

Climate Change PBL #4: Reducing Automobile Peak Hour Congestion

Problem

In Vancouver, it is estimated that over 222 000 tons of Greenhouse Gasses (GHGs) are emitted by cars stuck in traffic.¹ Focusing solely on the economic and environmental costs of peak hour congestion, what could Metro Vancouver (formerly GVRD) authorities do to mitigate congestion and reduce GHGs emitted by idle cars?

Background

In the past 10 years, commuting times in Vancouver have increased by 30 percent.² The cost of congestion includes lost time, wasted fuel, and GHG emissions. Estimation of the congestion cost in the Lower Mainland ranges from 628 million to 1.2 billion dollars, depending on the study.³ Yet, despite the costs, there are more and more cars on the streets of Metro Vancouver. In 2004, 1.29 million registered motor vehicles were on Metro Vancouver streets. Statistics Canada is expecting that number to increase by 60% in the next 20 years. This is partly due to the increase in the Metro Vancouver population which grew by 750 000 people in the past 20 years and is expected to reach 3 million by 2031.⁴ Another explanation is the economic growth of Vancouver, which is the main Canadian port serving Asia, one of the fastest growing markets in the world. BC Transport estimates that truck traffic will increase by 50 percent by 2021.

In comparison to the rest of Metro Vancouver, the City of Vancouver has actually seen a decrease in congestion relative to population growth as a result of City transportation policies, which promote public transit, walking and biking. Between 1996 and 2006, trips to downtown Vancouver increased by 23%, yet vehicles entering and leaving the city decreased by 10% over the same period. Car ownership in Vancouver increased by 17% between 1991 and 2006. In the same period, population increased by 23 percent, a decline in vehicle ownership rates from 0.57 to 0.54⁵. However, these trends are not the same for Metro Vancouver as a whole over the same period, where there are actually

¹Transport Canada: Environmental Affairs (march 22, 2006). *The Cost of Urban Congestion in Canada*. Retrieved July 27, 2007 from <http://www.tc.gc.ca/programs/Environment/EconomicAnalysis/docs/summary.pdf> (Broken link. This is the new one: <http://www.tc.gc.ca/pol/en/acs/EconomicAnalysis/docs/summary.pdf>)

²Government of British Columbia (2001). *Gateway Program*. Retrieved July 27, 2007 from <http://www.th.gov.bc.ca/gateway/>

³Transport Canada: Environmental Affairs (March 22, 2006) . *The Cost of Urban Congestion in Canada*. Retrieved July 27, 2007 from (same as above: <http://www.tc.gc.ca/pol/en/acs/EconomicAnalysis/docs/summary.pdf>)

⁴Government of British Columbia (2001). *Gateway Program*. Retrieved July 27, 2007 from <http://www.th.gov.bc.ca/gateway/>

⁵ Understanding Vancouver, 2011. City of Vancouver. Last Retrieved June 22, 2012 from <http://vancouver.ca/commsvcs/planning/stats/plantransport/index.htm>

more vehicles per person. It is necessary to take into account urban demographics in analyzing these trends. As of 2002, 39 percent of the jobs were concentrated in the downtown area, creating traffic jams on bridges that linked the suburbs to the downtown. However, current job growth trends predict that most job creation will occur in the suburbs, increasingly demand for inter-municipal travel. The fact that Lower Mainland road, highway and bridge networks have not seen major increase in capacity since the 1980s has contributed to increased congestion patterns on all major routes.⁶

In 2003, in response to growing regional congestion in Metro Vancouver, the provincial government established the Gateway program, which promises to create “a comprehensive, effective network that supports improved movement of people and goods, increases transportation choice, facilitates economic growth and provides better connections to designated population growth areas.”⁷ On the other hand, the Gateway project has been strongly criticized for the impact it could have on the environment including loss of wildlife habitat and farmland, encouragement of more motor vehicles, and increased air pollution. In the spring of 2012, proposals were made by Metro Vancouver Mayor’s Council on Regional transportation to impose congestion pricing, a set of road and bridge tolls during peak traffic hours. Unlike building new road infrastructure, congestion pricing does not provide an incentive for people to drive. However, its critics have argued that the system unfairly affects lower income commuters⁸.

Example

In 1989, Mexico was one of the first cities to experiment with congestion management system. In order to reduce car use and reduce air pollution the government organized the *Hoy No Circula* (one day without a car) program, which restricted each car from driving on a specific day according to their last license plate number. The actual results of this policy are widely debated.⁹

In 2006, New York City revealed the *PLANYC 2030*, which aimed to make the city more sustainable. Local surveys have shown that despite improvements of the transit networks and promotion of alternative modes of transportation, the number of drivers in the city has remained essentially unchanged. In order to address this problem, NYC implemented a program already in place in cities such as London, Stockholm and Singapore: congestion pricing. This system charges a fee for drivers entering the city’s center (8\$ for cars entering New York city and 21\$ for trucks). The *PLANYC 2030* reports that in all the

⁶Ibid

⁷Ibid.

⁸ Wood, Joel (2012). Congestion Pricing Would Help Solve Our Traffic Woes. The Fraser Institute. Retrieved June 22, 2012 from <http://www.fraserinstitute.org/research-news/news/display.aspx?id=2147484448>

⁹World Bank (1997). *Rationing Can Backfire: the “Day without a Car” in Mexico City*. Retrieved July 30, 2007 from: [\(This link always directs to a generic world bank page. You might have to include directions on how to find the article \(its just a few clicks\)\).](#)

cities where congestion pricing has been implemented it succeeded at “reducing traffic both within the congestion zone and outside it, speeding bus services, decreasing delivery times, improving air quality, and cutting greenhouse gases emissions with no material impact on the economy.”¹⁰

In Vancouver, the City is already taking steps to reduce GHGs emitted by cars. In 1992, the GVRD assisted by the BC Ministry of Environment started the AirCare program which tests vehicles for their contribution to GHGs and suggests repairs for those who exceed the normal emission output for vehicles of the same age and type. The program is said to have reduced GHGs emissions from cars by 29 percent since 1992.¹¹

Guiding questions

- What are the traffic trends in Vancouver (when, where, why)? Will they be the same in 10, 20 years?
- Given those traffic trends, what would be the best congestion management system for Vancouver? For example, if traffic were increasingly inter-municipal, would congestion pricing be useful and, if so, what locations would require a congestion management system?
- Is the AirCare program enough to reduce emissions of GHGs from cars to acceptable levels? How can the program be improved?
- Do HOV lanes help clear up traffic? If so, how can we increase the number of people using HOV?
- Given the size of Vancouver (compared to New York) is congestion pricing a viable option for Vancouver?
- What would be the impact of the implementation of a congestion management system such as Mexico’s “Day without a Car” program? Have these programs proven successful in the past?
- What would be the impact of improved road infrastructures on traffic and on the environment?
- What could be done to improve the transportation of commercial goods?
- What other congestion management systems exist? Are they appropriate for Vancouver? If not, what type of system would be efficient?
- Maybe something about the new bike lane on Burrard (?) bridge and its impact?

¹⁰New York City Government (2006). “Transportation”. *PLANYC 2030*. Retrieved July 27, 2007 from

http://www.nyc.gov/html/planyc2030/downloads/pdf/report_transportation.pdf

¹¹AirCare (2006). *The Vehicle Emissions Testing Program for Vancouver and the Fraser Valley*. Retrieved July 27, 2007 from [This link might be better although I couldn't find the exact document you cited <http://www.aircare.ca/newspubs-reports.php>](http://www.aircare.ca/newspubs-reports.php)

Resources (Do NOT directly contact individuals in these organizations).

City of Vancouver, *Sustainability*.

<http://www.city.vancouver.bc.ca/sustainability/index.htm>

Transport Canada, *The Cost of Urban Congestion in Canada*.

http://www.gatewaycouncil.ca/downloads2/Cost_of_Congestion_TC.pdf The Government of British Columbia, *The Gateway Program* - <http://www.th.gov.bc.ca/gateway/>

Dynamic Cities Project (simulations) - <http://dynamiccities.squarespace.com/home/> I think this site has some misconceptions about peak oil, but I'm probably biased

UBC SCARP and Urban Studies faculty – search for them.

Greenest City Initiative- <http://vancouver.ca/greenestcity/index.htm>

<http://buzzer.translink.ca/wp-content/uploads/2010/11/Moving-Forward-Nov-8-FINAL.pdf>

Potential Community Engagement

The Livable Region Coalition - <http://www.livableregion.ca/>

One Day Vancouver - <http://onedayvancouver.ca/>

GetMoving BC blog - <http://www.getmovingbc.com/Blog.htm>

Anti-gateway activism network - <http://www.stopgateway.ca/index.htm>