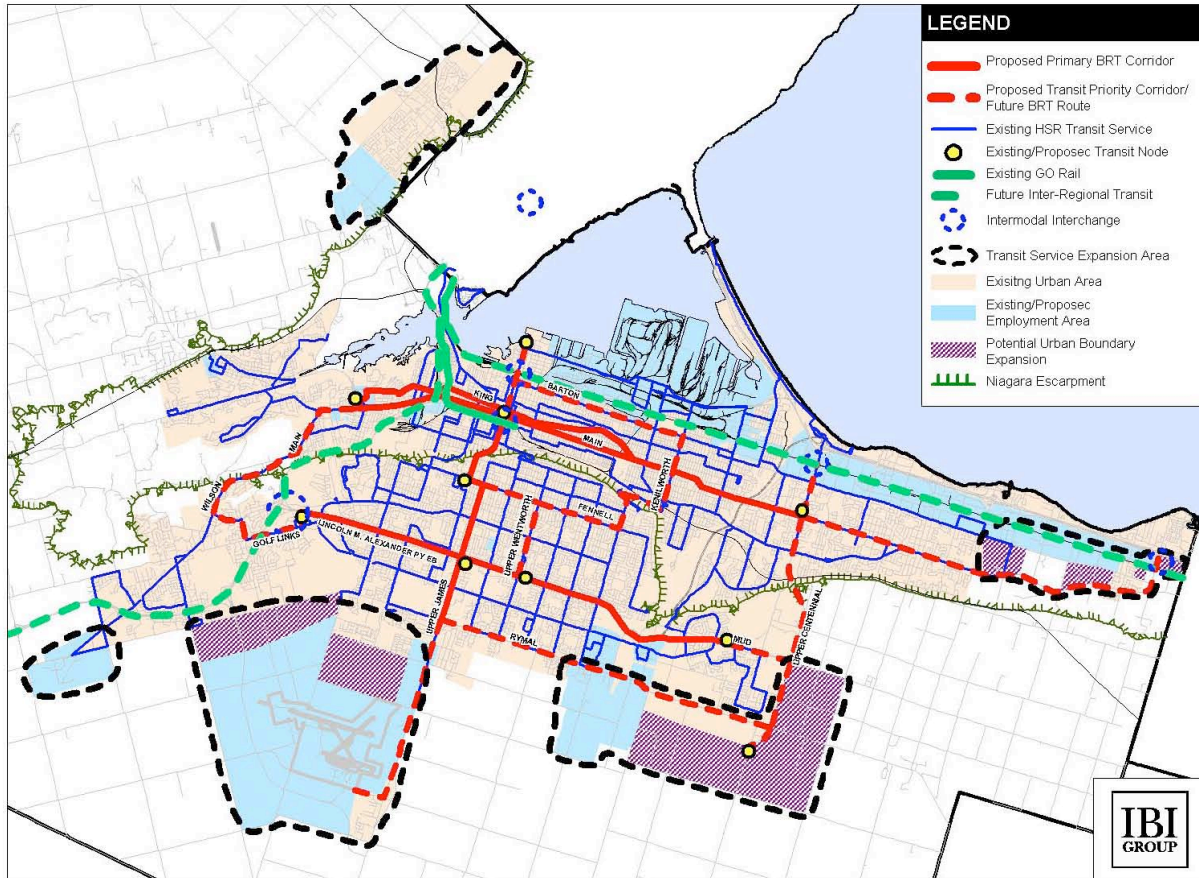
The TMP proposed a Higher Order Transit network for the City along with a number of related transit enhancements. A Key Element is to build a Bus Rapid Transit (BRT) network. Three primary corridors for BRT and ultimately other forms of Rapid Transit emerged from the working paper that was prepared:

- A Lower City east-west corridor on King Street/Main Street/ Queenston Road
- A Central North-South Corridor on James Street and Upper James via Mohawk College
- A Mountain East-West Corridor on the Lincoln Alexander Parkway or parallel facility

In addition, the following Park and Ride locations were noted as a key priority:

- Meadowlands area
- Eastgate mall area
- Mount Hope (at or near Mountain Transit Terminal)
- Elfrida
- Winona

Exhibit 7.1: Proposed Higher Order Transit Network



The TMP also proposed a number of improvements to conventional and accessible transit and supporting actions:

- Transit Service Extensions
- More compact mixed-use development around nodes and corridors throughout the City
- Comprehensive route restructuring study to determine how transit service should change in suburban areas
- Ensuring access for persons with disabilities
- Utilizing the Smart Commute Program to promote alternative strategies
- Guidelines on Transit-Supportive Densities

In terms of financial implications, it was estimated that the conventional transit fleet would need to expand from the current 205 vehicles to approximately 440 buses by 2031. At the time of preparation of the TMP, the cost was estimated at \$91 million, or \$3.6 million per year over 25 years. Additional associated transit capital costs related to transit facilities and the implementation of Bus Rapid Transit were an estimated 2007 cost of \$51 million and \$159 million respectively. Approximately \$300 million would have to be invested in the conventional transit system over the next 25 years, or approximately \$12 million per

year. This does not include the cost of replacing aging buses. Overall, it was projected that at least \$20 million per year would need to be invested in the transit system.

Exhibit 5 provides a high level status of proposed infrastructure and projects. A more detailed review of transit operations and measures recommended to increase the role of transit in meeting current and future transportation needs is provide in Appendix B2 – Summary - Hamilton Street Railway Operational Review (March 2010).

### Cycling Network

The TMP established a high level cycling network. Key aspects from a bicycle commuting perspective include:

- On- and off-street connections between McMaster University, Westdale neighbourhood, and Downtown Hamilton;
- On-street east-west route across lower Hamilton;
- Direct and protected on-street north-south routes in upper Hamilton, in addition to existing local routes;
- New Escarpment crossings, including a proposed dedicated inclined railway for pedestrians and cyclists in vicinity of Upper Wentworth Street and Concession Street.

Key aspects from a recreational cycling perspective include:

- Trail extensions and enhanced trail connections for the Harbour Waterfront Trail, Lake Ontario Waterfront Trail, Escarpment Rail Trail, and the Chippewa Rail Trail, among others; and
- New Escarpment crossings.

### Cycling Master Plan 2009

The high level cycling network established in the 2007 TMP has been further detailed by the adoption of the cycling master plan ***Shifting Gears 2009***. This plan recommends a network of multi-use trails and bike lanes that are to be completed in order to achieve City goals that are strongly endorsed by the City's Strategic Plan; specifically, health, safety, and sustainability. Some of these projects are stand-alone retrofit projects, some are embedded in road reconstruction projects, some are part of new streets in new developments, and some are multi-use trail projects.

Shifting Gears 2009 proposes approximately 550 km of bike lanes of which 150 km currently exist (~25%); and 190 km of major multi-use trails of which 140 km currently exist (~75%). There are also opportunities to utilize some convenient connections on streets with low traffic volumes simply with directional signage (i.e. no bike lanes are required); and over 90% of that recommended network is completed.

Paved shoulders are also recommended on critical roads in rural areas of the City. This aspect of the cycling master plan was not identified as a priority in the report to

PWC/Council in 2009 because it was recognized that achieving a well-connected cycling network in the urban area as a priority will provide a greater benefit to a larger proportion of citizens. Currently, approximately 5% of the recommended network of paved shoulders exists.

Section 6 of the cycling master plan “Implementation Strategy” addresses the annual implementation costs, the approval process for individual projects, annual maintenance costs, funding sources both internal and external, and benefits (i.e. return on investment). The plan assumes a 20 year implementation schedule, thus an estimated \$2.5 million annually to complete the entire urban and rural cycling network.

The PWC minutes for June 15 2009 include the following approved motion as stated as item 8 (c) regarding PW09068:

*(c) That, upon completion of the thirty day public review period, the General Manager, Public Works, be authorized and directed to schedule the recommended projects for consideration in the 2010 and future years Capital Budget deliberations;*

Regarding implementation costs, report PW09068 stated that:

“... to complete the cycling network in a timely fashion, that the annual budget for cycling infrastructure be increased, subject to budget deliberations. The starting point for the budget process will be an annual request for \$1,250,000. While \$1,250,000 annually is less than the amount required to complete the entire network in twenty years, it will allow for good success on the urban portion and is compatible with staff’s ability to undertake these projects.”

A review of spending on cycling infrastructure in previous years was conducted as per a request of PWC, and that report (PW10063) determined an estimated expenditure for all cycling investment, from amalgamation (January 1, 2001) to December 2008, to be approximately \$7.1 million, or \$890,000 per year.

The following table shows what the approved expenditure has been since 2009. The City has been making solid progress implementing cycling infrastructure, especially given the financial constraints facing municipalities. Notwithstanding, it should be noted that 5% of the network would need to be constructed annually to complete the cycling network in 20 years (i.e. 2029), and that level of implementation has not been achieved. In the plan, the approximate density of cycling infrastructure in the urban area is approximately one corridor every 2 km. Exhibit 4 indicates that the City has been able to increase the average annual expenditure to \$1.23 million, which is comparable to the \$1.25 million as suggested in the PWC report that approved the cycling master plan in 2009 (PW09068). (Note the table does not include cycling infrastructure constructed as part of new developments). These financial numbers do not include the \$14 million that was spent on the Red Hill Valley Trail, including the crossing of the QEW, as the funding for that project was provided from the Province.

**Exhibit 4: Cycling Expenditure Annually Since 2009**

| Year         | Portion of CMP Identified Projects* (by length) | Portion of CMP Projects Plus Paved Shoulders | Bicycle Route Projects | Embedded in Individual Road Reconstruction Projects | Total Cost |
|--------------|---|--|------------------------|---|------------|
| 2009         | 1%  | 1%   | 300,000                | 600,000   | 900,000    |
| 2010         | 3%  | 2%   | 300,000                | 1,835,000   | 2,135,000  |
| 2011         | 1%  | 1%   | 300,000                | 200,000   | 500,000    |
| 2012         | 3%  | 2%   | 300,000                | 1,275,000   | 1,575,000  |
| 2013 planned | 6%  | 3%   | 300,000                | 730,000   | 1,030,000  |

\* "Identified Projects" include bike lanes and major multi-use trails

Exhibit 6 summarizes the status of proposed actions and projects.

Pedestrian Network

The success of the TMP strategic solution requires a holistic approach to mobility including initiatives to:

- Improve the quality and extent of pedestrian and bicycle infrastructure;
- Encourage shorter average distances between home, work and other major destinations;
- Increase awareness of non-motorized networks and safety requirements;
- Enhance the co-ordination of transit trips with walking and cycling trips; and
- Ensure the bicycle and pedestrian friendliness of new development.

DRAFT Pedestrian Master Plan

Establishing a Pedestrian Mobility Master Plan was a recommendation from the 2007 council approved City-wide Transportation Master Plan, the 2008 International Charter for Walking (endorsed by City Council), the Recreational Trails Master Plan, plus numerous other City initiatives that identify pedestrian mobility as an essential part of City-making. In November 2010, the Pedestrian Mobility Master Plan was initiated and is being undertaken consistent with Phase 1 and 2 of the Environmental Assessment process. A staff report will be going forward to Council in early 2013 for endorsement of the Pedestrian Mobility Master Plan.

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is being undertaken consistent with Phase 1 and 2 of the Environmental Assessment process.

The City of Hamilton is only the second municipality in Ontario to undertake a pedestrian-specific plan (Ottawa is the other municipality) and the first to address the pedestrian environment at this level of detail for a master plan. This demonstrates the City's commitment and innovation in accommodating pedestrian mobility issues, and active transportation within the City.

The Pedestrian Mobility Plan identifies the need to increase pedestrian safety and the number of walking trips to achieve the City-wide Transportation Master Plan targets. In addition, the study evaluated existing pedestrian policies, procedures and programs in order to develop a sustainable implementation strategy that will identify priorities for improvements and performance indicators.

The Pedestrian Mobility Plan is consistent with the City-wide Strategic Plan Vision and acts as one of the catalysts to achieving this broader vision for the City.

The key highlights of the plan are as follows:

- Neighbourhood pedestrian planning should characterize the health related attributes (such as the demographic profile) of its residents in order to calibrate the overall age friendly land use and transportation approaches needed. Once set, physical design measures should be selected and employed.
- Holistic approach to designing the street to accommodate all users, including the pedestrian in order to meet all travel requirements.
- Context Sensitive Design that will encourage the provision of amenities within the right of way that make public transit, pedestrian movement and cycling effective alternative transportation modes including better access to interesting destinations, increased shade from trees, differing sidewalk widths, pedestrian plazas.
- Land use patterns that are inter-related with pedestrian facilities and oriented to streets by maximizing existing planning policies.
- Enhancing and/or developing supportive policy that addresses matters such as urban Braille, transportation demand management, walking to school programs, education, enforcement and age sensitive design.

### Road Network

The proposed TMP road network strategy generally reflects committed and planned improvements identified through previous studies. In total, approximately \$418 million worth of roadway improvements were recommended. Even assuming the implementation of committed improvements and the most aggressive scenario with respect to travel demand management, it is projected that there will still be some remaining capacity deficiencies including those listed below.

**Downtown and Central Escarpment Crossings:** many of the Escarpment crossings are projected to continue to experience some congestion. Major expansions to the Downtown

road network are not consistent with the goals of promoting a pedestrian and transit supportive environment; therefore other approaches will be required:

- Accept some congestion as part of a successful Downtown
- Implement aggressive Transportation Demand Management (i.e. parking pricing)
- Additional transit improvements
- Postpone proposed conversion of east-west streets to two-way

**Red Hill Valley Corridor:** In the longer term, the Red Hill Valley Parkway may experience capacity limitations due to longer distance travel. This can be postponed by implementing additional Transportation Demand Management and/or auto disincentives (i.e. road pricing).

**Highway 403 Corridor:** This Provincial Highway corridor experiences regular congestion and this is expected to increase due to the growth in surrounding municipalities. Strategies to improve the person carrying capacity of the Highway 403 are required and could include the implementation of High Occupancy Vehicle lanes (similar to Highway 404 and Highway 403 in Mississauga). Potential improvements require on-going discussion with MTO.

**New Link to Airport** – Appropriate goods movement access to the Hamilton International Airport from the north and east has been identified as a significant issue. The 2005 Hamilton Goods Movement Study identifies the need to provide a connection between the Red Hill Valley Parkway and the Airport as a designated truck route.

Exhibit 7, attached, illustrates the Proposed Road Infrastructure Improvements that resulted from the May 2007 Transportation Master Plan and the status of the recommended road projects. As can be seen in the summary, the City is making reasonable progress on road infrastructure, with approximately half of the road projects either completed or in progress. However, as many of these projects are still in the planning and/or design phases, there is still over \$400 million worth of infrastructure proposed over the term of the Master Plan (2031).

### Goods Movement

A goods movement study, the Hamilton Goods Movement Study (June 2005), was undertaken for the City. Key recommendations are to:

- Resolve freight bottlenecks including short term measures such as improving signage for truck routes to and from major industrial areas, to and from the Port and to and from the Airport.
- Re-examine specifications for truck routes within the City to ensure that clearances are appropriate for traffic entering and leaving the Port area in particular. This would involve more routine operation of oversized loads from the Port to eastbound and westbound destinations. A truck route study will be initiated by the City in 2007.
- Establish policies to accommodate 24-hour freight operations in the Port, Airport, and rail freight facilities.

- Support Hamilton Port Authority initiatives concerning establishment of 12 month operations, which involves eliminating or minimizing the three month closure of the Burlington Lift Bridge each winter for maintenance.

### **City of Hamilton Recreational Trails Master Plan**

The Recreational Trails Master plan prescribes a comprehensive multi-purpose off-road recreational trail system to connect natural areas, cultural features and major land use destinations within the City of Hamilton. This system links to the on-road commuter systems and will be fully integrated into larger regional, and national network of trails. This Trails Master Plan provides direction on a system wide basis with respect to the following among others:

- Plan for the development and operation of a trail system within the City of Hamilton that provides for a wide range of recreational opportunities;
- Connect major urban and rural land uses by providing multi-purpose trails and integrate the system with on-street cycling and sidewalk systems.
- Support public and private transportation demand management plans by providing alternative modal interconnections between residential, employment, commercial and institutional centres;
- Provide a safe cycling and pedestrian environment;
- Promote physical activity and healthy lifestyles

### **City of Hamilton Transit Oriented Development (TOD) Guidelines (2010)**

The City of Hamilton TOD guidelines provide direction to guide policies and development within the City in order to encourage a better integration of land use and transportation. The core components of TOD should include: compact, mixed use, highly pedestrianized areas with connections to transit. The guidelines serve as a user friendly guide that identifies the components that should be part of development or redevelopment and are a useful tool to help implement the existing policy such as the Official Plan and Transportation Master Plan. The TOD guidelines are based on the following principals:

- Promote Place Making – Creating a Sense of Place
- Ensure a Mix of Uses/Appropriate Land Uses
- Address Parking Management
- Focus on Urban Design
- Create Pedestrian Environments
- Require Density and Compact Urban Form
- Respect Market Conditions
- Take Comprehensive Approach to Planning
- Plan for Transit and Promote Connections (for all modes)
- Promote Partnerships and innovative Implementation

## **Hamilton Transit Ridership Growth Plan**

The guiding principles for the transit ridership growth plan are:

- The need to improve services and safety for existing riders so they become ambassadors for transit;
- Adoption of strategic approach that considers transit's role in the larger transportation, social, economic and environmental context, including the ability for transit to facilitate the City's growth management objectives and policies for a more balanced transportation system;
- The need to pursue initiative that are cost-effective with high visibility, and those that improve the image of the transit system;
- The benefits of marketing the transit system as an important city service and one that requires attention to position Hamilton for future economic success, community well-being, affordability for passengers and environmental sustainability.

## **Main King Queenston Corridor Strategy Study**

In 2010, work began on the first corridor planning study, the Main, King, Queenston (B-Line) Nodes and Corridors Land Use Planning Study, to implement the policy framework in the City of Hamilton. Background studies and consultation revealed a number of challenges and opportunities related to the Corridor. Changing demographics combined with other factors, can result in declining investment, image and services along the Corridor. One of the key outcomes of consultation is the recognition of the need for reurbanization along the Corridor. A key element of revitalization and transformation is intensification. Therefore, a central element of the Corridor Plan will focus on how to achieve intensification in a manner that brings vitality to the Corridor while respecting established neighbourhoods.

In April 2012 Council approved a corridor development option, Focused Reurbanization, which would promote the Corridor as a mixed use, transit oriented corridor and would provide the necessary direction to achieve the City's intensification targets. The approved corridor concept applies a variety of built forms and ground level activity scenarios for the corridor with the focus of reurbanization activity concentrated in focal areas (transit stops). Land assembly would be facilitated in focal areas to promote mid-rise buildings. This Option provides a balanced approach, facilitating and allowing for reurbanization and intensification, while addressing potential impacts on, and fit with, adjacent neighbourhoods. As part of the next steps, a detailed strategy and implementing Official Plan and Zoning By-law Amendments for the Main, King, Queenston (B-Line) Corridor will be prepared. Approximately 11,400 additional residential units, or approximately 19,145 people, could potentially be added along the Corridor (excluding the downtown Urban Growth Centre).

## **City Wide Corridor Planning Principles and Design Guidelines**

In April 2012, the City of Hamilton adopted City Wide Corridor Planning Principles and Design Guidelines. The purpose of the Guideline is to provide a set of planning principles and implementing design guidelines for Corridors in the City of Hamilton. These principles and guidelines provide direction for new development, public realm investments and future planning studies along primary and secondary Corridors across the City. The following are the key principles proposed in the document to guide the development of Corridor planning initiatives:

Corridors should be planned and developed to:

- (a) Support and facilitate development and investment that contributes to the economic and social vitality of the Corridor and adjacent neighbourhoods.
- (b) Promote and support development which enhances and respects the character of existing neighbourhoods where appropriate and creates vibrant, dynamic, and livable urban places through high quality urban design.
- (c) Develop compact, mixed use urban environments that support transit and active transportation.
- (d) Promote and support an innovative sustainable built environment that uses resources efficiently and encourages a high quality of life.
- (e) Identify areas of change as the locations for new development along Corridors.

The guidelines were prepared considering development potential as it relates to typical built form and property size. They provide guidance on development along corridors including issues such as maximum building height (related to property depth and street width), minimum building height, landscaping, parking and loading, relationship of buildings to the street (pedestrian focus area, flexible area, residential character area) , setbacks, sidewalks and streetscapes and land assembly to provide for developable parcels, shadow impacts, and precinct site development.

# **Transportation Master Plan Status of Implementation Summary Tables**

| Category                            | Project Description  | 2007 Cost (Millions) | 2012 Cost (Millions) | Status         | Planning | Design | Implementation |
|-------------------------------------|--|----------------------|----------------------|----------------|----------|--------|----------------|
| BRT                                 | East-West Lower City Corridor (King/Main/Queenston) <sup>1</sup> | \$14.00              | \$15.26              | Not Considered |          |        |                |
|                                     | Central North-South Corridor                                     | \$65.00              | \$70.85              | In Progress    |          |        |                |
|                                     | East-West Mountain   | \$70.00              | \$76.30              | No Action      | -        | -      | -              |
|                                     | Other Corridors  | \$10.00              | \$10.90              | No Action      | -        | -      | -              |
| Park & Ride Locations               | Meadowlands  | \$0.20               | \$0.22               | No Action      | -        | -      | -              |
|                                     | Mount Hope   | \$0.20               | n/a <sup>2</sup>     | In Progress    |          |        |                |
|                                     | Elfrida  | \$0.20               | \$0.22               | No Action      | -        | -      | -              |
|                                     | Eastgate Mall  | \$0.20               | \$0.22               | Complete       |          |        |                |
|                                     | Winona   | \$0.20               | \$0.22               | No Action      | -        | -      | -              |
| Commuter Rail & Bus (Mobility Hubs) | James Street North (Liuna)                                       | n/a                  | n/a                  | In Progress    |          |        |                |
|                                     | Centennial Pkwy @ QEW  | n/a                  | n/a                  | In Progress    |          |        |                |
|                                     | Stoney Creek   | n/a                  | n/a                  | No Action      | -        | -      | -              |
| Transit Terminals                   | Eastgate Mall Terminal   | \$1.50               | \$1.64               | Complete       |          |        |                |
|                                     | Downtown (McNab Terminal)  | \$15.00              | \$16.35              | Complete       |          |        |                |
|                                     | Mohawk College Terminal  | \$4.00               | n/a <sup>2</sup>     | In Progress    |          |        |                |

<sup>1</sup> LRT technology chosen for further consideration

<sup>2</sup> Metrolinx Quick Wins Funding

**Exhibit 6: Cycling Master Plan Implementation Status**

| <b>Action</b>  | <b>Action Lead</b>  | <b>Action Priority</b>   | <b>Action Status</b> |
|--|---|--------------------------|----------------------|
| Proceed with implementation of the planned network   | Traffic Engineering Section, P.W.                         | High                     | In progress          |
| Investigate design options for a cycling facility connecting Greensville to Dundas along Hwy 8   | Traffic Eng. Section, P.W. to initiate and determine lead | High (as EA is underway) | Study completed      |
| Aim to incorporate signal activation for cyclists with all future signal design  | Traffic Engineering Section, P.W.                         | High                     | In progress          |
| Offer cycling education to teens and adults – possibly CAN-BIKE  | Traffic Engineering Section, P.W.                         | High                     | In progress          |
| Adding more enclosed bike parking facilities throughout the City   | Strategic Planning and Rapid Transit Section, P.W.        | High                     | Implementing         |
| Complete an inventory of bike racks at City facilities and address deficiencies  | Traffic Engineering Section, P.W.                         | High                     | In progress          |
| Monitoring, Review & Council Updates   | Traffic Engineering Section, P.W.                         | High                     | Implementing         |
| Discuss with Haldimand County the connection of the Chippawa rail Trail south of Haldibrook Rd   | Traffic Eng. Section, P.W. to initiate and determine lead | Medium                   | In progress          |
| Further promote the existing Cyclemania program provided by the Hamilton Police Service  | Traffic Eng. Section, P.W. to initiate and determine lead | Medium                   | Implementing         |
| Consideration of adding a bike icon to street name plates on streets that provide specific cycling infrastructure  | Traffic Engineering Section, P.W.                         | Medium                   | No action            |
| Consider additional wayfinding signage – including distance information  | Traffic Engineering Section, P.W.                         | Medium                   | Implementing         |
| Investigate bicycle routing issues on streets that are being considered for rapid transit  | Strategic Planning and Rapid Transit Section, P.W.        | Medium                   | In progress          |
| Review City bylaws to assess consistency with Provincial laws  | Traffic Engineering Section, P.W.                         | Medium                   | In progress          |
| Discuss with the Ministry of Transportation facilities proposed in the plan beside Provincial highways   | Traffic Eng. Section, P.W. to initiate and determine lead | Low                      | In progress          |
| Discuss with Haldimand County a connection along the existing Hwy 6 corridor - but likely after the construction of the planned Hwy 6 west of the existing corridor south of White Church Rd | Traffic Eng. Section, P.W. to initiate and determine lead | Low                      | No action            |
| Investigate bike friendly facilities at existing escarpment stairs at Dundurn St and Wentworth St  | Traffic Eng. Section, P.W. to initiate and determine lead | Low                      | In progress          |



| Road Name  | From                    | To                | Description                       | Anticipated Timing | 2007 Cost (Millions) | 2012 Cost (Millions) | Status         | Planning | Design | Implementation |
|--|-------------------------|-------------------|-----------------------------------|--------------------|----------------------|----------------------|----------------|----------|--------|----------------|
| Airport Access Road  | RHVP                    | Hwy 6             | New Road                          | 2007-2011          | TBD                  | TBD                  | No Action      | -        | -      | -              |
| Ancaster New E/W Road (Trinity@Wilson Development)           | Tradewind/Cormorant     | Trinity           | New Road                          | 2007-2011          | \$2.40               | \$2.62               | In Progress    |          |        |                |
| Ancaster New Midblock Collector (Trinity@Wilson Development) | Cormorant               | Tradewind         | New Road                          |                    |                      |                      |                |          |        |                |
| Arvin Avenue   | McNeilly                | existing end      | New Road                          | 2007-2011          | \$3.89               | \$4.24               | In Progress    |          |        |                |
| Barton Street  | Fruitland               | Fifty             | TWLTL                             | Beyond 2021        | \$12.57              | \$13.70              | No Action      | -        | -      | -              |
| Baseline Road  | Winona                  | North Service     | TWLTL                             | 2007-2011          | \$1.48               | \$1.61               | Complete       |          |        |                |
| Binbrook Road  | Fletchers               | 3 km W of Hwy 56  | Road Widening                     | 2012-2021          | \$7.80               | \$8.50               | In Progress    |          |        |                |
|  | E & W of Hwy 56         |                   | Intersection Improvements         |                    |                      |                      |                |          |        |                |
| Bold Street  | Queen                   | James             | Two-way Conversion                | 2007-2011          | \$0.10               | \$0.11               | No Action      | -        | -      | -              |
| Centre Road/Hamilton Street                                  | Northlawn               | John              | TWLTL                             | 2012-2021          | \$2.12               | \$2.31               | No Action      | -        | -      | -              |
| Community Avenue   | Stoney Creek Limits     | Teal              | Urbanization                      | 2012-2021          | \$0.99               | \$1.08               | No Action      | -        | -      | -              |
| Dartnall Road  | StoneChurch             | Dickenson         | New Road north of Dickenson TWLTL | 2012-2021          | \$8.57               | \$9.34               | In Progress    |          |        |                |
| Dickenson Road   | W of Glover             | Glancaster        | Urbanization and turn lanes       | 2012-2021          | \$12.35              | \$13.46              | No Action      | -        | -      | -              |
| Duke Street  | Queen                   | James             | Two-way Conversion                | 2007-2011          | \$0.10               | \$0.11               | No Action      | -        | -      | -              |
| Falcon Road  | Fifty                   | West Limits       | Urbanization                      | 2007-2011          | \$0.19               | \$0.21               | Complete       |          |        |                |
| Fifty Road   | QEW                     | Hwy 8             | Road Widening                     | Beyond 2021        | \$2.32               | \$2.53               | No Action      | -        | -      | -              |
| Fletcher Road  | Rymal                   | Binbrook          | Left Turn Lanes                   | 2012-2021          | \$8.10               | \$8.83               | In Progress    |          |        |                |
| Fruitland Road   | Arvin                   | Barton            | Road Widening                     | Beyond 2021        | \$0.79               | \$0.86               | No Action      | -        | -      | -              |
| Garden Avenue  | Teal                    | Pinelands         | Urbanization                      | 2007-2011          | \$0.48               | \$0.52               | No Action      | -        | -      | -              |
| Garner Road / Wilson St / Hwy 2                              | 50m E. of Glancaster Rd | Hwy 52            | Road Widening/TWLTL               | 2012-2021          | \$28.95              | \$31.56              | In Progress    |          |        |                |
| Garth Street   | StoneChurch             | Rymal             | TWLTL                             | 2007-2011          | \$1.60               | \$1.74               | In Progress    |          |        |                |
| Garth Street Extension                                       | Twenty                  | Dickenson         | New Road                          | Beyond 2021        | \$3.06               | \$3.34               | No Action      | -        | -      | -              |
| Glancaster Road  | Hwy 53                  | Twenty            | Add Left Turn Lanes               | 2007-2011          | \$1.56               | \$1.70               | No Action      | -        | -      | -              |
| Glover Access Road   | Glover                  | North Service     | Urbanization                      | 2007-2011          | \$0.75               | \$0.82               | Complete       |          |        |                |
| Glover Road  | Rymal                   | Dickenson         | Urbanization                      | 2007-2011          | \$6.26               | \$6.82               | In Progress    |          |        |                |
| Golf Links Road  | McNiven                 | Kitty Murray      | TWLTL                             | 2012-2021          | \$2.07               | \$2.26               | No Action      | -        | -      | -              |
| Governor's Road  | Bridlewood              | Osler             | TWLTL                             | 2012-2021          | \$5.23               | \$5.70               | In Progress    |          |        |                |
| Hamilton Drive   | Hwy 403                 | 0.35km South      | Intersection improvements         | 2007-2011          | \$0.65               | \$0.71               | No Action      | -        | -      | -              |
| Hwy 20   | Ridge                   | south of Mud      | Intersection improvements/TWLTL   | 2012-2021          | \$4.65               | \$5.07               | No Action      | -        | -      | -              |
| Hwy 8  | Hillcrest               | Park              | TWLTL                             | Beyond 2021        | \$1.97               | \$2.15               | In Progress    |          |        |                |
| Hwy 8  | Bond                    | Dundas Limits     | TWLTL                             | Beyond 2021        | \$6.27               | \$6.83               | No Action      | -        | -      | -              |
| Hwy 8  | Dewitt                  | Hamilton Boundary | Road Widening/TWLTL               | Beyond 2021        | \$10.54              | \$11.49              | In Progress    |          |        |                |
| Hwy 5/6  |                         |                   | interchange                       | 2012-2021          | \$16.90              | \$18.42              | In Progress    |          |        |                |
| Jerseyville Road   | Martin                  | Lloyminn          | TWLTL                             | 2012-2021          | \$6.99               | \$7.62               | No Action      | -        | -      | -              |
| Jones Road   | Barton                  | South Service     | Urbanization                      | 2012-2021          | \$1.94               | \$2.11               | No Action      | -        | -      | -              |
| Kenmore Avenue   | Arvin                   | Barton            | Urbanization                      | 2012-2021          | \$0.86               | \$0.94               | No Action      | -        | -      | -              |
| King Street  | Queen                   | Wellington        | Two-way Conversion                | 2007-2011          | \$2.98               | \$3.25               | Not Considered | -        | -      | -              |
| Leaside Avenue   | Arvin                   | Barton            | Urbanization                      | 2012-2021          | \$0.65               | \$0.71               | No Action      | -        | -      | -              |
| Lewis Road   | Barton                  | South Service     | Urbanization                      | 2007-2011          | \$1.75               | \$1.91               | No Action      | -        | -      | -              |
| MacNab Street  | Cannon                  | Guisse            | Two-way Conversion                | 2007-2011          | \$0.25               | \$0.27               | No Action      | -        | -      | -              |
| McNeilly Road  | Barton                  | South Service     | Urbanization                      | 2007-2011          | \$1.87               | \$2.04               | Compelte       |          |        |                |
| McNiven Road   | Rousseaux               | Golf Links        | Road Widening                     | 2007-2011          | \$1.72               | \$1.87               | No Action      | -        | -      | -              |
| Millen Road  | South Service           | Hwy 8             | TWLTL                             | 2012-2021          | \$4.92               | \$5.36               | In Progress    |          |        |                |
| Mohawk Road  | McNiven                 | Hwy 403           | Road Widening                     | 2007-2011          | \$3.55               | \$3.87               | No Action      | -        | -      | -              |

|                                 |                    |                     |                                       |             |         |         |                |   |   |   |
|---------------------------------|--------------------|---------------------|---------------------------------------|-------------|---------|---------|----------------|---|---|---|
| Nebo Road                       | Rymal              | Dickenson           | TWLTL/Urbanization                    | 2012-2021   | \$5.50  | \$6.00  | No Action      | - | - | - |
| North Service Road              | Gray's             | East City Limits    | Road Widening/Urbanization            | 2012-2021   | \$18.94 | \$20.64 | No Action      | - | - | - |
| Oriole Avenue                   | South Service      | Wiona               | Urbanization                          | 2007-2011   | \$1.08  | \$1.18  | In Progress    |   |   |   |
| Parkside Drive                  | Braeheld           | Hwy 6               | TWLTL/Road Widening                   | 2012-2021   | \$9.12  | \$9.94  | In Progress    |   |   |   |
| Pinelands Avenue                | Community          | South Service       | Urbanization                          | 2007-2011   | \$0.65  | \$0.71  | No Action      | - | - | - |
| Queen Street                    | Cannon             | Stuart              | Road Narrowing (Road Diet)            | 2012-2021   | \$0.42  | \$0.46  | No Action      | - | - | - |
| Regional Road 56                | South City Limits  | Street M            | TWLTL/Road Widening                   | 2012-2021   | \$21.72 | \$23.67 | No Action      | - | - | - |
| Rymal Road                      | Ryckermans         | Upper James         | Road Widening                         | 2012-2021   | \$39.55 | \$43.11 | In Progress    |   |   |   |
| Scenic Drive                    | Old City Limits    | Lavender Dr. S. Leg | TWLTL                                 | 2007-2011   | \$3.05  | \$3.32  | No Action      | - | - | - |
| Seabreeze Crescent              | Glover             | MnNeilly            | Urbanization                          | 2007-2011   | \$1.35  | \$1.47  | In Progress    |   |   |   |
| Seaman Street                   | South Service      | Dewitt              | Urbanization                          | 2007-2011   | \$1.30  | \$1.42  | No Action      | - | - | - |
| Shaver Road                     | Hwy 403            | Wilson              | TWLTL/Urbanization                    | 2012-2021   | \$4.08  | \$4.45  | No Action      | - | - | - |
| South Service Road              | Millen             | Gray's              | Road Widening                         | 2012-2021   | \$6.44  | \$7.02  | No Action      | - | - | - |
| Southcote Road                  | Golf Links         | Garner              | Road Widening                         | 2012-2021   | \$5.73  | \$6.25  | No Action      | - | - | - |
| Springbrook Road                | Meadowlands        | Garner              | TWLTL                                 | 2012-2021   | \$2.40  | \$2.62  | No Action      | - | - | - |
| Stone Church Road               | Pritchard          | Upper James         | TWLTL                                 | 2007-2011   | \$3.25  | \$3.54  | Complete       |   |   |   |
| Sulfer Springs Road             | Wilson             | Mansfield           | Urbanization                          | 2012-2021   | \$0.75  | \$0.82  | Complete       |   |   |   |
| Sunnyhurst Avenue               | Barton             | North End           | Urbanization                          | 2012-2021   | \$1.12  | \$1.22  | No Action      | - | - | - |
| Teal Avenue                     | Garden             | South Service       | Urbanization                          | 2012-2021   | \$0.65  | \$0.71  | No Action      | - | - | - |
| Trinity Church Road             | Golf Club          | Stone Church        | Urbanization/Left turn lanes/New Road | 2012-2021   | \$12.38 | \$13.49 | In Progress    |   |   |   |
| Trinity N'hood/ROPA 9 Collector | Second W           | Highland            | New Road                              | 2007-2011   | \$2.23  | \$2.43  | Not Considered |   |   |   |
| Trinity Road                    | 1km S. of Wilson   | Hwy 403             | Road Widening                         | Beyond 2021 | \$6.28  | \$6.85  | No Action      | - | - | - |
| Twenty Road                     | Glancaster         | Glover              | TWLTL                                 | 2012-2021   | \$9.76  | \$10.64 | In Progress    |   |   |   |
| Upper Gage                      | Mohawk             | Thornley            | TWLTL                                 | 2007-2011   | \$2.40  | \$2.62  | No Action      | - | - | - |
| Upper James                     | Rymal              | Former City Limits  | TWLTL                                 | 2012-2021   | \$1.92  | \$2.09  | No Action      | - | - | - |
| Upper Mount Albion              | Mud                | Rymal               | TWLTL/Road Closure                    | 2012-2021   | \$4.75  | \$5.18  | In Progress    |   |   |   |
| Upper Ottawa Extension          | Former City Limits | Twenty              | New Road                              | 2012-2021   | \$2.05  | \$2.23  | No Action      | - | - | - |
| Upper Sherman                   | Rymal              | LINC                | TWLTL                                 | 2012-2021   | \$4.67  | \$5.09  | No Action      | - | - | - |
| Upper Wellington                | Rymal              | Stonechurch         | TWLTL/Road Widening                   | 2012-2021   | \$5.63  | \$6.14  | In Progress    |   |   |   |
| New E-W Link                    | W of Hwy 6         | new N-S Link        | New Road/Intersection Improvements    | 2012-2021   | \$18.02 | \$19.64 | In Progress    |   |   |   |
| Parkside Drive                  | Churchill          | new N-S Link        | Urbanization/Road Widening            |             |         |         |                |   |   |   |
| New N-S Link                    | Parkside           | Dundas              | New Road                              |             |         |         |                |   |   |   |
| Dundas Street/N-S Link          | W of N-S link      | E of N-S link       | Intersection Improvements             |             |         |         |                |   |   |   |
| Dundas Street                   | new N-S link       | Hamilton Boundary   | Road Widening                         | 2012-2021   | \$18.20 | \$19.84 | In Progress    |   |   |   |
| Waterdown Road                  | Mountain Brow      | Hwy 403             | Road Widening                         |             |         |         |                |   |   |   |
| Mountain Brow Road              | Waterdown          | new N-S Link        | Road Widening                         |             |         |         |                |   |   |   |
| New N-S Link                    | Mountain Brow      | Dundas              | New Road                              | 2007-2011   | \$2.81  | \$3.06  | In Progress    |   |   |   |
| Weir's Lane                     | Hwy 8              | Escarpment          | Urbanization                          |             |         |         |                |   |   |   |
| Wellington Street               | Hunter             | Young               | Road Narrowing (Road Diet)            | 2007-2011   | \$0.31  | \$0.34  | No Action      | - | - | - |
| West 5th                        | Rymal              | Limeridge           | TWLTL                                 | 2012-2021   | \$5.02  | \$5.47  | In Progress    |   |   |   |
| Wilson Street                   | Hamilton           | Halsen              | Road Widening                         | 2012-2021   | \$7.02  | \$7.65  | In Progress    |   |   |   |
| York Blvd/Wilson Street         | Bay                | Wellington          | Two-way Conversion                    | 2012-2021   | \$2.28  | \$2.49  | Complete       |   |   |   |

|   |    |       |  |          |          |          |
|---|----|-------|--|----------|----------|----------|
| Projects Identified                                       | 85 |       |  | Gross    | \$415.02 | \$452.37 |
| Projects Completed  | 7  | 8.2%  |  | Complete | \$10.57  | \$11.52  |
| Projects in Progress - EA complete/underway/portion built | 34 | 40.0% |  | Net      | \$404.45 | \$440.85 |
| Projects No Longer Considered                             | 2  | 2.4%  |  |          |          |          |
| Projects Outstanding                                      | 42 | 49.4% |  |          |          |          |

|                |    |    |    |
|----------------|----|----|----|
| Complete       | 26 | 9  | 7  |
| 3/4 Complete   | 4  | 3  | 0  |
| 1/2 Complete   | 8  | 7  | 6  |
| Initiated      | 3  | 3  | 0  |
| Not Started    | 42 | 61 | 70 |
| Not Considered | 2  | 2  | 2  |
| Total          | 85 | 85 | 85 |

## Appendix B2

### Summary - Hamilton Street Railway Operational Review (March 2010)

#### INTRODUCTION

The HSR Operational Review was initiated by the Transit Division in August 2008 in response to recommendations of the Transportation Master Plan and other City initiatives to increase the role of transit in meeting current and future transportation needs. Completion of the study also fulfilled a commitment made to the Amalgamated Transit Union. The report was received by Council on August 12, 2010.

Although the plan and recommendations contained in the review have not been fully implemented, they have been used as input during annual operational and service plan reviews. The 2010 Operational Review has also provided significant input into the main "Rapid Ready" 2012 report.

***The following is a summary of the full 2010 report. It should be noted that the data and figures are as contained in the 2010 report and have not been updated.***

#### Population and Employment Growth

Population growth in the City of Hamilton is forecast to occur mainly in suburban areas which traditionally have had lower density and limited mixed development patterns, such as Flamborough, Stoney Creek and Glanbrook, and to a lesser extent, Ancaster and Dundas. With the exception of Lower Hamilton, these areas have limited conventional scheduled transit service, whereas the former City of Hamilton areas are served by conventional scheduled services that provide higher frequencies and better coverage. If this future growth can occur in higher density and mixed land use forms, as desired by the Growth Related Integrated Development Strategy (GRIDS) for the City of Hamilton, these areas could present opportunities for increased transit ridership. This will, however, require improvements to be made in the frequency, travel time and reliability of these services to and from these areas to key transit trip destinations such as Downtown and Central, East and West Hamilton.

The fastest employment growth in the City of Hamilton is happening at medical centres/hospitals and the service sector. The current large employment at Hamilton's various medical centres and their potential growth in the future arising from the aging population in the City of Hamilton and surrounding areas present opportunities for increased ridership. This can be achieved by further enhancement to transit services, such as improved frequency and reliability, combined with more aggressive efforts by the City's TDM Coordinator to expand the use of the Employer Pass Program for employees of the Hamilton Health Centres.

In 2001, approximately 81% of the total trips made by residents stayed within the City of Hamilton. However, this figure has been declining since 1986 when 86% of trips stayed within the City. Between 1986 and 2001, the proportion of Hamilton’s labour force employed outside Hamilton increased from approximately 17% to 28%.

With future potential growth of trips from Hamilton Region to the Greater Toronto Area and vice versa, continued improvements to the HSR operated services to the GO Transit stations will be important.

## RECOMMENDATIONS

In order to achieve the objectives of ensuring public transit services are being operated in a safe, efficient and effective manner, considering the needs of customers, employees and the general public and to move towards achieving the targets in the City’s Transportation Master Plan, the following are the key recommended actions.

### Exhibit: List of Recommended Actions

|  |
|--|
| 1. Adopt this report in principle as the basis for planning, managing and financing the Transportation Master Plan implementation over the period, 2010 to 2014.                   |
| 2. Develop and implement a comprehensive marketing and corporation communications plan   |
| 3. Brand the new mobility program  |
| 4. Undertake a transit priority measures study to prepare a suitable strategy for giving transit vehicles priority at traffic congestion points throughout the City.               |
| 5. Adopt the infrastructure plan.  |
| 6. Enhance and expand the role of transit terminals across the city as transportation hubs. Construct transit terminals in the vicinity of McMaster University and Mohawk College. |
| 7. Upgrade bus stop signage and accessibility features of bus stops including the addition of 147 shelters.  |
| 8. Undertake a transit facility needs study to define future needs and facility location strategy.   |
| 9. Adopt the Financing capital plan as summarized in section 4.7 of the full report (summarized below).  |

## FINANCIAL SECTION

The 5-year term of the Service Plan has the following operating and financial implications:

The changes are a projected annual increase of 5% with annual revenue-hours of service growing to 806,910 from a base of 655,086 in 2008. Ridership is projected to increase from 21 million in 2008 to approximately 27 million by 2014 based on the proposed route changes and service improvements.

Fare revenues will increase consistent with the proposed fare strategy and annual small increases in fare rates from \$32.6 million to \$48.6 million by 2014. The purpose of the revised fare strategy is to increase revenues to primarily fund service improvements.

Direct operating costs will be \$93,758,000 in 2014 compared to \$63,801,000 in 2008. The capital budget will total approximately \$65.3 million comprised of \$54.5 million for 121 new buses (90 for replacement and 31 for service expansion), \$3.0 million for construction of two new terminals, \$1.47 million for 147 additional shelters, \$300,000 for bus stop improvements, \$1.0 million for re-branding of HSR, \$5.0 million for transit priority measures and \$100,000 for a Transit Priority Strategy study and Facility Needs Strategy study.

Exhibit : 2010-2014 HSR Operating and Capital Budget

|                                      | 2008          | 2010          | 2011          | 2012          | 2013          | 2014          | Change        |
|--------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                                      | Actual        |               |               |               |               |               | 2008-14       |
| <b>Service Area Pop.</b>             | 465,000       | 469,650       | 471,998       | 474,358       | 476,730       | 479,114       | 14,114        |
| <b>Vehicle Fleet</b>                 |               |               |               |               |               |               |               |
| + Buses (Replacement)                | 18            | 18            | 18            | 18            | 18            | 18            | + 90          |
| + Buses (Expansion)                  | 6             | 5             | 6             | 10            | 10            |               | + 31          |
| - Buses (Retirements)                | 18            | 18            | 18            | 18            | 18            | 18            | 90            |
| <b>Total Buses</b>                   | 24            | 23            | 24            | 28            | 28            | 28            | 121           |
| <b>Total Fleet</b>                   | 217           | 222           | 228           | 238           | 248           | 248           | + 31          |
| <b>Staff</b>                         |               |               |               |               |               |               |               |
| Operations                           | 28.3          | 30.3          | + 2           | 30.3          | + 0           | 30.3          | + 0           |
| Bus Operators                        | 402           | 415           | + 13          | 436           | + 21          | 458           | + 22          |
| Maintenance                          | 112           | 112           | + 0           | 112           | + 0           | 112           | + 0           |
| Administration                       | 42.5          | 44.5          | + 2           | 44.5          | + 0           | 44.5          | + 0           |
| <b>Total Staff</b>                   | 584.8         | 601.8         | + 17          | 622.8         | + 21          | 644.8         | + 22          |
| <b>Revenue Hours</b>                 |               |               |               |               |               |               |               |
| Bus                                  | 655,086       | 676,338       | 730,155       | 745,663       | 782,946       | 806,910       | 15,1824       |
| <b>Revenue Hours per Capita</b>      | 1.41          | 1.44          | 1.50          | 1.57          | 1.64          | 1.68          | 0.28          |
| <b>Rev. Passengers</b>               |               |               |               |               |               |               |               |
| Bus                                  | 20,952,826    | 21,000,000    | 22,050,000    | 23,384,025    | 24,798,759    | 26,068,949    | 5,116,123     |
| <b>Rev. Passengers per Rev.</b>      |               |               |               |               |               |               |               |
| Bus                                  | 32.0          | 31.0          | 31.0          | 31.4          | 31.7          | 32.3          | 0.3           |
| <b>Revenue Passengers per Capita</b> | 45.1          | 44.7          | 46.7          | 49.3          | 52.0          | 54.4          | 9.4           |
| <b>Direct Operating Expenses</b>     |               |               |               |               |               |               |               |
| Bus                                  | \$ 63,800,752 | \$ 67,628,799 | \$ 73,340,546 | \$ 79,101,501 | \$ 85,548,273 | \$ 93,757,788 | \$ 29,957,036 |
| <b>Additional Staff</b>              |               |               |               |               |               |               |               |
| Operations                           | \$ -          | \$ 200,000    | \$ 200,000    | \$ 200,000    | \$ 200,000    | \$ 200,000    | \$ 200,000    |
| Administration                       | \$ -          | \$ 125,000    | \$ 125,000    | \$ 125,000    | \$ 125,000    | \$ 125,000    | \$ 125,000    |
| <b>Total Direct Operating Cost</b>   | \$ 63,800,752 | \$ 67,953,799 | \$ 73,465,546 | \$ 79,426,501 | \$ 85,873,273 | \$ 94,082,788 | \$ 30,282,036 |
| <b>Operating Cost per Rev. Hour</b>  | \$ 97.39      | \$ 100.47     | \$ 103.45     | \$ 106.52     | \$ 109.68     | \$ 116.60     | \$ 19.20      |
| <b>Passenger Revenue</b>             |               |               |               |               |               |               |               |
| Bus                                  | \$ 31,692,311 | \$ 33,034,211 | \$ 35,726,499 | \$ 39,024,591 | \$ 42,627,146 | \$ 46,154,820 | \$ 14,462,509 |
| <b>Average Fare</b>                  | \$1.51        | \$1.57        | \$1.62        | \$1.67        | \$1.72        | \$1.77        | \$0.26        |
| <b>Other Revenue</b>                 |               |               |               |               |               |               |               |
| Bus                                  | \$ 893,822    | \$ 893,822    | \$ 893,822    | \$ 893,822    | \$ 893,822    | \$ 893,822    | \$ -          |
| <b>Operating Revenue</b>             |               |               |               |               |               |               |               |
| Bus                                  | \$ 32,586,133 | \$ 33,928,033 | \$ 36,620,321 | \$ 39,918,413 | \$ 43,520,968 | \$ 47,048,642 | \$ 14,462,509 |
| <b>Net Operating Cost</b>            |               |               |               |               |               |               |               |
| Bus excluding Debt                   | \$ 31,214,619 | \$ 34,025,766 | \$ 36,845,225 | \$ 39,508,088 | \$ 42,352,305 | \$ 47,034,146 | \$ 15,819,527 |
| Increase vs. 2008                    |               | + 9%          | + 18%         | + 27%         | + 36%         | + 51%         |               |
| <b>Net Cost per Capita</b>           | \$ 67.13      | \$ 72.45      | \$ 78.06      | \$ 83.29      | \$ 88.84      | \$ 98.17      |               |
| <b>Revenue/Cost Ratio</b>            | 51.07%        | 50.17%        | 50.07%        | 50.46%        | 50.87%        | 50.18%        |               |
| <b>Capital Expenses</b>              |               |               |               |               |               |               |               |
| Buses (Replacement)                  |               | \$ 8,100,000  | \$ 8,100,000  | \$ 8,100,000  | \$ 8,100,000  | \$ 8,100,000  | \$ 40,500,000 |
| Buses (Expansion)                    |               | \$ 2,250,000  | \$ 2,700,000  | \$ 4,500,000  | \$ 4,500,000  |               | \$ 13,950,000 |
| <b>Total - Buses (121)</b>           |               | \$ 10,350,000 | \$ 10,800,000 | \$ 12,600,000 | \$ 12,600,000 | \$ 8,100,000  | \$ 54,450,000 |
| Terminals (construct two)            |               | 1,500,000     | 1,500,000     |               |               |               | \$ 3,000,000  |
| Bus Stops (renew 1,000 stops)        |               | 150,000       | 150,000       |               |               |               | \$ 300,000    |
| Shelters (147 shelters)              |               | 294,000       | 294,000       | 294,000       | 294,000       | 294,000       | \$ 1,470,000  |
| Re-branding of HSR, design fee       |               | 1,000,000     |               |               |               |               | \$ 1,000,000  |
| Transit Priority Measures study      |               | 50,000        |               |               |               |               | \$ 50,000     |
| TPM improvements - construct         |               |               |               | 2,500,000     | 2,500,000     |               | \$ 5,000,000  |
| Facilities Needs study               |               |               | \$ 50,000     |               |               |               | \$ 50,000     |
| <b>Total</b>                         | \$ -          | \$ 13,344,000 | \$ 12,744,000 | \$ 15,394,000 | \$ 15,394,000 | \$ 8,394,000  | \$ 65,270,000 |

## HSR SECTION

Hamilton Street Railway (HSR) with over 175 buses on the road each day is one of the most visible public services in the community serving over 70,000 revenue passengers on an average weekday and just under 22 million passengers per year. Approximately 7% of the City's population travels by transit everyday while an estimated 30% or more of the population make use of transit at some point during the year.

The HSR currently operates a network of 33 bus routes with service levels ranging from 22 hours a day, seven days a week to peak hour (6-9AM, 3-6PM) Monday to Friday only. In 2008, a total of 655,088 revenue-hours of service

were operated with a staff of 585 and 217 buses. Almost 21 million trips were taken on HSR services representing a utilization rate (rides per capita) of 45.1

Overall, HSR provides cost-efficient fixed route transit services which are well-regarded by transit users.

As with any organization, there is room for growth and improvement. In particular, in the coming years, transit is expected to take on an increasing role in accommodating the travel needs of Hamiltonians in order to meet the City's economic, environmental, and social objectives.

### **What do Stakeholders Say about HSR?**

- HSR is generally regarded as a well-run service.
- Some perceive HSR as a social service and one that caters to students.
- Many decisions in City are made without considering the impacts to transit.
- HSR's routes are difficult to understand if you are not familiar with the system.
- Even though HSR does not have fundamental flaws, it may be time for a major renewal of service design in concert with a commitment to invest in service improvements.
- Looking to the future, most feel that transit will play a greater role as environmental and energy concerns increase.
- All residents benefit from transit in some way, and should pay their share.

### **What is expected of HSR in the future?**

The City's strategic priorities and Transportation Master Plan calls for transit to take on a greater role in the future while policies at the federal, provincial and local level all point towards the goal of significantly increasing the role of transit.

#### City of Hamilton

Vision 2020 calls for a doubling of transit usage to 100 rides per person per year.

Transportation Master Plan has set target of reducing auto vehicle-km by 20% by 2031 – stressed importance of early and incremental improvement

New Official Plan embraces transit-oriented development policies

#### Federal/National

Investing billions of dollars in infrastructure, including rapid transit; rewarding communities that have comprehensive strategies.

The Canadian Urban Transit Association has set a goal for large cities to increase per capita transit ridership by 1.2% per year over next 30 years (or 50% increase overall by 2040).

### Provincial

- Have identified Downtown Hamilton as a focus areas for growth.
- Have set a target to reduce greenhouse gas emissions by 80% by 2050.
- Metrolinx is investing in rapid transit.

### **How will HSR get there?**

Transit ridership is tied to investment levels, population growth, quality of service delivery, affordability and transit supported policies (e.g. downtown parking fees). There are no magic strategies to grow transit ridership without incurring increased costs or sacrificing minimum service standards.

Fortunately, there are many ways that the City can leverage investments in transit to maximize growth in ridership. First and foremost, an integrated approach to the planning and operation of public transit is required, including strong links between the City's existing transit services (HSR) and the shaping of land use around major transit corridors. In essence, transit ridership growth needs to be considered in all aspects of City planning and decision making.

### **Service Plan Characteristics:**

- Simplify the system by straightening route alignments, minimizing redundancies and limiting the number of route branches and exception trips supported on individual routes.
- Improve riders' ability to travel more directly (*i.e.*, in a straight line) between origins and destinations and minimize onboard transit travel times.
- Decrease average wait times for boarding and transferring riders.
- Implement high speed Rapid Transit service in two priority high capacity corridors initially (B Line and A Line) and subsequent corridors identified in the City's BLAST Rapid Transit Concept Plan.
- Transition from HSR's historically radial design favoring travel to/from Downtown Hamilton, to a high-frequency grid design supporting ubiquitous travel patterns comparable to regional auto traffic. Facilitate travel to/from six major regional activity centers rather than the single city center. Service restructuring proposals focus on relocating the terminal points of outbound local routes from disconnected bus loops on the fringe of development areas to the integrated transit hubs, straightening alignments for better onboard travel times, and limiting the number of branches to two per route. Service

span and frequency would either improve or stay the same on virtually all routes.

- Re-align services in anticipation of future rapid transit services in the A-Line and B-Line corridor.

**Exhibit: Proposed High Frequency Corridors (2015 and beyond)**



To accomplish the goal of 80 - 100 annual transit rides per capita by 2031, HSR will have to continue to improve its service levels in terms of improved service coverage, more direct and timely routes, increased frequencies, and faster, more reliable services. It will need to provide frequent and high quality Rapid Transit services, plus a limited stop cross-town express service. The objective is to build on HSR's strong base by increasing use by the population who have a choice of mode, particularly to major attractors such as educational facilities, business parks, medical facilities, and major shopping centres in Hamilton.

This strategic target cannot be achieved by HSR alone, and will require a paradigm shift in the way transit is viewed, planned for and funded in the City. All decisions regarding land use, finances and transportation generally will need to be viewed from the perspective of improving transit.

To realize the new vision for transit, there will need to be a significant shift in policy; a shift from a cost-driven to a market-driven service policy with less emphasis on cost-recovery. The following goals, objectives and service standards address this vision.

**Transit Hubs** – The proposed network focuses on six major destinations where enhanced transit service levels will be concentrated to increase network connectivity, reduce wait times, and upgrade facilities for HSR customers. Existing routes will be realigned to better serve the hubs, creating new direct linkages outside of Downtown with the potential for reverse direction bus ridership. Transit hub locations include: Downtown Hamilton; Eastgate Square; Lime Ridge Mall; McMaster University; Meadowlands Centre; Mohawk College.

**Rapid Transit** – Consistent with the City's Transportation Master Plan and Rapid Transit Initiative, existing express bus services on Main/King (Route 10/B Line)



and Upper James (Route 20/A Line) be upgraded to RT operating standards. Like most RT systems that develop from a series of coordinated improvements in mixed-traffic conditions rather than as a fixed guideway capital project, the City will need to invest in facilities and technologies, as opportunities arise, required to deliver high-quality RT service.

**Core Service Area** – Within the urbanized area defined generally as west of Centennial Parkway, north of Lincoln Alexander Parkway, and east of the Chedoke Expressway, the transit system will consist of a high-frequency grid of north-south and east-west routes overlaying the one-kilometer grid of arterial and primary collector streets that predominate in much of metropolitan Hamilton. Service frequency on most weekday routes will be improved to every 10 minutes during peak times.

**Outlying Service Areas** – Existing service in Ancaster, Dundas, South Hamilton, Stoney Creek and Waterdown will be refocused to provide short-distance neighborhood and feeder trips to the nearest transit hub. Service frequency on weekday routes at peak times will be improved to every 15 minutes in most areas.

**Transit Priority Measures** - Implementation of transit priority measures will require a separate study to confirm the measures to be introduced and to prepare cost estimates and an implementation plan.

### **New Transit Signal Priority Locations**

#### King / Main James / John Streets Area

The King/Main corridor between Queen St and Catharine St South, and the James St/John St corridor between King St and the Mountain.

This section of downtown Hamilton presents the greatest delay for transit vehicles due to general congestion of all vehicular traffic. In addition, it is in this area where passenger loads are highest, compounding delays through heavy boarding and alighting activity at closely spaced stops. Due to these conditions, the downtown corridors of King Street, Main Street, James Street, and John Street are prime candidates for the application of various transit priority measures.

The most effective measure that can be implemented along these corridors would be to provide bus-only lanes, particularly during peak periods. This would allow buses to bypass heavy traffic conditions and improve operating conditions and reliability. Many cities employ rush-hour only bus lanes by converting curb parking lanes.

Installation of signal priority will require that buses be equipped with CAD/AVL and transponder systems in order to activate signal priority only when running behind schedule. This system allows buses to extend the length of a green light,

or shorten the length of a red light, in order to reduce delay at heavy intersections.

#### Lime Ridge Mall

Considering the major role that the terminal is to play in the future with increases in service on the Mountain, it is imperative that the movement of transit vehicles be improved and prioritized at this location through a combination of active signal priority and physical priority measures.

#### Upper James Street and Mohawk Road

The intersection of these two main arterials creates significant delays at peak periods for both general traffic and buses. With the introduction of A-Line bus rapid transit on the Upper James corridor, the intersection of Upper James and Mohawk is a prime candidate to introduce transit priority measures to improve operation and to facilitate easy bus-to-bus transfers.

#### **To Improve Ridership and Mode Share**

Future ridership growth needs be in the 7% range annually over the next five years if HSR is to double ridership to 100 rides per capita within ten years. There is significant potential for ridership growth of this magnitude as transit's main markets are experiencing growth, including the student, seniors and commuter markets, and higher parking and energy cost over the next five years should cause a switch to transit for the choice markets who are currently auto users

The objectives of this ridership goal are as follows:

- **Service penetration** – *increase service use from 40 rides per capita (2006) to 50 rides per capita by 2014 as identified in the Transportation Master Plan.*
- **Ridership** – *increase annual revenue passengers from 21.8 million to 27.8 million by 2014.*
- **Service Levels** – *increase annual vehicle service hours to 806,910 by 2014.*

#### **MARKETING SECTION**

The Transportation program requires a formal strategic marketing program, and needs to undertake detailed market segmentation work (i.e., regularly conducting telephone or web-based market research surveys or collecting focus group feedback, attitude or customer satisfaction ratings). As well, the program needs a specific and strong branding plan. The marketing efforts by other transit systems have significantly contributed to the ridership success on their branded BRT services and their overall transit systems. Examples include the iXpress in Waterloo Region, the VIVA service in York Region and Metrolink in Halifax Region.

Existing outreach activities are numerous, although there needs to be a clearer focus to these efforts.

**Expand employer pass program, undertake more travel smart initiatives, and introduce modifications to transit funding:**

TDM Co-ordinator should more aggressively market an Employer Pass to large employers such as the various medical centres and hospitals, research centres and others in the City of Hamilton.

**Establish and implement a transit park-and-ride strategy:**

Transit park-and-ride lots for transit riders near major transit terminals would encourage people from outlying areas to transfer to HSR for the remainder of their journey. Establishing permanent park-and-ride lots at the following locations can provide an opportunity for increased HSR ridership: Meadowlands; Eastgate Square; Mountain Transit Centre (HSR Facility); Elfrida; Winona

**Enhance HSR fare products:**

- Expand on the fare products its offers in order to develop new customers and markets and increase ridership:
- Promote the use of HSR Day Pass as a Guest or a Bus Buddy Pass to permit transit advocates to invite potential riders to try the transit system and to train them on how to use the system.
- Develop an Annual Pass for most classes of passengers to enable year-round transit commuters to pre-purchase their travel a year in advance to assist in financial planning and to provide the deepest discount available.
- Provide an Eco Pass/Community Pass to provide a discounted pass to large developments or to distinct communities (i.e., residential or business areas) where in return for a committed number of passes being purchased for a specified term (e.g. one to four years) as part of the development agreement or community agreement.
- Ensure basic features such as customer information and service are done well to provide solid foundation.
- Fares should be simplified, and the cost of a monthly pass should be cheaper relative to ticket prices.

Overall, HSR is viewed by many as a “social” service, or one that is aimed too much at students. This makes it difficult to market to workers or those making leisure-based trips. There needs to be a fundamental shift in thinking for both the City and the public so that transit becomes a mode as natural as taking the car.

**Marketing Plan**

An effective marketing, outreach and communications program should include the following activities:

- analyze existing market data, including customer feedback, to determine trends, strengths and weaknesses as they pertain to marketing;
- collect new data where required;
- reach out to the non-riding public to determine perceptions and opportunities; develop a brand which helps to elevate council, media and public opinion of transit;
- develop and focus efforts and resources upon specific target markets; minimize the distractions from competing media that target these specific markets;
- develop education programs and/or materials to help key decision-makers understand the complexities of running an efficient and trusted public transit system;
- partner with pertinent city departments, public, not-for-profit and private organizations to market to target audiences in common;
- develop mechanisms for regular and effective interactions with media, partners and supporters of transit;
- measure marketing efforts (e.g. through ridership and the complaints system).

All of these areas could be improved with the help of a strong Marketing Plan to focus and prioritize activities. At the same time, appropriate resources (financial and personnel) need to be provided both for the short and the long term.

### **Advertising Revenues**

StreetSeen Media has the contract for interior and exterior bus advertising. StreetSeen has just signed a new contract with the HSR for 5 years, ending in 2014. ViaCom (CBS Outdoor) has the contract for bus shelter advertising. Its contract with the HSR ends in 2015. Creative Outdoor Advertising has the contract for bench ads.

### **Brand/Corporate Image**

For the City's transit system to move into the future, now is the time to review the HSR brand from all perspectives, corporate and community. An outreach program to obtain feedback about the HSR could include surveys, focus groups, media articles and targeted advertising (such as on buses) with the Hamilton public, and especially with non-transit riders.

### **Partnerships**

Additional partnerships include various contra promos with McMaster University (including a promo with McMaster to walk, bike or take transit), various contra promos with the seven different local BIAs along with joint campaigns with the Waterfront Trust, Environment Hamilton and Smart Commute.

A Marketing Plan, with a focus upon specific target markets and with a direct link to a strong HSR brand will help staff to determine which partnerships and events

will offer the HSR maximum public and political outreach. Such a plan would also help to determine which partnerships are missing.

## **Marketing Outreach through Print Materials**

### ***Route Maps***

The HSR Transit Guide presents all of the routes. The Transit Guide is updated every 18-24 months depending upon how often changes are made. Approximately 40,000 copies are printed and if a re-print is required 10,000 are generally re-printed at once.

### ***Individual Route Maps***

The HSR currently has 34 individual route maps. They are updated on an individual basis and are printed with the date. These are distributed in the same manner as the Transit Guide, but are also distributed at shopping malls and to the Wards that are pertinent to each route. The individual maps are also available on the buses in the “take one” slots. They are also posted on the website.

### ***Brochure***

A “Bus News” bulletin is produced primarily at schedule time changes. These brochures are distributed on buses and at the HSR ticket office.

Brochures for the fare vendors, for bike and bus riders, for seniors on how to travel safely, for environmental themes and for a variety of other items are created on an “as needed basis”.

An internal newsletter for employees is prepared three to four times per year. The purpose of this newsletter is to provide employees with a regular updates on plans, changes and activities concerning the HSR.

### ***Bus Advertising Cards***

*Bus Cards are produced on an “as needed basis” and are created to let riders know of changes in policy. Only unsold card space is used. The panel behind the driver’s seat is also used to share information about changes in the fare structure or for events such as Earth Week. External Bus Cards are produced on an “as needed basis”.*

### ***Shelter Materials***

HSR does not use shelter ad space, but does include copies of their full route maps on the walls of the shelters.

### ***Posters***

Posters are created and are distributed for special events.

***Internal Printed Notices***

These are produced for bus operators whenever changes are made as well as for general information regarding issues or events affecting HSR and employees.

***Print Ads***

Newspapers where the HSR posts ads include the Hamilton Spectator in the “At Your Service” section in the Community News newspapers in Hamilton, Stoney Creek, Ancaster, Binbrook, Dundas and Flamborough on an “as needed” basis.

***Signage***

Some bus stops include info posts with schedules. Some of the schedules are specific to each stop while others are more generic to the entire route.

**Marketing Outreach through Electronic Materials**

***Web Site***

The HSR pages are hosted within the City’s web site. Transit staff update the HSR portion of the site in-house. A staff member has the ability to create live updates without needing to go through a separate department to do this. The site includes a Trip Planner which gives scheduled time; the Trip Planner should become a live, “real time” tool. There are a number of ways to find information about HSR service. The site called [www.myhamilton.ca](http://www.myhamilton.ca) is apparently not the official city site, yet it is the first site that comes up on Google searches when the keyword “HSR” is entered.

***Recorded Phone Messages***

Generally, the only recorded messages are for changes resulting from inclement weather. The Call Centre staff are responsible for looking after the recordings.

***E-bulletins***

The HSR does not produce e-bulletins for customers.

***Customer Contact for One-on One Info & Complaints***

Some information comes from customers and from councillors; other information arrives in the form of e-mail messages. The Customer Service Coordinator looks after these, along with phone and fax messages which relate to complaints. She enters the information into a database by date and decides upon which section will receive the information, in order to respond.

***Call Centre***

The Call Centre is open 365 days of the year, from 7:30 AM to 8:00 PM, with the exception of Christmas Day, when the Centre is open from 9:00 AM to 5:00 PM. The Centre averages 600 calls per week. There are 5 full time staff and 4 part time staff for the Call Centre. After closing hours, the Dispatcher can take calls

**The activities within the Corporate Renewal strategy include:**

- Developing a new corporate image and identity (and possibly name) for the HSR. The image would include new logo, paint scheme and name
- Applying the new identity to all corporate materials and infrastructure (buses, stops, printed materials)

The activities within the Current Customer Target, in order of priority are:

- Map/Schedule Design, Printing and Distribution
- Schedule Update Printing/Distribution
- Web Site design and content
- Shelter Display Materials including maps and other customer information and promotional ads
- Customer Contact Program
- Customer Surveys
- Transit Theme Days

**The activities within the Prospective Customer Target, in order of priority are:**

- Route Branding – taking a specific route and developing an image or name – such as for the BRT services
- Student Transit Ambassador Program
- College Program
- Exterior and Interior Transit Specific Bus Cards
- Transit Specific Shelter Ads
- Mass Media Ad Campaign
- Niche Ridership Training Program

**The activities within the Public Relations Target, in order of priority are:**

- Contact list and program for regular contact with the media verbally or electronically
- Media Relations Kits

- Public Information Kits

**The activities within the Business and Political Target, in order of priority are:**

- Regular consultation with key opinion leaders including attendance at business meetings
- One-on-one meetings with employers
- Meetings with medical and educational institutions

**The activities within the Internal Strategy are:**

- Staff Training
- Networking
- Communications, verbally, electronically and in posted bulletins

Together these activities demonstrate how comprehensive an effective marketing plan needs to be.

### **Policy - parking**

Downtown Hamilton has a significant supply of low cost parking, which limits the potential of this area to attract people to transit. This parking situation should be partially addressed by adopting the comprehensive city parking management strategy and downtown parking strategy/by-law. This parking strategy could be used to further enhance City policies to improve the market for transit ridership by limiting the parking supply, raising the cost of parking, etc. As a general target, the cost of parking in the Downtown Core should not be less than the cost taking transit, which is not the case for most parking lots today.

### **FLEET SECTION**

The City's conventional transit (HSR) vehicle fleet consists of 217 buses as well as support vehicles for operations and maintenance. There are a further 66 buses for the specialized transit service (DARTS). The average fleet age is approximately 5.7 years. The fleet is in good mechanical condition and presents a clean, positive image of not only the transit system but of the City.

Maintenance of the HSR conventional bus fleet consists of two main activities:

- Daily cleaning and fuelling, exterior washing and periodic, more comprehensive, cleaning of each bus; and
- A scheduled maintenance and repair program.



The *daily vehicle cleaning* activity consists of exterior washing, interior cleaning and sanitizing, removal of garbage, sweeping floors, wiping seats, interior fittings, fuelling, checking and replenishing fluid levels, emptying fareboxes and downloading electronic data. This activity is intended to maintain a reasonable standard of cleanliness and hygiene. Maintaining a high level of vehicle cleanliness is important in attracting users to transit.

## **INFRASTRUCTURE SECTION**

This section summarizes the required future investment in the City's transit infrastructure, consisting of vehicle purchases for replacement as well as for service expansion, expansion of the transit centre, new or re-constructed terminals, bus stop designs and signage and additional shelters.

The base fleet replacement program identifies a requirement for 18 vehicles to be acquired annually based on the target 12-year replacement cycle. This represents an annual investment of approximately \$8.1 million annually at an average unit cost of \$450,000.

### **Transit Centre/Garage**

All of HSR's administrative; operations, planning and vehicle maintenance functions are centralized in the Mountain Transit Centre located at 2200 Upper James Street. The specialized transit (DARTS) fleet and operations is located in a separate facility at 330 Wentworth Street North.

The Transit Centre was opened in 1983 and is approximately 250,000 square feet in size with indoor storage capacity for 200 12.2m buses. There is outdoor storage space for a further 20 vehicles. The Maintenance area includes sections for vehicle servicing (fuelling, washing, cleaning), inspections, component overhaul and major body repairs.

The practical capacity of the Mountain facility will be exceeded as the vehicle fleet will total 248 vehicles or over 260 units.

The City should undertake a longer review of its transit facility needs. Such study would identify in specific detail the City future transit fleet needs for a minimum horizon timeline of 25 years and consider the impact of introducing RT service and its corresponding operations and maintenance facility needs.

### **Terminals**

There are currently five major transit terminals in Hamilton in addition to the GO centre terminal, located at: Gore Park; Lime Ridge Mall; Eastgate Square Mall; MacNab Street; Meadowlands. The transit terminals are in generally good condition and have suitable capacity to meet future operational needs. Additional terminals are needed near McMaster University as well as in the vicinity of Mohawk and West 5<sup>th</sup> Street, the latter linked to the new BRT line.

In addition to the five transit terminals, there are also five “loops” or route end points where several routes come together. As such, they serve as key transfer points or “terminus” points for routes.

### **Bus Stops and Shelters**

Bus stop signage has become varied in its design and installation. There is a need to renew and up-date bus stop signage to enhance the image of transit service, and ensure signage is kept lean and free of graffiti.

### **Bus Stops**

There are currently 2,100 bus stops located throughout the city. Bus stops are the sole method of accessing transit service for users. The stops and related signage serve three important functions in the operation of a transit system:

- “Advertise” to users where transit services exist;
- Indicate where users are to stand to access the transit service; and,
- Designate the spot where the bus operator is to stop.

### **Passenger Shelters**

Passenger shelters are located at bus stops based on a needs basis, which factors in ridership levels, exposure to the elements, nature of the trip generator near the stop, and availability of land. There are 5xx shelters at bus stops throughout the transit service area.

The current number of shelters represents a coverage rate of approximately 26%. With the addition of 150 more shelters over the next 10 years, the rate will increase to 33%. Municipalities and their transit systems are generally moving to increase the bus stop/shelter coverage rate as part of a strategy to enhance the attractiveness of using transit, which recognizes the need to limit user exposure to the elements, regardless of the level of usage at a particular stop. The City should target a higher coverage rate for shelters of 40% in the short term with a target rate of 50% in the long term. This would represent in the short term, the installation of 147 additional shelters by the City over the next 5 years.

## **CUSTOMER SERVICE SECTION**

HSR will need to continually improve the level and quality of service it provides customers. This effort will enable it to retain and increase the frequency of use by current riders and attract new riders.

The objectives of a service quality goal are as follows:

- ***Schedule Adherence*** - *improve schedule adherence so that buses are on-time 95% of the time.* Buses should never operate more than one minute ahead or more than 3 minutes behind schedule at identified time points.

- **Service Reliability** – *achieve or maintain bus availability so that 99.9% of the scheduled service is delivered as a minimum.*
- **Service Interruptions** - *improve bus maintenance so that on-road service interruptions due to vehicle breakdowns do not exceed a maximum of 2 per 100,000 vehicle kilometres.*

These objectives are to be accomplished by increasing on-road monitoring of schedule adherence, improving route and schedule design, and vehicle maintenance relative to breakdowns.



**Appendix B3:**  
**Transportation and Health**  
**January, 2013**

Prepared by  
Public Health Services  
City of Hamilton

## Appendix B3: Transportation and Health

### Introduction

A transportation system that relies heavily on vehicles results in a number of negative health effects.

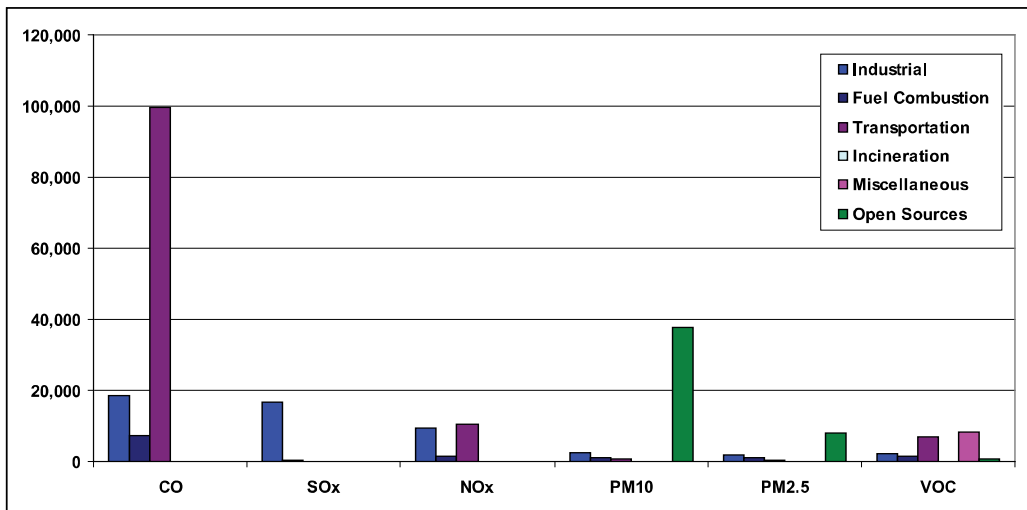
- Air pollution from vehicle emissions is linked with cardiovascular and respiratory disease.
- Increased traffic is a safety and injury concern, particularly for young children and seniors.
- Physical inactivity and a sedentary lifestyle can lead to obesity and an increased risk of chronic disease.

The following is a summary of the impact of increased vehicular use and its impact on health.

### Air pollution:

The transportation sector is the highest emission source of carbon monoxide (CO), nitrogen oxide (NOx) and volatile organic compounds (VOCs) in Hamilton (Clean Air Hamilton, 2012). Air pollution is estimated to contribute to approximately 5900 deaths per year in eight Canadian cities (Quebec City, Montreal, Ottawa, Toronto, Hamilton, Windsor, Calgary and Vancouver). It leads to short-term and long-term effects on both the heart and lungs such as asthma and heart attacks. Each year, in Hamilton alone, air pollution is estimated to lead to over 100 premature deaths and over 700 respiratory and cardiovascular admissions. This is worsened by living, working, going to school or playing near arterial roads (Litman, 2012).

Figure 1: Sources of air pollution emissions in Hamilton, 2008 (Clean Air Hamilton 2011)



### Injuries and Safety:

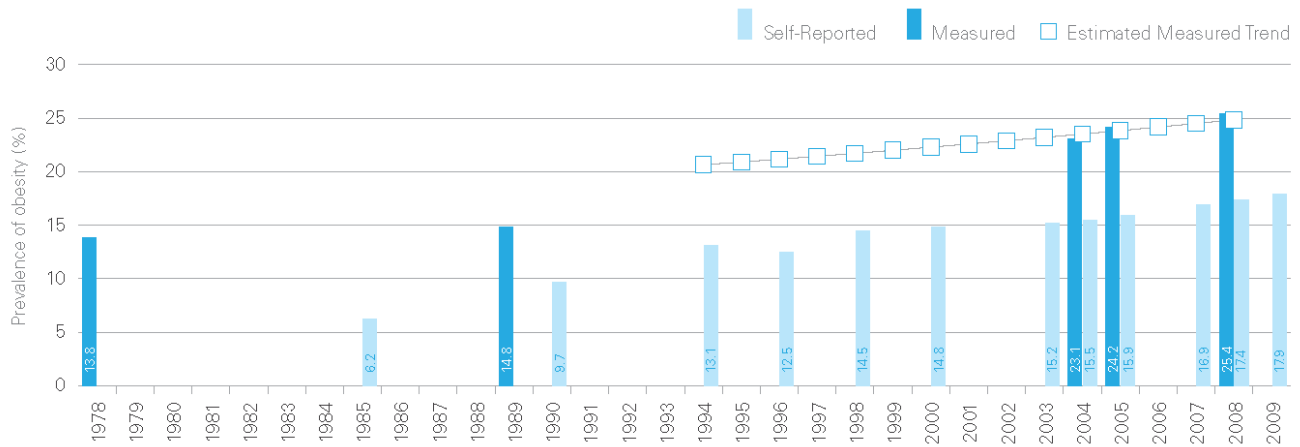
In addition to worsening air pollution, vehicular traffic also results in non-fatal and fatal injuries through motor-vehicle collisions, as well as pedestrian and cycling injuries. Young children and seniors are particularly vulnerable. Pedestrian injuries are one of the leading causes of injury-related deaths for children aged 14 years and younger (Safe Kids Canada, 2012). Senior pedestrians are at greater risk of death owing to vehicle-pedestrian collisions (Ramage-Morin, 2008). As the risk of physical injuries increases, concerns about safety also increase. Safety concerns are cited as one of the barriers in participating in physical activity, for walking or cycling. In one survey, more than one out of three parents (34%) listed “fear of injury” as a personal barrier for them. On behalf of their children, parents identified safety concerns as the highest deterrent for physical activity. Factors such as too much traffic and poorly maintained sidewalks and bike lanes (CFLRI, 2009) were cited as problems. A reliance on automobiles for transportation also results in reduced physical activity comprised of minimal walking to and from cars.

### Physical inactivity:

Most Canadians are not physically active enough. The Canadian Health Measures Survey (using objective measures) found that 93% of Canadian children and youth (Colley et al., 2011a) and 85% of Canadian adults (Colley et al., 2011b) are not meeting recommended physical activity guidelines. Only 7% of Canadian children and youth and 15% of adults are meeting the physical activity guidelines.

Physical inactivity is a vital public health concern because it increases the risk of chronic diseases including obesity, cardiovascular disease, type 2 diabetes, some cancers, and obesity (Warburton, Nicol, & Bredin, 2006; McKinnon, Bowles, & Trowbridge, 2011). Over the past 30 years, obesity rates have steadily risen (Figure 2). It also represents a large economic burden in Canada. The economic toll in 2009 was estimated at \$6.8 billion—\$2.4 billion in direct health care costs and \$4.3 billion in indirect costs (Janessen, 2012).

Figure 2: Trends in self-reported and measured obesity levels in Canada (Source: Obesity in Canada, PHAC and CIHI 2011)



NOTE: Excludes the Territories.

SOURCE: Analysis of 1978/79 Canada Health Survey; 1989 Canadian Heart Health Survey (ages 18-74); 1985 and 1990 Health Promotion Surveys; 1994/95, 1996/97 and 1998/99 National Population Health Surveys; and 2000/01, 2003, 2004, 2005, 2007, 2008, and 2009 Canadian Community Health Surveys, Statistics Canada and CANSIM Table 105-0501.

### **Investing in a strong transportation system**

A strong transportation system, focusing on active transportation and public transit, would improve the health and well-being of a community and provide opportunities for all of its citizens. Public transit and active transportation improves air quality, reduces traffic related deaths and injuries and increases levels of physical activity. A strong transportation system allows for all citizens to access programs, services, educational and employment opportunities in an inclusive way.

### **What is active transportation?**

According to the Public Health Agency of Canada (2010) active transportation refers to any form of human-powered transportation such as walking and cycling. Active transportation includes utilitarian trips (e.g., walking to school, work, or for errands), and recreational activity. Active and sustainable transportation includes transit users because each trip starts and ends with either walking or cycling, resulting in reduced single occupancy vehicle trips.



### Improving air quality - health and environmental benefits

A strong active transportation system has fewer vehicles on the road because people are walking, cycling or using transit instead. This results in less air pollution and cleaner air. Higher air quality lowers rates of heart and lung diseases. The resulting environmental benefits are reduced energy consumption and reduced greenhouse gases (Reynolds et al., 2010), reduced noise, and improved water quality (Campbell & Wittgens, 2004).

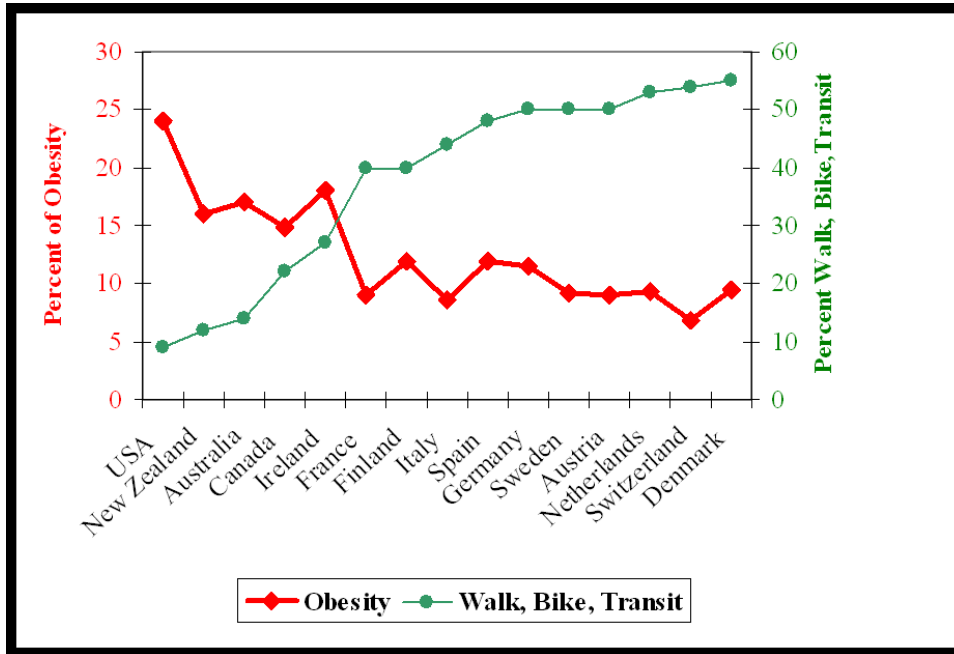
### Improving safety:

Fewer vehicles on the road reduces the incidence of motor vehicle collisions, and vehicle-induced pedestrian and cyclist injuries (Perrotta, 2011). In fact, public transit offers a safer mode of travel in comparison to other vehicles (Beck, Dillinger, & O'Neil, 2007) with 1/20<sup>th</sup> the fatality rate of car travel (Beck, Dillinger, & O'Neil, 2007). All users can benefit from complete streets policies that provide a safer road network, be they drivers, cyclists, pedestrians, or transit users.

### Increasing Physical Activity:

An active transportation system, which supports walking, cycling and public transit would reduce levels of cardiovascular disease (e.g. heart attacks and strokes), type 2 diabetes and some cancers. Countries where more people walk, cycle and use public transit (rather than relying on cars) have lower rates of obesity (Figure 3). In addition, increased physical activity is associated with improved mental health and quality of life (Reynolds et al., 2010). Active transportation provides opportunities for physical activity that can contribute to modest increases in physical activity levels. Increased physical activity and healthier citizens can result in substantial health care cost savings.

Figure 3: The relationship between active transportation and obesity (McCann, 2010)



Access, equity and citizen engagement:

The transportation network within a community is a powerful tool for all citizens to access opportunities for programs, services and other destinations that can enhance health, wellbeing, and simply improve overall quality of life. Many individuals and population groups rely on non-automobile options for transportation. For financial reasons, individuals with low incomes often lack access to automobiles (PolicyLink Prevention Institute, 2010). The elderly and individuals with physical limitations also drive less, relying on other transportation options (Turcotte, 2012).

Expanding mobility options for transportation would improve health equity outcomes. With a strong transportation network and ongoing infrastructure support, those for whom access to automobiles is limited, would enjoy easier access to health care for the purpose of both primary and secondary prevention. They would have wider opportunities for educational, training and employment services that can support entry into the workforce. A strong transportation network has the potential to attract more business to the community, and with new business comes more jobs. With greater employment opportunities comes fiscal independence, improved access to healthier food and lifestyle choices, better housing options, improved mental health and well being, with stronger familial and community ties and less dependence on negative coping strategies such as alcohol and other substances. A strong transportation system also provides easier access to social services, and allows citizens to connect with social networks with greater ease, all of which can support a higher functioning

citizenry. For newcomers to Canada, accessible transportation encourages community engagement, participation and acclimatization (World Health Organization, 2003a-h).

### **Conclusion:**

The benefits of a strong transportation system are numerous, cumulative and create a domino effect within a community. The World Health Organization views transportation as a social determinant of health and recommends:

- Giving preference to cyclists and pedestrians on our roads
- Improving public transportation
- Restructuring incentives to financially support public transportation as opposed to roads, and increasing parking fees and penalties
- Changing land use to reduce the emphasis on car use (i.e. decrease parking spots and increase green space; increase cycling and bus lanes)
- Putting people and active living ahead of cars and convenience, and
- Increasing traffic restrictions (World Health Organization, 2003h).

Our infrastructure and city design must encourage active and sustainable transportation in order to improve the health of our community. An integrated, multi-modal transportation plan encourages both environmental and policy changes. The goals of this comprehensive transportation system will greatly influence the adoption of active transportation, healthier residents as well as a safer, healthier environment and more engaged community. It is also important to continue to recognize the relationship between the social determinants of health and transportation. Addressing health inequities through an accessible transportation network needs to be a priority.

Within the City, the continued collaboration across City Departments, and incorporation of the public health impacts into the planning and implementation of this multi-modal transportation plan is vital. This will continue to build on joint initiatives such as:

- Active and Safe Routes to School – including school travel planning and school siting and site design.
- Organization and delivery of the 2012 Transportation and ACT Summits.
- Open Streets events, which have successfully engaged our youth volunteers
- Grant submissions
- Support for submissions to planning tables such as the Healthy Kids Panel submission by Metrolinx related to expanded school travel planning.

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**Appendix B3:**  
**Background Paper on the Intersection of  
Transportation and Health**

(With a focus on older adults)

**Prepared for the HSR**

**November, 2012**

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## **Executive Summary**

The purpose of this background paper is to consider transportation from a public health perspective. Using a review of the literature and publications from key websites, we discuss the health and well-being benefits of public and active transportation. Active transportation is any self propelled human-powered mode of transportation, such as walking or bicycling.

The transportation system of a city is a complex web of roads, transit, cycling and walking facilities that connect people to each other as well as to places of work, banking, play, shopping, community and health care. While transportation may not be thought of as a key determinant of health, transportation policies and accompanying land use patterns, planning and usage have far-reaching implications for both our physical and mental health as well as quality of life. While in many ways they improve our quality of life, research shows that land-use and transportation planning both directly and indirectly affect health and safety. Public transportation has a much less harmful effect on health than the use of automobiles with the emission of less pollutants and a lower risk of traffic fatalities and injuries.

The “walkability” of neighbourhoods has a significant impact on the health and well-being of residents. Walkable neighborhoods encourage physical activity thereby promoting physical health, decreasing the likelihood of traffic and pedestrian fatalities, obesity, chronic diseases and improving cognitive functioning. Safety is one of the most significant concerns about walkability and a key predictor of walking behavior.

Public transportation and active transportation are indirectly linked to health by facilitating the participation of citizens in their communities. These transportation options improve access to goods and services, access to community and health services, connections to work, banking and leisure activities and promote connections to family and friends. Participation in community life is said to improve quality of life and hence indirectly improve the health and well-being of individuals and the communities in which they live.



As we redesign our cities to create healthy communities and age-friendly cities we have an opportunity to improve the health of individuals and communities. Transportation policies and land use patterns must become a vehicle to promote public health and to create an age friendly community that will allow people of all ages to participate and prosper. Doing so requires the development of accessible, efficient, affordable, and safe alternatives to automobile travel that can not only offset health impacts and costs, but generate health benefits. These alternatives enable people to walk, bicycle and use public transportation more, increasing their physical activity levels, their opportunities for participation, their access to jobs, their access to goods and services, and their access to health services thereby improving their physical and mental health, their quality of life and their overall health and well-being.

## Introduction

The purpose of this background paper is to consider transportation from a public health perspective. Using a review of the literature and publications from key websites, we discuss the health and well-being benefits of public and active transportation.

The transportation system of a city is a complex web of roads, transit, cycling and walking facilities that connect people to each other as well as to places of work, banking play, shopping, community and health care. The transportation system impacts more than just how Hamiltonians get from place to place, it influences physical activity, accessibility to goods and services, access to health services, engagement in leisure, social, cultural and spiritual activities in the community, as well as engagement with family and friends. While transportation may not be thought of as a key determinant of health, transportation policies and accompanying land use patterns, planning and useage have far-reaching implications for both our physical and mental health as well as quality of life.<sup>1</sup> While in many ways they improve our quality of life, research shows that land-use and transportation planning both directly and indirectly affects health and safety by influencing the environment, physical and mental health and through facilitating social engagement in the community.

Mobility is fundamental to everyday life and is critical to health and well-being. Mobility has several different meanings. The term “mobility” is often used interchangeably with the term “transportation”; when addressing the issue of transportation it is best understood as the ability to move from one place to another, or between environments. It includes the use of an automobile, public transportation, other forms of passenger transport and active transportation.

Currently transportation, land-use patterns and planning favor a society that is auto dependent. Our dependence on automobiles and roadways has profound negative impacts on human health: decreased opportunities for physical activity, polluted air, pollution-related asthma, pedestrian injury, traffic accidents, and the risk of obesity and

chronic diseases that stem from sedentary lifestyles.<sup>1 2</sup> Public transportation has a much less harmful effect on health than the use of automobiles. According to the American Public Health Association, public transportation produces 95% less carbon monoxide, 45% less carbon dioxide and 92% fewer volatile organic compounds compared to private automobiles. Further the fatality rate associated with public transportation is approximately 1/25 of that associated with private automobiles.<sup>3</sup>

Active Transportation is a concept employed in public health and health promotion strategies meaning public engagement in various modes of transportation involving some light-to-moderate physical activity. Active transportation is “any self propelled human-powered mode of transportation, such as walking or bicycling.”<sup>4</sup> Active transportation is an essential component of mobile lifestyles that aid individuals in achieving health and well-being. Walking, cycling and the use of public transit ( every trip begins and ends with a pedestrian or cycling activity) are forms of active transportation that promote individual as well as population health by providing exercise, reducing accidents, increasing social contact and reducing air pollution.<sup>5</sup>

The Hamilton Master Transportation Plan published in 2007 guides transportation policies and strategies for the City of Hamilton.<sup>6</sup> With the knowledge that walkable, bikeable, safe neighborhoods with convenient access to goods and services promote economic development and make cities more livable, the City of Hamilton is working to reduce the dependence on automobile transportation by providing accessible low-floor buses, increasing non-motorized forms of transportation such as walking and biking, and moving towards the implementation of “complete streets” which are roads that are designed and built to be accessible to all travellers regardless of mode, age, or capability.<sup>7 8</sup>

## **A Public Health Perspective on Transportation**

A healthy community is one that promotes healthy people by ensuring access to safe and nutritious foods, safe places to walk, run, or bike; clean air and water; adequate and accessible health care systems; and other healthy enablers. One of these healthy enablers is the transportation system (public and active).<sup>3</sup>

From a public health perspective, mobility is more than just an outcome or end point of policy; restrictions in mobility have consequences for the health and well-being of individuals and the health of populations. For example, accessible transportation and walkable communities can lower the disability threshold,<sup>5</sup> increase physical activity, promote participation in the community and improve the health of individuals and populations on measures of physical and mental health as well as quality of life.<sup>4</sup> For planners, the outcomes of active transportation, (participation, physical and mental health, access to goods and community and health services) that reduce health costs and care burden, are considered indirect effects of integrated, efficient, multi-faceted transit systems.

Transportation has been identified as one of the eight dimensions of an age-friendly city. An age-friendly city is an inclusive and accessible urban environment that promotes active aging.<sup>9</sup> Other dimensions include, outdoor places and buildings, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, and community support and health services. Transportation is part of the physical environment and access to transportation contributes to active aging, “the process of optimizing opportunities for health, participation and security to enhance the quality of life as people age”.<sup>5</sup> Transportation promotes quality of life for older adults as it provides important opportunities for participation, civic engagement and employment, and respect and inclusion. Being able to move about the city determines access to community and health services, (i.e., doctor, dentist, hospital or specialized health services) .Therefore,

barriers to transportation, including physical mobility issues or reliance on outside help for transportation, can limit people's access to these services.<sup>10</sup>

Policy makers have a vested interest in creating and maintaining opportunities for people to age well. As people age they are more likely to experience multiple chronic conditions that make it difficult to get around the community. Social isolation can further reduce an older adult's quality of life and discourage older adults from participating in society, potentially contributing to a downward spiral of health problems leading to the increased and protracted utilization of health care resources. Healthy aging is an ongoing process of optimizing opportunities to maintain and enhance physical, social and mental health as well as independence and quality of life.<sup>10</sup> Healthy aging is not just a seniors issue, it affects all age groups. Opportunities must exist, at all stages of life, for Canadians to maintain and enhance good physical, mental and social health. Transportation has been identified as a facilitator of healthy aging.<sup>10</sup>

## **Transportation Usage**

Most Canadians live in neighborhoods designed around cars as the means of travel. Central neighborhoods of large cities are the exception, since residents can more easily travel by public transit, on foot or bicycle. Most Canadians use a car as their primary means of travel. According to Statistics Canada, 79% of men cite driving as their main form of transportation as compared to 44% of women; whereas women were more likely to be passengers (41%) compared to men (12%).<sup>11</sup> In terms of active transportation, Statistics Canada reports that about 6% use public transportation, 4% walk or bicycle as their main form of transportation.<sup>11</sup> The use of a taxi or specialized transit for persons with disabilities is primarily used by those aged 85 years and over. For frail older persons specialized transportation or accessible taxis are the only feasible modes of transportation, other than getting a ride from others.

The proportion driving declines with age. At age 65 to 74, 84% of men and 53% of women cite driving as their main source of transportation as compared to 62% of men and 20% of women 85-89 years of age. As people get older, travelling as a passenger in a car becomes their main form of transportation; this was the case for about one-half of seniors aged 85 and over and was more common for women than men.<sup>11</sup>

The proportion who used public transit on an occasional basis (i.e., used at least once in the past month) is somewhat greater (for example, 19% for those age 65-74) however, walking and cycling were more popular than public transportation as an occasional means of transportation.<sup>11</sup>

Use of public transportation does not increase with age as people become less likely or unable to drive. For example, 25% of women (who are more likely than men to use public transit) aged 55-64 reported taking public transit at least once in the last month, whereas only 18% of women 85+ said the same. This is because as people age they tend to leave home less often, they live in low density neighbourhoods where transit systems were designed to meet workers needs, there is a lack of accessible public transit especially outside of metropolitan areas or they are unaware of how to use the accessible features if they do exist.<sup>11</sup>

## **Safety**

Traffic injuries and fatalities (from vehicular crashes as well as bike and pedestrian accidents) are an enormous health problem.<sup>12</sup> In 2010, the number of motor vehicle collision fatalities in Canada was 6.5 per 100,000 population and the number of injuries was 500 per 100,000.<sup>12</sup> They are one of the leading causes of death for people ages 5-34. From 2000 through 2004, motor vehicle accidents accounted for 1.3% of all deaths in Canada, but 17.3% of all deaths among people younger than 30.<sup>13</sup>

Compared to younger drivers, older drivers are at an increased crash risk per mile driven. According to a report by the Canadian Centre for Disease Control<sup>14</sup> older drivers (ages 80 and older) have higher crash rates per mile driven than all but teen drivers.

Older drivers are more likely than younger drivers to die from injuries sustained in motor vehicle crashes. Pedestrian safety is an important concern for pedestrians and cyclists where roads have been designed to facilitate transport with multiple lanes, no sidewalks and distant and minimal crosswalks. Pedestrian collisions comprise between 12-14% of all fatalities from traffic accidents each year in Canada, compared to between 51-54% for drivers.<sup>14</sup>

For older adults, real or perceived safety is a significant factor to limit their mobility.<sup>15</sup> Mobility patterns are affected and opportunities for activity are reduced when people feel unsafe (e.g., when waiting at a bus stop, or walking down the street or in a parking lot or through fear of crime).<sup>16</sup> Opportunities to increase secure environments include safe pedestrian crossing, separate cycling paths for cyclists, good street lighting and attractive green spaces and streets. The more people integrate non-motorized travel into their daily routines, the lower the rate of fatalities from traffic accidents. Research conducted by *The Victoria Transport Policy Institute* in 2012 shows that in areas where more people walk, cycle and take the bus, the speed of vehicular traffic is slower and the damage experienced by a pedestrian hit at lower rates of speed is far less than in areas of high speed traffic flow.<sup>17</sup>

Fear of falling is also an important obstacle of mobility and this is most common for older people with a history of falls. It is estimated that one-in-three older adults have a fall in any one year.<sup>18</sup> Falls among older people are significant and growing cause of injury and often result in emergency room visits, hospitalization, placement in a nursing home and death. Environmental hazards that increase the risk of falling include irregular walking surfaces, lack of supportive handrails, poor lighting, and rest areas without bench seating. Creating age-friendly outdoor spaces will address older adult's fear of falling, promote active transportation, and reduce the number of visits to emergency rooms, hospital admissions, nursing home placements and even death.<sup>18</sup>

## Active Transportation Promotes Physical Health

The importance and benefits derived from physical activity for public health is still emerging but the consensus is that physical inactivity contributes to obesity and increased risk of many chronic diseases and health conditions. Obesity is a growing problem. Around one-quarter of Canadians aged 18 and older are obese<sup>19</sup> putting them at risk for diseases such as diabetes, hypertension, cardiovascular disease, gout, gallstones, fatty liver and some cancers. There is mounting evidence that active transportation (i.e., walking and cycling, including to and from public transportation) may have beneficial effects on health as they involve physical activity.<sup>20 21</sup> Physical activity plays an important role in preventing illness and dependence through improved cardiovascular health, physical fitness, and decreased levels of obesity.

Obesity in children is a growing health risk and many obese and overweight children are at risk of chronic illnesses such as Type II Diabetes. Many experts believe that walking and bicycling are the most practical ways to increase physical activity for children and adults. However rates of active transportation such as walking and bicycling to and from school has declined dramatically over the past thirty years as more and more children are bused to school. While distance is the primary reason that many children take the bus or are driven to school, implementing safe routes to schools (i.e., safer and fully accessible crossings, walkways, trails and bikeways) in the U.S. has shown to increase walking and bicycling to schools in the range of 20 to 200 percent with safety improvements of up to 49% in participating programs.<sup>22</sup>

Physical inactivity is also a major contributor to chronic illnesses such as Type II diabetes and heart disease.<sup>23</sup> As people grow older their risk of chronic health problems increase; more than half of those 65 and over suffer from one or more chronic health problems, the most common being musculoskeletal conditions (including arthritis), high blood pressure, back problems, heart disease and diabetes.<sup>18 23</sup> Research shows that regular, moderate physical activity can reduce the onset of chronic



diseases, reduce the risk of cardiac death, and reduce the severity of disabilities associated with heart disease and other chronic illnesses.<sup>5 10 20</sup>

Data from the Canadian Community Health Survey showed that only half (51%) of Canadians aged 12 and over were active or moderately active.<sup>22</sup> Studies show that 30 minutes per day of moderate-intensity physical activity provides significant health benefits. The Public Health Agency of Canada recommends 2.5 hours of moderate to vigorous aerobic exercise per week to promote health and well-being and quality of life.<sup>24</sup> This could be achieved by integrating active transportation into daily routines.

Studies in European countries have shown that higher rates of walking and cycling as the most common modes of transportation are linked to overall lower rates of obesity and associated illnesses than in countries where such modes of transportation are less common.<sup>20</sup> In a cross sectional analysis of health and travel data from 14 countries (including Canada, European, US and Australia), all 50 US states and 47 of the 50 largest cities in the US, Pucher and colleagues investigated the relationship between active transportation, physical activity and physical health (particularly obesity and diabetes) for the adult population.<sup>20</sup> Their research showed a positive relationship between walking, cycling and health at the country, state and city levels. Higher rates of walking and cycling, were significantly related to lower rates of obesity in all countries under investigation. Other studies suggests that neighborhood walkability is associated with significant health effects, including more physical activity, less cardiovascular disease and less obesity.<sup>25 26 27</sup> Thus this research provides convincing evidence for the relationship between active transportation, physical activity and health.

### **Active Transportation Promotes Cognitive Health**

There is growing evidence that physical activity plays an important role in enhancing cognitive functioning for older adults and can combat depression. The Public Health Agency of Canada estimates that about 20% of community dwelling older adults have some form of mental illness, the most common include Alzheimer's disease and other

dementias, depression and delirium. Among seniors living in the community it is estimated that about 5% have a diagnosed depression.<sup>10</sup> Depression can lead to higher mortality and morbidity from other diseases such as cardiac disease, stroke and chronic pain. Physical activity has been shown to be inversely related to depression in older persons.<sup>27</sup> A study by Berke and colleagues report that in older men, walkable neighborhoods can provide a buffer or protect against depressive symptoms, over and above the role played by physical activity.<sup>27</sup>

Evidence is accumulating that physical exercise benefits the brain through enhancing cognitive performance and can even benefit those who have a cognitive impairment or dementia. Colcombe and Kramer analyzed the results of 10 scientific studies between 2000 and 2004 and their results showed that fitness training increases cognitive performance in healthy adults between the ages of 55 and 80.<sup>29</sup> Heyn and colleagues also reviewed many studies to conclude that exercise training showed beneficial effects on the cognitive function of seniors with cognitive impairment.<sup>30</sup> Most recent evidence suggests that physical exercise benefits the brain by preventing brain shrinkage which is linked to cognitive decline (i.e., problems with thinking and memory) and is linked to Alzheimer's.<sup>31</sup> Promoting opportunities for active transportation, then, will have a beneficial effect on cognitive and mental health through providing more opportunities for physical activity.

### **Transportation, Participation, Quality of Life and Health**

Participation is defined as actions and tasks required to engage in organized social life and includes involvement in community life, recreation and leisure, and in religion and spirituality.<sup>32</sup> Research reveals that participation is an important element to quality of life.<sup>5 7 33</sup> The ability to “get out and about” is a key element of quality of life.<sup>34 35</sup> Participation is a result of the fit between the person's characteristics and his/her environment, factors that act as either facilitators or barriers.

Transportation directly impacts participation by facilitating connections between persons and the environment in which they live.<sup>36</sup> Integrated transportation options and walkable neighbourhoods connect individuals to goods and services in their community (i.e., shopping, restaurants etc.). Being able to move about the city determines access to community and health services (i.e., doctor, dentist, hospital or specialized health services). Barriers to transportation including physical mobility issues or reliance on outside help for transportation can limit people's access to these important services<sup>18</sup> and contribute to unmet health care needs.

Transportation has an indirect impact on health through participation.<sup>34</sup> Studies demonstrate that participation is associated with a number of health indicators including mortality,<sup>37</sup> depression,<sup>38</sup> disability,<sup>39</sup> cognitive performance and dementia<sup>40 41</sup> self-rated health<sup>42</sup> psychological distress and a decrease in overall general health and well being.<sup>5</sup> When barriers to transportation limit participation, the health and well-being of individuals and populations are impacted.<sup>43</sup>

Most people want to be able to grow old in their own homes (i.e., age in place).<sup>18</sup> However, when transportation is unavailable, older adults tend to limit their participation. Participation among older adults involves both daily activities required for survival (e.g., nutrition, personal care, mobility, communication) and the social roles necessary for adult's quality of life.<sup>37</sup> An analysis of the Canadian Community Health Survey- Healthy Aging revealed that inadequate access to transportation or difficulties getting around the neighbourhood created barriers to participation especially for older women.<sup>11</sup> As noted by Turcotte "seniors, whose main form of transportation was driving their car were the most likely to have taken part in a social activity during the previous week (73%), with passengers who had a driver's license close behind (69%). Public transit users and seniors who walked were little less likely to participate (61% and 66% respectively). People who were mainly passengers and did not have a license (53%) and people who used accessible transit or taxis (46%) had the lowest participation rates" (p. 14).<sup>11</sup>

In a recent study of seniors living in Greater Montreal participants were asked to rate their level of participation in 30 activities as 'regular, occasional or never'. Level of participation was highest among drivers, walkers and users of public transit, compared to those who were passengers, or users of taxis and other assistive transport services. This is thought to be the result of "loss of spontaneity in transportation" among those experiencing greater impairment (p. 497).<sup>36</sup> A second Montreal study examined neighborhood correlates of participation among older adults.<sup>44</sup> Measures of participation included 10 categories ranging from visiting with family members and friends, volunteer work to going shopping, to the public library or cultural events etc. Levels of participation were higher for respondents who walked frequently, who had a positive perception of the walkability of their neighbourhoods, who used public transportation (at least once a week) than those with a driver's license and those who had a motor vehicle in the household.

In summary, transportation directly impacts individuals and families ability to participate and play an active role in the community. Participation promotes social connectives, thereby providing an indirect impact on the health and well-being of individuals and communities.

## **Transportation & Disability**

While 14% of all Canadians report a disability, disability is more common among the older population with 23% of those 55 to 64 and 43% of those 65 and over reporting a disability.<sup>45</sup> The World Health Organization defines disability as impairment, activity limitation or participation restriction that is a result of the interaction between the contextual factor (personal and environmental) and the health condition. Disability may emerge from barriers in the environment that prevent individuals from engaging with the community for work or leisure, including lack of accessible transportation.<sup>46</sup> Further barriers in the environment such as uneven sidewalks, or lack of curb cuts can limit mobility and hinder transportation. Accessible public transportation, specialized transit

and age-friendly outdoor spaces permit persons with a physical limitation to be mobile and reduce the number of persons with a disability in the community.<sup>47 5</sup> A study by White and colleagues surveyed 436 people with functional limitations due to osteoarthritis to study the relationship of features of the neighborhood environment and disability. Their study revealed that walking areas, adequate handicapped parking and public transportation play an important role in facilitating working, volunteering and in recreational and social activity as well as general physical activity.<sup>46</sup> The Province of Ontario has recognized the disadvantages persons with disabilities face in being full participants in community life and are implementing the Accessibility for Persons with Disabilities Act (AODA) to create transportation and built environment standards that are more accessible to persons with a disability.

## **Conclusions**

A growing body of evidence suggests that planning the built environment to promote physical activity (such as through infrastructure for walking, cycling, availability of public transit, connectivity, housing density and mixed land use) may influence the likelihood that people will use active transportation for daily travel.<sup>47</sup> The “walkability” of neighbourhoods can have a significant impact on the health and well-being of residents. Walkable neighborhoods encourage physical activity thereby promoting physical health, decreasing the likelihood of obesity and chronic diseases and improve cognitive functioning. Walking is more common in neighborhoods with older homes, such as those built before WWII (i.e., communities where there are more likely sidewalks, denser, grid road patterns and mixed business/residential land use).<sup>48</sup> Safety (street traffic safe crossings, fear of crime) is one of the most significant concerns about walkability and a key predictor of walking behavior for older adults.

Public transportation and active transportation are indirectly linked to improved health by facilitating the participation of citizens in their communities. They improve access to goods and services, community and health services, connections to work and leisure activities and promote connections to family and friends. Active participation and engagement in community life improves quality of life and hence the health and well-

being of individuals and the communities in which they live. As we face the aging of the population and the expected increase to health care expenditures, transportation policies and programs to improve the health of individuals and populations will help to offset health impacts and costs.

Our current transportation networks and systems and community designs were planned when little was known about the impact of the environment on health. As we redesign our cities to create healthy communities and age-friendly cities we have an opportunity to improve the health of individuals and communities. Transportation policies and land use planning must become a vehicle to promote public health and to create an age friendly community that will allow everyone of all ages to participate and prosper. It requires the development of accessible, efficient, affordable, and safe alternatives to automobile travel that can not only offset health impacts and costs, but generate health benefits.<sup>49</sup> These alternatives enable people to walk, bicycle and use public transportation more, increasing their physical activity levels, their opportunities for participation, their access to jobs, their access to goods and services, and their access to health services thereby improving their physical and mental health, their quality of life and their overall health and well-being.

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## **Appendix C:** Mobility Programs and Special Projects Workplans

- C1.1: Transportation Demand Management (TDM)
- C1.2: Smart Commute Hamilton
- C1.3: TDM and Land Use
- C1.4: Complete Street Strategy
- C1.5: Mobility Corporate Working Team
- C1.6: Transportation Master Plan Five-Year Review
- C1.7: Quick Wins Projects
- C1.8: Public Bike Share Transit System
- C1.9: Cycling Master Plan Administration and Implementation
- C1.10: Pedestrian Mobility Master Plan Administration and Implementation
- C1.11: Transit Shelter Rehabilitation, Multi-Modal Integration,  
and Passenger Enhancement Program
- C1.12: Mobility Program Branding and Marketing



# C1.1 Transportation Demand Management

## Context and Purpose

The TDM program implements the recommendations of the Transportation Master Plan, to establish a transportation system and infrastructure that is efficient and balanced in terms of infrastructure use and modal choice. It comprises a set of tools, policies and programs that aims to reduce the travel demand associated with single occupancy vehicles (SOVs) and encourage a shift to other modes including: walking, cycling, transit, carpooling, carsharing, bikesharing, telework and work-shifting.

## Responsibility

Director, Transportation, Manager, Mobility Programs & Special Projects, Project Manager – Transportation Demand Management

## Activities

The TDM program is comprised of tools, implementation policies and programs including:

- » Sustainable Infrastructure Installation
  - Secure bike parking installation and grants
  - School bike rack seed funding program
  - Pedestrian and Cycling facilities at workplaces
  - Carpool Parking development
- » Shared Infrastructure Development
  - Carsharing: support the growth of carsharing through corporate programs, parking policies and facilitation of partnerships and preferred parking
  - Bike sharing: develop a bike sharing program to be delivered through a public-private partnership with bike stations at strategic locations in the city for use by citizens and tourists
- » TDM and Land Use (see 2013 Work Plan A1.3)
- » Community-based Social Marketing and BIA Engagement Strategy
  - CBSM involves direct contact with community members and focuses on removing barriers that prevent people from changing their behaviour. Follow-up on the pilot with 1 to 2 additional communities.
  - Communications Plan and Social Media – the TDM program has leveraged the reach and demographic markets using social media and this will continue in 2013.
  - Sustainable Transportation Phone Application Development – with over 50% of internet use on the mobile web, delivering programs, way finding and customer interaction can be facilitated through the mobile engagement strategy.
  - BIA Engagement Strategy – assist BIA's in becoming more pedestrian, cycling and transit friendly by providing enhanced infrastructure and using targeted sustainable marketing and incentives.
- » School Travel Planning, Stepping It Up and Schools Certification Program
  - Partner with public health on TDM focused school programs under the Active and Safe Routes Committee and the establishment of school travel plans in all City schools.
  - Sustainable Schools Certification program: involves the piloting of a manual and checklist to encourage schools to develop travel plans, engage students and staff and certify their school as a Bronze, Silver or Gold Sustainable Transportation School.

## Internal Linkages

- » Transportation Planning – Transportation Master Plan
- » Public Health Services – built environment research, programs and policies
- » Community Planning and Development Planning – development applications, nodes and corridors planning, secondary plans
- » Traffic Engineering – transportation impact studies and integration of TDM plans
- » Economic Development – complete streets and the associated economic uplift potential

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and **the associated transportation demand management (TDM) plan**

**Strategy 1.4.5:** Development of a strategy to enhance conventional transit service levels within the A and B Line corridors

## Timelines

- » Sustainable Infrastructure Installation
  - Status: on-going
- » Shared Infrastructure Development
  - Implement a two year corporate carsharing program from Nov. 2012 to November 2014
  - Bike sharing: develop a bike sharing program to be operational in Q3, 2013
- » TDM and Land Use
  - Develop a TDM checklist and points based evaluation system in by Q4, 2013

- » Community-based Social Marketing and BIA Engagement Strategy
  - Develop a sustained CBSM plan by Q1 2013 and implement a second project in Q2
  - Launch the Sustainable Transportation Phone Application in Q4 2012 as a two year pilot
  - BIA Engagement Strategy – launch a pilot BIA in Q2, 2013
- » School Travel Planning, Stepping It Up and Schools Certification Program
  - Sustainable Schools Certification: pilot complete in June 2013; full launch in fall 2013

## Resources

**Current:** 1 FTE Project Manager – Transportation Demand Management, 1 FTE support (currently supplied by student, admin staff and a technician)

## Budget Impact

\$75,000 City capital to fund BIA engagement strategy and community based social marketing programs.

## Performance Criteria

- » Modal split change to more active and sustainable modes
- » Measured increase in bike parking, secure bike parking, hybrid and carpool parking, active transportation amenities, multi-modal transit stop amenities and other project-specific criteria
- » Increase in Carsharing vehicles from 5 cars to 8 cars by 2014
- » Increase to 35 bike sharing stations and 300 bikes by September 2013
- » Engage two communities in CBSM projects related to transit route changes in 2013
- » Establish 10 new school travel plans to complement the current 15 by Q4, 2013



# C1.2 Smart Commute Hamilton

## Context and Purpose

Smart Commute Hamilton is an association led by the City of Hamilton which works with local businesses and community organizations to provide programs, initiatives, site analysis and infrastructure that encourages the use of active and sustainable modes of transportation for improved employee health and wellness, cost savings and reduced environmental impact. This is a specific employer-based transportation demand management (TDM) strategy.

## Responsibility

Director, Transportation, Manager, Mobility Programs & Special Projects, Project Manager – Transportation Demand Management

## Activities

Smart Commute Hamilton works with corporate partners to provide them with a range of services to help manage their travel demand on a yearly basis:

1. Employer Engagement Process: each employer completes an employee survey (or follow-up survey) along with a site analysis, which evaluates the existing infrastructure and current travel flows. The data is analysed and a transportation demand management plan is developed to help reduce single occupancy vehicle use at the employer site – these plans are consistently updated every 2 years.
2. The employer also receives a customized set of services provided, in part, by Metrolinx which include:
  - » Carpoolzone.ca, employee ride matching service
  - » EmergencyRideHome.ca, commuter insurance in case of an emergency
  - » Commute Cost Savings Calculator and SmartCommute.ca, an integrated suite of online services

- » Smart Commute Expos and Events including Carpool Week (Feb. 2013), Bike to Work Day (May 2013), Clean Air Commute Week (June 2013), Open Streets Hamilton, Smart Commute Week (Sept. 2013), Car Free Day (Sept. 22, 2013), Transportation and Healthy Living Fair (June/Sept 2013), Rural Routes (summer 2013)
- » Each employer receives a baseline survey, or a follow up survey every two years, and a site analysis to help them determine the types of infrastructure improvements and program improvements that would have the best benefits for their employees. This includes:
  - Secure bike parking and bike parking planning and installation
  - Carpool parking planning, signage and zone development
  - Active transportation amenities planning and construction (showers, lockers, storage)
  - Corporate Carsharing programs and parking areas
  - Carpool and vanpool incentive programs
  - Transit route analysis, awareness, incentives and planning
  - Walking and cycling routes analysis, workshops, promotions and incentives
- 3. Discounted Transit Pass Program – it is expected that a total of 3 employers will participate in this program in 2013, with Mohawk College already on-line with a program that started in Q4 2012

## Internal Linkages

- » Transportation Planning – Transportation Master Plan
- » Public Health Services – employer wellness and health programs
- » Community Planning and Development Planning – development applications, nodes and corridors

planning, secondary plans to integrate Smart Commute

- » Economic Development – offering Smart Commute as a services for employers
- » HSR – Smart Commute as a one stop, first contact for all employers who wish to perform transit, traffic and active transportation impact analysis and scheduling work

- » Assist Mohawk College with student influx from the Brantford Campus closure (Q1 2013)

## Resources

**Current:** 1 FTE Project Manager – Transportation Demand Management & 1.0 FTE equivalent provided by consultant (Urban Trans, Green Venture)

**Required:** 1.0 FTE to eliminate consultant

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan.**

Smart Commute Hamilton also relates broadly to (a) Strategic Priority #1: A Prosperous & Healthy Community - Smart Commute works with employers and communities to enhance work commutes through transit, walking and cycling, improving livability and health; and (b) Strategic Priority #2: Valued & Sustainable Services - Smart Commute is a service provided by the City free of charge to employers, to help lower their costs and improve employee well-being.

## Budget Impact

\$100,000 annual City capital, \$100,000 Metrolinx contribution. Program total of \$200,000. Consider increasing City 2014 contribution to \$150,000 and requesting a parallel increase in Metrolinx contribution, for a program total of \$300,000.

## Performance Criteria

- » Improve modal split at each worksite by 5% to sustainable modes in 2013
- » Perform follow-up surveys at each employer site to measure program growth, depth and retention (Q1 – Q4, 2013)
- » Recruit 5 new employers for a total of 20 employers and 90,000 employees (Q4 2013) which include: Arcelor-Mittal Dofasco, Yale Properties, Good Shepherd Centres, Tim Hortons, Maple Leaf Foods, and Orlick Enterprises in addition to 14 employers that are already part of the network including: City of Hamilton, Hamilton Health Sciences, McMaster University, Mohawk College, St. Joseph's Healthcare, Horizon Utilities Corporation, McMaster Innovation Park, McMaster DTC, Canada Bread, CAA South Central Ontario, Hamilton Chamber of Commerce, Hamilton Wentworth Catholic District School Board, Redeemer University-College, and ILR Industries.

## Timelines

- » Develop a business plan for all employers in the network (Q4, 2012)
- » Install sustainable infrastructure including carpool parking and bike parking (Q1-Q2, 2013)
- » Re-launch the Emergency Ride Home Program at all sites (Q1 2013)
- » Bring the Open Streets Hamilton program to 3 distinct BIAs in 2013
- » Pilot Corporate Carsharing programs at 2 sites in addition to the City of Hamilton (Q3 2013)

# C1.3 Transportation Demand Management (TDM) and Land Use

## Context and Purpose

TDM and land use guidelines help ensure that transportation demand management (TDM) and sustainable mobility policies, programs, strategies and tools are integrated into community planning, long-range planning, transportation planning, development applications, and infrastructure construction processes and projects.

This is critical to implementing the recommendations of the Transportation Master Plan and to increase modal share of cycling, walking, transit, carshare, bikeshare and carpool trips for work, school and leisure in new and existing commercial, industrial, institutional and residential developments and communities.

## Responsibility

Director Transportation, Manager Mobility Programs & Special Projects, Project Manager – Transportation Demand Management

## Activities

1. **Require a TDM statement in Transportation Impact Studies for developments:** Traffic Impact Study guidelines should be updated to strengthen the requirement for an analysis of TDM measures to mitigate the impacts on traffic or transit resulting from new site-generated demand, and incorporate these into their site design.
2. **Implement and enforce a TDM checklist for developments:** In addition to including TDM requirements in Transportation Impact Studies, a TDM checklist for all new developments should be adopted. There are numerous TDM strategies applicable to site developments, and new developments should be required to implement these at a minimum. A point-based TDM implementation checklist could be developed and enforced for new

site developments in Hamilton, with a minimum score required to pass; otherwise, developers would be asked to implement additional TDM measures into the site. This would apply to private, public and institutional developments.

3. **Initiate a parking pricing pilot project** with Sustainable Prosperity to introduce Environmental Pricing Reform measures in the City.
4. **Broadly work to ensure that TMP and OP have emphasis on TDM initiatives** to improve AT modal splits, and other plans call for similar changes (i.e. Nodes and Corridors), this includes a review ongoing secondary plans to ensure they integrate TDM considerations.
5. **Develop a Complete Streets Strategy** which encourages the incorporation of all modes into street designs (i.e. walking, cycling and transit in addition to vehicles), supporting the implementation of TDM initiatives.
6. **Develop TDM performance indicators and monitoring program:** performance indicators would allow the City to track the impact and extent of TDM strategies in achieving TDM and sustainability goals. In conjunction with a monitoring program, tracking ensures TDM strategies would be ongoing, instead of one-time initiatives. This tracking system would also help the City identify where TDM has been successful and gather lessons learned for future implementation.
7. **Emphasize TDM as an integral part of the TMP 5 year review,** the upcoming 5-year review of the Transportation Master Plan should incorporate the above considerations in order to elevate the importance of TDM and its potential for addressing future transportation needs and opportunities

## Internal Linkages

- » Transportation Planning – Transportation Master Plan
- » Public Health Services – built environment research, programs and policies
- » Community Planning and Development Planning – development applications, nodes and corridors planning, secondary plans
- » Traffic Engineering – transportation impact studies and integration of TDM plans
- » Economic Development – complete streets and the associated economic uplift potential

## City Strategic Plan Link:

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

**Strategy 1.4.5:** Development of a strategy to enhance conventional transit service levels within the A and B Line corridors

## Timelines

- » Develop a TDM checklist and points based evaluation system in by Q4, 2013
- » Community-based Social Marketing and BIA Engagement Strategy
  - Develop a sustained CBSM plan by Q1 2013 and implement a second project in Q2
  - Launch the Sustainable Transportation Phone Application in Q4 2012 as a two year pilot
  - BIA Engagement Strategy – launch a pilot BIA in Q2, 2013

## Resources

**Current:** 1 FTE Project Manager – Transportation Demand Management

**Required:** N/A

## Budget Impact

\$80,000 for consultant services to develop TDM guidelines and perform stakeholder consultations

## Performance Criteria

- » Modal split change to more active and sustainable modes
- » Measured increase TDM supportive developments
- » A minimum of five (5) developments to implement the checklist

## C1.4 Complete Streets Strategy

### Context and Purpose

Complete Streets is an identified transportation demand management (TDM) strategy for improving infrastructure and making the transportation network more efficient for all users. It takes into account the needs of those with special needs, pedestrians, cyclists, transit users, automobiles, and goods movement and uses design principles to accommodate all these users in a given road allowance. Complete streets is a key TDM strategy aimed at increasing active and sustainable modes of travel.

### Responsibility

Director, Transportation, Manager, Mobility Programs & Special Projects, Project Manager – Transportation Demand Management

### Activities

In order to understand complete streets in the context of the City's current state of infrastructure and policy environment, it is important to take the following steps. These activities are complementary to the Transportation Master Plan 5 year review:

- » Policy and Procedure Inventory – summarize the existing policies and procedures that support or work against establishing complete streets from a policy and technical perspective
- » Physical Inventory – showcase current complete streets in Hamilton
- » Design Guidelines – work with Development Engineering who will be updating their design guidelines in 2013 to develop guidelines that incorporate complete streets design philosophies
  - Use the example of the City of Calgary that incorporated Complete Streets as part of their guidelines
  - Create Hamilton-specific Complete Streets additions to and/or guidelines

- » Complete Streets Research
  - Work with Public Health and the Social Planning and Research Council on a Complete Streets research piece which will help answer some of the question arising out of discussions on Complete Streets including the need for 1-way to 2-way street conversion
  - Work with stakeholders such as McMaster researchers to understand the impact of complete streets projects that have already taken place in terms of traffic flow, economic development, improved pedestrian activity and other variables
- » Complete Streets Transportation Summit Follow-up
  - Implement the recommendations of the summit held in April 2011
  - Use the feedback to summarize community concerns
  - Develop a community engagement strategy from the data collected
- » Continue projects with the Toronto Centre for Active Transportation (TCAT)
  - Work with TCAT to establish the Complete Streets for Canada resource centre
  - Summarize the TCAT national Complete Streets inventory and rank Hamilton's policies and implementation as compared to other cities.
  - Take a more active role in future TCAT Complete Street Forums
- » Transportation Master Plan 5 year review team support
  - Provide a support role for the TMP review
  - Contribute to the process all the previous work performed in 2011, 2012 and early 2013 that will contribute to a robust TMP
  - Assist with public engagement and TDM linkages

- » Investigate a complete streets demonstration project, to be coordinated with the roads capital budget process (e.g. choosing a road which is scheduled for road reconstruction) and other relevant programs

## Internal Linkages

- » Transportation Planning – Transportation Master Plan review and implementation
- » Public Health Services – Complete streets research and health impacts
- » Community Planning and Development Planning – nodes and corridors planning, secondary plans to integrate Complete Streets
- » Development Engineering – input on guideline review
- » Economic Development – the economic uplift potential of complete streets
- » Other HSR departments – Using Complete Streets to benefit transit and increase ridership through walkability, bike share, and multi-modal transit stop integration.

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

**Strategy 1.3.6:** Identify and implement high-priority actions to support the accelerated revitalization of Hamilton's downtown core

## Timelines

- » Policy Inventory – Q2, 2013
- » Complete Streets Guidelines – Q4 2012 and Q1 2013
- » Complete Streets Research
  - Social Planning and Research Council on a Complete Streets – Q3, 2013

- McMaster Research project – Q4, 2013
- » Complete Streets Transportation Summit Follow-up
  - Implement the recommendations of the summit held in April 2011 – Q2, 2013
  - Develop a community engagement strategy – Q3, 2013
- » Continue projects with the Toronto Centre for Active Transportation (TCAT) – Q1, 2013
- » Transportation Master Plan 5 year review team support – Q2 – Q4, 2013

## Resources:

**Current:** 1 FTE Project Manager – Transportation Demand Management

**Required:** N/A

## Budget Impact

\$20,000 for outreach and engagement

## Performance Criteria

- » Develop a visual inventory of complete streets in Hamilton and mock ups
- » Develop the TMP 5 year review plan and changes to the document and EA components
- » Improve city design guidelines to include CS design principles and new sections for transit, cycling and pedestrian treatments
- » Publish two reports on complete streets for Hamilton
- » A complete streets demonstration project
- » Present at TCAT's Complete Streets Forum in 2013 on Hamilton's strategy
- » Develop a Hamilton Complete Streets Strategy Document summarizing the activities
- » Develop a Transportation Summit follow-up document and website on CS in Hamilton

# C1.5 Mobility Corporate Working Team

## Context and Purpose

The Mobility Corporate Working Team (MCWT) is a cross departmental advisory team which advises staff on all matters related to Public Transportation which fall under the Mobility Programs and Special Projects (MPSP) section of the Transit (HSR) division of Public Works including:

- Transit, Rapid Transit
- Cycling,
- TDM
- Pedestrian
- Inter-regional Transit
- Specialized Transit

The role of the MCWT is to provide input and advice to the MPSP team regarding the planning and development of mobility projects and related studies. The MCWT will meet at key points during various studies.

## Responsibility

Director of Transportation, Manager of Mobility Programs & Special Projects, Senior Project Manager, Mobility Programs & Special Projects

## Activities

- » Assist in the identification of current and potential issues relative to public transportation and land use, infrastructure, health, development, etc.
- » Assist the project team in moving all projects forward
- » Share information and knowledge of Transit, Rapid Transit, Cycling, TDM Pedestrian, Inter-regional Transit and Specialized Transit studies
- » Comment on technical studies, presentations and reports
- » Provide input on alternative solutions, strategies and plans
- » Provide information back to their respective departments/divisions

## Internal Linkages

The MCWT will be comprised of representative staff from all sections of the corporation.

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

**Strategy 1.4.5:** Development of a strategy to enhance conventional transit service levels within the A and B Line corridors

**Strategy 1.3.6:** Identify and implement high-priority actions to support the accelerated revitalization of Hamilton's downtown core

## Timelines

Meetings will be held quarterly or unless otherwise determined and the duration of the working team's mandate will depend upon the various projects going forward.

## Resources

**Current:** Administration will be responsibility of Senior Project Manager, Mobility Programs & Special Projects. Support resources will include existing administrative and support technician.

**Required:** N/A

## Budget Impact

N/A

## Performance Criteria

The role of the MCWT is to provide input and advice to the MPSP team regarding the planning and development of mobility projects and related studies.



# C1.6 Transportation Master Plan

## Five Year Review

### Context and Purpose

Access to jobs, school, recreation, health care and other destinations are critical in ensuring healthy communities. Enabling people to get to where they want to go when they want to go and providing appropriate choices is what mobility management is all about. It is the function that organizes their trip in the best way, whether single or multi-modal. Facilitating mobility choices through full integrated transportation modes will benefit all residents. The City must build a blueprint of mobility management to achieve seamless, convenient, customer focused journeys for the traveling public. The City's Transportation Master Plan was adopted in 2007. Best practices are to review a master plan every five years to examine conditions and trends, measure achievements and progress, determine if the plan goals and objectives are still valid and update the plan as necessary.

- » Identify appropriate level-of-service approach for all modes of travel
- » Review of Existing Performance Measures
- » Capital Project Implementation Progress (the confirmation and prioritization of projects and financial strategies)
- » Assumption Changes from 2007 (Growth #s, infrastructure plans)
  - review of the rapid transit studies undertaken to date in the context of the proposed transit network and in light of other plan elements including the road network (auto travel), active transportation (cycling and pedestrian networks), travel demand management, the identification of planned transportation infrastructure (road and transit) and the protection of transportation right of ways)
  - if there are additional projects (e.g. the S-Line), which should be prioritized, and could result in possible City requested adjustments to the Metrolinx Big Move Plan

### Responsibility

Director of Transportation, Manager of Transportation Planning, Project Manager, TMP Implementation

- » Problem/Opportunity Statement Review
- » Emerging Travel Demand Management Trends
- » Model Calibration and network modifications
- » Operational Management
- » Update Transportation Model and network modifications
- » Revised Recommended Network Improvements
- » Develop revised Key Performance Indicators
  - the establishment of evaluation criteria as part of a transparent framework for assessing future transportation priorities, such as network connectivity, ridership, level of service, equity and accessibility, environmental sustainability, community impact, cost and constructability

### Activities

Undertake a Master Plan review, which includes:

- » Development of the Terms of Reference through the MCWT
- » Policy Implementation Review
- » Development and Implementation of a Complete Streets Strategy/Policy
  - a network wide review of one-way and two-way traffic systems
  - incorporation of the Council approved Ward 1, Ward 2 and Ward 3 One-Way to Two-Way Street Study Group process as an integral component of the Five Year Review, including the investigation of a reverse flow model

- » Operational Strategy (Transportation Management Systems (ITS))
- » Recommended Implementation Policies and Tools
- » Develop funding alternatives

**Strategy 1.4.5:** Development of a strategy to enhance conventional transit service levels within the A Line and B Line corridors

**Strategy 1.6:** Enhance Overall Sustainability (financial, economic, social and environmental)

## Internal Linkages

- » MPSP, MPSP Corporate Working Team
- » SMT
- » Divisions/Departments as required to support program areas
- » City Council

## Timelines

The review is scheduled to begin in Q2 2013. Anticipated completion is Q4 2015.

## City Strategic Plan Link

**Strategy 1.2:** Continue to prioritize capital infrastructure projects to support managed growth and optimize community benefit.

**Strategy 1.3:** Promote economic opportunities with a focus on Hamilton's downtown core, all downtown areas and waterfronts.

**Strategy 1.4:** Improve the City's transportation system to support multi-modal mobility and encourage inter-regional connections.

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

**Strategy 1.4.4:** Develop a Land Use Strategy, Urban Design Guidelines and implementation plans for the lands surrounding the James Street GO Station and along the A and B-line transit corridors

## Resources

### Current:

- Current Staff: staff person dedicated to managing the programs
- Regular assistance of Senior Project Manager, Project Manager and Technician Semi-regular assistance of MPSP Administration Assistant
- Occasional assistance of Student(s)

**Required:** External consultants for technical components

## Budget Impact

A capital budget of \$250,000 has been approved to undertake the review.

## Performance Criteria

- » Findings are consistent with City's Strategic Plan
- » Effective public consultation with internal and external stakeholders
- » Project completed in time and within budget

# C1.7 Quick Wins Projects

## Context and Purpose

In 2008, the City of Hamilton received \$29.8 million in capital funding from the Metrolinx Quick Wins initiative, to be used specifically for municipal capital expenditures related to the purchase of transit vehicles and the provision of infrastructure to support the HSR initiatives related to the A-Line and B-Line. A number of projects have been implemented and the following have been identified as the remaining outstanding Quick Wins projects/activities.

*Mohawk College Transit Terminal:* The proposed mixed-use/multi-modal building can be utilized to improve coordination of public transit needs and overall transit services and connections on the mountain.

*Park-and-Ride Facility at the HSR Transit Centre:* The park-and-ride would promote the use of public transit by permitting the commuter to park their vehicle in an area outside the urban core and not contribute to traffic congestion, while reducing parking demand and improving air quality. The outcome of providing the City's first Park-and-Ride facility will be to provide convenient parking for HSR passengers, with the goal of increasing ridership on not only the A-Line but other HSR routes.

*Transit Priority – King Street Transit-Only Lane:* This will consist of a dedicated Transit only lane that will improve schedule adherence and visually promote transit use.

*MacNab Transit Terminal Customer Service Technology:* This project includes the installation of Transit information screens that will encourage transit ridership and enhance the passengers experience.

*A & B Line Amenities:* This project is one way of encouraging transit ridership through the provision of improved facilities for passengers while they wait for public transit and to help build ridership. This will include, where space permits amenities, such as: shelters, benches, waste receptacles, bike locking facilities,

location maps and transit information at key strategic locations.

## Responsibility

Director of Transportation, Manager Mobility Programs & Special Projects, Senior Project Manager, Mobility Programs & Special Projects, Project Manager, Mobility Programs & Special Projects

## Activities

- » Mohawk College Transit Terminal:
  - Partnering with Mohawk College with the provision of public transit service to the campus through the planned development of the new mixed-use/multimodal building in the northwest corner of Fennell Avenue and West 5th Avenue.
  - Drafting a Licensing agreement for transportation service on the Mohawk College property to ensure the long term use of the property by the HSR, as well as ensure the development is to the City's satisfaction with respect to the funding commitments and timelines.
- » Park-and-Ride Facility at the HSR Transit Centre:
  - To obtain site plan approval, undertake detailed engineering design, tender and construction
- » Transit Priority – King Street Transit-Only Lane:
  - complete the design of the transit only lane
  - complete an inventory of all parking spots along the chosen corridor
  - engage the Councilors and community in the development and trial of the proposed transit only-lane
  - detailed design of the lane markings and signs required
  - implementation of the final design

- » MacNab Transit Terminal Customer Service Technology:
  - procurement and installation of this technology
- » A & B Line Amenities:
  - completing an inventory of all A and B line transit stations to determine their profile and property allocation with reference to the ridership data in order to determine a hierarchy of stop locations
  - designing and developing the amenity prototypes and prototypical scenarios
  - detailed design of the chosen prototype
  - procurement and installation

## Internal Linkages

Transportation Planning, Public Health Services, Community Planning and Development Planning, Traffic Engineering, Economic Development, Legal, Construction, Procurement

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

**Strategy 1.4.5:** Development of a strategy to enhance conventional transit service levels within the A and B Line corridors

**Strategy 1.3.6:** Identify and implement high-priority actions to support the accelerated revitalization of Hamilton's downtown core

## Timelines

- » Mohawk College Transit Terminal (Legal Agreement – Q4 2012; Detailed Design Plans – Q4 2013; Substantial Completion – Q3 2014)
- » Park-and-Ride Facility (Detailed Design – Q1 2013; Tenders – Q2 2013; Construction Q3 – 2013; Completion Q4 – 2013)
- » Transit Priority (Community engagement Q1- 2013; Detailed Design Q2 – 2013; Approvals Q2-2013; Implementation Q3 -2013; Completion Q4-2013)
- » MacNab Transit Terminal Customer Service Technology
- » A & B Line Amenities (Inventory and hierarchy Q4 – 2012; Prototype design Q4 – 2012; Detailed Design Q1 – 2013; Procurement/Tender Q2-2013; Construction Q3 -2013)

## Resources

Current staff complement

## Budget Impact

\$11.1 million (QuickWins Funds)

## Performance Criteria

- » Completion of construction of the Mohawk College Transit Terminal
- » Installation and completion of Park-and-Ride facility at the Mountain Transit Terminal
- » Implementation of the transit priority (Transit Only Lane) measures
- » Installation of the customer service technology at the MacNab Transit Terminal
- » Installation and completion of at least 10 custom transit shelters with other amenities and signage at all the B and A line stops

# C1.8 Public Bike Share System

## Context and Purpose

The move towards complete streets, modal integration, sustainable infrastructure, liveable cities and transportation demand management strategies has necessitated a re-thinking of the services provided at a transit stop and station. This includes the provision of public bikes available on demand by registered users, students or those with a credit card for one time uses, such as a tourist.

## Responsibility

Director of Transportation, Manager of Mobility Programs & Special Projects, Senior Project Manager, Mobility Programs & Special Projects

## Activities

- » Complete an inventory of all transit stations to determine their (a) expandability, (b) classification as rapid or local transit, (c) state, (d) need for replacement and (e) ability to support multiple modes.
- » Research best practices that incorporate bike share stations, bike parking, public bike pumps and tools, passenger information systems, advanced maps (both transit, walking and cycling), pedestrian way finding, waste management, event promotions and connection to carshare parking locations.
- » Develop a public bike share system to eliminate first/last mile issues and improve active transportation access and amenities at transit stops.
- » Finalize bike share station locations and acquire space for those stations, primarily on City-owned property.

- » Initiate a Request for Proposals process to procure stations and bikes.
- » Initiate a Request for Proposals process for system operations and maintenance.

## Internal Linkages

- » Transportation Planning – integrate multi-modal stop and station amenities into the plan
- » Public Health Services – built environment research, programs and policies
- » Community Planning and Development Planning – nodes and corridors planning, secondary plans to integrate bike share station/stop planning
- » Traffic Engineering – determining the ability to expand stations and stops into the road allowance
- » Economic Development – stations and stops are key components for the streetscape, street amenities, complete streets and the associated economic uplift potential

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

**Strategy 1.4.5:** Development of a strategy to enhance conventional transit service levels within the A and B Line corridors

**Strategy 1.3.6:** Identify and implement high-priority actions to support the accelerated revitalization of Hamilton's downtown core

## Timelines

- » Station inventory and identification complete by Q1 2013
- » Best Practices research complete by Q2 2013
- » Station location finalized Q1 2013
- » Bikeshare RFP complete by Q2 2013
- » Community engagement to begin in Q2, 2013
- » Stations and bike installed in Q3 2013

## Resources

**Current:** 0 FTE

**Required:** 3 FTE (project manager, maintenance, office manager – to be provided through a public-private partnership)

## Budget Impact

\$1.6 million (Quick wins and Provincial Gas Tax funding)

## Performance Criteria

- » Complete a 35 station, 350 bike, public bike share program to feed transit stops and provide additional amenities.
- » Develop a stop advertising program for City programs and projects
- » Measure before and after use at transit stops with bike share stations to monitor progress/success
- » Measure the effect on overall transit ridership and on non-SOV mode split through user surveys

# C1.9 Cycling Master Plan

## Administration and Implementation

### Context & Purpose

The City of Hamilton's cycling infrastructure is guided by the Council approved cycling master plan **Shifting Gears 2009**. This plan, as envisioned in the Transportation Master Plan (2007), recommends a network of multi-use trails and bike lanes that are to be completed in order to achieve City goals that are strongly endorsed by the City's Strategic Plan; specifically, health, safety, and sustainability. Some of these projects are stand-alone retrofit projects, some are embedded in road reconstruction projects, some are part of new streets in new developments, and some are multi-use trail projects. Shifting Gears 2009 proposes approximately 550 km of bike lanes of which 150 km currently exist (~25%); and 190 km of major multi-use trails of which 140 km currently exist (~75%).

### Responsibility

Director of Transportation, Manager of Mobility Programs & Special Projects, Project Manager, Mobility Programs & Special Projects

### Activities

- » Manage construction of cycling infrastructure as retrofit projects
  - Two-way bike lanes on Hunter Street, and connections on Wellington St and Young St
  - Construct a multi-use trail along the north edge of Chedoke Golf Course, including connections along Aberdeen Ave to Longwood Rd and northerly on Longwood Rd
  - One-way bike lane on Herkimer St (Dundurn St to James St)
  - One-way bike lane on Charlton Ave (James St to Dundurn St)
  - Bike lanes on Mount Albion Rd (Greenhill Ave to escarpment)

- Bike lanes on Highland Rd (Winterberry Dr to Upper centennial Pkwy)
  - Bike lanes on Hatt St (Main St westerly)
  - Bike lanes on Beach Blvd under the QEW (Van Wagner's Rd to Woodward Ave)
  - Bike lanes on Cannon St/Britannia Ave/Melvin Ave (Kenilworth to Woodward Ave)
  - Bike lanes on Kentley Dr/Delawana Dr (Nash Rd to Lake Ave)
  - Bike lanes on Dewitt Rd (Hwy 8 to Ridge Rd)
  - Bike lanes on Limeridge Rd (Garth St to West 5th St)
  - Bike lanes on Dundas St (Hwy 6 to Hamilton St)
  - Install bike racks across the city
- » Coordinate with road construction/reconstruction projects that include cycling infrastructure, 2012-2013 projects include:
- Sanatorium Rd (Redfern Ave to Chedmac Dr)
  - West 5th St reconstruction (Marlowe Dr to the LINC)
  - Hwy 8 resurfacing (King St to Fruitland Rd)
  - Queensdale Ave (Upper Wentworth to Upper Sherman)
  - Assist in planning new streets that include cycling infrastructure
  - Provide expertise to Strategic Planning, Landscape Architecture Services, Parks Maintenance, and Road Operations regarding their activities related to infrastructure
  - Provide advice to Public Health Services and Community Services
  - Provide staff support and resources to the Hamilton Cycling Committee
  - Produce and disseminate cycling materials (promotional and educational)
  - Answer community and media inquiries

- Liaise with external agencies including the Ontario Traffic Council, Trans-Canada Trail Organization, Waterfront Regeneration Trust, and the Hamilton Conservation Authority.

## Internal Linkages

The advancement of active (cycling, etc.) infrastructure in Hamilton requires coordination with an array of City staff relating to traffic signals, traffic operations road crews, planning, operations, finance, clerks, parking, data management, culture & recreation, enforcement, and community health.

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

The city-wide Transportation Master Plan (2007) states seven key objectives one of which is **Offer a choice of integrated travel modes, emphasizing active transportation (walking and cycling), public transit and carpooling**. Other key objectives also provide direction, albeit less directly, to advance cycling infrastructure by referring to compact urban form, minimizing impacts on the environment, safety, and liveability.

## Timelines

The cycling specific projects listed above, 13 in total, will be rolled out at various times throughout the spring, summer and fall of 2013 provided sufficient City staff is made available for the projects. Administration and implementation of the program is ongoing.

## Resources

Looking to resolve – hoping the additional staff in Design will help – if an arrangement could be made for this person to dedicate 33% of their time to projects initiated by the Mobility Office.

## Budget Impact

- » Cycling specific projects listed above sum to a total cost of approximately \$490,000. Some of these projects will be funded by funds arranged for these projects in previous budgets.
- » Requested funding for these projects from the 2013 budget is \$300,000 and is identified in the capital budget as the Bicycle Route Improvements Program. \$300,000 value is the typical annual amount allocated to this item.
- » Consideration should be given to incrementally increasing the annual investment. An increase to \$500,000 is recommended by 2015. This could provide greater flexibility in funding and better align funding with the 5% of the network needed to be constructed annually to complete the cycling network.
- » Costs associated with the cycling elements of the larger road construction projects are a part of these individual projects. In the four projects cited, the total estimated cost for the cycling infrastructure is \$1.1 million, and the total cost of these four construction projects is \$6,265,000 thus the cycling component is estimated to be 15% of the total cost.

## Performance Criteria

The City continues to increase the monitoring of cycling activity in bike lanes and on multi-use trails to track the, as of yet anecdotal, increase in cycling activity in Hamilton. Data is also monitored in larger data collection exercises including the Transportation Tomorrow Survey and Statistics Canada data.



# C1.10 Pedestrian Mobility Plan

## Administration and Implementation

### Context and Purpose

Access to jobs, school, recreation, health care and other destinations are critical in ensuring healthy communities. Enabling people to get to where they want to go when they want to go and providing appropriate choices is what mobility management is all about. It is the function that organizes their trip in the best way, whether single or multi-modal. Facilitating mobility choices through full integrated transportation modes will benefit all residents. The City must build a blueprint of mobility management to achieve seamless, convenient, customer focused journeys for the traveling public. Establishing a Pedestrian Mobility Plan was a recommendation from the 2007 council approved City-wide Transportation Master Plan.

### Responsibility

Director of Transportation, Manager of Mobility Programs and Special Projects, Senior Project Manager, Mobility Programs and Special Projects

### Activities

1. Adoption of the Pedestrian Mobility Master Plan
2. Recommended Next Steps as shown in table below.

| Recommendation  | Department / Section Lead  | Timeframe  | Estimated Budget  |
|---|--|--|---|
| 1. Pedestrian Mobility Advisory Committee   | Public Works Department, Transportation, Energy and Facilities, Mobility Programs and Special Projects | Short-term (2013-2014)                           | \$5,000 (annually)  |
| 2. Training   | Public Works Department, Transportation, Energy and Facilities, Mobility Programs and Special Projects | Short-term (2013-2014)                           | \$15,000-\$20,000   |
| 3. 1 FTE (Pedestrian Coordinator)   | Public Works Department, Transportation, Energy and Facilities, Mobility Programs and Special Projects | Short-term (2013-2014)                           | As per salary range identified under the current Collective Agreement. (+/- \$85,000) |
| 4. Update Existing Development Engineering Guidelines   | Planning & Economic, Development, Development Engineering  | Short-Term (2013-2014)                           | \$90,000 (2013 – budget submission)   |
| 5. Other Design Guideline Updates <ul style="list-style-type: none"> <li>• Site Plan Control Guidelines</li> <li>• Various Urban Design Guidelines</li> </ul> | Planning & Economic Development  | Short-term (2013-2014)                           | a) \$15,000<br>b) \$15,000  |
| 6. City-wide Way Finding Strategy   | Planning & Economic Development  | Short-Term (2013)<br><br>Medium-Term (2014-2018) | \$100,000 (2013 – budget submission)<br><br>\$100,000                                 |
| 7. Coordinated Street-Furniture Strategy  | Public Works Department, Operations & Waste Management   | Short-Term (2012-2014)                           | Currently undergoing EOI process  |
| 8. Pedestrian & Cycling Activity Monitoring   | Public Works Department, Transportation, Energy and Facilities, Mobility Programs and Special Projects | On-Going   | \$25,000 (annually)   |

## Internal Linkages

The Pedestrian Mobility Plan provides the opportunity to create a culture of walking in the City by normalizing pedestrian mobility tasks within routine daily activities. It is recognized that there are many coordinated efforts required to achieve a culture of walking within the built environment. Dedication of City staff required for implementation is not dissimilar to the structure and dedication required for other services provided by the City. The Mobility Corporate Working Team will be essential to coordination.

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

## Timelines

- » Adoption of the Pedestrian Mobility Plan Q1 2013
- » Recommended Next Steps, as per table above.

## Resources

To ensure effective implementation of the Pedestrian Mobility Plan, consideration for 1.0 FTE in the near-term is recommended. This position would be integrated in the Mobility Programs & Special Projects office.

## Budget Impact

- » Total Program capital \$340,000
- » 2013 Capital Budget Submission \$50,000 to begin items 1, 2 and 4.
- » Operating 1 additional FTE at \$85,000 annually
- » Annual capital costs of approx. \$30,000 for advisory committee and monitoring

## Performance Criteria

- » Adoption of Plan by Q1 2013
- » Items 1, 2 and 4 underway by year end 2013
- » Ongoing Monitoring Plan to be developed

# C1.11 Transit Shelter Rehabilitation, Multi-Modal Integration and Passenger Enhancement Program

## Context and Purpose

An enhanced focus on customer service, complete streets, modal integration, sustainable infrastructure, liveable cities and transportation demand management strategies has necessitated an assessment of the services provided at transit stops. Issues around vandalism and graffiti also need to be addressed. Furthermore, the current shelter advertising contract will expire 2015.

## Responsibility

Director of Transportation, Manager of Mobility Programs and Special Projects, Senior Project Manager, Mobility Programs and Special Projects, Project Manager – Transportation Demand Management

## Activities

- » Review of existing shelter advertising contract.
- » Complete an inventory of all transit stations to determine their (a) expandability, (b) classification as rapid or local transit, (c) state, (d) need for replacement and (e) ability to support multiple modes.
- » Research best practices that incorporate amenities, such as bike infrastructure, passenger information systems, advanced maps (transit, walking and cycling), pedestrian way finding, waste management, event promotions and connection to carshare parking locations.
- » Develop a system to identify stations that need replacement and develop a list of options to rehabilitate shelters using adhesive treatments, community art, graffiti, full replacement with more robust materials and more.

- » Create a station and stop brand for rapid transit and local transit, which provides information, features rapid transit stops and identifies multi-modal nodes (in connection with marketing and branding projects)
- » Investigate use of stop advertising for City programs and TDM programs/events, as well as mapping and way-finding
- » Investigate the integration of branding, stop identification and passenger information systems into an online and mobile application to work with sms texting and smart phones.
- » Engage the community in the development of station and stop art and rehabilitation of stations
- » Investigate the integration of other amenities into stations and stops such as retail, vending machines, presto kiosks, interactive displays and other amenities that are have a high return and low capital investment.

## Internal Linkages

- » Transportation Planning – integrate multi-modal stop and station amenities into the plan
- » Public Health Services – built environment research, programs and policies
- » Community Planning and Development Planning – nodes and corridors planning, secondary plans to integrate station/stop planning
- » Traffic Engineering – determining the ability to expand stations and stops into the road allowance
- » Economic Development – stations and stops are key components for the streetscape, street amenities, complete streets and the associated economic uplift potential

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the **associated transportation demand management (TDM) plan**

**Strategy 1.4.5:** Development of a strategy to enhance conventional transit service levels within the A and B Line corridors

**Strategy 1.3.6:** Identify and implement high-priority actions to support the accelerated revitalization of Hamilton's downtown core

## Timelines

- » Station inventory and identification complete by Q1 2013
- » Best Practices research complete by Q2 2013
- » Station/stop branding complete by Q1, 2013
- » Community engagement to begin in Q3, 2013

## Resources

**Current:** 0 FTE

**Required:** 1 FTE (project manager [0.5 FTE] staff support [0.5 FTE]) (also to support Mobility Programs special projects such as quick wins, transit priority measures, etc.)

## Budget Impact

- » Phase 1 Bus Shelter-Bench Repairs & Replacement existing capital budget \$255,000 (5301285905).
- » Phase 2 - Proposed 2013 expansion program of \$533,000 (submitted under separate cover report PW13XXXX). Proposed annual enhancement budget of \$235,000 2014 to 2017.

## Performance Criteria

- » Identify 15 - 25 stops that are damaged and should be replaced or rehabilitated using community input and creative re-design
- » Identify 5 to 10 stops that need shelters or additional amenities
- » Establish a Rapid Transit brand and incorporate that branding into station design
- » Develop a stop advertising program for City programs and projects
- » Measure before and after use at rehabilitated transit stops to monitor progress/success

# C1.12 Mobility Program

## Branding and Marketing

### Context and Purpose

Increasingly, transit agencies across North America are incorporating commercial marketing approaches and methods to both attract new users and to retain existing riders. Methods may include sophisticated market research and segmentation tactics, branding and identity programs, product positions, and individualized and targeted marketing. The use of these approaches has commonly involved newer express and rapid bus services; however, a broad approach encompassing the entire, seamless, mobility program will be investigated. Branding and marketing approaches collectively aim to create a positive brand awareness amongst the general public and have attracted new users to the services.

» An effective marketing, outreach and communications program should include the following activities:

- analyze existing market data, including customer feedback, to determine trends, strengths and weaknesses as they pertain to marketing;
- collect new data where required;
- reach out to the non-riding public to determine perceptions and opportunities;
- develop a brand which helps to elevate council, media and public opinion of transit;
- develop and focus efforts and resources upon specific target markets;
- minimize the distractions from competing media that target these specific markets;
- develop education programs and/or materials to help key decision-makers understand the complexities of running an efficient and trusted public transit system;
- partner with pertinent city departments, public, not-for-profit and private organizations to market to target audiences in common;
- develop mechanisms for regular and effective interactions with media, partners and supporters of transit;
- determine, on an on-going basis, which types of programs and projects are most efficiently carried out by staff and which are best carried out through contracted organizations or through partnership arrangements; and
- measure marketing efforts (e.g. through ridership and the complaints system).

### Responsibility

Director, Transportation, Manager, Mobility Programs and Special Projects

### Activities

- » A Marketing Plan is recommended which focuses on five essential strategies. They are:
  - Corporate renewal (Branding)
  - Current Customers
  - Prospective Customers
  - Public Relations including business and political leaders
  - Internal communications
- » The activities within the Corporate Renewal (Branding) strategy include:
  - Developing a new corporate image and identity (and possibly name) for the HSR. The image would include new logo, paint scheme and name.
  - Applying the new identity to all corporate materials and infrastructure (buses, stops, printed materials).

## Internal Linkages

- » SMT
- » All Transportation Division sections
- » Corporate Services
- » Neighbourhood Development Strategies
- » Public Health & Community Services
- » Planning and Economic Development

## City Strategic Plan Link

**Strategy 1.4.3:** Develop an integrated, multi-modal, public transportation program, including implementation of rapid transit, conventional transit, active transportation (e.g. pedestrian, cycling) and the associated transportation demand management (TDM) plan

**Strategy 1.4.5:** Development of a strategy to enhance conventional transit service levels within the A and B Line corridors

## Timelines

- » Branding – 2013-2014
- » Marketing - Development of marketing plan in 2013-2014 and ongoing thereafter.

## Resources

Current staff resources that may contribute to this initiative include:

- Transportation Demand Management Project Manager
- Marketing & Communications Co-ordinator
- Mobility Programs and Special Projects Support Technician

However, the staff time required to implement and continue the plan will exceed the available resources. Thus, additional resources would be required to accomplish all of the proposed tasks. It is proposed that, to begin, one additional FTE would be required.

## Budget Impact

- » Branding - \$1.0 million to develop a new corporate identity with logo and colour scheme, as well as a further \$10.0 to \$12.0 million to apply the new identity to all physical assets (buses, stops, shelters, terminals, buildings, printed materials).
- » Marketing - A total budget of \$200,000 annually should be maintained with a major portion of the budget going to communications and customer relations.

## Performance Criteria

- » Development of the branding and strategy by Q3 2014
- » Implementation to begin Q4 2014
- » Modal split change to more active and sustainable modes and increased transit ridership

