STAFF REPORT
INFORMATION ONLY

TOWARDS A SUSTAINABLE TRANSPORTATION IMPLEMENTATION STRATEGY: UPDATE REPORT

Date:	May 21, 2008
To:	Planning and Growth Management Committee
From:	Chief Planner and Executive Director, City Planning Division General Manager, Transportation Services
Wards:	All
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SUMMARY

This report provides an update on the progress being made in the development of the City's Sustainable Transportation Implementation Strategy (STIS). The focus is on the reduction of greenhouse gas emissions from the City's passenger transport sector and both short-term and long term sustainable transportation initiatives and options are presented. The City's efforts are related to the current work of Metrolinx to develop a 25-year Regional Transportation Plan (RTP) for the Greater Toronto plus Hamilton (GTHA) area.

The City's greatest impact on reducing greenhouses gases from the transportation sector is through its influence on urban form and the provision of transit, cycling and pedestrian infrastructure. These measures influence travel behaviour in various ways to reduce total vehicle-kilometres travelled and carbon emission levels. However, the ambitious target of reducing greenhouse gases to 80% below their 1990 level by 2050 cannot be achieved by changes to infrastructure and urban form alone. These changes will need to be reinforced by stronger regulatory and pricing controls and assisted by innovations in vehicle technology. The City has limited control over the regulatory framework and the pace of technological innovation. In developing the STIS, the City will need to work closely with all levels of government and to be cognizant of technological changes in the vehicle manufacturing and fuels industries. The result will be to develop an on-going strategy rather than a static plan to tackle transport's carbon emissions challenge.

Financial Impact

There are no financial implications.

DECISION HISTORY

At its meeting of July 16, 17, 18 and 19, 2007 Council adopted, with amendments, the recommendations of the "Climate Change, Clean Air and Sustainable Energy Action Plan: Moving from Framework to Action" (Clause 10.3 of Executive Committee Report No. 10). Included in these recommendations is the direction that staff prepare a Sustainable Transportation Implementation Strategy (STIS) embodying both a long-term vision of a sustainable transportation system and the identification of selected short-term transportation projects that will accelerate the achievement of the City's sustainable transportation agenda. This report provides an update on the progress that has been made in developing the STIS.

ISSUE BACKGROUND

Council's adoption of the Climate Change, Clean Air and Sustainable Energy Action Plan report (June, 2007), hereafter referred to as the "Climate Change Plan", establishes the following greenhouse gas and smog emission reduction targets:

1. reduction targets for greenhouse gas emissions from the 1990 levels of approximately 22 million tonnes per year for the Toronto urban area:
   - 6% by 2012 (the "Kyoto target");
   - 30% by 2020, and
   - 80% by 2050

2. a 20% reduction target for locally generated smog causing pollutants from 2004 levels by 2012 for the Toronto urban area.

Estimates for 1990 indicate that the passenger transportation sector in the City of Toronto emitted some 6.4 million tonnes of greenhouse gases. By 2004, this figure is estimated to have increased to 8.6 million tonnes (including an estimate for truck traffic). The 2050 reduction target implies a cap of around 1.3 million tonnes of greenhouse gases from the passenger sector with a somewhat higher total figure if freight traffic is included. The figures presented above relate to "tailpipe" emissions and do not include the full "life cycle" energy consumption and emissions associated with vehicle production, maintenance and disposal.

Reducing greenhouse gas emissions from the transportation sector to around 1.3 million tonnes by 2050 is clearly a major challenge. It is a challenge made more difficult by the fact that the City is planning for continued population and employment growth which will lead to even more trips in the future. For example, the Official Plan has targets of 3 million residents and 1.83 million jobs by 2031, which represent 20% and 40% increases over 2006 population and employment levels, respectively. Comparable population and employment figures for the Greater Toronto plus Hamilton area (GTHA) reveal even higher anticipated growth levels of 44% and 41% respectively over the 2006-2031 period. Presumably, population and employment growth in the City and the surrounding region will continue beyond 2031 though, perhaps, at a slower rate as the area matures.

COMMENTS

The STIS will explore the ways in which changes in travel behaviour, urban structure and technology can work towards the achievement of the City's greenhouse gas reduction targets. Both short-term and long-term changes are being looked at.

1. Short-term Changes

At its meeting of October 22 and 23, 2007 City Council adopted, with amendments, the recommendations of the staff report titled "Sustainable Transportation Initiatives: Short-term Proposals". These proposals were summarized in a chart that is attached as Appendix 1 to this report. Appendix 2 of this report presents a table that updates the progress that has been made to date on the implementation of the short-term sustainable transportation proposals.

As noted in Appendices 1 and 2, some of the proposals extend into the mid and longer term periods. The overall aim is to move quickly to introduce a number of relatively modest measures that will collectively signal the start of a new way of looking at the City's transportation system and provide the launch for the more fundamental city-building changes that will be required to achieve a long-term sustainable transportation system for Toronto.

2. Long-term Changes

The City's Official Plan, Transit City Plan, Bike Plan and emerging Walking Strategy contain policies to encourage motorists to change their ways. These plans provide incentives for people to leave their cars at home more often by:

- emphasizing investments in transit, cycling and pedestrian facilities over expansions to the road system for cars;
- directing future development to targeted, compact, dense, mixed use growth areas that are supportive of increased transit, cycling and walking trips; and
- introducing regulatory changes and programs that support sustainable transportation choices and/or curb the use of the car.

Policies related to infrastructure, urban form and regulatory controls seek to modify travel behaviour in ways that reduce vehicle-kilometres travelled (VKT). The extent to which reductions in VKT are to be relied upon to reduce greenhouse gas emissions will be conditioned by changes in vehicle technology (more efficient engine designs, lighter vehicles and alternative types of fuels). Changes in vehicle technology and related standards are difficult to predict over a forty year period. However, there is general agreement, at this point in time, that technological advancements alone cannot solve the carbon emissions problem in the transport sector. Changes in vehicle technology are considered to be largely outside the City's hands but provincial and federal policies can be used to influence the switch to vehicles that produce less carbon emissions.

3. Modelling the Future

The University of Toronto has developed an advanced computer model system that is capable of estimating 24-hour weekday travel demand and associated tailpipe emissions for personal-use and transit vehicles for the City and the larger Greater Toronto Area. The University has been retained to assist staff in applying this model to assess the likely reduction in greenhouse gas emissions associated with various policy alternatives in order to identify which policies or combinations of policies hold the greatest promise.

One of the first tasks is to use the model to reassess the 1990 base level of greenhouse gas emissions from passenger travel to establish a consistent base from which to compare future projections. The model will be used to test the impact of policy changes over the 2006 - 2031 timeframe, using the City's population and employment forecast for this period.

Priority attention is being given to changes in:

- the transit system - upgraded and expanded services including the implementation of the Transit City network; greater transit priority on City roads, and changes to the fare structure; and
- the road network – reallocation of road capacity (from cars to transit, walk and cycle); road user charges; higher gasoline prices, and parking pricing/regulation.

A scalar or percentage factor will be applied to assess the impact on emissions of different levels of change in vehicle technology. At a later stage in the modelling work, changes in urban structure (distribution of population and employment) and neighbourhood design (more bike and walk trips, better transit access) will be factored into the model. Finally, carbon emissions from trucking activities will also need to be incorporated into the model.

The modelling work outlined above is not directly aimed at achieving a specific greenhouse gas reduction target. Rather, the results will show how various policy alternatives to reduce VKT will impact on greenhouse gas reductions. Not all these policies are directly under the City's control. For example, substantial expansions and upgrades to the transit system will require funding support from the higher levels of government and road user charges would require provincial approval and should be introduced at a regional scale.

There is also a need to assess the economic impacts of reducing greenhouse gas emissions in the urban transport sector. The benefits of achieving an environmentally sustainable transportation system are taken as given, but the economic implications of achieving these benefits, in terms of the gains and losses associated with implementing various environmental policy packages, should be assessed. It is important to understand which of the policy alternatives tested in the modelling work are the most cost effective and which economic incentives work best. For example, road-user charges work most effectively where there are relatively attractive alternative modes of travel available. For passenger travel this usually means providing good transit services. The more attractive the alternatives, the more responsive the level of auto use will be to increases in road-user charges.

Substantially reducing greenhouse gas emissions from the urban transport sector over the next forty years will likely require considerable sacrifice on society's part accompanied by strong political leadership and the support of an informed public. For example, a study of reducing greenhouse gas emissions by 80% over the 1990 to 2030 period in the Quebec-Windsor Corridor found that, for the urban passenger market, the level of passenger kilometres would to have to be reduced by around 50% while vehicle kilometres (VKT) would need to be lowered by 75% as compared to the business-as-usual scenario. This speaks to an urban future where people travel much less by car and at greater cost.

4. The Regional Context

The larger the scale at which efforts to reduce greenhouse gas emissions from the transport sector are applied, the greater are the beneficial impacts on climate change. The Province recently created the Greater Toronto Transportation Authority, now called Metrolinx, to develop a 25-year Regional Transportation Plan (RTP) for the GTHA. As the centre of the GTHA, the City of Toronto has an obvious interest in ensuring that the development of the RTP provides the foundation for the larger region to grow sustainably and to be economically competitive.

Metrolinx has produced seven background reports (or green papers), each dealing with a separate transportation topic, for public discussion. On the basis of these reports, two white papers have recently been released dealing with the vision, goals and objectives of the RTP and preliminary directions and concepts. Collectively, these reports present a progressive approach to regional transportation planning that pushes against the limits of conventional thinking. The RTP deliberately departs from taking a business-as-usual attitude, recognizing the need for "transformational" change.

Included in the objectives and indicators for the RTP, are the Province's "Go Green" targets for greenhouse gas emission reductions (6% by 2014; 15% by 2020, and 80% by 2050). The second white paper applies computer modelling methods to test the performance of three different transportation infrastructure concepts (Linear, Radial, and Web), plus a business-as-usual concept for comparison purposes. The forecast period is 2006 to 2031 and the population and employment growth forecasts (44% and 41% respectively) are taken from the Province's "Growth Plan", although the distribution of this growth varies among the test concepts. Under current trends, these levels of population and employment growth are expected to produce a 37% increase in VKT in the region over the next 25 years.

The Web concept is the most transit supportive and, in the City, includes all the elements of the Transit City Plan plus subway lines along Queen Street (linking to the Bloor-Danforth line), Eglinton Avenue (Pearson Airport to Kennedy Station) and extensions to the Sheppard Subway (to Downsview and to the Scarborough Civic Centre), as well as regional express rail corridors and an extension of the Scarborough RT line to Malvern. It is important to keep in mind that these concepts have been developed for test and comparison purposes only and do not represent transportation infrastructure plans or proposals. For the region as a whole, the Web concept is estimated to cost $90 billion over 25 years (or $3.6 billion/year) for transportation system

expansion (not including maintenance and operating subsidies). This represents an unparalleled level of long-term transportation investment at the regional scale, particularly for transit.

Other assumptions for the Web concept include:

- the incorporation of current and planned municipal road networks, plus the Province's 5-year highway capital program and the Growth Plan's proposed 407 East Corridor;
- marginal auto costs increase by 100% (2006-31) reflecting higher gas prices and/or the implementation of road pricing;
- parking charges extending to more areas in the region and generally increasing by 50% (2006-31), and
- the maintenance of transit fares at the same level as in 2006 in real terms and with better fare integration.

Not all the "directions" presented in the first part of the White paper are carried over into the computer modelling exercise. Consequently, the impacts of recommended measures such as expanded TDM programs and encouraging more active transportation (bicycling and walking) are not directly reflected in the model results.

In terms of environmental impacts, the Web concept manages to contain greenhouse gas emissions at around 2006 levels but this is far from achieving the target reduction levels. The White Paper states: "the challenge of adding 2.6 million people to our region while trying to reduce or even hold the line on emissions cannot be overestimated". The Metrolinx model relies largely on transit improvements and changes to the urban structure, along with relatively modest pricing changes that favour transit use, to generate reductions in carbon emissions. As important as these approaches are, they cannot achieve the full level of emissions reductions that is required. Other initiatives to modify travel behaviour to reduce VKT, including more stringent regulatory and pricing controls, need to be brought to bear. Also, projected innovations in vehicle technology should be taken into account. The Metrolinx Board has directed that a scenario which meets the provincial emission targets be developed and tested.

The test results for the Web concept obviously carry over to the City. The reductions in carbon emissions may be greater in the City. Employment growth in the City was assumed to be lower than in the rest of the region and transit improvements may have a larger absolute impact on reducing car use because of the City's established practice of encouraging transit-oriented development matched by a strong tradition of high transit use. In fact, it may be beneficial to direct a greater proportion of future regional population and employment growth to the City where it can be more readily accommodated in a sustainable manner: resulting increases in greenhouse gas emissions in the City would be more than off-set by reductions elsewhere in the region. It is important to maintain a regional perspective when looking at reducing carbon emissions.

5. Summation

In many ways the City is already doing what can be reasonably expected of a municipal government in terms of reducing carbon emissions from the urban transportation sector. As Appendix 2 of this report illustrates, the City is playing a lead role in introducing a number of innovative, short-term sustainable transportation initiatives such as pedestrian priority measures at signalized intersections and the promotion of car sharing. Longer term sustainable transportation objectives and implementation strategies are contained in several forward-looking policy documents including the Official Plan, Transit City Plan, Bike Plan and the emerging Walking Strategy.

The Official Plan's transportation policies are directed at reducing auto-dependency and directs development to targeted growth areas that are well-served by transit and where cycling and walking can also be promoted as alternatives to auto travel. The Official Plan contains no proposals for major road expansions. The City is currently vigorously pursuing the implementation of its infrastructure plans for improved transit, cycling and pedestrian facilities, notably:

- conducting environmental assessment studies for seven new LRT lines (Sheppard East, Etobicoke-Finch West, Don Mills Road, Eglinton-Crosstown, Jane Street, Scarborough/Malvern Extension and Kingston Road) that will significantly improve transit services in a number of suburban areas;
- Scarborough RT Extension EA;
- extending the Spadina subway line;
- accelerating the introduction of on-street bicycle lanes and off-street bicycle trails, and
- significantly improving pedestrian conditions in and around Union Station, including an extension to the underground PATH system.

Other important City initiatives related to the development of a sustainable transportation system are:

- initiating and continuing to support the Smart Commute program to deliver transportation demand management (TDM) initiatives;
- introducing a vehicle registration fee later in 2008, and
- proposing to reduce the minimum parking requirements and to introduce maximum parking limits in the new Zoning By-law for selected commercial and multi-unit residential uses in the targeted growth areas (Downtown, Central Waterfront, Centres and Avenues).

These changes to transportation infrastructure, urban form and management will reduce auto-dependency and VKT. They are very important components of an overall strategy to reduce carbon emissions and will greatly help to off-set the negative environmental impacts of future population and trip growth. As the Metrolinx test cases show, even the most ambitious transit (Web) concept only holds carbon emissions at approximately their 1990 levels. Reductions in the rate of carbon emissions are largely off-set by projected increases in vehicle trip growth.

To begin cutting carbon emissions back towards 1990 levels there will also be the need for stronger regulatory measures and advances in vehicle technology. As noted earlier, innovations in vehicle technology relate to more efficient engine designs, lighter vehicles and the use of alternative fuels and hybrids. Additional regulatory controls could include the introduction or stronger application of such measures as:

- fuel pricing/taxation;
- registration and insurance fees based on annual distance the vehicle travels;
- carbon rationing/permit/trading system;
- regional road pricing related to the carbon emissions profile of the vehicle and the number of passengers;
- more stringent Company Average Fuel Consumption (CAFC) standards, and
- more informed ecological driving practices combined with lower speed limits.

In comparison to the provincial and federal levels of government, the City has limited regulatory powers and its ability to influence technological change is also constrained. In this context, it will remain vital for the City to lead the way in those areas of sustainable transportation over which it has control and to continue encouraging the higher levels of government to take the bold measures required of them to fully meet the emission targets that have been set. Certainly, this is the role the City has played in the development of the RTP. It will be revealing to see what additional measures are contained in the Metrolinx scenario that puts the regional transportation system on a sustainable trajectory to meet the 2050 greenhouse gas emissions target.

CONTACTS

Rod McPhail
Director, Transportation Planning
Tel. No. 416-392-8100
Fax No. 416-392-3821
E-mail: rmcphail@toronto.ca

John Mende, P.Eng., Director
Transportation Infrastructure Management
Transportation Services Division
Tel: (416) 392-5348
Fax: (416) 392-4808

SIGNATURES

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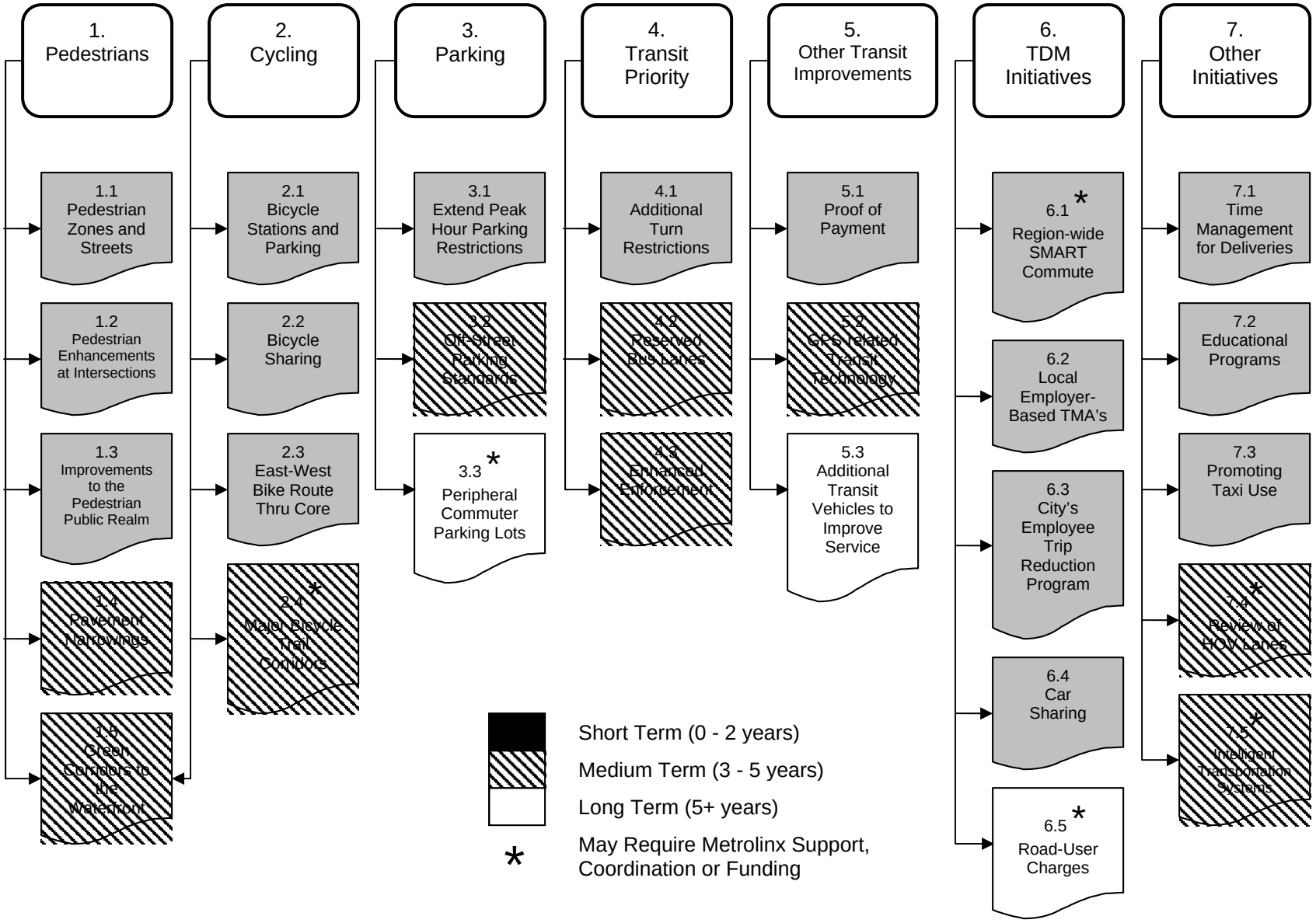
Gary Wright
Chief Planner & Executive Director
City Planning Division

Gary Welsh, P.Eng.
General Manager
Transportation Services Division

ATTACHMENTS 2

Appendix 1
Sustainable Transportation Initiatives
Summary Chart



Revised March 12, 2008

ATTACHMENT 2: Sustainable Transportation Initiatives

Initiative	Timeframe	Status
1. Pedestrians		
1.1 Pedestrian Zones and Streets	Short-term	• New criteria/process for reviewing and approving temporary closings will be developed by May. • Assessment underway for the possible permanent closing of Gould Street. Discussions ongoing with Ryerson.
1.2 Pedestrian Enhancements at Intersections	Short-term	• Increased pedestrian crossing clearance times will be installed at a rate of 40-50 intersections per year commencing this year. • Province will be requested to undertake a pilot project of the flashing "WALK" signal. • Installation of pedestrian scramble phase at Yonge/Dundas intersection is being assessed and designed. Constraints identified. • Five or six "leading pedestrian intervals" will be implemented in each District in 2008.
1.3 Improvements to the Pedestrian Public Realm	Short-term	• Ongoing review of opportunities. • Some initiatives underway, including Roncesvalles Ave, Jarvis St, Bloor St, Transit City.
1.4 Pavement Narrowings	Medium-term	• Staff have been instructed to consider opportunities as part of all reconstruction projects.
1.5 Green Corridors to the Waterfront	Medium-term	• List has been compiled identifying possible "green corridors." • List includes connections to parks and green spaces, not just to the Waterfront.
2. Cycling		
2.1 Bicycle Stations and Parking	Short-term	• Bicycle Station at Union Station (180 spaces) scheduled to open in September 2008. • Funds provided by Metrolinx for bicycle parking at transit stations.
2.2 City Bike Share Program	Short-term	• Extensive training required from Health and Safety, and Risk Management perspectives. • May not be practical and feasible.
2.3 East-West Bicycle Route Through Core	Short-tem	• Richmond/Adelaide problematic; Front-Wellington more promising. RFP will be prepared by June. • Ongoing review of Bloor-Danforth proposal (in conjunction with Bloor Transformation Project).
2.4 Major Bicycle Trail Corridors	Medium-term	• Tender for construction in the West Toronto Rail Corridor closed in March. Construction in 2008. • Tender for detailed design of CN Leaside project will be issued in 2008.
2.5 Improved Cyclist Safety at Intersections	Short-term	• Province must first approve bicycle signals. • Staff reviewing/developing guidelines and will submit request to Province for approval. • Staff will be implementing "bike boxes" in conjunction with bicycles lanes.

Initiative	Timeframe	Status
3. Parking		
3.1 Extend Peak Period Parking Restrictions	Short-term	• Review underway for implementation in 2008. • Focus is on downtown core, transit routes and roads with bicycle lanes (e.g. Queen and College Streets).
3.2 Strategy for Constructing Commuter Parking Facilities	Long-term	• City developing strategic position on commuter parking lots. • Discussions with Metrolinx and GO Transit because many of these sites are identified as "Mobility Hubs".
4. Transit		
4.1 Additional Turn Restrictions	Short-term	• Transportation staff are reviewing list of locations provided by TTC for implementation in 2008. • TTC has advised Toronto Police Services of the proposed creation of "Transit Priority Zones" with increase in fines and enforcement. • Transportation and TTC staffs are currently reviewing opportunities to improve traffic signal priority for TTC vehicles.
4.2 Reserved Bus Lanes	Medium-term	• TTC will be submitting list of locations for queue jump lanes at key intersections to be implemented in conjunction with reconstruction program. • Staff addressing legislative issues related to the provision of bus shoulder lanes on the DVP.
4.3 Enhanced Enforcement	Medium-term	• Automated enforcement requires amendment to the Highway Traffic Act. • Feasibility of both wayside and on-board cameras being reviewed. Practical problems and limitations.
5. Other Transit Improvements		
5.1 Proof of Payment	Short-term	• Ability to handle some form of proof-of-payment is a specification for all new transit vehicles purchased.
5.2 GPS-related Transit Technology	Medium-term	• TTC undertaking ongoing review of opportunities. • Bus shelters in the Street Furniture Program have been designed to incorporate GPS-related IT.
5.3 Additional Transit Vehicles to Improve Service	Long-term	• 89 of 100 recently-purchased buses will be put into service in the Fall 2008 as part of the Ridership Growth Strategy to provide better service for TTC customers (the other 11 are reserved as "maintenance spares").

Initiative	Timeframe	Status
6. TDM Initiatives		
6.1 Region-wide SMART Commute	Short-term	• Funding arrangements have been completed with Metrolinx.
6.2 Local Employer-based TMA's	Short-term	• A "Downtown SMART Commute" association is being established.
6.3 City's Employee Trip Reduction Program	Short-term	• Discussions underway with Corporate HR Staff to establish a policy on "teleworking".
6.4 Car Sharing	Short-term	• Staff have met with Legal staff to discuss legal implications of reserving on-street parking for car-share companies. • No legal obstacles identified. • Further research into best practices, charges, etc. • Report on findings will be submitted in Fall 2008.
6.5 Road-User Charges	Long-term	• Metrolinx requested, as part of the RTP, to include road pricing as a policy to reduce road congestion.
7. Other Initiatives		
7.1 Time Management for Deliveries	Short-term	• Staff meeting regularly with industry representatives, parking enforcement and other stakeholders to identify opportunities and constraints related to local distribution issues. • May be able to coordinate these discussions with Metrolinx's initiatives related to Goods Movement.
7.2 Educational Programs	Short-term	• A communication plan is being developed in conjunction with these initiatives. • Press releases/conferences are being considered for key initiatives (e.g. Union Station bikestation and pedestrian scramble phases). • Additional education programs will be considered, if necessary (likely web-based).
7.3 Promoting Taxi Use	Short-term	• Staff consult with a "taxi advisory board" to consider opportunities to accommodate/improve taxi service. • Meeting also arranged with major fleet owners.
7.4 Review of HOV Lanes	Medium-term	• City has requested Metrolinx to examine HOV issues and policies on a GTHA-wide basis. • In the meantime, staff are reviewing the City's network of HOV facilities and regulations.
7.5 Intelligent Transportation Systems	Medium-term	• A GTAH Steering Group has been established to look at ITS issues, including traveler information systems. • The City will also be entering into an agreement with Transport Canada to study these initiatives further.