From:	"Johnston, Sadhu" <sadhu.johnston@vancouver.ca></sadhu.johnston@vancouver.ca>				
To:	"Direct to Mayor and Council - DL" <ccdtmacdl@vancouver.ca></ccdtmacdl@vancouver.ca>				
CC: <u>"City Manager's Correspondence Group - DL" <cmcg@vancouver.ca></cmcg@vancouver.ca></u>					
	"LaClaire, Lon" <lon.laclaire@vancouver.ca></lon.laclaire@vancouver.ca>				
	"McGregor, Marnie" < Marnie.McGregor@vancouver.ca>				
	"Enfeldt, Magnus" <magnus.enfeldt@vancouver.ca></magnus.enfeldt@vancouver.ca>				
	<u>"Dobrovolny, Jerry" <jerry.dobrovolny@vancouver.ca></jerry.dobrovolny@vancouver.ca></u>				
	<u>"Bracewell, Dale" <dale.bracewell@vancouver.ca></dale.bracewell@vancouver.ca></u>				
Date:	2/27/2018 3:50:26 PM				
Subject:	Memo - Mobility Pricing Update				
Attachments:	ENG - Memo to Mayor & Council - Mobility Pricing Update - Completion ofpdf				

Dear Mayor & Council,

Please see the attached memo from Jerry Dobrovolny in regards to the mobility pricing research and engagement, being led by the Mobility Pricing Independent Commission. A short summary of the memo is as follows:

- Commission is beginning Phase 2 engagement and modelling of example scenarios of decongestion charging.
- Phase 1 raised public awareness of congestion majority of participants are frustrated by traffic delays and unpredictability of travel times, and think it's a good idea to study mobility pricing.
- Distance-based charges varying by time and location, and point charges (a cordon or system of point charges) have greatest potential to achieve Transportation 2040 goals and become comprehensive, long-term congestion management solution.
- Commission will recommend key principles and concepts In May 2018, leading to several more years of research and dialogue before a final decision to implement a mobility pricing system.

Should you have any questions, please contact Dale Bracewell, Branch Manager of Transportation Planning, at 604.871.6440 or<u>dale.bracewell@vancouver.ca</u>.

Best, Sadhu

Sadhu Aufochs Johnston | City Manager City of Vancouver | 453 W 12th Avenue Vancouver | BC V5Y 1V4 604.873.7627 | <u>Sadhu.johnston@vancouver.ca</u> Twitter: sadhuajohnston



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ENGINEERING SERVICES Jerry Dobrovolny, P.Eng. City Engineer / General Manager

MEMORANDUM

CC:

February 27, 2018

TO: Mayor and Council

Sadhu Johnston, City Manager Paul Mochrie, Deputy City Manager Janice MacKenzie, City Clerk Lynda Graves, Manager, Administration Services, City Manager's Office Rena Kendall-Craden, Director, Communications Kevin Quinlan, Chief of Staff, Mayor's Office Naveen Girn, Director of Community Relations, Mayor's Office Lon LaClaire, Director of Transportation Marnie McGregor, Director of Intergovernmental Relations and Strategic Partnerships Magnus Enfeldt, Associate Director, Strategic Business Advisory

FROM: Jerry Dobrovolny, General Manager of Engineering Services

SUBJECT: Mobility Pricing Update Completion of Phase 1 Research and Engagement

In June 2017, the Mobility Pricing Independent Commission was formed to research and engage the public in exploring how decongestion charging could work in Metro Vancouver.

The purpose of this memo is to provide a summary of the findings in Phase 1 of the Commission's work, including a summary of the public engagement, research of global best practices, an evaluation of policy tools, and initial strategic considerations identified by staff.

The Commission is initiating Phase 2 of the work, conducting further research and engagement on example scenarios of decongestion charges. Staff will report to Council with a comprehensive evaluation of the potential decongestion charging policies and final recommendations following the completion of the Mobility Pricing Independent Commission's work in May 2018.

City of Vancouver, Engineering Services 320-507 West Broadway Vancouver, British Columbia V5Z 0B4 Canada *tel:* 3-1-1, Outside Vancouver 604.873.7000 *website:* vancouver.ca

VANCOUVER'S POLICY CONTEXT

The foundation of the Transportation 2040 Plan (2012) is to enhance mobility and access by enabling more walking, cycling, and transit trips by reducing the need to drive. As the region grows, the increasing demand of moving people and goods puts greater pressure on our street network. Continuing to prioritize more space-efficient and sustainable modes is critical to managing growth in a way that supports a healthy and liveable city.

Motor vehicles are an important part of the City's transportation mix for people and goods movement, and the reliability of our street network is critical to ensuring efficient movement for buses, trucks, and emergency vehicles. The Congestion Management Strategy (adopted by Council in 2017) provides direction on identifying, monitoring, and developing strategies to address congestion with a focus on reliability (i.e. predictable travel times depending on the day of week and time of day) on the street network and prioritizing space-efficient transportation modes.

Comprehensive regional mobility pricing is a key initiative for achieving objectives in both Transportation 2040 and the Congestion Management Strategy. Transportation 2040 advocates for and supports the exploration of regional mobility pricing to reduce vehicle congestion and to support investment in transit and other sustainable transportation improvements, provided it is done in an equitable manner:

Policy M 4.2 Support regional road or congestion pricing, with revenue directed towards sustainable transportation improvements.

Action M 4.2.1 Advocate for regional road pricing to reduce congestion to help fund transit and other sustainable transportation improvements. Contribute to the study and evaluation of alternatives.

BACKGROUND ON THE MOBILITY PRICING INDEPENDENT COMMISSION AND PROCESS

A basic level of mobility pricing is already in place in Metro Vancouver in the form of fuel tax, transit fares, parking fees, and the previous tolls on the Port Mann and Golden Ears Bridges. Problems with the current approach include the need to manage congestion as the region grows, and fairness concerns that were raised with disproportionately impacting some communities around the Fraser River by tolling some bridges and not others. Revenues from fuel sales tax, the region's main source of transportation funding, has been declining and limiting the ability to effectively manage the transportation network and meet the communities' needs.

Given these challenges, a more comprehensive approach to mobility pricing on the region's road system has been supported by local governments in Metro Vancouver as far back as the region's transportation strategy in 1993 (Transport 2021). More recently, TransLink's Regional Transportation Strategy (2013) established a core policy direction to advance an integrated and coordinated approach to pricing mobility services in Metro Vancouver. The Mayors' Council 10-Year Vision (2014) includes a commitment to price the transportation system more effectively.

In June 2017, the Mobility Pricing Independent Commission was formed by the Mayors' Council and the TransLink Board of Directors. The Commission, comprised of 14 community leaders from across Metro Vancouver, will propose recommendations about mobility pricing. Although a comprehensive approach to mobility pricing includes transit fares, pay parking, and other forms, the Commission's focus is specifically on 'decongestion charging', (pricing the use of roads with the objective of reducing congestion). The work is guided by three key objectives:

- 1. Reducing traffic congestion on roads and bridges
- 2. Promoting fairness
- 3. Supporting transportation investment

In October 2017, the Commission initiated a public engagement and research project referred to as the *It's Time* project. The first phase was completed in January 2018 and a report was released to summarize the findings of what was heard so far from the public and stakeholders, lessons learned from global best practices, and an evaluation of decongestion charging policy tools. The Commission's full Phase 1 report (162 pages) can be found at the Commission's website (https://www.itstimemv.ca/research-and-reports.html).

WHAT WAS HEARD FROM METRO VANCOUVER RESIDENTS

Over 6,000 Metro Vancouver residents, stakeholders and elected officials were engaged in the Phase 1 process through a combination of meetings, workshops, and an online engagement platform. Vancouver residents and stakeholder groups had the highest participation rate out of all municipalities in Metro Vancouver (32% of online participants were Vancouver residents, as compared to 26% of Vancouver's population in Metro Vancouver).

Some of the key findings from the engagement include:

- A public opinion poll found that the large majority of participants are frustrated with traffic delays caused by high volumes (89%) and the unpredictability of travel times (80%). The majority of participants (60%) think it's a good idea to study ways to change mobility pricing in this region.
- Common discussion themes around congestion emerged regarding the need for more mode options to incentivize and reduce vehicle use; increasing consistency, reliability and predictability of journey times; faster journey times; congestion reductions across all modes of transportation and not only cars; considering the unintended consequences of shifting behaviour and diverting traffic flows; and considering different factors of congestion including trucks on major corridors and construction.
- Common discussion themes around fairness emerged regarding the need for improving access, service levels, affordability and frequency of transit options; not burdening those with fewer mode choices based on where they live or work; and considering social equity and affordability impacts.
- Strong and divided preferences were heard regarding different pricing model concepts with both supportive and opposing opinions for user-pay approaches, progressive pricing based on ability to pay, and paying less in areas with fewer transit options. The statement "I think it should cost less to drive in areas that have fewer transit options" had the highest level of agreement, and the statement "I think people should pay based on how many kilometres they drive" had the lowest level of agreement.

 Common discussion themes around transportation investment emerged regarding using revenues to improve public transit and other sustainable modes; taking a strategic approach to building transportation infrastructure; supporting new technology and innovations; and ensuring accountability and transparency in the use of revenue.

The level of public acceptance towards mobility pricing can be expected to fluctuate before decongestion charges are implemented. Drawing from experience in other cities, research shows that public acceptance is usually moderate to low early in the process when the effects of decongestion charging are described as abstract concepts. As the process evolves and decongestion charging concepts become more concrete, the public tends to worry about negative personal consequences, leading to lower acceptance levels before implementation.

However, public acceptance typically increases after implementation from experiencing more improvements to travel time and reliability than expected and realizing the negative consequences such as paying charges, shifting modes, and changing travel times to be less problematic than anticipated. Over time, people adapt and accept a new status quo, no longer evaluating it as a 'change'.

COARSE-LEVEL EVALUATION OF DECONGESTION CHARGING POLICY TOOLS

Through the Phase 1 work, the Commission conducted a coarse-level evaluation to assess multiple decongestion charging policy tools for their ability to manage congestion at specific hotspots and region-wide, potential to promote multiple dimensions of fairness, potential to generate revenue, and the ease and efficiency of implementation.

The evaluation identified two policy tools for further exploration in the next phase:

- **Distance-based charges varying by time and location** (i.e. a per-km charge, in which some locations and times could have a higher rate at busy times of day); and
- **Congestion point charges**, including a **system of point charges** (i.e. charging vehicles when passing a defined point or location, like a busy section of road, a bridge, or tunnel), and **cordon charges** (i.e. charging vehicles when passing through entries/exits to and from a defined area).

Both distance-based charges and congestion point charges support Transportation 2040 objectives, as they will reduce congestion and effect behavioural change in travel such as by combining several activities (trip chaining), or changing the destination, mode of travel, time of travel, or route to take. These policy tools have the greatest potential as comprehensive long-term congestion management solutions.

However, their effectiveness will be highly dependent on where and how they are applied. In general, distance-based charges could be more effective in achieving the City's target to reduce the total number of kilometres travelled by vehicle due to a pricing structure that is directly proportional to the distance travelled. Congestion point charges could be more effective at reducing congestion in specific locations, but it could also increase trip distances if people change their route or destination to avoid passing charge points. Careful design and implementation of decongestion charging is important to minimize unintended consequences.

Through the next phase of work, the application of these policy tools will be better defined and understood through detailed analysis and modelling. As well, these tools will be compared against the 'status quo', a baseline scenario with the existing **fuel sales tax**.

Among the long list of potential policy tools, several will be set aside from the Commission's current work, but merit further exploration either as complementary measures or as part of a pathway to implementation.

- **Pricing parking on private and public parking** is less effective at managing congestion and is a mechanism that better addresses vehicle storage rather than road usage. For this reason, staff were initially concerned with the Commission's desire to study parking pricing as a primary congestion charge, but now agree with the resolution to study regional parking pricing as a complementary measure.
- **Distance-only road user charges** are less effective at managing congestion than distance-based charges that vary by time and location, but could be implemented as an initial step in advance of variable rates.
- Vehicle levies could be explored as a complementary measure to further generate revenue and reduce vehicle ownership.
- Mandatory corridor charges could result in unintended consequences of traffic diversion and would be better implemented as part of a coordinated system.

The research also identified the following policy tools that will no longer be considered as part of a mobility pricing solution through the Commission's work.

- **Isolated point charges** are significantly less effective at managing congestion than a coordinated system of point charges, and result in fairness and equity concerns.
- Voluntary corridor charges have limited application and are not suitable in the region's context.
- **Distance-based vehicle insurance** is a mechanism better suited for consideration by ICBC, rather than as a congestion management and revenue generation tool.
- **Parking levies** have limited potential as a comprehensive congestion management solution.

KEY LESSONS FROM INTERNATIONAL EXPERIENCE

Decongestion charging is not only a well-researched policy, but has proven to be effective in many international cities. Various congestion point charge approaches have been successfully implemented and operational for many years in Singapore, London, Milan, Stockholm, and Gothenburg.

Three key lessons have been identified from examining international examples of decongestion charging.

- All decongestion charging schemes to date have been implemented with the intention to reduce congestion and/or vehicle emissions. City staff emphasize the importance of reducing congestion as the primary objective for mobility pricing in Metro Vancouver, to support the City and region's wider goals for enhanced mobility, safety, health, environmental sustainability and liveability.
- Revenue is important to address the current funding challenges and declining fuel sales tax revenue, and is one of the core objectives of mobility pricing. Most decongestion charging examples also provided a positive revenue stream which is typically used to fund sustainable transportation options and services. Achieving the right balance between the objectives of generating revenue and reducing congestion will be important, and staff believe it is important to also consider revenue-neutral options, especially in the early phases of implementation.
- It is also important to note that no jurisdiction has implemented a version of decongestion charging that uses distance-based charging assessed for time of day and geography. This type of system has been evaluated as complex and costly given the technology available at this time. However, the technological environment is rapidly changing and possible solutions will likely emerge by the time a mobility pricing solution will be implemented in Metro Vancouver. A variety of promising technologies are currently being piloted in Singapore and in multiple cities in the USA.

As other cities implement new mobility pricing systems or improve upon existing ones, Metro Vancouver can continue to draw on international examples to support a region-wide distance-based charge or congestion point charges. Singapore is already implementing the next-generation of electronic road pricing, and transitioning from a system of point charges to distance-based road charging by using onboard GPS units that are integrated with pay-parking and other transportation services. California, Oregon and Washington States are currently piloting distance-based road use charges and testing various technology options and working to resolve privacy concerns. New York City is resurrecting plans for a cordon pricing system, after a previous failed attempt.

A short summary of international case studies is provided in Appendix A.

IMPACTS OF TOLL REMOVAL ON THE PORT MANN AND GOLDEN EARS BRIDGES

The impacts of mobility pricing on travel behaviour and traffic congestion can also be observed in the local Metro Vancouver context. On September 1, 2017 the BC Provincial Government removed the tolls from the Port Mann and Golden Ears Bridges. Following the toll removal, traffic conditions and transit ridership across the Fraser River bridges were monitored to compare with conditions in Fall 2016 when the two bridges were tolled. A table of traffic impacts across the Fraser River bridges is provided in **Appendix B**.

The key observations include:

- On the Port Mann and Golden Ears Bridges, traffic volumes increased 28% on weekdays, and 38% on weekends.
- On the Pattullo Bridge, traffic volumes decreased by 11% on weekdays and 17% on weekends. On the Alex Fraser Bridge, volumes decreased by around 5% overall.
- Across all Fraser River bridge crossings, traffic volumes increased by around 8%.

- Travel times between regional town centres generally increased as a result of toll removal, but travel times specifically between New Westminster and Surrey and Coquitlam decreased.
- Transit ridership decreased slightly on some bus routes, while SkyTrain ridership was not impacted.

These observations clearly demonstrate the changes in travel behaviour as a direct result of road usage charges. When some bridges were tolled and not others, people chose to travel farther distances to avoid paying a toll and caused congestion in specific communities. Removing tolls on some bridges redistributed traffic across all bridges, as people chose a shorter and more direct route. People also chose to drive less when the bridges were tolled. By removing tolls, more vehicles are crossing the Fraser River bridges and travel times across the network have increased.

Removing tolls on the Port Mann and Golden Ears Bridges improved congestion in some communities, however it induced more vehicles on the road network and worsened overall congestion in the region.

NEXT STEPS OF THE MOBILITY PRICING INDEPENDENT COMMISSION PROCESS

The Commission is beginning Phase 2 of the research and engagement to explore and analyze different examples of how distance-based charges and congestion point charges could be applied in Metro Vancouver.

The public and stakeholder groups will continue to be engaged through various workshops and the online engagement platform beginning February 26, 2018. Additionally, several of the City's Council Advisory Committees participated in a workshop on February 22, 2018.

The analysis of distance-based charges and congestion point charges will also include testing scenarios through TransLink's Regional Transportation Model. Consistent with our Congestion Management Strategy, staff continue to stress the importance for the region to focus on travel time reliability as the most appropriate measure of congestion, rather than travel times and speed.

Following the second phase of research and engagement, the Mobility Pricing Independent Commission will complete a Final Report by May 2018, including:

- Recommended principles that should be considered in advancing mobility pricing both for the road and future integration across all modes;
- Example mobility pricing options/concepts for the region's road network and an overview of key impacts, trade-offs, and outcomes related to the objectives of reducing congestion, promoting fairness, and supporting investment;
- Recommended next steps and areas for further research and work; and
- Detailed summary of all research work, technical analysis and evaluation, and public and stakeholder engagement.

TransLink Board and Mayors' Council will prepare a response to acknowledge receipt of Commission's final report, confirm fulfillment of the Commission's mandate, and provide an outline of and timing for next steps to support a decision on how to proceed. The exact approach to receive and prepare a response to the Final Report is not yet confirmed, but was discussed during the most recent Joint Mobility Pricing Steering Committee Meeting. The likely path will be an advanced preview of the final report by the Joint Mobility Pricing Steering Committee, followed by a public release and response at a joint public meeting of the Mayors' Council and TransLink Board of Directors.

The approach of a simultaneous public release and response will allow the Mayors' Council and TransLink Board to help shape the narrative from the beginning. By committing to a path forward with a defined period of time to inform future policy and investment planning, the momentum will be maintained after the completion of the Commission's work.

Staff will report to Council following the completion of the Commission's work, including a strategic analysis and policy recommendations if needed.

The overall project timeline of the mobility pricing engagement and research is shown below in **Figure 1**.



Figure 1: Mobility Pricing Project Timeline

LOOKING AHEAD: A UNIQUE OPPORTUNITY FOR METRO VANCOUVER

The implementation of a sophisticated mobility pricing system presents an incredible opportunity for Metro Vancouver to position itself as the global leader in innovative congestion management.

The completion of the Mobility Pricing Independent Commission's work only marks the conclusion of a first step towards a comprehensive mobility pricing system. Considerable intergovernmental dialogue and research will be necessary due to the complexity of issues. Several more years of work will be needed before a fully defined regional mobility pricing system is ready for a final decision on implementation.

As decisions are made from now until then, it is important to continue to prepare for future mobility trends. As the shift to electric vehicles continues, a more reliable source of revenue is needed to replace declining fuel sales tax revenue. Automated, connected, and shared

vehicles have the potential to increase congestion. A region-wide mobility pricing system of distance-based charges varying by time and location will have the greatest potential to ensure that mobility patterns today and in the future continue to fit within our transportation objectives of managing congestion and encouraging sustainable transportation modes.

It is imperative that the City continue to advocate for regional decongestion charges integrated with other mobility pricing such as transit fares and parking, as a key initiative to manage congestion and enhance reliability in way that supports a thriving economy and a sustainable, healthy, and livable city.

Beyond the conclusion of the Independent Commission, staff will continue to be involved in future phases of mobility pricing and other related work including the upcoming TransLink Regional Transportation Strategy Update. If you have any questions or require additional information, please contact Dale Bracewell, Branch Manager of Transportation Planning, at 604.871.6440 or <u>dale.bracewell@vancouver.ca</u>.

Jerry Dobrovolny, P. Eng., MBA General Manager of Engineering Services

(T) 604.873.7331(E) jerry.dobrovolny@vancouver.ca

Attachments:

Appendix A - Summary of Mobility Pricing International Case Studies Appendix B - Transportation Impacts on Fraser River Crossings Before/After Toll Removal

CITY	MOBILITY PRICING SYSTEM HIGHLIGHTS				
Singapore	Singapore established an Electronic Road Pricing (ERP) system in 1998, a system of point charges using gantries. After the ERP system was introduced, traffic decreased by 13% and car-pooling increased. Hours of peak vehicular traffic also gradually eased and spread into off-peak hours, suggesting a more productive use of road space. In addition, average road speeds for expressways and major roads remained the same, despite rising traffic volumes over the years. The next-generation of distance-based charges via an on-board GPS unit is planned for implementation by 2020.				
Stockholm	Motorists are charged an "Environmental Charge" (\$2 to \$6 CAD) when entering and exiting the inner city (Stockholm City Centre). Introduced in January 2006, the effects were substantial and immediate - 20% decrease in traffic, reductions of 17% in emission, and 6% increase in transit use.				
Gothenburg	Implemented in 2013, motorists are charged a time-differentiated fee when crossing a cordon point around the inner city. The maximum daily fee is approximately \$10 CAD, with an estimated annual intake of \$110M CAD to be used for regional infrastructure projects. After one year of implementation, transit and active transportation usage increased by 10%, and traffic levels were observed to be 8% to 11% lower than before the charge.				
London	London's Mobility Pricing system was introduced in 2003. Motorists are charged a daily fee of \$20 CAD with unlimited re-entries to access London's Inner Ring Road. London's "Congestion Charge", netting approximately \$250-300M CAD per year, was designed to shift motorists to other modes of transport - public transport, walking and cycling. The mode share of private vehicle transport has fallen from 41% (2003) to 32% (2014).				
Milan	In Milan (implemented in 2008), motorists are charged a daily fee with unlimited re-entry to access the City Centre. The "Area C / Congestion Charge" (formerly "Pollution Charge") generates approximately \$30M CAD annually, and is used to improve transit and bicycle infrastructure. The research indicates vehicular traffic accessing the City Centre has decreased by approximately 30%.				

Appendix A - Summary of Mobility Pricing International Case Studies

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Crossing	Day	Change in Traffic (Fall 2017 vs. Fall 2016)	
		Traffic Volumes	Percent Change
Port Mapp Bridge	Weekday	+ 35,000	28% increase
Fort Marin Bridge	Weekend	+ 35,000	40% increase
Coldon Fors Bridge	Weekday	+ 12,000	29% increase
Golden Ears bridge	Weekend	+ 11,000	38% increase
Pattullo Bridgo	Weekday	- 10,000	11% decrease
Fattulio Di luge	Weekend	- 11,000	17% decrease
Alox Fragor Bridgo	Weekday	- 5,000	4% decrease
Alex Maser Druge	Weekend	- 4,000	5% decrease
Goorge Massoy Tuppel	Weekday	- 2,000	2% decrease
George Massey Tunnet	Weekend	+ 2,000	2% increase
Overall	Weekday	+ 30,000	7% increase
Fraser River Crossings	Weekend	+ 32,000	9% increase

Appendix B - Transportation Impacts on Fraser River Crossings Before/After Toll Removal

Source: Monitoring Transportation Impact of Toll Removal, Regional Transportation Advisory Committee Briefing Note, TransLink, November 20, 2017

