



STAFF REPORT ACTION REQUIRED

Downtown Transportation Operations Study – Final Report

Date:	October 29, 2013
To:	Public Works and Infrastructure Committee
From:	General Manager, Transportation Services
Wards:	Trinity-Spadina, Ward 20; Toronto Centre-Rosedale, Wards 27 and 28
Reference Number:	P:\2013\Cluster B\TRA\TMC\PW13008.tmc.docx

SUMMARY

The purpose of this report is provide an update to the March 21, 2013 staff report to the Public Works and Infrastructure Committee “Downtown Transportation Operations Study – Interim Progress Report”, to present the study findings and recommendations for the Downtown Transportation Operations Study (DTOS), and to request City Council's endorsement of the implementation plan.

The DTOS is bounded by: Lake Shore Boulevard/Harbour Street, to the south; Queen Street East/West, to the north; Jarvis Street, to the east; and Bathurst Street, to the west. However, a number of the recommended implementations can be of benefit outside the study area.

It is expected that by implementing the recommendations and initiating the proposed projects that traffic operations will improve and congestion will be better managed in the downtown area.

RECOMMENDATIONS

The General Manager of Transportation Services recommends that:

1. City Council endorse the Downtown Transportation Operations Study implementation plan; and
2. City Council approve the amendments to traffic and parking regulations outlined in Attachments 3 and 4.

Financial Impact

The estimated costs associated with the implementation of the Downtown Transportation Operations Study identified within this report are \$2.755 million. This consists of operating costs of \$0.930 million in 2014 and \$0.625 million in 2015, that are available within Transportation Services approved base budget; and additional capital costs of \$0.150 million in 2014 and \$1.050 million in 2015 that will be included in the 2014 – 2023 Recommended Capital Budget and Plan for Transportation Services, for consideration as part of the 2014 Budget process.

Revenue losses are also anticipated arising from a reduction in metered parking revenue. The Toronto Parking Authority (TPA) will incur a maximum potential revenue loss estimated at \$0.870 million per year. The 2014 Recommended Operating Budget for the TPA includes revenue changes for on-street parking consistent with this anticipated revenue loss. In addition to the reduction in metered parking revenue, the TPA will incur one-time capital costs to implement the new metered parking hours estimated at \$0.030 million.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

City Council, at its meeting of July 12, 13 and 14, 2011, in considering Item PW5.1 – "Bikeway Network, 2011 Update", among other things, directed staff to report to the September 2011 meeting of Public Works and Infrastructure Committee (PW&I) on a Terms of Reference for an overall transportation operations study in the downtown area.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.PW5.1>

Public Works and Infrastructure Committee, at its meeting of August 30, 2011, recommended to City Council that the Terms of Reference for an overall transportation operations study in the downtown area be approved.

<http://www.toronto.ca/legdocs/mmis/2011/pw/bgrd/backgroundfile-40078.pdf>

City Council, at its meeting of September 21 and 22, 2011, adopted the report (Works Committee Report PW7.9) dated August 30, 2011 entitled, "Downtown Transportation Operations Study – Terms of Reference" and the associated recommendations, with amendments.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.PW7.9>

The Public Works and Infrastructure Committee, at its meeting of April 10, 2013 received the report (PW22.8) entitled "Downtown Transportation Operations Study – Interim Progress Report".

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.PW22.8>

City Council, at its meeting of October 8, 9, 10 and 11, 2013, adopted with amendment the motion (Member Motion MM39.16) by Councillor Karen Stintz, seconded by Councillor John Parker entitled, “Maintaining Traffic Flow in the Downtown Area”.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.MM39.16>

ISSUE BACKGROUND

Transportation Services staff have completed the Downtown Transportation Operations Study (DTOS). The purpose of the study is to identify and address congestion and traffic operations issues in downtown Toronto, and develop a process to assess the numerous transportation initiatives currently underway. This process will highlight the measures that will provide safe and effective transportation in the downtown.

The approved study area (see Attachment 1 – Study Area Map) for the DTOS generally consists of Lake Shore Boulevard/Harbour Street to the south, Bathurst Street to the west, Queen Street East/West to the north and Jarvis Street to the east.

COMMENTS

This report identifies measures that can be implemented in the next two years to optimize the use and capacity of the existing infrastructure, and outlines future tasks to be completed to improve traffic conditions and manage congestion.

Existing Conditions Assessment

The objective of the existing conditions assessment is to analyse the existing transportation operations and the level of congestion in downtown Toronto within the proposed study area.

The existing conditions assessment scope includes the following tasks:

- a) Defining what is considered to be a transportation operations “problem”;
- b) Identifying where and why problems regularly occur;
- c) Developing qualitative and quantitative measures of each problem; and
- d) Determining what would be considered as a success in addressing each problem.

Problem Definition and Identification

As development intensifies, traffic volumes increase, and travel patterns evolve, travel to, from, and within the downtown becomes more challenging. One of the more obvious symptoms of these changes is congestion. Congestion is a collective term used to describe the increasing level of conflict, friction, and delay experienced by all road users (i.e., pedestrians, cyclists, transit riders, and motorist). Addressing congestion-causing issues is the primary focus of this study.

Within the context of the DTOS, the study team has identified eight leading causes of congestion in the study area. These are described in Table No. 1 below.

The eight causes of congestion described below were used to form the framework for problem identification, and the degree to which operational issues contribute to the subject causes of congestion. Issues which were previously identified through discussions with City staff have also been linked back to the causes, including the 13 problem locations and issues that were identified in the study terms of reference. This was used as the starting point for the assessment of existing conditions.

Table No. 1: Leading Causes of Congestion

No.	Cause	Description Detail
1	F.G. Gardiner Expressway capacity constraints	Queuing and excessive delays on access routes to the Gardiner, especially on Spadina Ave., but also on Bay St. and Jarvis St. The queuing also results in intersection blockages for east-west traffic.
2	Illegal lane and road occupancies	Creation of “bottlenecks” from lane occupancies as a result of illegal parking and loading/unloading activity, and maintenance/construction activities without a permit.
3	Legal lane and road occupancies (permits, by-laws)	Creation of “bottlenecks” from lane occupancies for parking, loading/unloading activity, hoarding for building construction, maintenance activities, etc.
4	Sub-optimal traffic signal timings	Inefficient use of available capacity due to a lack of signal coordination and out-of-date signal timings.
5	Transit/Vehicle Mix with Competition for Space and Time	Passenger loading/unloading times, location of transit stops, and integrating transit signal priority into signal operations.
6	Intersection operations	Delays due to left-turns from a shared lane, intersection blockages, and vehicle-pedestrian conflicts.
7	Road operations	Lane configurations which may not provide optimal operations.
8	Non-recurring and special events	Reduced road space availability, disruptions, and special traffic patterns caused by: <ul style="list-style-type: none"> - Collisions and breakdowns; - Road and lane closures to accommodate special events and festivals; - Sporting and cultural activities.

In order to expand upon the understanding of problem locations and issues, an inventory of transportation operations data was compiled, and stakeholder consultations were conducted.

The following sections present the data inventory and analysis, and summarize the findings of the consultations that have been conducted to date.

Data Collection and Analysis

The study team collected data to build an understanding of the existing transportation operations within the study area. A high-level summary of the data collected and how the data were used is presented below:

Network Data – Information about the existing transportation network was compiled from various City and external sources, and overlaid onto maps of the study area. The maps contain various layers displaying information such as approximate link volumes, road classifications, and traffic signal control types.

Cordon Counts – Cordon count data from around the Greater Toronto Area (GTA) was used to determine the inbound and outbound traffic patterns for the City of Toronto downtown cordon between 2001 and 2011.

Traffic Investigations – City of Toronto traffic investigations data for completed service requests across the three (3) study area wards for the 2011 and 2012 calendar years were reviewed to provide insight into the most commonly reported types of transportation issues.

By-laws – City of Toronto by-law data detailing locations of No Standing, No Parking, and No Stopping zones, and turning movement prohibitions within the study area. There are currently over 400 such prohibitions, which impact surface transportation.

Policies/Practices Governing Road Occupancies and Curbside Activities – City of Toronto guidelines that govern road occupancy and curbside activity practices.

The data and counts demonstrated that the peak period volumes are still growing; however, the major volume growth occurs during the peak period shoulders. The morning and afternoon peak periods have typically been considered to be between two and three hours long. However, a comparison of 2001 to 2011 traffic volumes demonstrates that peak period shoulders have increased by 30 minutes to one hour in both the morning and afternoon peak periods, leading to peak periods which are now three to four hours long.

Consultation

To obtain the input of relevant stakeholders and the general public, IBI Group, in consultation with City staff, developed a consultation plan. This consultation plan consists of stakeholder interviews, a drop-in centre, and online consultation.

Stakeholder Interviews

For the purposes of this study, a stakeholder is defined as an entity whose operations are directly influenced by transportation within the downtown core, such as a resident or an employee in the area.

Stakeholders were interviewed with the following three objectives: inform them about the study and what it entails, determine what they believe are “hot spot” issues and determine what a successful study means to them.

Based on the interview findings, the most commonly raised "cause of congestion" categories was Legal Lane and Road Occupancies, and Road Operations. The Sub-Optimal Traffic Signal Timings, and Non-Recurring and Special Events were the least commonly raised issues.

The following list provides common themes and issues raised throughout the stakeholder interviews:

- a) Study area should be extended; some solutions required implementation at a region-wide level.
- b) All modes of travel should be considered (motor vehicles, pedestrians, transit, cycling, coach buses, etc.).
- c) Major issues identified include: Gardiner on-ramp spillback, King/Queen intersection blockages, Bay Street Clearway, Yonge/Dundas pedestrian scramble, prohibition violations and curb side operations.
- d) Increased traffic violation enforcement through additional resources and clear enforcement route recommendations supported.
- e) Mixed views regarding one-way streets.
- f) Several stakeholders supported the Complete Streets idea; all modes of travel are served but not on every street. Streets are allocated to specific modes for example: King St./Queen St. serves pedestrians and transit while Adelaide St./Richmond St. serves vehicles.
- g) Transit Signal Priority supported however successful implementation is a challenge.
- h) No stopping, standing, parking and turning movement prohibitions create a conflict with transportations service providers such as coaches and taxis. These prohibitions attempt to increase traffic flows however they make providing high levels of service for transportation service providers more difficult.

Drop-In Centre

The drop-in centre took place on Wednesday, March 27th, 2013, in the Metro Hall Rotunda. The purpose of the event was to introduce the DTOS to the public, allow the public to identify transportation-related issues within the study area, answer questions about the study and the types of actions that may result from its undertaking, as well as solicit what success means to them. The drop-in centre also served to launch the online component of the public consultation. A media release was conducted prior to the commencement of the drop-in centre to advise the public of the drop-in centre and to broadcast the study initiative.

Online Consultation

A controlled online public survey was launched with the drop-in center on March 27th, 2013. The purpose of the survey was to provide the public with an additional opportunity to the drop-in-center to voice their concerns regarding transportation issues within the downtown core.

The online consultation was conducted in two streams: 1) a web-based survey that focuses on downtown travel behaviours and transportation issues on a high level; and 2) a map-based tool that allows users to identify specific transportation issues, categorized according to the eight (8) leading causes of congestion, by location.

The survey consisted of eight (8) questions comprised of a combination of multiple choice and ranking. No personal information was collected through the survey, with the exception of whether respondents live/work within or outside of the study area. The goal of presenting the survey in this format was to broaden the reach of the public consultation, and to engage downtown residents, as well as those who live outside of the study area, but travel downtown regularly.

In total, over 3300 surveys were completed online. The following table summarizes the key concerns and associated “hot spots” that were identified through the online survey.

Issue	Hot Spots
1. F.G. Gardiner Capacity Constraints	<ul style="list-style-type: none"> • Westbound off ramp at Bathurst St; • Southbound Spadina Ave on ramp; • Southbound York St on ramp; and • Eastbound off ramp at York St.
2. Illegal Lane and Road Occupancy	<ul style="list-style-type: none"> • Lower Simcoe St • Yonge St and Dundas St intersection (west leg mostly); • King St between John St and Simcoe St; • Adelaide St between Sheppard St and Yonge St; and • Bay St and Yonge St between Dundas St and Queen St.
3. Legal Lane and Road Occupancy	<ul style="list-style-type: none"> • Queen St between Bathurst St and Jarvis St; • King St between Bathurst St and Jarvis St; and • Spadina Ave between Adelaide St and Front St.
4. Inefficient Traffic Signal Timings	<ul style="list-style-type: none"> • University intersections with King St and Queen St; • Spadina Ave intersections between Front St and Lake Shore Blvd; and • Richmond St and Jarvis St intersection.
5. Transit/Vehicle Mix with Competition for Space and Time	<ul style="list-style-type: none"> • Queen St between Bathurst St and Jarvis St; • King St between Bathurst St and Jarvis St; and • Bathurst St, Lake Shore Blvd, Fleet Intersection.
6. Intersection Operations	<ul style="list-style-type: none"> • Yonge St and Dundas St intersection; and • Entertainment District intersections.
7. Road Operations	<ul style="list-style-type: none"> • Richmond St between Bathurst St and University St; and • Adelaide St between Bathurst St and University St.
8. Non-Recurring and Special Events	<ul style="list-style-type: none"> • Streets immediately adjacent to Air Canada Centre.

Evaluation Framework

The DTOS process generated an extensive list of current projects, proposed projects, related projects, discontinued projects, and ideas to be considered in the development of a strategy. Furthermore, new projects and ideas continued to be developed throughout the study. This necessitated the development of a detailed, balanced evaluation framework.

A three stage approach was developed to clearly define the potential project, and then use the preliminary assessment to perform a screening exercise. Then, if worthy of further evaluation, the project was more thoroughly developed and assessed using a more detailed evaluation process.

First Stage

The first stage required a project name, a proponent or trigger, the objectives, a geographical area, the timeframe, the scope, and the key measures of effectiveness.

Second Stage

The Preliminary (Qualitative) Assessment identified any relevant City policies, the impacted stakeholders, the impact to the causes of congestion, and the types of strategies required: Legislation, Enforcement, Engineering, ITS Technology, and Education, along with potential related projects. If the potential project passed the Preliminary Assessment, then it progressed to the third stage.

Third Stage

Under the Third Stage, the potential project underwent a detailed (quantitative and qualitative) assessment, for each of the types of strategies: legislation, enforcement, engineering, ITS technology, and education. This included collection of field data, review of related reports, and additional contact with key stakeholders.

Potential Projects

The DTOS process initially generated about 50 candidate projects. Through the application of the Evaluation Methodology, a more manageable and cohesive set of projects was developed.

Following a detailed evaluation of all projects, a list of 17 potential projects were identified for potential implementation which are presented in more detail in Attachment 2. While all of the projects are somewhat interrelated they fall under four general themes as listed below:

- Coordination and Communication
- Traffic Regulations and Management
- Traffic Circulation
- Intelligent Transportation Systems

Coordination and Communication

Project 1: Downtown Transportation Operations Implementation Team

The team will consist of senior representatives from Transportation Service, Toronto Police Service, City Legal, Toronto Parking Authority. The team will develop, coordinate and prioritize initiatives to improve traffic operations in the downtown core.

Project 2: Road User Behaviour Education Campaigns

Campaigns will be developed to educate road users on road safety, appropriate road behaviour and general road user behaviour.

Project 3: Transportation Assistance Personnel (TAP)

Establish a program for the deployment of TAP to improve intersection operation by assisting and providing guidance on traffic operations. For example, TAP could be deployed to reduce the frequency of intersection blockage.

Traffic Regulation and Management

Project 4: Adjusted Hours of Peak Period Parking and Turn Restrictions

Implement adjusted parking regulations and turn restrictions to reflect extended peak periods on Queen Street and King Street in the initial deployment. This will reduce the number of hours for metered parking; therefore, the Toronto Parking Authority will incur a maximum potential revenue loss estimated at \$0.870 million per year. In addition to the reduction in metered parking revenue, the TPA will incur one-time capital costs to implement the new metered parking hours estimated at \$0.030 million.

Project 5: Intensified On-street Stopping, Standing and Parking Enforcement

Develop and implement a targeted enforcement plan to reduce curb lane blockages to improve traffic flow by working with Toronto Police Services/Toronto Parking Enforcement.

Project 6: Enhanced Parking Infractions Management

Reduce curb lane blockages to improve traffic flow by implementing a "Fixed Fine" system and by applying "Rush Hour Offences" fine levels for illegal parking offences.

Project 7: Courier Management

Implement dedicated Courier Delivery Zones in 13 areas during off-peak hours as a pilot project to encourage couriers to provide service to downtown businesses without impacting the road network.

Project 8: Enhanced Disruption Management

Develop and implement tools to better manage the impacts of street occupancy in the immediate vicinity of road/lane closures, and on the surrounding area.

Project 9: Special Events Transportation Management

Develop a Special Events Transportation Plan process tailored towards maximizing the road network's ability to accommodate and manage the increased traffic volumes associated with special events in the downtown area.

Traffic Circulation

Project 10: Yonge and Dundas Area Traffic Operations Improvement

Implement courier and delivery vehicles load zones, "hail spots" for taxi drop-off and pick-up as well as increasing enforcement of peak period parking regulations that will help to mitigate the congestion along this section of Dundas Street.

Project 11: Bay Street Clearway

Implement right turn prohibitions at Bay Street and King Street and Wellington Street that will improve traffic flow along Bay Street and will reduce vehicle–pedestrian conflicts associated with right turns along this heavily used transit and pedestrian corridor.

Project 12: Wellington Street and Simcoe Street Redesign and Two-Way Conversion

Convert Wellington Street (Peter Street to Yonge Street) and Simcoe Street (Front Street to Wellington Street) from one-way streets to two-way streets to provide for improved traffic circulation. The benefits associated with this implementation will further be realized when the impending road design changes to Front Street, west of York Street are implemented.

Project 13: Gardiner Expressway Lane Modifications

Consider implementing westbound lane modifications on the Gardiner Expressway that would potentially improve the flow of traffic entering the expressway thereby by reducing congestion in the downtown core that is created due to "spillback" from the Gardiner Expressway on-ramps.

Intelligent Transportation Systems

Project 14: Traffic Cameras

Install 15 traffic cameras to monitor congestion "hot spots" as well as construction sites. The use of traffic cameras to monitor for incidents, chronic illegal stopping/parking activity or delinquent contractors will provide for the opportunity to dispatch enforcement or to make adjustments to traffic signal timings in order to mitigate the disruption in a timely manner.

Project 15: Transit Signal Priority Strategy

Implement a revised Transit Signal Priority strategy at a number of key locations in the downtown area. The new strategy will consider serving TTC patrons when the traffic signal is red as opposed to serving when the traffic signal is red or green. Implementing this change is expected to continue to provide transit priority, while reducing driver frustration and reducing the possible conflict between vehicles and pedestrians boarding and alighting streetcars.

Project 16: Richmond Street Traffic Signal Strategy

Implement technology that will detect congestion on Richmond Street. Once excessive congestion is detected along Richmond Street, traffic control signals along the corridor will

implement specific signal timing plans to mitigate congestion by spreading out the traffic queue evenly along Richmond Street.

Project 17: Entertainment District Traffic Signal Strategy

Implement specific traffic signal timing plans based on the Entertainment District's particular time of day, day of week transportation characteristics. Presently, traffic signal timings in this area are based the traditional morning, afternoon and of peak periods from Monday to Friday. However, as this area does not have typical traffic patterns, specific signal timing plans are required for various times of the day for all days of the week.

A number of projects require by-law amendments. The by-laws associated with all projects, with the exception of Courier Management, and Wellington Street and Simcoe Street Redesign and Two-Way Conversion are not delegated, and therefore must proceed through the Public Works and Infrastructure Committee. City Council will need to rescind the by-laws listed in Attachment 3, and enable the by-laws listed in Attachment 4. The projects with delegated by-laws will be processed through the Toronto and East York Community Council (TEYCC).

In addition to improving conditions for general vehicular traffic, the projects also provide safety and operational benefits to pedestrians, cyclists, local residents as well as businesses.

Status of Initiated Operational Enhancements

The Interim Progress Report identified a number of Near Term Operational Enhancements in the area of the downtown core. The following is a summary of the status of those initiatives, which were identified for implementation within a few months of the March 2013 PWIC meeting.

Signs and Pavement Marking Program

This involved the replacement of worn signs and refresh of pavement markings within the study area, including the installation of new Zebra markings at certain intersections. To date, a total of 200 signs were upgraded/replaced with new signs. Furthermore, a total of approximately 9,000 linear metres of lane markings and various other pavement marking features were installed, including 41 new intersections which were marked with Zebra crossing markings.

Street Occupancy Review Blitz

This involved the creation of a task force to review of all existing street occupancies within the study area, to confirm appropriate compliance with permit conditions, traffic control and duration of occupancy. The outcome of the blitz between April and September, 2013, resulted in a total of 64 construction related charges being laid by Transportation and Police Services enforcement staff.

On-Street Stopping/Standing/Parking Enforcement Blitz

Similar to the Street Occupancy Review Blitz, this involved the creation of a small task force to perform an enforcement blitz of on-street stopping/standing and parking violations within the

downtown core area. Specific attention was given to main arterial rush hour routes, and also to street occupancy/work zones. Between April and September 2013, a total of 780 charges were laid by Transportation and Police Services staff.

Benefits

It is expected by implementing these projects there will be improvements to traffic operations and in managing congestion in the downtown core. In addition, the table below identifies the positive impacts these projects will have on the various users in the area.

Project Title	Positive Impacts					
	Business	Residents	Transit	Cyclists	Pedestrians	General Traffic
1. Downtown Transportation Operations Project Implementation Team	✓	✓	✓	✓	✓	✓
2. Road User Behaviour Education Campaigns	✓	✓	✓	✓	✓	✓
3. Transportation Assistance Personnel (TAP) Program			✓	✓	✓	✓
4. Adjusted Hours of Peak Period Parking and Turning Restrictions			✓	✓		✓
5. Intensified On Street Stopping, Standing and Parking Enforcement			✓	✓		✓
6. Enhanced Parking Infractions Management				✓		✓
7. Courier Management	✓		✓			✓
8. Enhanced Disruption Management	✓	✓	✓	✓	✓	✓
9. Special Events Transportation Management	✓	✓		✓	✓	✓
10. Yonge and Dundas Area Traffic Operations Improvement			✓		✓	✓
11. Bay Street Clearway Transit Operations Improvements			✓	✓	✓	✓
12. Wellington St and Simcoe St Redesign and Two-Way Conversion						✓
13. Gardiner Expressway Lane Modifications						✓
14. Downtown Arterial Road Traffic Cameras			✓	✓		✓
15. Transit Priority Strategy			✓	✓	✓	✓
16. Richmond St Congestion Management Traffic Signal Strategy						✓
17. Entertainment District Area Operations Traffic Signal Strategy	✓	✓		✓	✓	✓

Proposed Schedule

The deployment schedule was developed to implement all of the projects within two years. The Proposed Project Schedule is shown in Attachment 6 and will be presented to the Downtown Operations Implementation Team for prioritization and coordination.

Staffing Implications

The DTOS Deployment Plan identifies 17 projects identified to be implemented within two years of budget approval. A number of the projects can be completed within the current staff complement, however, the Intelligent Transportation Systems projects will require additional staff to plan, design and implement. These additional staff been identified in the City of Toronto Congestion Management Plan 2014-2018 and will be included in the 2014 Operating Budget Submission.

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SIGNATURE

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ATTACHMENTS

Attachment 1 – Study Area Map
Attachment 2 – Project Descriptions
Attachment 3 – By-laws to be rescinded
Attachment 4 – By-laws to be enacted
Attachment 5 – Proposed Project Schedule
Attachment 6 – Costs