GOOD JOBS, CLEAN SKIES

ECONOMIC GROWTH AND GREENHOUSE GAS REDUCTION IN THE MAYORS' COUNCIL TRANSIT PLAN

by Blair Redlin and David Fairey

March 2015

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GOOD JOBS, CLEAN SKIES: Economic Growth and Greenhouse Gas Reduction in the Mayors' Council Transit Plan

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GreenJobs BC and BlueGreen Canada

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Executive Summary

SINCE THE FIRST ARRIVAL of Canadian Pacific and Great Northern trains, Metro Vancouver has been built up by strategic transportation investment. Our valuable location on the Pacific and the Fraser is supported by great sea and air ports that rely on efficient movement of goods and people to do their work.

Dependence on fossil fuels must be reduced. And we can do it by creating good green jobs that also help build a just and prosperous economy for everyone.

PHOTO COURTESY
PAUL KREUGER/FLICKR

Better transportation is needed by all economic sectors and every type of worker. And the good news is these are green jobs. Transit occupies a sweet spot for creating good jobs that reduce our environmental footprint. They are a classic green jobs generator.

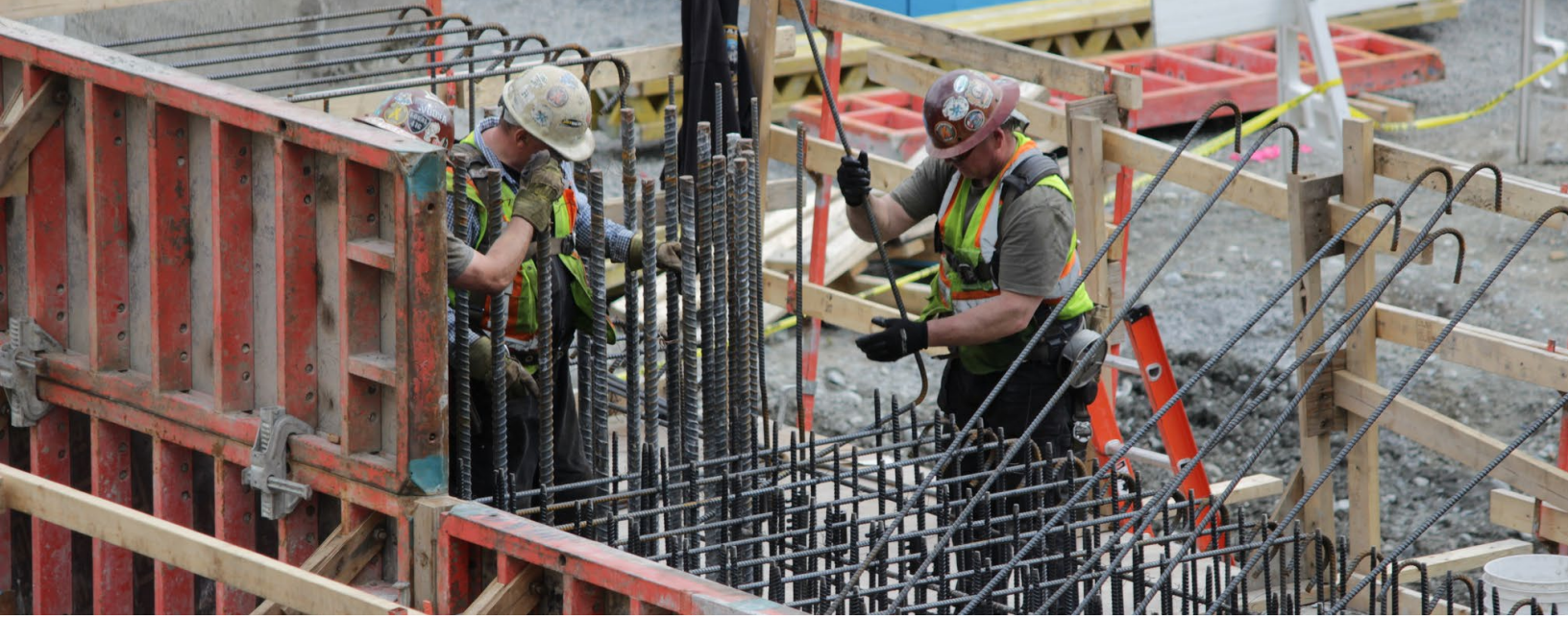
From March 16 to May 29, 2015, people in Metro Vancouver will vote on an ambitious plan to expand transit. A 0.5 per cent sales tax would generate $250 million per year for the Mayors' Council 10-year Transportation and Transit Plan and leverage further transit funds from the provincial and federal governments.

The impact on jobs and greenhouse gases are key considerations in that decision.

The devastating impacts of global climate change are clearer by the day. Dependence on fossil fuels must be reduced. And we can do it by creating good green jobs that also help build a just and prosperous economy for everyone.

In 2012, the Urban Transportation Task Force of the council of ministers responsible for transportation said:

> *Congestion reduces Canadians' quality of life and also has environmental costs. The waste of energy in gridlocked traffic and the production of greenhouse gases and other pollutants are harmful to the Canadian environment. Perhaps most importantly, congestion has substantial economic costs. Decisions on investments and jobs hinge on the quality of transportation infrastructure and the free flow of goods and people in and through our cities.*



That's why, with a million new residents and 600,000 new jobs heading to Metro Vancouver by 2041, the Mayors' Council on Regional Transportation wants to invest $7.5 billion over 10 years to help people get around.

The plan proposes improvements for all parts of the region over the next 10 years.

In addition to clear benefits for users, such as more convenient and frequent transit, the Mayors' Council 10-year plan would bring significant environmental and economic benefits. We know from direct experience that transportation investments are big job generators.

From a job creation point of view, investing in transit creates 10 times more jobs than investing in fossil fuel extraction.

Right now, construction of the Evergreen Line Skytrain expansion from Lougheed Town Centre to the Coquitlam City Centre, halfway through the four-year construction phase, is currently creating 8,000 direct and indirect jobs. When it's up and running, the line will generate jobs for systems operators and supervisors as well as maintenance technicians.

In addition to the direct and indirect jobs associated with the line itself, the BC Ministry of Jobs, Tourism and Skills Training estimates the residential and commercial construction triggered by the Evergreen Line will generate more than 7,000 additional person years of employment.

The Canadian Urban Transit Association says that Canada's current public transit systems already account for around 70,000 direct and indirect jobs and cut greenhouse gas emissions by 2.4 million tonnes annually.

Over its 10 years, the Mayors' Council plan will contribute to:

- **26,322 person years of new direct employment**
- **43,800 person years of total employment**
- **$2.96 billion in wages**
- **$4.48 billion toward GDP in Metro Vancouver**

And the good news is these are green jobs. Transit occupies a sweet spot for creating good jobs that reduce our environmental footprint.

COQUITLAM STATION PHOTO
COURTESY BC TRANS/FLICKR

GENERATING JOBS

Over its 10 years, the Mayors' Council Transportation and Transit Plan will contribute to 26,322 person years of new direct employment, 43,800 person years of total employment, $2.96 billion in wages, and $4.48 billion toward GDP in Metro Vancouver. On average, over the 10 years, 4,380 person years of employment will be created annually. By 2024, the annual number of person years of work from the Mayors' Council plan will be 5,901.

ECONOMIC STIMULUS

In total, the Mayors' Council plan estimates $7.5 billion ($2015) in new capital expenditures over the period as well as an increase in operating and financing costs of $800 million per year.

Transit investments multiply their impact. A 2012 Federation of Canadian Municipalities report found that every dollar invested in transportation infrastructure reduces private sector costs by 17 cents. In that context, these are even bigger dollars.

Put another way, as a report for the Residential and Civil Construction Alliance of Ontario found, for every tax dollar invested in improved infrastructure the taxpayer is better off by $1.48 on average.

Transit investments multiply their impact. A 2012 Federation of Canadian Municipalities report found that every dollar invested in transportation infrastructure reduces private sector costs by 17 cents. In that context, these are even bigger dollars.

PORT MANN BRIDGE CONSTRUCTION
PHOTO COURTESY BC TRANS/FLICKR

CONGESTION COSTS

Congestion costs: in lost time, in wasted fuel, and in carbon emissions. As congestion worsens, these costs go up.

A recent study found that current road congestion in Metro Vancouver costs $487 million per year and reduces business revenue by $591.8 million. Continuing the status quo means congestion will cost the region an additional $1 billion per year by 2045—nearly double current costs. Implementing the Mayors' Council plan would reduce those costs for business and the economy by up to 41.3 per cent.

According to the Victoria Transport Policy Institute, per capita congestion delays are 30 to 50 per cent lower in urban regions with high quality public transit than in otherwise comparable cities.

One consequence of congestion is reduced access to employment. A number of projects were individually assessed on the question "In 2030, how many more jobs will the average person in the region be able to access within an acceptable travel time as a result of this project?" With the transit plan in place, by 2030 nearly 60,000 more jobs become accessible, a 7 per cent improvement.

Reducing congestion and gridlock not only reduces lost time for the economy, but also frees up non-commuting time for individuals, reduces waste of fuel, and reduces carbon emissions.

REDUCING GREEN HOUSE GAS EMISSIONS

Transportation is the top source of greenhouse gas emissions in both Metro Vancouver and BC as a whole. And 87 per cent of road transport emissions are from passenger and heavy duty vehicles. The easier we make it for low emission rail and other kinds of transit to replace these trips, the lower our emissions will be.

In British Columbia, the transportation sector accounts for 37.9 per cent of provincial greenhouse gas emissions. If we are serious about reducing GHGs in Metro Vancouver and BC, particularly from road transport, we need to be serious about investment in transit expansion.

The Greenhouse Gas Reduction Targets Act mandates that greenhouse gases in BC fall to 33 per cent below 2007 levels by 2020. Metro Vancouver adopted the same target in 2008.

To get there, the BC government has set a goal to double transit ridership by 2020—in large part because of the connection between better transit and lower emissions. As the Simon Fraser University Centre for Dialogue notes:

> *... transportation and land use go hand in hand. While it's important to have a variety of housing types to suit all lifestyles and family structures, transit is conducive to more compact, walkable, and bikeable communities. It allows cities and municipalities to build more affordable and energy-efficient buildings and infrastructure.*

It's no surprise that the Mayors' Council plan would make a big difference. Right now, emissions are forecast to rise to more than 5.1 million tonnes a year by 2030. If the Mayors' Council plan happens, they will rise to only 4.7 million tonnes—an 8.2 per cent improvement.

We can reduce our dependence on fossil fuels and create good jobs that also help to build a just and prosperous economy for everyone.

SEABUS PHOTO COURTESY JIMMY/FLICKR

IN SUMMARY

In addition to benefits for users such as time savings, improved health, and accident reduction, the Mayors' Council 10-year plan has considerable societal benefits. It will create jobs, reduce congestion, and cut greenhouse gases. Those working to build and operate the plan—and many who will derive work as a consequence of the better infrastructure—will be employed in green jobs that contribute to a greener economy. We can reduce our dependence on fossil fuels and create good jobs that also help to build a just and prosperous economy for everyone.

Over its 10 years, the Mayors' Council plan will contribute to 26,322 person years of new direct employment, 43,800 person years of total employment, $2.96 billion in wages, and $4.48 billion toward GDP in Metro Vancouver. On average, over the 10 years, 4,380 person years of employment will be created annually. By 2024, the annual number of person years of work from the Mayors' Council plan will be 5,901.

Regional targets for livability, growth, and location of employment centres will be supported by improved transit in all parts of the region, notably in fast growing urban centres such as Vancouver, Surrey, and the Tri-Cities.

We'll save more than $1 billion in traffic congestion costs. The distances people drive and the costs of excess emissions will all be reduced by about a third. Greenhouse gases from transport will fall and Metro Vancouver will be well on its way to being a place where half of all trips can be made by walking, cycling, and transit by 2043.

That future is very achievable—and within a decade—if the Mayors' Council plan for enhanced transportation infrastructure is put in place.

PART 1

Introduction

WEST COAST EXPRESS PHOTO COURTESY STEPHEN REES/FLICKR

SINCE THE FIRST ARRIVAL of Canadian Pacific and Great Northern trains, Metro Vancouver has grown and prospered by strategic transportation investment. Today, better transportation is still an important solution to manage population growth and affordable housing. Decades of regional planning has built consensus for densification on the Burrard Peninsula and at town centres. To succeed, this plan requires continuing transportation investment. Our valuable location on the Pacific and the Fraser is supported by great sea and air ports that rely on efficient movement of goods and people to do their work. Better transportation is needed by all economic sectors and every type of worker.

This report examines the potential for both employment growth and greenhouse gas reduction if the Mayors' Council plan is approved and built.

The Mayors' Council 10-year Transportation and Transit Plan is now in front of voters. Citizens will shortly decide whether to approve that plan.

The impact on jobs and greenhouse gases are key considerations in that decision. This report examines the potential for both employment growth and greenhouse gas reduction if the Mayors' Council plan is approved and built.

The devastating impacts of global climate change are clearer by the day. Dependence on fossil fuels must be sharply reduced. And we can do it by creating good jobs that help build a just and prosperous economy for everyone. This is why policy makers in British Columbia—and around the world—are increasingly focused on "green jobs" as a way to balance economic development with environmental protection.

The United Nations Environmental Programme (UNEP) says that green jobs are economic activities that "contribute substantially to preserving or restoring environmental quality," and that "green jobs need to be decent work, i.e. good jobs which offer adequate wages, safe working conditions, job security, reasonable career prospects, and worker rights."[1]

1 *Green Jobs: Towards decent work in a sustainable, low-carbon world*, United Nations Environment Programme, September 2008, p. 4, www.unep.org/PDF/UNEPGreenjobs_reporto8.pdf

Investment in public transit and reduced congestion is fundamental for both environmental quality and economic development in major urban areas. In 2012, the Urban Transportation Task Force of the Council of Ministers responsible for transportation put it this way:

> *Congestion reduces Canadians' quality of life and also has environmental costs. The waste of energy in gridlocked traffic and the production of greenhouse gases and other pollutants are harmful to the Canadian environment. Perhaps most importantly, congestion has substantial economic costs. Decisions on investments and jobs hinge on the quality of transportation infrastructure and the free flow of goods and people in and through our cities. Congestion increases current costs and discourages future investments.*[2]

Population projections for the Metro Vancouver region forecast an additional one million residents and 600,000 additional jobs by 2041.[3] The Mayors' Council on Regional Transportation has responded with a 10-year plan to invest $7.5 billion in transportation and transit improvements.[4] By expanding public transit and reducing congestion, the Mayors' Council plan would improve environmental quality in the Lower Mainland. Those employed in the construction and operation of the planned improvements will be directly engaged in green work. Many others will gain new opportunities for employment over the next decades as a consequence of improved mobility and more sustainable development.

The Mayors' Council 10-year Transportation and Transit Plan proposes to fund an additional $250 million per year for transportation investment through revenue from a 0.5 per cent increase in the provincial sales tax. These funds will lever further cost-shared dollars from the provincial and federal governments.

Investment in public transit and reduced congestion is fundamental for both environmental quality and economic development in major urban areas.

ABOVE: DUNSMUIR SEPARATED BIKE PATH AT GRANVILLE STREET, PHOTO COURTESY PAUL KRUEGER/FLICKR

2 *The High Cost of Congestion in Canadian Cities,* Urban Transportation Task Force, Council of Ministers Responsible for Transportation and Highway Safety, April 2012, p. 3, www.comt.ca/english/uttf-congestion-2012.pdf

3 *Metro Vancouver 2040: Shaping Our Future Regional Growth Strategy,* Table A.1 "Population, Dwelling Unit and Employment Projections for Metro Vancouver Subregions and Municipalities" www.metrovancouver.org/services/regional-planning/PlanningPublications/TableA1-PopDwelUnitEmpProjforMVSubregMuni.pdf

4 Details of the proposed investments and their impacts can be found in the Appendices *Regional Transportation Investments: a Vision for Metro Vancouver,* Mayors' Council on Regional Transportation, June 2014, http://mayorscouncil.ca/wp-content/uploads/2014/06/Mayors-Council_Appendices_June-12-2014.pdf

IN FOCUS

For transit users, the plan means more and better service.

For drivers, the plan means less time stuck in traffic and real alternatives to driving.

TOP PHOTO COURTESY DENNIS TSANG/FLICKR; BOTTOM PATULLO BRIDGE/REVAG,FLICKR

Plan Highlights

- A new four-lane Patullo Bridge
- 11 new B-line bus routes served by 159 new B-line vehicles
- A 25 per cent increase in bus service overall with the addition of 400 new buses
- A 50 per cent increase in Seabus service
- 27 per cent more West Coast Express service
- An 80 per cent increase in Night Bus service and more bus service to new neighborhoods
- 2 new Light Rail Transit lines connecting Surrey City Centre to Guildford, Newton and Langley
- New rapid transit for the Broadway Corridor in Vancouver in a tunneled subway extension of the Millennium Line to Arbutus
- 2,700 kilometres of bikeways, including 300 kilometres of fully traffic-separated routes
- 30 per cent more Handy Dart service
- Improvements to the Major Road Network, bus exchanges, Skytrain stations and pedestrian connections.

In addition to clear benefits for users, such as more convenient and frequent transit, the Mayors' Council 10-year Transportation and Transit Plan will also bring economic benefits. We know from direct experience with the current system that transportation investments are big job generators.

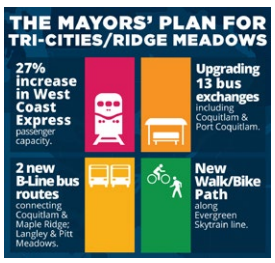
Construction of the $1.43 billion Evergreen Line Skytrain expansion from Lougheed Town Centre in Burnaby to the Coquitlam City Centre, now halfway through its four year construction phase, is creating 8,000 direct and indirect jobs. Operation of the line, as with earlier rapid transit lines, will generate ongoing employment for systems operators and supervisors as well as maintenance technicians. Meanwhile, in addition to the direct and indirect jobs associated with the line itself, the BC Ministry of Jobs, Tourism and Skills Training estimates the residential and commercial construction resulting from Evergreen will generate more than 7,000 additional person years of employment in the region.[5]

The story was similar for the $1.167 billion Millennium Line which was built on time (33 months) and under budget and was the recipient of many engineering and design awards. The $2.1 billion Canada Line has exceeded ridership projections in only a few years and the Expo Line has contributed significantly to economic development throughout the region since the 1980s. Thousands of capital and operating jobs were created by all of them. In the case of the Millennium Line, an additional 900 manufacturing jobs were created through an arrangement with Bombardier that saw 58 Skytrain cars manufactured in Burnaby.[6]

Currently, TransLink directly employees more than 6,000 people.[7] ProTrans BC, the private operator of the Canada Line, has a further 150 employees.

While the transit system is a major direct and indirect employer, it also plays a big role in mitigating and reducing greenhouse gas emissions in the region. This is important because, in British Columbia, the transportation sector is the largest single contributor to greenhouse gases, accounting for 37.9 per cent of total provincial emissions. Road transport makes up the bulk of that at 23.7 per cent of total provincial emissions.[8] In the Metro Region, cars and trucks are the source of 32 per cent of greenhouse gases.[9] To get serious about reducing greenhouse gases in Metro Vancouver and BC, particularly from road transport, we need serious investment in transit expansion.

The plan proposes improvements for all parts of the region.



5 *Project Report: Evergreen Line Rapid Transit Project,* Partnerships British Columbia, March 2013, Section 4.4, p. 9, www.partnershipsbc.ca/files-4/documents/PBCEvergreen.pdf

6 "Skytrain Goes Boldly into the 21st Century with Millennium Line extension" by Ian Smith, *Branchline,* January 2003, p. 3, www.bytownrailwaysociety.ca/branchline/files/2003/2003-01.pdf

7 This includes: 4,300 employees at Coast Mountain Bus, 3,700 of whom are bus operators; 537 operators, attendants, dispatchers and operations and maintenance staff of the core Skytrain system; 230 employees of the transit police; 80 employees of Seabus; and management and administration staff.

8 *British Columbia Greenhouse Gas Inventory Report 2012*, BC Ministry of Environment, Table 3.2, p. 14, http://www2.gov.bc.ca/gov/DownloadAsset?assetId=19484040723540AA8CFFD28097BCAB3A&filename=pir-2012-full-report.pdf

9 *Integrated Air Quality and Greenhouse Gas Management Plan* Metro Vancouver, October 2011, p. 34, www.metrovancouver.org/services/air-quality/AirQualityPublications/IntegratedAirQualityGreenhouseGasManagementPlan-October2011.pdf

PART 2

Transportation and Employment

VARIOUS ANALYSTS HAVE QUANTIFIED the impact of transportation investment on employment.

The Canadian Urban Transit Association says that Canada's current public transit systems already accounts for 70,000 direct and indirect green jobs and reduces greenhouse gas emissions by 2.4 million tonnes annually.[10]

In a 2010 report for the Columbia Institute on green jobs, David Thompson and Rob Duffy cited federal data that showed that in BC "Transit and ground passenger transport created 18.5 direct and indirect person years of employment per $1 million invested. This compares favourably to oil and gas extraction (1.8 person years per $1 million) and forestry and logging (7 person years per $1 million)."[11] In other words, investment in transit results in 10 times the number of jobs as an equivalent investment in fossil fuel extraction.

Analysis in 2009 for Smart Growth America and the University of Utah found that every $1 billion in infrastructure investment had direct, indirect, and induced employment effects ranging from 14,747 to 22,849 with the highest employment impact from mass transit. Mass transit was found to generate 31 per cent more jobs than construction of roads and bridges.[12]

In 2012, a Federation of Canadian Municipalities report noted that "Every dollar invested in transportation infrastructure reduces private sector costs by 17 cents." In the report, FCM cited a Risk Analytica report for the Residential and Civil Construction Alliance of Ontario which found that for every tax dollar invested in improved infrastructure the taxpayer is better off by $1.48 on average.[13]

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10 *Measuring Success: The Economic Impact of Transit Investment in Canada,* Canadian Urban Transit Association, May 2010, www.cutaactu.ca/en/publicationsandresearch/resources/Issue_Paper_35E.pdf

11 *Jobs, Justice, Climate: Building a Green Economy for BC,* David Thompson and Rob Duffy, Columbia Institute, November 2010, p. 27, www.columbiainstitute.ca/sites/default/files/attachments/REVISED_FINAL_Columbia_green_jobs_nov2010.pdf

12 "Economic Stimulus Through Construction and Repair of Transportation Infrastructure", Metropolitan Research Center, University of Utah, quoting J. Heintz, R. Rollin and H. Garrett-Peltier, *How Infrastructure Investments Support the U.S. Economy: Employment, Productivity and Growth*, 2009 in Briefing Paper No. 2 (pp. 6 and 7), *The Best Stimulus for the Money: Briefing Papers on the Economics of Transportation Spending,* April 2009, www.smartgrowthamerica.org/documents/thebeststimulus.pdf

13 *The Road to Jobs and Growth: Solving Canada's Municipal Infrastructure Challenge,* Federation of Canadian Municipalities, November 2012, pp. 5 and 6, www.fcm.ca/Documents/backgrounders/The_Road_to_Jobs_and_Growth_Solving_Canadas_Municipal_Infrastructure_Challenge_-_Submission_EN.pdf

PART 3

Jobs from the Mayors' Council Plan

BASED ON EVIDENCE AND EXPERIENCE ELSEWHERE, we should expect significant employment benefits from the Mayors' Council Transportation and Transit Plan.

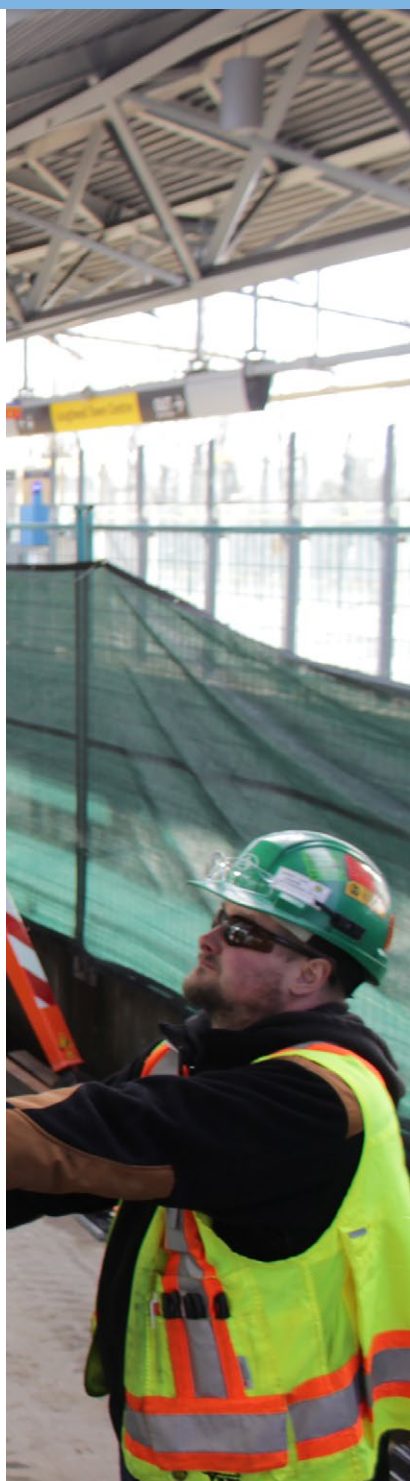
The plan, proposed for the period from 2015–2024, estimates $7.5 billion ($2015) in new capital expenditures over the 10-year period, as well as an increase in operating and financing costs of $800 million per year.[14]

Impacts/Benefits Data

Analysis shows that implementing the Mayors' Council plan will, by 2024, contribute to 26,322 person years of new direct employment, 43,800 person years of total employment, $2.96 billion in wages, and $4.48 billion toward GDP in Metro Vancouver. On average, over the 10 years, 4,380 person years of employment will be created annually. By 2024, the annual number of person years of work will be 5,901.

The economic impact estimates are broken down into three categories: direct, indirect, and induced economic impacts. Within each category they measure the employment impacts, the wages impacts, and the Gross Domestic Product (GDP) impacts. (See Appendix A for information on how the impact estimates are derived and what they mean.)

The following tables provide annual estimates of the employment, wage, and GDP benefits derived from the direct, indirect, and induced economic impacts of the 10 years of the capital and operational investment expenditures plan.



14 *Regional Transportation Investments: a Vision for Metro Vancouver,* Mayors' Council on Regional Transportation, June 12, 2014, p. v., http://mayorscouncil.ca/wp-content/uploads/2015/02/Mayors-Council-Vision-Document_June-2014.pdf

Economic Impact of the Mayors' Council Transit Plan

Incremental economic impact on the Metropolitan Vancouver economy of 10-year capital and operational spending versus base case of maintaining what is currently in place (cumulative 2015 – 2024),[a]

TABLE 1: EMPLOYMENT IMPACT

Expenditure/economic impact	Employment impact[b] (person years)			
	Direct	Indirect	Induced	Total
Capital expenditures	15,317	6,595	4,410	26,322
Operational expenditures	11,234	2,976	3,269	17,478
Total expenditures	26,551	9,570	7,679	43,800
Annual average expenditure	2,655	957	768	4,380
Annual expenditure by 2024	3,630	1,213	1,058	5,901

Notes: Metropolitan Vancouver economy only. [A] Estimates derived from TransLink-provided data. [B] Summation of annual estimates.

TABLE 2: WAGE IMPACTS

Expenditure/economic impact	Wages impact[b] ($ millions)			
	Direct	Indirect	Induced	Total
Capital expenditures	956	440	232	1,628
Operational expenditures	969	199	164	1,332
Total expenditures	1,925	639	396	2,960
Annual average expenditure	192	64	40	296
Annual expenditure by 2024	282	82	54	418

Notes: Metropolitan Vancouver economy only. [A] Estimates derived from TransLink-provided data. [B] Summation of annual estimates.

TABLE 3: GDP VALUE-ADDED IMPACT

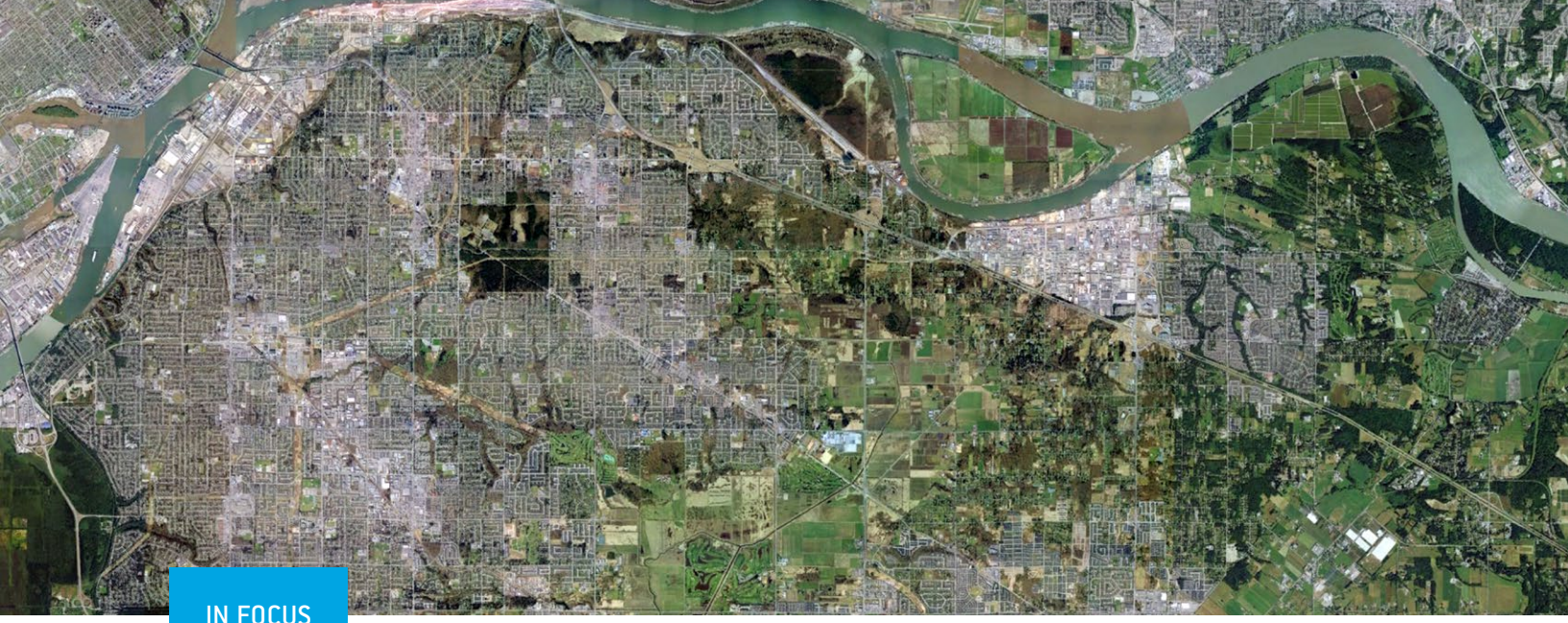
Expenditure/economic impact	GDP impact[b] ($ millions)			
	Direct	Indirect	Induced	Total
Capital expenditures	1,233	620	516	2,369
Operational expenditures	1,351	377	383	2,111
Total expenditures	2,584	997	899	4,480
Annual average expenditure	258	100	90	448
Annual expenditure by 2024	386	136	127	649

Notes: Metropolitan Vancouver economy only. [A] Estimates derived from TransLink-provided data. [B] Summation of annual estimates.

TABLE 4: TOTAL IMPACT

Expenditure/economic impact	Employment (person years)	Wages ($ millions)	GDP ($ millions)
Capital expenditures	26,322	1,628	2,369
Operational expenditures	17,478	1,332	2,111
Total expenditures	43,800	2,960	4,480
Annual average expenditure	4,380	296	448
Annual expenditure by 2024	5,901	418	649

Note: Metropolitan Vancouver economy only.



IN FOCUS

Surrey Rapid Transit

The City of Surrey and surrounding communities are among the fastest growing parts of the region, forecast to attract more than 25 per cent of new residents and jobs over the next 30 years.

> *Surrey Metro Centre is emerging as the region's second downtown, serving communities south of the Fraser. The City of Surrey's many investments and decisions, as well as the locating of the newest Simon Fraser University campus and the Surrey Hospital, have provided major catalysts to the centre's development. The Central City office tower and more recent developments provide a growing supply of office space. Continued job growth in Surrey Metro Centre is critical to reduce the length of work trips and access to services.*
>
> *In 2006, Surrey Metro Centre had 8,300 jobs, a number expected to grow to 50,000 by 2041. Surrey Metro Centre is also an important residential location with brisk development in recent years. Adequate transit capacity, as well as improved cycling and pedestrian facilities, leading to Surrey Metro Centre from other points south of the Fraser are needed to support the growth.*[15]

Significant rapid transit improvements are proposed for Surrey in the Mayors' Council plan. They are a good example of the job creating potential of the entire plan.

The proposed investment of $2.14 billion ($2015) over 12 years would result in a 27 km light rail transit (LRT) network connecting Surrey Centre with Langley via Fraser Highway, with Guildford via 104th Avenue, and with Newton via King George Highway. Newton would be connected to South Surrey/White Rock with new B-line express bus service. This would entail the construction of 19 new LRT stations and six new B-line stations.

These improvements would create direct jobs during construction, encourage transit use, ease congestion, promote development, support sustainable land use, and add to GDP.

Estimates of some of the economic impacts of construction provided to the provincial government found that Surrey rapid transit would create at least 14,700 person years of employment during construction and add $1.14 billion ($2010) in GDP to the region.[16]

In Surrey, the Mayors' Council plan would create direct jobs during construction, encourage transit use, ease congestion, promote development, support sustainable land use, and add to GDP.

SURREY SATELLITE IMAGE, COURTESY GOOGLE EARTH

15 *Regional Transportation Strategy,* Backgrounder #4 "Regional Economy and Growth", TransLink, 2013, www.translink.ca/-/media/Documents/plans_and_projects/regional_transportation_strategy/Backgrounders/Regional_Economy_and_Growth_Backgrounder.pdf

16 "Economic Outputs from Construction ($2010) – LRT1" provided by TransLink.

PART 4

Cost of Congestion

SEABUS LINEUP PHOTO
COURTESY ATOMICT/FLICKR

THE 2012 URBAN TRANSPORTATION TASK FORCE of the Council of Ministers Responsible for Transportation and Highway Safety reviewed the cost of congestion and gridlock in Canadian cities. Here is an excerpt from their report:

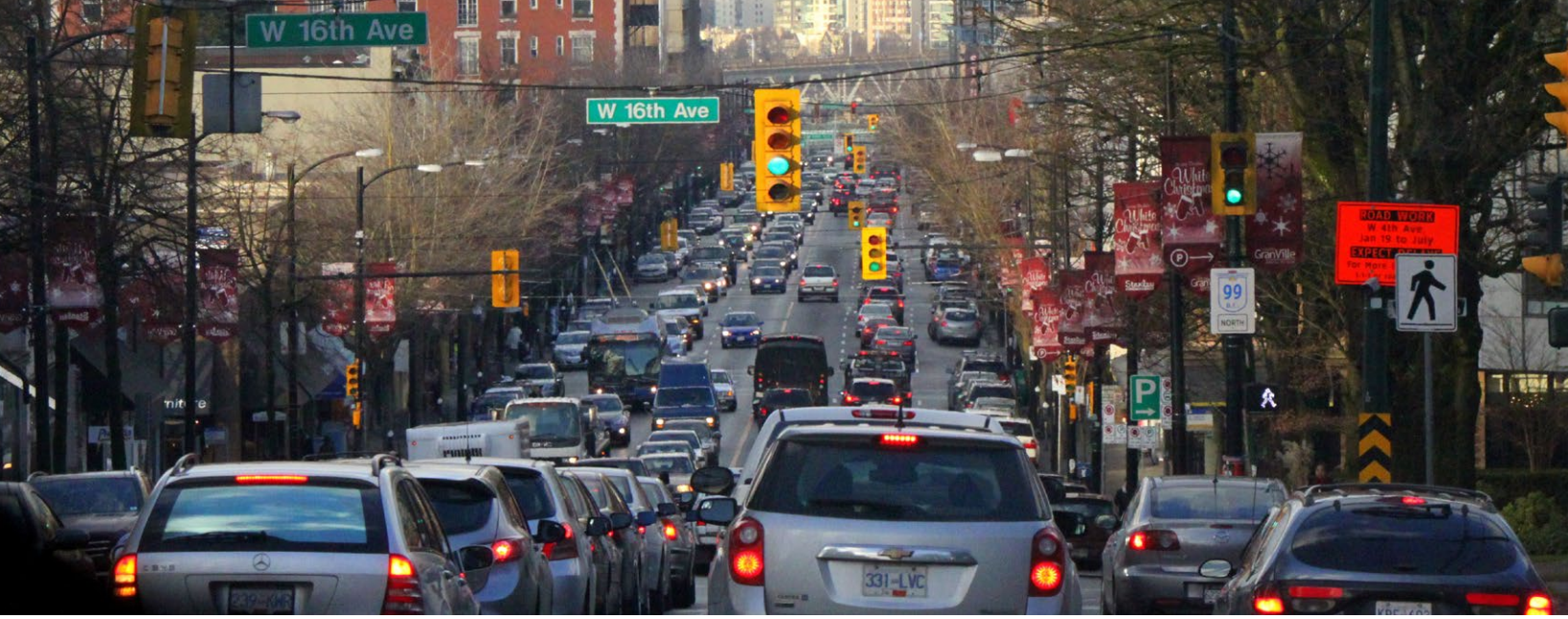
> *In 2006, Transport Canada studied both direct and social costs of congestion in 9 of Canada's largest urban centres.[17] The study was updated in 2009....The study broke the costs down into three categories: costs due to lost time of drivers, costs due to wasted fuel, and costs of emissions of greenhouse gases over what they otherwise would be under free-flow conditions.*
>
> *The costs of congestion were calculated by estimating the additional time that drivers took to complete their journeys under three thresholds of congestion: 50%, 60%, and 70% of free-flow speeds... (i.e. if the free flow speed on a road is 100 km/hour but actual travel is at 70 km/hour then it is 70% of free flow)...*
>
> *The results were assigned a monetary cost based on market values, or close proxies. The first indicator, lost time, is a loss to the economy, but also a social loss in terms of time not available for individuals to use for other purposes. The second indicator, wasted fuel, has both an economic cost and an environmental cost. The final indicator, carbon emissions into the atmosphere, has consequences for the economy now and for the environment in the years ahead....*
>
> *The study found that congestion costs Metro Vancouver at least $518 million per year at the 50% congestion threshold, $652 million at 60% and $755 million at 70%. Metro Vancouver accounted for 20.6% of total congestion in the country.[18]*

Lost time, is a loss to the economy, but also a social loss in terms of time not available for individuals to use for other purposes.

Reducing congestion and gridlock not only reduces lost time for the economy, but also frees up non-commuting time for individuals, reduces waste of fuel, and reduces carbon emissions.

17 *The Cost of Urban Congestion*, Transport Canada, 2006, www.adec-inc.ca/pdf/02-rapport/cong-canada-ang.pdf See also: *Smart Congestion Relief: Comprehensive Evaluation of Traffic Congestion Costs and Congestion Reduction Strategies* by Todd Litman, Victoria Transport Policy Institute, January 27, 2015, www.vtpi.org/cong_relief.pdf

18 *The High Cost of Congestion in Canadian Cities,* supra note 2, pp. 6 – 8.



The Transport Canada methodology for quantifying the cost of congestion — which measured congestion against free-flow speed — differs from the approach used by economic consulting firm HDR for its February 15, 2015 report to TransLink.[19] Rather than the "engineering" approach of the Transport Canada study, the HDR report uses an "economic" approach that considers there is an optimum volume of traffic and an economically efficient level of congestion. Additional trips beyond the optimum are considered "excess" traffic as they generate more costs than benefits.

The HDR report found that current road congestion in Metro Vancouver costs a total of $487 million per year (all HDR dollar figures are in $2015), that it reduces business revenue by $591.8 million, and that it reduces regional GDP by $340.1 million. If the Mayors' Council plan is not implemented (and as population and traffic grows over time), the HDR report projects that by 2045 the cost to the region of road congestion will grow to $1.087 billion, will worsen business revenue by $1.76 billion, and will reduce regional GDP by $1.007 billion.

On the other hand, if the Mayors' Council plan is put in place, HDR projects 33.6 per cent less congestion cost than the base case (at $722 million), 40.8 per cent less impact on business revenue (at $1.042 billion), and 41.3 per cent less reduction of GDP (at $591.6 million.) The report also looked at the impact of congestion on labour demand. It finds that congestion currently reduces potential jobs by 2,989. If nothing is done by 2045, that impact will double to 4,910 jobs whereas with the Mayors' Council plan that number will improve by 40.1 per cent to 2,928 jobs.[20]

The bottom line is that carrying on with the status quo will cost the region an additional $1 billion per year by 2045 — or nearly double current costs — whereas implementing the Mayors' Council plan could reduce those costs for business and the economy by 33.6 to 41.3 per cent.

This is consistent with Victoria Transport Policy Institute findings that per capita congestion delays are 30 to 50 per cent lower in urban regions with high quality public transit than in otherwise comparable cities.[21]

The bottom line on congestion is that carrying on with the status quo will cost the region an additional $1 billion per year by 2045 — or nearly double current costs — whereas implementing the Mayors' Council plan could reduce those costs for business and the economy by 33.6 to 41.3 per cent.

GRANVILLE STREET TRAFFIC PHOTO COURTESY VALENTINA/FLICKR

19 *Current and Projected Costs of Congestion in Metro Vancouver, Final Report* HDR, February 2015, mayorscouncil.ca/wp-content/uploads/2014/06/Current-and-Projected-Costs-of-Congestion-in-Metro-Vancouver.pdf

20 Ibid., Table 11, p. 41.

21 *Smart Congestion Reductions II: Reevaluating the Role of Public Transit for Improving Urban Transportation* by Todd Litman, Victoria Transport Policy Institute, September 9, 2010, http://puff.lbl.gov/transportation/transportation/pdf/congestion-relief-II.pdf and www.vtpi.org. See also *Raise My Taxes, Please!: Evaluating Household Savings from High Quality Public Transit Service* by Todd Litman, Victoria Transport Policy Institute, 26 February 2010 www.vtpi.org/raisemytaxes.pdf

With the transit plan in place, nearly 60,000 more jobs would be accessible to the average person in the region within an acceptable travel time – a 7 per cent improvement.

ABOVE: SEABUS LAUNCHING COURTESY CHARLOTTE BOYCHUK/FLICKR

OPPOSITE: STANLEY PARK CAUSEWAY PHOTO COURTESY BC GOVERNMENT/FLICKR

One consequence of congestion is reduced access to employment. Appendix C of the Mayors' Council plan[22] forecasts outcomes for access to employment. A number of projects were individually assessed on the question "In 2030, how many more jobs will the average person in the region be able to access within an acceptable travel time as a result of this project?" With the transit plan in place, nearly 60,000 more jobs would be accessible (822,369 by 2030 with the plan in place and 764,719 with no action). That's a 7 per cent improvement.

Relieving traffic congestion is key not only for the efficient movement of goods, services and commuters, but also for the reduction of carbon emissions. As our region's population grows, the waste of time and potential productivity caused by traffic congestion will only worsen if strategic transit and transportation improvements are not made. On the other hand, both regional employment and the climate will benefit if projected levels of congestion are significantly reduced.

New research suggests the congestion may be even more serious than the HDR estimates. A recent study from the C.D. Howe Institute and Clean Energy Canada found that the hidden costs of congestion — the costs of all the things that don't happen because of congestion — is costing the Metro Vancouver economy between $0.5 and $1.2 billion dollars a year.[23] According to the report:

> *Traffic congestion slows down traffic — that is the visible cost of congestion. But it also causes people to forgo trips that they otherwise would take. This is the hidden cost of congestion.*
>
> *When congestion causes people not to travel it stifles the key benefits of living in a city: learning face-to-face, finding better jobs, and sharing services and infrastructure.*
>
> *On top of the cost of congestion due to slower travel, these wider, hidden costs of congestion are between $500 million and $1.2 billion per year for the Metro Vancouver area. These hidden costs of congestion are at least as large as the visible economic costs that the regional Mayor's Council has presented.*

22 The BC government's inventory of greenhouse gases by community estimates that transportation contributed 5.5 million tonnes in Metro Vancouver in 2010, more than half of total emissions. We rely on TransLink's estimates instead of the provincial ones because they are more conservative. Government of British Columbia, *Community Energy & Emissions Inventory (CEEI), Metro Vancouver Regional District, 2010 year* (updated February 20, 2014), http://www2.gov.bc.ca/gov/DownloadAsset?assetId=86FE4A1DD47A4B1A9AECA4ACCE74CE52&filename=ceei_2010_metro-vancouver_regional_district.pdf

23 Ben Dachis, 2015, *Tackling Traffic: The Economic Cost of Congestion in Metro Vancouver,* www.cdhowe.org/tackling-traffic-the-economic-cost-of-congestion-in-metro-vancouver/28923

PART 5

Reducing Greenhouse Gas Emissions

BC'S GREENHOUSE GAS REDUCTION TARGETS ACT mandates that greenhouse gases in BC are to be 33 per cent below 2007 levels by the year 2020.[24] Metro Vancouver adopted the same target in 2008.

The BC government has set a goal of doubling transit ridership in BC by 2020 — in large part because of the connection between better transit and lower emissions:

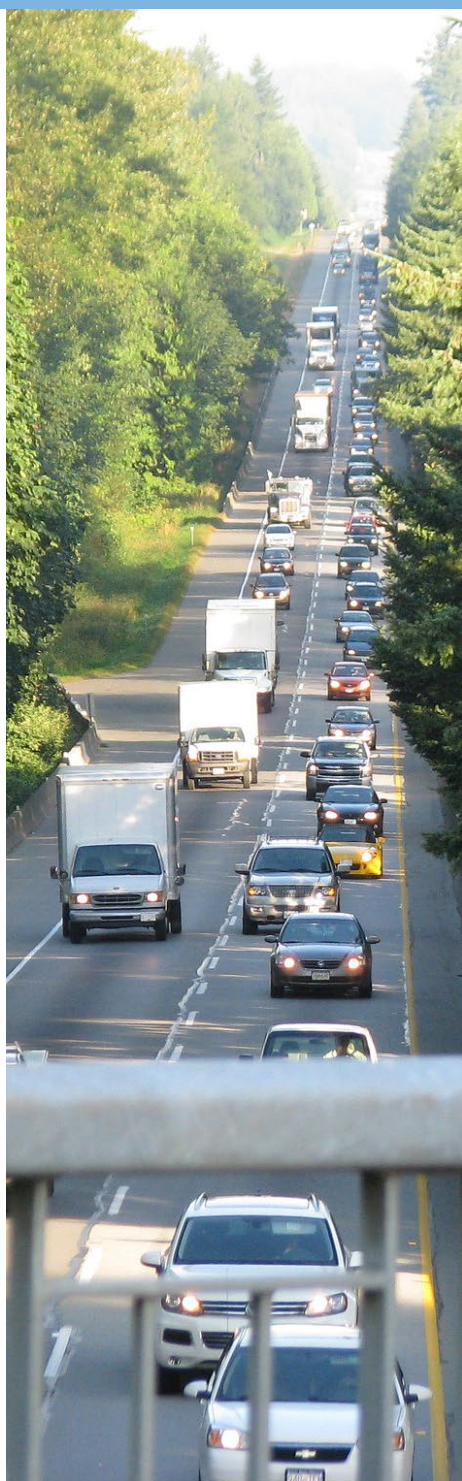
> *The majority of greenhouse gas (GHG) emissions in the transportation sector come from car and truck traffic. Leaving your vehicle at home and taking public transit has an immediate and direct impact on greenhouse gas emissions. By getting just 40 vehicles off the road (the amount of people who will fit in one city bus), we can save over 10,000 litres of fuel and reduce greenhouse gas emissions by 25 tonnes each year.*[25]

As noted earlier, transportation is the top source of greenhouse gas emissions in both Metro Vancouver and BC. In their report *Jobs, Justice, Climate: Building a Green Economy for BC,* David Thompson and Rob Duffy observed that:

> *Passenger vehicles contribute the majority of road transport emissions. Together passenger and heavy duty vehicles total 87% of road transport emissions…Apart from increasing (fossil) fuel efficiency or switching fuels, the other way to reduce emissions is to reduce vehicle use….Moving more people onto transit and goods onto trains will reduce greenhouse gas emissions because rail and transit have significantly lower greenhouse gas emissions per passenger and per km of freight moved.*[26]

In their primer on the transportation referendum, Seth Klein, Iglika Ivanova, and Marc Lee of CCPA–BC note:[27]

> *High-quality — fast and convenient — transit capacity makes it easier for people to leave their cars at home… The share of trips by car in Metro Vancouver has been declining, although it still amounted to 73% of all trips in 2011 (higher in outer*



24 www.leg.bc.ca/38th3rd/3rd_read/gov44-3.htm

25 www.livesmartbc.ca/road/transit.html

26 *Jobs, Justice, Climate: Building a Green Economy for BC,* supra note 11, p. 27.

27 *Why we'll be voting yes to new transit and transportation funding: A primer on the Metro Vancouver referendum*, by Seth Klein, Iglika Ivanova and Marc Lee, Canadian Centre for Policy Alternatives – BC office, March 3, 2015, www.policynote.ca/why-were-voting-yes-to-new-transit-and-transportation-funding

To make a meaningful difference to the climate crisis, we must increase the supply of efficient, reliable public transit. The Mayors' Council plan will contribute significantly to that objective.

VANCOUVER TRAFFIC PHOTO COURTESY PAUL KREUGER/FLICKR

suburban areas).[28] *People are shifting onto public transit, with total passenger trips up 80% between 2000 and 2013.*[29] *As the region grows in population, more transit trips are inevitable, as there is only so much road space.*

As the Simon Fraser University Centre for Dialogue notes:

> *... transportation and land use go hand in hand. While it's important to have a variety of housing types to suit all lifestyles and family structures, transit is conducive to more compact, walkable, and bikeable communities. It allows cities and municipalities to build more affordable and energy-efficient buildings and infrastructure.*[30]

If no action is taken, it is anticipated the 2011 level of 4,399,258 tonnes of GHGs per year[31] will rise by 2030 to 5,100,979 tonnes per year. If the transportation vision is put in place the tonnage drops to 4,736,449. That's an 8.2 per cent improvement.[32]

TransLink's 2013 Regional Transportation Strategy sets regional objectives for the next 30 years. The goal is to reduce the distances people drive by one third and for half of all trips to be by walking, cycling, and transit by 2043.[33] Achieving that goal will be essential to Metro Vancouver meeting its greenhouse gas reduction targets which, in turn, is essential to British Columbia meeting its legislated greenhouse gas targets.

To make a meaningful difference to the climate crisis, we must increase the supply of efficient, reliable public transit. The Mayors' Council 10-year Transportation and Transit Plan will contribute significantly to that objective.

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28 *Regional Transportation Strategy,* TransLink 2013 "How and Why People Travel", Backgrounder #5, www.translink.ca/~/media/Documents/plans_and_projects/regional_transportation_strategy/Backgrounders/How_and_Why_People_Travel_Backgrounder.ashx

29 "Transit Ridership, 1989-2013", TransLink via Stephen Rees' blog, https://stephenrees.files.wordpress.com/2015/02/transitridership.pdf

30 *Moving in a Livable Region* website, "Will Vancouver's transportation referendum be good for climate change", Simon Fraser University Centre for Dialogue, 2014, www.movinginalivableregion.ca/will-vancouvers-transportation-referendum-good-climate-change/

31 In Metro Vancouver, in 2010, transportation accounted for an estimated 5.5 million tonnes of carbon emissions, more than half (53 per cent) of the region's total emissions.

32 Additional policy measures such as improved national fuel efficiency standards and support for electric vehicles will further reduce emissions.

33 *Regional Transportation Strategy,* TransLink, 2013, www.translink.ca/en/Plans-and-Projects/Regional-Transportation-Strategy.aspx

PART 6

Conclusion

IN ADDITION TO BENEFITS FOR USERS such as time savings, improved health, and accident reduction, the Mayors' Council 10-year Transportation and Transit Plan has considerable societal benefits in terms of increasing employment, reducing congestion, and cutting greenhouse gases. Those working to build and operate the plan — and many who will derive work as a consequence of the better infrastructure — will be employed in green jobs that contribute to a greener economy.

Implementing the Mayors' Council plan by 2024 will contribute to 26,322 person years of new direct employment, 43,800 person years of total employment, $2.96 billion in wages, and $4.48 billion toward GDP in Metro Vancouver. On average, over the 10 years, 4,380 person years of employment will be created annually. By 2024, the annual number of person years of work will be 5,901.

The Mayors' Council plan has considerable societal benefits in terms of increasing employment, reducing congestion, and cutting greenhouse gases. That future is very achievable — and within a decade — if the plan is put in place.

Regional targets for livability, growth and location of employment centres will be supported by improved transit in all parts of the region, notably in fast growing urban centres such as Vancouver, Surrey and the Tri-Cities.

Over $1 billion in excess traffic congestion will be relieved, thereby freeing up resources for productive investment. Congestion costs, the distances people drive, and the costs of excess GHG emissions will all be reduced by about a third. Greenhouse gases from transport will be cut in keeping with provincial targets and Metro Vancouver will be well on its way to the goal of half of all trips being by walking, cycling, and transit by 2043.

That future is very achievable — and within a decade — if the Mayors' Council plan for enhanced transportation infrastructure is put in place.

CANADA LINE SKYTRAIN PHOTO COURTESY TED MCGRATH/FLICKR

APPENDIX A

Direct, Indirect, and Induced Economic and Employment Impacts from Capital and Operational Spending

The economic impacts of *capital* spending arise from the building of new transit systems, roads, bridges, or the upgrading of existing structures and systems that require the building of structures and the purchase of raw and finished materials, equipment, etc. that will employ people in a range of construction, manufacturing and professional occupations such tradespeople, fabricators, machine operators, and engineers. These capital expenditures and resulting economic benefits are "one time" only for each element of the construction and installation phase.

The economic impacts of *operational* spending arise from operation of the new transit system components as they come into use that will employ people in a range of system operational and maintenance occupations such as vehicle operators, system controllers and machinery, building and equipment maintenance technicians. These operational expenditures and resulting economic benefits are ongoing and recurring year after year for new elements of the system.

Direct Economic Impacts

The direct economic impact data in this analysis of both capital expenditures and operational expenditures is the employment and GDP that can be attributed directly to the construction, operation and maintenance of the transportation projects included in the 10-year investment plan. From the estimates of direct employment the estimates of wages to be paid those employed have been derived.

Indirect Economic Impacts

The indirect economic impact data in this analysis of both capital expenditures and operational expenditures is the employment and GDP created in other industries and sectors that supply goods and services to the businesses that receive the direct expenditures for the transportation expansion projects, e.g., suppliers of raw materials and construction machinery and equipment during the construction phase, and suppliers of machinery, materials and services necessary for maintenance of the new elements of the transportation infrastructure. This is referred to as one of the "multiplier" impacts. In addition, from the estimates of indirect employment the estimates of wages to be paid those employed have been derived.

Induced Economic Impacts

The induced economic impact data in this analysis of both capital expenditures and operational expenditures is the employment and GDP generated because of expenditures of individuals from the wages earned while employed either directly or indirectly. This is also referred to as one of the "multiplier" impacts. In addition, from the estimates of induced employment the estimates of wages to be paid those employed have been derived.

Total Economic Impacts

Total economic impact data in this analysis is the sum of the regional direct, indirect and induced impacts. All of these measures of the economic impact of capital and operational expenditures associated with the Mayors' Council Transportation and Transit Plan relate to the "gross" level of activity or expenditure associated with the multiple projects covered by the plan, and do not account for any of the costs or negative economic effects of how the revenue is obtained to pay for the plan's expenditures. In addition, the economic impacts data in this analysis is limited to the economic benefits estimated to accrue to the Metro Vancouver regional economy only, and not those benefits that will accrue to the rest of Canada, such as for the purchase of new vehicles, equipment and materials produced outside of the region.

Employment Impacts

The estimates of employment impacts in this analysis, whether direct, indirect or induced, are measured in "person years" or full time equivalent jobs, i.e., a person year of employment.

Incremental Economic Impacts

The estimates of economic impacts of capital and operational expenditures in this analysis measure the difference or incremental impact of the 10-year investment plan and the capital and operational expenditures that will be required to maintain the transportation system currently in place without improvements.

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