



STAFF REPORT ACTION REQUIRED

Eglinton Avenue East – High Occupancy Vehicle (HOV) Lanes

Date:	May 30, 2014
To:	Public Works and Infrastructure Committee
From:	General Manager, Transportation Services
Wards:	Ward 25 (Don Valley West) Ward 36 (Scarborough Southwest) Ward 26 (Don Valley West) Ward 37 (Scarborough Centre) Ward 34 (Don Valley East) Ward 38 (Scarborough Centre) Ward 35 (Scarborough Southwest)
Reference Number:	P:\2014\ClusterB\TRA\TIM\pw14017tim.docx

SUMMARY

The City has a limited network of High Occupancy Vehicle (HOV) lanes which are lanes on arterial roads that are restricted during peak periods for use by buses, taxis and, in some cases, vehicles with three or more (HOV3+) occupants. The purpose of HOV lanes is to make transit service and travel in multi-occupant vehicles faster, more attractive, and more reliable than operating in general traffic.

There are currently HOV lanes on Eglinton Avenue East from Leslie Street to Cedar Drive (east of Markham Road) which are provided, in part, to improve the service and reliability of the TTC buses operating along this route. These HOV lanes will not be required for TTC bus service in the future on the sections of Eglinton Avenue East adjacent to the Eglinton Crosstown LRT. Therefore, the HOV lanes will be removed between Leslie Street and Kennedy Road (the easterly limit of the LRT) during construction of the LRT to minimize the impact of this construction activity on traffic operations and service in this corridor.

The General Manager of Transportation Services was requested to assess the impacts of removing the HOV lanes along this section Eglinton Avenue East under its current configuration, prior to the commencement of the LRT construction. As a result of this assessment, this report recommends the retention of the HOV lanes until the commencement of LRT construction but that, prior to their removal, the restrictions to the use of these lanes be converted from HOV3+ to HOV2+. This regulatory change is expected to improve traffic conditions along Eglinton Avenue East, while maintaining some level of priority for transit vehicles and HOV's.

RECOMMENDATIONS

The General Manager, Transportation Services recommends that:

1. City Council approve an amendment to Toronto Municipal Code Chapter 950, Traffic and Parking, to include a definition of a High Occupancy Vehicle carrying two or more people (HOV2+) and to allow for HOV2+ operation on Eglinton Avenue East, between Leslie Street and Cedar Drive, as contained in Appendix 3 of this report.
2. City Council request the General Manager, Transportation Services, to monitor the operations and impacts of the regulatory change to the HOV lanes on Eglinton Avenue East, between Leslie Street and Cedar Drive, and report back to the Public Works and Infrastructure Committee in 2015 on the findings, as well as a citywide strategy on the HOV network, operations and regulations.
3. City Council approve the removal of the HOV2+ lanes on Eglinton Avenue East, between Leslie Street and Kennedy Road (the easterly limit of the LRT), and their replacement with general purpose lanes, in conjunction with the commencement of construction of the Eglinton Crosstown LRT along this section of Eglinton Avenue.

Financial Impact

The alteration of the HOV signage along the Eglinton Avenue East corridor by affixing overlay labels on each sign to indicate revised permitted operating condition to '2 or more persons' will cost approximately \$20,000. These funds are available in Transportation Services' Capital Budget in account CTP713-27 (Signs and Markings Asset Management).

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

DECISION HISTORY

The Public Works and Infrastructure Committee at its meeting on September 20, 2013, in considering a letter dated August 6, 2013 from the Councillor, Ward 35 (Scarborough Southwest), requested the General Manager, Transportation Services to review the impact of the removal of the High Occupancy Vehicle lanes along Eglinton Avenue East and report back to the Public Works and Infrastructure Committee.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.PW25.13>

COMMENTS

Existing Conditions

The Eglinton Avenue East High Occupancy Vehicle (HOV) lanes operate curbside, one in each direction between Leslie Street and Cedar Drive (22.6 lane-kms total), as shown in Appendix 1. These lanes connect directly with the 27.2 lane-kms of the Don Mills Road - Overlea Boulevard - Pape Avenue HOV lanes and together comprise a substantial portion of the City's 58 lane-kms of HOV lanes. This section of Eglinton Avenue East has a six-lane cross-section that carries mixed traffic, including TTC buses, of 30,000 to 60,000 vehicles per day with the highest volumes at the Don Valley Parkway and the lowest volumes at the eastern limits at Cedar Drive.

The HOV lanes on Eglinton Avenue East are restricted to use by public transit vehicles, taxicabs, motorcycles, bicycles and all other vehicles carrying three or more occupants. The HOV lanes are in effect Monday to Friday (except Public Holidays) during the morning and afternoon peak periods (i.e., 7:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:00 p.m., respectively). During these periods, non-HOV traffic is permitted to operate within the HOV lanes within 45 metres of an intersection or driveway for the purpose of accessing or egressing these intersecting roads/driveways.

With the construction of the Eglinton Crosstown Light Rail Transit (LRT) currently scheduled to start in 2016/17, the adjacent HOV lanes between Leslie Street and Kennedy Road (the easterly limit of the LRT) will be removed as recommended in the Eglinton Crosstown EA report. East of Kennedy Road to Cedar Drive, it is proposed that the HOV lanes remain in place to facilitate TTC bus service using this section of Eglinton Avenue to connect with the Kennedy Road LRT station.

Review of Current HOV Corridor Operation

Vehicle Occupancy Survey

A survey was undertaken on Eglinton Avenue East, between Bermondsey Road and Swift Drive, to determine the traffic volumes, the types of vehicles and the number of occupants in each of the travel lanes – one HOV lane and two general purpose lanes (GPL) in each direction. The survey was conducted in the peak direction of travel during each of the peak periods: in the westbound direction during the 7:00 a.m. to 10:00 a.m. period and in the eastbound direction during the 3:00 p.m. to 7:00 p.m. period. As illustrated in Table 1, there is a very low level of compliance with the HOV lane regulation – only 23% in the AM peak period and 19 % in the PM peak period.

TABLE 1
Vehicle Occupancy Survey
Summary Results of HOV Lane Compliance
(Eglinton Avenue East, West of Bermondsey Road)

Direction of Travel and Time Period	Total Volume (# of vehicles)	Compliance with Current HOV Lane Regulation
Westbound AM 7 a.m. to 10 a.m.	6,000	23% ^{1.}
Eastbound PM 3 p.m. to 7 p.m.	8,000	19%

- ^{1.} This means that 23% of all vehicles in the HOV lane were TTC vehicles, taxis, motorcycles, or HOV3+ that are permitted to use this lane during this period.

Passenger Vehicle Travel Time Survey

Over a two-day period in November 2013, a passenger vehicle travel time survey was conducted along Eglinton Avenue East between Victoria Park Avenue and Brimley Road (4.6 km) in both the HOV and GPL lanes during both the a.m. and p.m. peak periods and in each direction of travel. The results are summarized in Table 2 below.

TABLE 2
Passenger Vehicle Travel Time Survey Summary Results
(Eglinton Avenue East - Victoria Park Avenue to Brimley Road)

Lane	Average Travel Time (min:sec)	Average Speed (km/hr)	Average No. of Stops	Average Stopped Delay (min:sec)
AM Peak Period (7 a.m. to 10 a.m.)				
E/B HOV	7:58	43	6	2:20
E/B GPL	9:20	38	6	3:13
W/B HOV	8:13	42	5	2:57
W/B GPL	10:04	37	7	3:37
PM Peak Period (3 p.m. to 7 p.m.)				
E/B HOV	8:51	39	5	2:37
E/B GPL	11:33	33	8	4:44
W/B HOV	10:51	32	9	* 5:32
W/B GPL	11:14	32	8	4:47

* Above average stop delay attributed to heavy vehicle movement in and out of driveways from a number of large plazas on the north side of Eglinton Ave E.

In each instance of time and direction, the HOV lanes performed more favourably (i.e., lower average travel time) than the GPLs. Overall, the travel time saving experienced in the HOV lanes over the GPLs was significant, and despite the low compliance rate findings shown in Table 1 above, the HOV lanes still provided time savings for all users in this lane, including public transit. Therefore, in order to maintain an improved level of service for public transit vehicles and HOV's (when compared to general traffic) it is recommended that the existing HOV lanes not be removed between Leslie Street and Cedar Drive, but maintained in some form until the commencement of construction of the Eglinton Crosstown LRT surface work currently scheduled for 2016/17.

Improving Corridor Traffic Operations

The surveys indicate that only 6% of all vehicles on this section of Eglinton Avenue East are permitted to use the HOV lane. Given this low percentage, it is recommended that the current HOV designation be amended to allow vehicles with two or more occupants (i.e., HOV2+ instead of the current HOV3+). This would improve conditions for a greater proportion of motorists travelling along the corridor but still provide some level of improved service for TTC vehicles.

With this proposed HOV2+ regulation, it is expected that the vehicle throughput in the HOV lane for the AM peak period would increase by 8.8% and increase marginally in the PM peak period. In addition, it is expected that there will be gains of approximately 8% in total person throughput in the corridor in both the AM and PM peak periods. Details of these results are provided in Appendix 2. Travel times in the HOV lane will also increase as a result of the increased volumes. The extent of this increase, and the impact on TTC bus service, will be determined as part of the monitoring and assessment of the impacts of these changes.

Based on the survey of traffic volumes and vehicle occupancy, it is anticipated that under a HOV2+ operating condition compliance would increase to 56% and 69% in the westbound and eastbound directions, respectively, as illustrated in Table 3 below.

TABLE 3
Comparison of HOV Lane Vehicle Compliance
Existing HOV Regulation vs. Proposed HOV2+ Scenario

Direction of Travel and Time Period	Total Volume (# of vehicles)	Existing HOV Regulation	Proposed HOV2+ Scenario
Westbound AM 7 a.m. to 10 a.m.	6,000	23%	56%
Eastbound PM 3 p.m. to 7 p.m.	8,000	19%	69%

Changes Required to Implement HOV2+

Implementing HOV2+ will require amendments to Toronto Municipal Code Chapter 950 (Traffic and Parking). Details outlining the recommended changes are contained in Appendix 3 of this report.

With the change to HOV2+, it is recommended that staff monitor and assess the impacts and report back to the Public Works and Infrastructure Committee in 2015 on the findings as well as a citywide strategy on the existing HOV network, operations and regulations. Staff will continue to work closely with TTC staff to monitor the specific impact on TTC service and operations.

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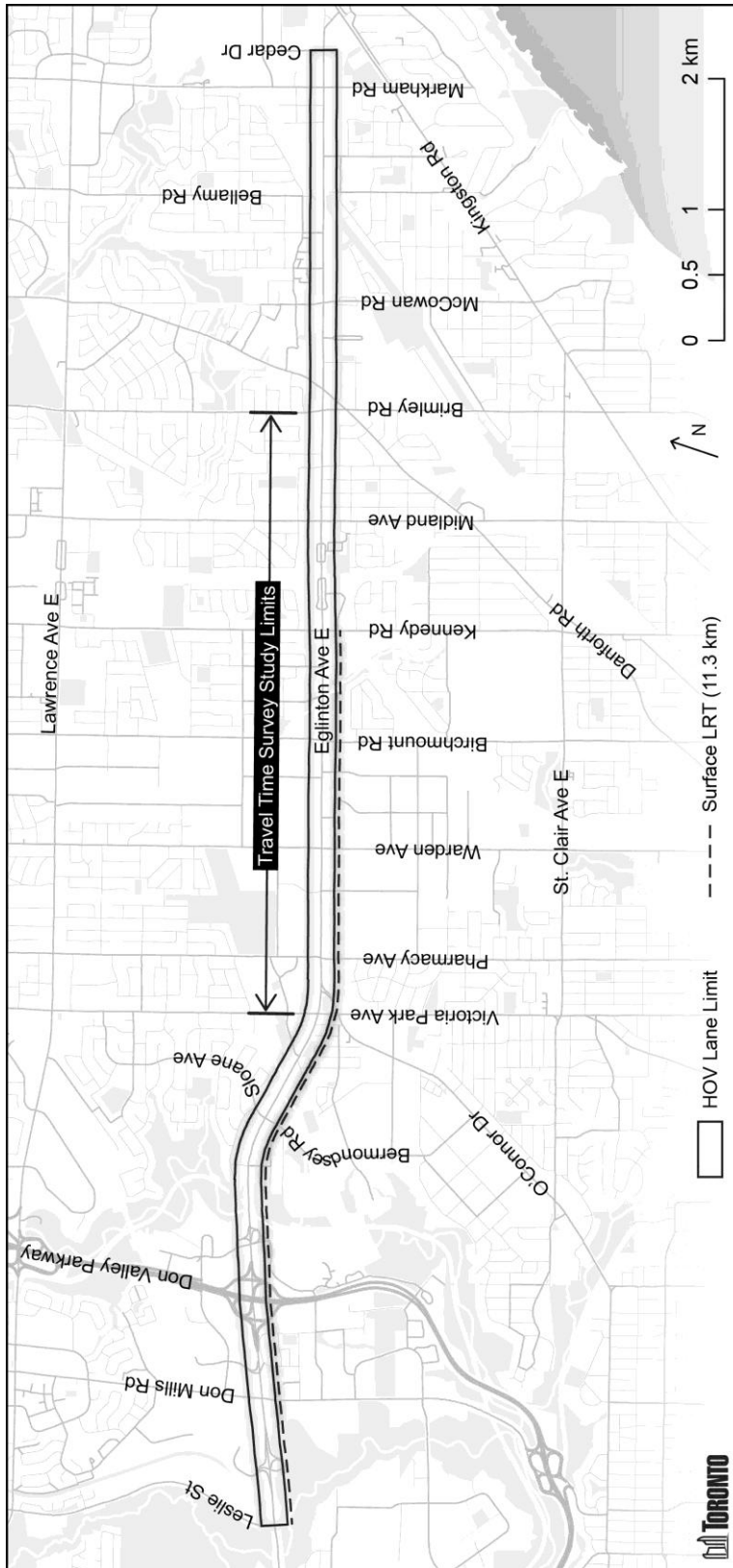
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ATTACHMENTS

APPENDIX 1 – Eglinton Avenue East HOV Lanes – Location Plan
APPENDIX 2 – Vehicle and People Throughput Under HOV 2+ Scenario
APPENDIX 3 – Toronto Municipal Code Chapter 950, Traffic and Parking Amendments

APPENDIX 1

EGLINTON AVENUE EAST HOV LANES - LOCATION PLAN



APPENDIX 2

VEHICLE AND PEOPLE THROUGHPUT UNDER HOV 2+ SCENARIO

Comparison of Vehicle Throughput in all Lanes Current vs. Proposed HOV2+ Conditions

Lane	Current Condition (Veh/hr)	Proposed HOV2+ Condition (Veh/hr)	% Change
HOV (W/B - AM)	501	545	8.8
GPL 1 (W/B - AM)	887	862	-2.8
GPL 2 (W/B - AM)	612	593	-3.1
Total	2,000	2,000	
HOV (E/B - PM)	542	546	0.7
GPL 1 (E/B - PM)	735	732	-0.4
GPL 2 (E/B - PM)	723	722	-0.1
Total	2,000	2,000	

Comparison of People Throughput in all Lanes Existing vs. Proposed HOV2+ Conditions

Lane	Existing Condition (Ppl/hr)	Proposed HOV2+ Condition (Ppl/hr)	% Change
HOV (W/B - AM)	2,314	2,495	7.8
GPL 1 (W/B - AM)	970	869	-10.4
GPL 2 (W/B - AM)	683	603	-11.7
Total	3,967	3,967	
HOV (E/B - PM)	2,242	2,428	8.3
GPL 1 (E/B - PM)	857	757	-11.7
GPL 2 (E/B - PM)	824	738	-10.4
Total	3,923	3,923	

Assumptions:

1. The number and mix of vehicle types operating in the corridor will remain the same.
2. The curb lane will operate at roughly 75% of the capacity (and not 100%) of the average of each of the GPL flows given that TTC buses operate concurrently in the lanes and there is 'friction' from driveways and right-turning vehicles that further reduce capacity.
3. That 90% all 2+ vehicles operating in the corridor will gravitate to the HOV lane and displace Single-Occupant Vehicles (SOVs).
4. Some SOVs will continue to operate in the HOV lane to the extent and limit of the 75% capacity point noted above.

APPENDIX 3

TORONTO MUNICIPAL CODE
CHAPTER 950, TRAFFIC AND PARKING AMENDMENTS

1. Insert into § 950-503 Reserved Lanes for Designated Classes of Vehicles, Subsection A, the following definition:

HIGH OCCUPANCY VEHICLE TWO PLUS - means a private motor vehicle containing a minimum of two persons, and, for purposes of Schedule XXII in § 950-1321, is also referred to as "HOV2+"

2. Delete from § 950-1321 Schedule XXII: Reserved Lanes for Designated Classes of Vehicles, the following:

(From Column 1 Highway) Class	(From Column 2 Between)	(From Column 3 Lanes)	(From Column 4 Times or Days)	(From Column 5 Designated of Vehicle)
Eglinton Avenue East	Leslie Street and Cedar Drive	Northerly Westbound and Southerly Eastbound	7:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:00 p.m. Monday to Friday except Public Holidays	PTVs, HOVs, Taxicabs, plated motorcycles and Bicycles

3. Insert into § 950-1321 Schedule XXII: Reserved Lanes for Designated Classes of Vehicles, the following:

(From Column 1 Highway) Class	(From Column 2 Between)	(From Column 3 Lanes)	(From Column 4 Times or Days)	(From Column 5 Designated of Vehicle)
Eglinton Avenue East	Leslie Street and Cedar Drive	Northerly Westbound and Southerly Eastbound	7:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:00 p.m. Monday to Friday except Public Holidays	PTVs, HOV2+s, Taxicabs, plated motorcycles and Bicycles