

The Challenge

In 2008, Metrolinx outlined coordinated and comprehensive regional transportation improvements in its “Big Move” Regional Transportation Plan.^{1,2} Recent CivicAction reports have documented the significant and growing economic, environmental and social costs of not making these improvements. Among other things, maintaining the status quo in the Greater Toronto and Hamilton Area (GTHA) will see annual direct and indirect costs of congestion grow from \$6 billion in 2006 to \$15 billion by 2031.³ The “Big Move” plan will evolve, but the region cannot afford changes that will cause unreasonable delays or significant cost increases, or unduly water down the goal of providing regional rapid transit within walking distance for a majority of Toronto region residents, with improved transit service to low-income areas.

Current Situation

During the past two decades, demand for both roads and transit has grown much faster than supply (see Figure 1). During the same period, the region’s transportation system performance has greatly deteriorated. Peak period travel speeds have declined, while average daily commute times and tailpipe emissions have both increased (see Figure 2). And these trends have been accelerating: “...traffic congestion delays and related costs are going from bad to worse at an increasing rate.”⁴

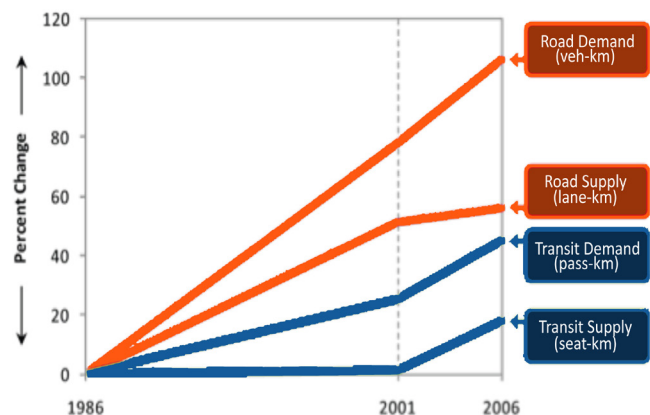
Implementation of The Big Move Regional Transportation Plan, as originally published in 2008 or evolved (“the RTP”), is urgently required as soon as possible for many reasons, including the following:

- We will add two million more people and one million more autos to the GTHA during the next 25 years; coping with this growth will demand much better transit, greater use of active transportation modes, more compact, mixed use land use, and related technological improvements and demand management policies, all of which are emphasized in the RTP.
- Auto travel is insufficient by itself; other modes are essential to building greater capacity and service as the region grows.
- The economic, social and environmental costs of not acting will greatly exceed the costs of implementing the RTP.

Almost \$40 billion of the RTP’s \$50 billion capital cost (in 2008 dollars) remains unfunded; new funding sources are urgently needed to avoid delays in implementation.

A key strategy of the RTP is to tie the region together with a comprehensive rapid transit network providing travel speeds and reliability independent of auto traffic. To be successful, this network must compare favourably with auto travel in terms of travel times and reliability. The resulting gains will enable the GTHA to better compete globally for investment,

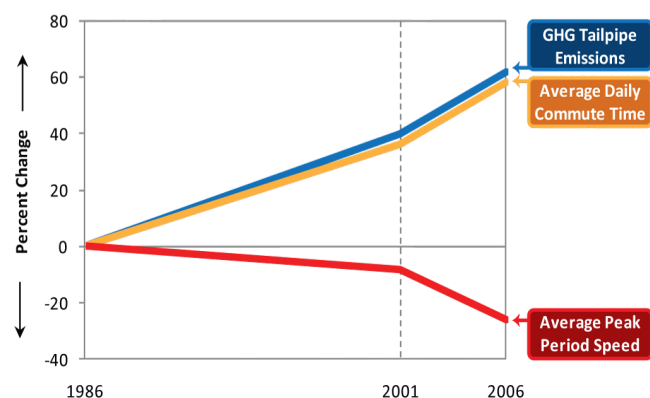
Figure 1: 1986-2006 GTHA Transportation Demand and Supply Trends *



* The data points are graphed for 1986, 2001 and 2006 only, to show changes in net trends before and after 2001. Travel fluctuations between these points are not shown; for example, transit supply in seat-km increased in the years following 1986 but then declined to 2001, showing a negligible net gain over the 15-year period. Similarly, road travel demand has fluctuated above and below the trend lines, reflecting economic conditions (with a downward fluctuation in 2008/9 for example), but the overall trend continues to climb.

Source: IBI Group, based on Transportation Tomorrow data and GTHA road/transit data sources

Figure 2: 1986-2006 Transportation Performance Trends*



* As previously noted for Figure 1, trend fluctuations between the three data points are not shown, in order to emphasize the changes in the overall net trend lines before and after 2001. Source: IBI Group, based on Transportation Tomorrow data and model runs

talent and high value jobs. They will also provide lower income residents with broader accessibility to job opportunities. A comprehensive regional transit network will deliver much greater coverage and more sustainable operations in terms of reduced energy use, petroleum consumption and emissions, with related health benefits for all region residents.

The RTP will provide a hierarchical network comprised of six rapid transit modes: ^{5 6}

1. **Express Rail:** high speed trains, typically electric, serving longer, regional trips with frequent service;
2. **Regional Rail:** also primarily serving longer, regional trips but with lower frequency, speed and capacity than provided by Express Rail;
3. **Subway:** fully grade-separated heavy rail, usually underground with very frequent service (as often as every 90 seconds) and capacity (as high as 25,000 – 40,000 passengers per hour in the peak direction);
4. **Automated Guided Transit (AGT) (also referred to as Grade-Separated LRT or Elevated LRT):** short light rail trains operating in tunnels or on elevated track, with speed and frequency similar to Subway but about half Subway’s capacity, which can be operated automatically without drivers, such as the SkyTrain System in Vancouver (see Figure 3);

Figure 3: AGT/Elevated LRT: The Vancouver SkyTrain



Image credit: Laurence Lui

5. **Light Rail Transit (LRT):** short, light rail trains operating at ground level, such as the planned LRT lines in the RTP. They are largely in a separate right-of-way, but subject to delays at level crossings with roads and therefore providing lower speeds and capacity than AGT; and
6. **Bus Rapid Transit (BRT):** the type of BRT lines planned as components in the RTP’s rapid transit network are similar to LRT except that individual buses run on separate busways or bus lanes, which are cheaper to build than LRT tracks but generally provide lower capacity; the system provides more operating flexibility than LRT, but is more expensive to operate because more drivers are required. Other types of BRT, providing higher speed and capacity through grade separation and/or large articulated buses running at high frequencies, are not considered here since they are not part of The Big Move network or currently proposed changes to it.

As Figure 4 illustrates, the speed, capacity, capital cost, operating cost and delivery time characteristics of these rapid transit modes vary greatly. To be successful, a rapid transit network must draw on each mode’s strengths and be integrated seamlessly to provide the best performance and coverage per dollar invested. Trade-offs must be carefully evaluated when considering possible changes to the RTP, especially with regards to the coverage, speed and capacity provided by each rapid transit mode, as well as its cost and compatibility with adjacent land uses. For example, for the same cost we could buy approximately:

- two times more kilometres of AGT/grade-separated LRT than of Subway; and
- three times more kilometres of ground-level LRT than of Subway.

However, the latter provides slower service and less capacity than Subway and AGT, and causes more conflict with auto and truck traffic. AGT/elevated LRT also has significant visual impact in some contexts, with speeds similar to subway but less capacity.

BRT provides more coverage per dollar spent than any of the above three rail modes. However, as with LRT, it would take one lane of roadway in each direction away from other traffic if placed on existing roads where widening is not feasible. BRT can cost-effectively make use of other existing right-of-ways such as the Finch hydro corridor which runs east-west across the entire city. A small portion is currently used for the express bus route linking the Spadina subway to York University.

Figure 4: Rapid Transit Modes: Typical Speed, Capacity, Cost and Delivery Times

Mode	Speed (km/h)	Capacity (persons / hour / direction)	Capital Cost (\$m/km)	Operating Cost (\$/pass) *	Delivery Time (years)
Express rail	50 – 80	20,000 – 40,000	20 – 50	2.35	4 – 10
Regional rail	30 – 50	5,000 – 20,000	10 – 20	4.04	2 – 10
Subway	25 – 50	25,000 – 40,000	250 – 350	0.56	6 – 10
AGT/Grade-Separated LRT	25 – 40	10,000 – 25,000	100 – 175	0.12	4 – 6
LRT	15 – 35	5,000 – 10,000	50 – 100	0.65	2 – 4
BRT **	15 – 35	2,000 – 6,000	5 – 40	2.49	1 – 4

* Based on ridership at the lower level of the capacity range

** These numbers are typical for the relatively low capacity, low cost forms of BRT which are suitable for street level suburban applications and are planned as part of the RTP’s rapid transit network. See also the BRT description in the above text.

Source: IBI Group, drawing on experience in various urban areas and transit systems.

To get value for money, Subway requires intense land use and significant traffic density, characteristics which are generally not present in suburban areas, except in key corridors. Until these conditions exist, it can be cost-effective to start with AGT, LRT or BRT and convert to Subway if greater capacity is needed at a later stage.

For best results, the network should be planned and built holistically instead of piecemeal. The RTP is a living plan and should evolve flexibly as circumstances change, so long as objectives, costs and timelines are not sacrificed unreasonably. Where changes will increase cost, it is crucial to determine who will pay for the additional costs. In some cases, it may be appropriate to ask voters to decide between a property tax increase or other levy, for example.

Chief Barriers to Progress

Keeping the RTP on track and fully delivering it on time and on budget will require skilled management, including governance policies, and capacity for:

- effective, efficient design, implementation, operation, maintenance and rehabilitation of the new infrastructure; and, equally important,
- achieving the pricing, information and related improved customer service features of the plan.

At least three other elements are essential to staying on track:

- **sustainable funding** drawn from innovative sources to ensure reliable financing of the RTP, including its capital costs, ongoing operations and effective maintenance;⁷
- **effective communications** to galvanize public support for funding and implementation, while soliciting public input continuously as details are worked out;⁸ and
- **appropriate RTP change reviews**, to balance the costs and benefits of proposed changes **in the context of overall funding limits** and the need for timely implementation.⁹

Proposed changes to any long-term transportation plan can be expected as circumstances change. Nonetheless, recent proposals for major changes to The Big Move RTP have arisen early on in its life, and require timely consideration and action. It will be paramount to maintain effective communication and broad-based support for sustainable funding levels throughout the RTP's implementation.

Opportunities for Action

In the spirit of the previous sections, the following three opportunities for action are suggested for consideration by Metrolinx and relevant stakeholders:

1. Sustainable Funding, including the innovative use of additional funding sources such as those outlined in Figure 5 to cover ongoing shortfalls in RTP capital funding of \$2 billion/year (in constant 2008 dollars) when the current committed funds run out, plus an additional shortfall approaching \$0.5 billion/year for unfunded RTP operating and maintenance costs.

- Stakeholders can help to generate and inform widespread, objective public discussion about the pros and cons of each funding source or mix of sources.
- They can further provide Metrolinx and relevant governments with the input of the public and opinion leaders to assist them in considering potential funding sources and ways to achieve sustainable travel patterns.

Figure 5: Potential Sources for Additional GTHA Transit/Transportation Funding

Source	Net Additional Revenue to GTHA
1. Road Tolls on GTHA Freeways (400 series highways and municipal controlled-access highways)	\$1 – 2 B/year
2. Regional Gas/Diesel Fuel Tax	\$1 – 2 B/year
3. Commercial Parking Levy	\$1 – 2 B/year
4. Regional Sales Tax	\$1 – 2 B/year
5. High Occupancy Toll (HOT) Lanes or Express Lanes on GTHA Freeways	\$400 – 800 M/year for Express Lanes \$200 – 400 M/year for HOT Lanes
6. HST Revenue from Gas/Diesel Sales Tax (Revenue dedicated partially or fully to GTHA transit)	\$400 – 600 M/year
7. Central Area (C.A.) Congestion Levy on private vehicles entering Planning District 1, 6:30 am–6:30 pm Monday – Friday	\$250 – \$500 M/yr
8. Vehicle Registration Fee (Varies with vehicle GHG emission levels; replaces existing provincial single-value fee)	\$200 – 400 M/year
9. Value Capture Levy (Provides revenue from higher property values/taxes in areas served by higher-order transit)	\$50 – 100 M/year
10. Utility Bill Levy	\$50 – 100 M/year
11. Employer Payroll Tax in Areas with Higher-Order Transit Service	\$40 – \$80 M/year
12. National Federal-Provincial Transit Strategy (Similar to Ontario's former funding formula, but based on a national federal/provincial agreement for steady, long-term funding)	\$1 – 2 B/year

Source: See Reference 1 for more details on these potential funding sources.

2. Effective communications to maintain strong RTP support and constructive public input

- Encourage ongoing public information/awareness and media coverage highlighting the transformational improvements being delivered by the RTP, including more than 1200 kilometres of new rapid transit across the region, extensive upgrading of Union Station and a Union-Pearson air-rail link. The RTP will deliver transit that will compete with cars for many trips and related technological and information improvements that will make this, arguably, the most extensive current transit improvement program in North America.
- Facilitate ongoing, two-way public consultation as the RTP is implemented to ensure that feedback from residents, workers, employers and travelers is taken into account and addressed realistically.

3. Appropriate Consideration of Proposed Plan Changes to benefit from new ideas while maintaining the RTP's integrity, implementation schedule and financial realism.

- Support relevant agencies in limiting new study times to 2-3 months, leveraging the extensive studies already completed by Metrolinx, the TTC and other agencies in the GTHA. These studies provide clear, objective data on performance and roles for each rapid transit alternative, including possible compromise alternatives.
- Help ensure that decision-makers and the public can access these comparisons, increasing awareness of trade-offs via an education program. This activity might be led by a multi-sectoral group and sequenced to enable timely input to leadership's decisions.

Questions for Discussion

1. Provincial legislation calls for Metrolinx to produce a comprehensive investment strategy by June 1, 2013. What actions can be taken to help ensure sustainable funding for the RTP, and by whom, with at least some of the new funding instruments designed to help moderate or reduce congestion levels in some corridors?
 2. How can Metrolinx, all levels of government, CivicAction, and other stakeholders foster effective communications across the region, with the goal of expanding public support for the RTP?
 3. The Big Move RTP is a comprehensive 25-year transportation plan, and it is reasonable to expect that over that period there will be refinements and changes proposed. Some changes will not impact the overall plan's goals and objectives but more significant changes could. In the short term, some changes could considerably modify the length of time and cost to realize the vision.
 - a. How much delay in delivery and increased cost of certain projects is acceptable (i.e. more than a year delay in delivery or a lower project benefit-cost ratio)?
 - b. If fixed financial commitments are already in place for certain projects, who should bear any additional costs or how could these costs be offset?
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¹ Irwin, N. & Bevan, A. (July 2010) *Time To Get Serious: Reliable Funding Sources for GTHA Transit/Transportation Infrastructure*. Prepared for CivicAction: <http://www.civicaaction.ca/drp/sites/default/files/AllianceReliableFundingPaper.pdf>

² Cappe, M. (July 2010). *Transportation: Making The Right Choice*. Prepared for CivicAction: http://www.civicaaction.ca/drp/sites/default/files/Alliance%20Transportation%20Choice%20Paper%20_FINAL%20-%202010-07-07_.pdf

³ Metrolinx. (November 2008). *The Big Move – Transforming Transportation in the Greater Toronto and Hamilton Area*. Toronto: Metrolinx: http://www.metrolinx.com/mx/Docs/big_move/TheBigMove_020109.pdf

⁴ Irwin, N. & Bevan, A. (July 2010).

⁵ Metrolinx. (November 2008).

⁶ IBI Group (December 2008). *Transit Technologies*. Prepared for Metrolinx as a background report for “The Big Move.”

⁷ *Ibid.*

⁸ Cappe, M. (July 2010).

⁹ Irwin, N. & Bevan, A. (July 2010).