CITY OF **VANCOUVER**

ADMINISTRATIVE REPORT

Report Date:	November 27, 2007
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Meeting Date:	December 13, 2007

TO: Standing Committee on Planning and Environment

FROM: General Manager of Engineering Services

SUBJECT: Grandview Highway HOV Queue Jumpers and Overview of Other Eastern Vehicle Approaches

RECOMMENDATION

THAT Council approve the construction of High Occupancy Vehicle (HOV) queue jumper lanes on Grandview Highway subject to approval of the final costs and an assurance that if traffic volumes entering the City increase following construction that staff will report back with options to reduce traffic volumes.

COUNCIL POLICY

In 1994, Council endorsed the Regional Transportation Plan (Transport 2021) which included High Occupancy Vehicle lanes on the Trans Canada Highway and on Grandview Highway.

In 1997, Council approved the Vancouver Transportation Plan which included the following policies and principles:

- Supporting the Livable Region Strategic Plan policy of implementing transportation demand management (TDM), to change the behaviour of travelers in order to make better use of the existing transportation system,
- Expanding the regional freeway network only for High Occupancy Vehicle (HOV) lanes, with no additional bridge capacity leading to the City, and,
- Providing HOV lanes (with 3+ occupants) in circumstances where they can be implemented as short queue jumpers.

PURPOSE

This report requests approval of HOV queue jumper lanes on Grandview Highway subject to approval of final costs and an assurance that if traffic volumes coming into the City increase, staff will report back on options to reduce traffic volumes. This report also informs Council of other potential changes to the eastern approaches to the City.

BACKGROUND

At its meeting on June 13, 2006, Council passed a number of motions relating to the Gateway Program, including noting its unanimous opposition to twinning of the Port Mann Bridge and widening of Highway 1 and requesting the Provincial Government carry out a comprehensive review of alternatives to increasing Highway 1 road capacity.

At its meeting December 12, 2006, Council directed staff to consult with the community and report back on the results of several potential City-initiated transportation projects in the vicinity of the Highway 1 on and off ramps including:

i. HOV Queue Jumper Lanes on Grandview Highway,
ii. Left turn bays to allow left turns from Grandview Highway to Boundary Road, and
iii. Safety improvements to the Highway 1 off ramp at Boundary Road.

On October 18, 2007, Council approved the following geometric roadway modifications, subject to approval of their final costs:

i. The construction of left turn bays to allow left turns from Grandview Highway to Boundary Road, and,
ii. Closure of the median on Boundary Road at 11th Avenue to improve safety near the Highway 1 off ramp at Boundary Road.

In addition, Council referred the geometric roadway modification regarding the addition of HOV queue jumper lanes on Grandview Highway to its meeting on October 30, 2007. Furthermore, staff were asked to provide additional information on the implications of greenhouse gas and particulate emissions at this meeting.

On October 30th, 2007, in addition to the above two motions, Council asked staff to consider other modifications to the eastern approaches to the city which do not add to the number of vehicles coming into the city. And furthermore, that these modifications are not to encourage traffic to shift off the arterial grid.

DISCUSSION

Staff note that in an October 26, 2007 letter to the City Engineer, the Ministry of Transportation stated that without the HOV lanes through the intersection, they would not be in a position to construct the left turn lanes on Grandview Highway.

In response to Council's request for the consideration of other modifications planned for the eastern approaches to the city, in addition to the HOV queue jumpers on Grandview Highway, staff have identified the following potential changes to the eastern approaches to the City:

Street	Upcoming Projects
McGill Street	• Streetscape design improvements on McGill and Renfrew Streets and possible lane re-designations or reduction that would reduce vehicle capacity subject to consultation.
Hastings Street	• Possible conversion of the existing Hastings HOV lane to a bus-only lane that would reduce HOV capacity on Hastings Street subject to the recommendations of 95 B-Line study and consultation.
First Avenue	• Streetscape improvements to increase green space and reduce pavement area. This would require lane reduction, reducing existing capacity and preventing future capacity increases from Highway 1.
Grandview Highway	• Addition of left turn bays and HOV queue jumper lanes that will increase HOV capacity subject to conditions set out in this report.
Canada Way	• Reconfigured intersection on Boundary Road at Canada Way that will result in a reduction of pavement area and will not result in any additional lanes coming into the city, subject to consultation with the City of Burnaby and approval by Vancouver City Council.

Staff plan to report to Council on all of the projects listed above within the next two to three years. If the HOV queue jumpers on Grandview Highway are approved, it is expected that they would be constructed after 2010.

Staff believe that these projects will not result in an increase in traffic on local streets. Nevertheless, staff will monitor traffic volumes on local streets in the vicinity of the modifications.

The City currently monitors traffic volumes entering and leaving the City of Vancouver on an annual basis. Staff reported in 2006 that the number of vehicles entering and leaving the City has decreased by 10% over the ten year period between 1995 and 2005. The most recent expansion of Highway 1 occurred in October 1998 with the opening of the existing Highway 1 HOV lanes.

Given the previous history of no increases in traffic volumes across the Boundary Road and the full range of changes planned for eastern approaches to the city, as listed in the table above, staff recommend approval of HOV queue jumper lanes on Grandview Highway.

FINANCIAL IMPLICATIONS

If the HOV queue jumpers are approved by Council, staff will seek a number of funding sources, including, but not limited to:

- Future City of Vancouver Capital Plans;
- Ministry of Transportation Cost Sharing Programs;
- TransLink Major Road Network (MRN) Cost Sharing Programs; and,
- Insurance Corporation of British Columbia (ICBC) Cost Sharing Programs.

Once all funding sources have been identified and cost estimates are available, staff will seek Council approval of the final construction costs.

ENVIRONMENTAL IMPLICATIONS

The City's existing transportation policy supports the provision of HOV lanes in circumstances where they can be implemented as short queue jumpers. Although adopted in 1997, staff feel that this policy is still applicable when considering the growing concern over the impact of greenhouse gases.

GREENHOUSE GAS EMMISSIONS

To demonstrate the greenhouse gas impacts of HOV's relative to other available modes of transportation in the Lower Mainland, staff have compiled the following information:

Mode	Kg CO_2 per passenger per 10 km
SOV Car (BC Fleet Avg.)	2.82
HOV Car (BC Fleet Avg.) (2 Person)	1.41
SOV SMART Car	1.17
SOV Toyota Prius	0.99
HOV Car (BC Fleet Avg.) (3 Person)	0.94
Diesel Bus[1]	0.72
CNG Bus[1]	0.67
HOV SMART Car (2 Person)	0.59
HOV Toyota Prius (2 Person)	0.49
HOV Toyota Prius (3 Person)	0.33
Trolley Bus[1]	0.03
SkyTrain[1]	Less than 0.01

Source: Metro Vancouver (2000), Office of Energy Efficiency (OEE), www.thesmart.ca, and Transport Canada
[1] Based on Average Occupancy

This table shows that HOV's can perform almost as well as an average occupancy diesel bus with respect to greenhouse gas emissions per person per kilometre. With smaller vehicles and new technologies, such as hybrids, HOV's can perform better than a diesel bus.

CHANGE IN THE AMOUNT OF PAVED SURFACES

On Grandview Highway the eastbound HOV queue jumper lane can be implemented by re-designating the eastbound right-turn-only lane to an HOV and right turn lane. The westbound HOV queue jumper lane can be implemented by removing parking in the curb lane for approximately 300 m. These lane designations would create no net increase in asphalt. To

construct the approved left turn bays would require an increase in asphalt of approximately 700 m^2. This is the only project listed in this report that would result in an increase in the amount of asphalt. All of the other projects are expected to have no change or result in a reduction of asphalt. For example, changes at 1st Avenue and Canada Way are expected to reduce the amount of asphalt by 1700 m^2 and 900 m^2 respectively. In combination with the Grandview Highway project, these three projects would result in a net decrease in asphalt of approximately 1900 m^2.

CONCLUSION

Staff recommend the approval of the HOV lanes subject to approval of the final costs and the monitoring of the eastern approaches into the city.

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