

Leveling the Playing Field: Improving Public Transportation Infrastructure in Surrey, BC

**Prepared for Downtown Surrey
Business Improvement Association**



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Executive Summary

This report outlines the context and rationale for increasing the efficiency of existing transportation options and exploring innovative funding services for future public transportation investments in Surrey, BC. Based on the data examined, Surrey is not receiving its fair share of required transit investment from TransLink to keep up with future population and employment projections. City residents continue to identify poor transit service as the top transportation issue requiring attention.

We highlight some regional transportation funding inequalities and discuss some of their consequences. We identify how transportation improvements designed to reconfigure the urban form can have beneficial economic impacts and conclude with recommendations and policy implications that the City of Surrey and the Surrey Downtown Business Improvement Association should support to move transportation improvements forward.

Potential transit ridership increases are greatest South of the Fraser due to increasing population growth, rapidly changing land-use patterns and relatively low transit service levels. Surrey had 46% of Metro Vancouver's average bus service hours per capita and 6.2% of transit modal share to, from and within Surrey (compared to a regional average of 12.4%). Transit levels in Surrey were at 0.57% annual service levels compared to a 1.65% regional average in 2005. During 2006-2009 approximately 50% of the regional transit service hours expanded and bus service in Surrey increased from .057% to 0.97% service hours per capita, yet still remained significantly lower (by 120%) than the regional average of 2.13% transit service hours per capita (2009).

If current regional population and employment growth trends continue, demand for enhanced transit service will only increase in the coming years, particularly in South of Fraser suburb-to-suburb segments and connections.

Increasing the efficiency of the existing public transit infrastructure through transit priority measures is another missing link to improve Surrey's transportation. Queue-jumping lanes and intersection controls that prioritize public transit vehicles and high occupancy vehicles (HOV) over other vehicles can provide time savings that reduce unpredictable delays and increase the value of alternative transportation compared to

single occupancy vehicles. HOVs provides travel time savings, operating cost savings and increased travel reliability.

Innovative funding sources for transit is needed. Surrey will have to form innovative partnerships with diverse partners to ensure secured funding for future investments. Potential funding sources should seek to ensure equity, efficiency and address short and long term transportation improvements. Funding sources can be divided into demand management (short term) and supply management (longer term) mechanisms:

Demand Management Mechanisms

- a. Motor vehicle user fees
 - i. Carbon tax revenue
 - ii. Vehicle registration fee
 - iii. Road pricing

Supply Management Mechanisms

- b. Transportation Oriented Development (TOD)
 - i. Land value taxation
 - ii. Special assessment districts
 - iii. Other funding mechanisms

Improved transportation approaches in Surrey require generating greater ridership and making costs for transit more equitable within the City and the South of the Fraser area. Subsidizing operational costs to provide greater value investments in transportation can result in improved economic impacts for the City, such as higher property values, improved business performance, and increased productivity and quality of the work force.

Surrey should prioritize developing Light Rail Transit (LRT) and enhanced Bus Rapid Transit (BRT) connections and other bus services to link parts of the City in a much more effective way and also to connect Surrey to neighbouring municipalities. Based on lifecycle costs, trip lengths and GHG reductions, light rail represents the most appropriate investment opportunity for communities to support overall vehicle trip reductions. While suitable and cost-effective options are explored that work in tandem with existing transportation services, all stakeholders including the City of Surrey and Surrey Downtown Business Improvement Association will have to work together to carefully examine the opportunities presented in this report.

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Introduction

Surrey is undergoing a rapid transformation from suburban municipality to a multicultural metropolitan city. It is projected to lead the region in population and job growth as it reshapes its structure and function. Once dominated by single-family homes, the city-scape is shifting to more compact, mixed use communities that emphasize a sense of place and have pedestrian, cycling and transit friendly design. This is no more evident as in the City Centre that plans to accommodate 70,000 residents over the next 30 years.

This report outlines the context and rationale for additional public transportation investments in Surrey. Specifically, we emphasize sustainable transportation modes that include opportunities for public transit, fixed light rail, cycling and walking. We highlight some of the regional transportation funding inequalities over the past decade and discuss some of their consequences. We analyze potential funding mechanisms for transportation improvements that can reconfigure the urban form. Lastly, we provide recommendations and policy implications that the Surrey Downtown Business Improvement Association should consider for moving the City's transportation and land-use planning forward.

Research for this report included a review of planning documents from the Province of BC, TransLink, Metro Vancouver and the City of Surrey; as well as various transportation reports and neighbourhood plans. We also reviewed recent planning literature and selected relevant examples and best practices applicable to Surrey.

Context

Surrey is not receiving its fair share of transit investment from TransLink based on its share of existing and future population and employment growth.

Investments in public transportation have the ability to drastically transform the form and function of urban places by providing better access to public and private amenities, generating increased private sector investment and increasing property values. Transportation infrastructure investments from TransLink have varied over the past eleven years due to funding availability, scope and priorities that extend across Metro Vancouver. This is problematic for estimating impacts of road network expansion, particularly when estimating the impact of major provincial and federal highways

projects. Since TransLink does not collect revenue on an individual municipality basis, estimates from the City of Surrey were used.¹

Surrey's transit service was dramatically lower than other Metro Vancouver municipalities until 2005. At that time, Surrey received 76% fewer service hours than Vancouver/Richmond/ Burnaby/New Westminster, 73% fewer hours than the North Shore, and 56% fewer service hours than the Northeast Sector (Port Moody/Coquitlam/Port Coquitlam/Anmore/Belcarra/Maple Ridge/Pitt Meadows), despite leading the region in population growth.

Service levels increased approximately 70% in Surrey between 2005-2009 and transit service hours would have reached regional averages by about 2021, but regional transit service levels have not increased since 2009. Even with the completion of many of the recommendations from the 2007 South of the Fraser Area Transit Plan, service levels in Surrey are still lower in comparison to other municipalities in the BC Lower Mainland.² In part, this lack of service can be explained by lower levels of investment in public transit infrastructure, a late start in building public transit infrastructure (commencing in 1974 for Surrey and 1988 for Langley) and urban development and planning that encouraged dispersed subdivisions that are not conducive to an efficient provision of public transportation. Nevertheless, Surrey is undergoing transformation from a suburban municipality to a larger city and planning emphasis has shifted from a focus on single-family homes to higher density development in existing neighbourhoods.

From Metro Vancouver's perspective, potential modal share gains are greatest South of the Fraser (SoF) due to increasing population growth, rapidly changing land-use patterns and underserved areas in the area. For example, Surrey had 46% of Metro Vancouver's average bus service hours per capita and 6.2% of transit modal share to, from and within Surrey (compared to a regional average of 12.4%). Transit levels in Surrey were at 0.57% annual service levels compared to a 1.65% regional average in 2005.³

During 2006-2009 regional transit service hours expanded approximately 50% and bus service in Surrey increased from .057% to 0.97% service hours per capita. However,

¹ City of Surrey (2011, September 30). Translink Equity/Value One Page Summary for Surrey BIA.

² City of Surrey (2011, September 30). Translink Equity/Value One Page Summary for Surrey BIA.

³ City of Surrey (2011, September 30). Translink Equity/Value One Page Summary for Surrey BIA.

bus service expansion in Surrey remained significantly lower (by 120%) than the regional average of 2.13% transit service hours per capita (2009).⁴

Diversifying Transportation Revenue

Despite regional transit service discrepancies, one area for further exploration is how all municipalities can diversify revenue collection to further support public transportation investments. Municipalities rely excessively on property tax revenues to provide a wide range of services. The Federation of Canadian Municipalities (FCM) estimates that over 63% of municipal revenue comes from residential and commercial property taxes nationally.⁵ Municipalities need to diversify their revenue sources, particularly when considering the high capital and operating costs of road and public transit infrastructure, as it is unrealistic to rely solely on property taxes to continue to provide funding.

While the City of Surrey has adopted numerous “user pay” fees that account for approximately 24% of City revenue, these fees are limited to services such as water, sewage, garbage collection and recreational services rather than road and transportation infrastructure. This points towards the need to demonstrate public support for increased transportation investments, but requires greater knowledge and communication about how sustainable transportation investments contribute to more efficient and livable communities. For example, public investment related to the SOF TP increased bus service hours and contributed to Surrey’s modal share increasing from 4.4% to 6.3% between 2004-2008.⁶ Building the case for increased transportation investments and revenue options needs to include communicating these very tangible results that result from improved service levels to citizens and decision-makers.

Some municipalities are exploring innovative property tax legislation that divides property assessments into separate building and land values. Instead of taxing total property values, building are charged based on any improvements made. In other words, only unencumbered values of land parcels are taxed. The municipality taxes the land at a higher rate than buildings, which increases tax burdens on under-utilized and vacant lots. This in effect encourages densification, revitalization and redevelopment of

⁴ Upgrades in Surrey included Fraser Hwy, Surrey Central to Langley Exchange, 72 Avenue, Scottsdale to Langley, Scott Road & Scott Road Station to Newton, 104 Avenue, Surrey Central to Guildford, and King George Boulevard, Surrey Central to White Rock.

⁵ Federation of Canadian Municipalities. (2006). *Canada’s Communities: Keys to our Prosperity*, Available from July 30, 2011 from <http://www.fcm.ca/english/documents/platform2006.pdf>

⁶ City of Surrey (2011, September 30). Translink Equity/Value One Page Summary for Surrey BIA.

existing properties and neighbourhoods that can provide additional protection of agricultural land (see Potential Funding Mechanisms for more details).

Other policies include vehicle user fees, Transit Oriented Developments (TOD), value capture and special assessments that offer incentives directed toward or are absorbed in transit investments. We also discuss the economic impacts of transportation investments that are often misunderstood in Canada.

The Need for Transportation Infrastructure Investments

Inefficient land use development is one challenge many municipalities face in creating more sustainable communities. Land in close proximity to valuable public infrastructure (such as light rail stations or major road intersections), often remains under-utilized or vacant because a landowner leaves the land vacant waiting for profits to increase in the future once public investments have made the land more valuable.

This type of land speculation drives developers to cheaper sites further away from public services. When road and utility connections are extended to new areas on the urban fringe, land prices rise, causing developers to search for less expensive land even further away. The result is a phenomenon most commonly referred to as “sprawl.” Dispersed, sprawling development is characterized by segregated land uses with low density levels. Sprawl reduces productivity, creates congestion and air pollution, and necessitates dependency on motor vehicles to get around.

Various City of Surrey Planning documents, such as the Sustainability Charter (2007), the Official Community Plan (OCP) (annual review 2011), the Transportation Strategic Plan (2008), TransLink’s South of the Fraser Area Transit Plan (2008) and the Report on Transportation (2010) express the need to decrease dispersed development patterns while increasing transit and transportation oriented infrastructure to address an over-reliance on motor vehicles. Volatile prices of fossil fuel will continue to escalate in the mid- to long-term creating greater hardship for motorists. In order for more centralized and compact development to flourish, Surrey requires setting priorities and actions that link transit services with land use infrastructure.

High level planning documents have set Surrey's direction toward greater sustainability. Surrey's Sustainability Charter, for example, envisions "the efficient movement of people and goods, not just vehicles by striving for carbon neutrality. ..."⁷

The OCP states that "walking, cycling and transit will be the preferred transportation options for most people, there will be no part of the City in which people feel unsafe or uncomfortable, regardless of their transportation mode, age or physical abilities..." and Surrey supports "the expansion of the frequent bus network to support the city centre, town centres, corridors and employment areas."

These commitments to sustainability reflect the City's response to the BC carbon tax, where planning objectives are linked to reducing the City's carbon footprint in step with provincial policy. Indications of refined monitoring and reporting include commitments to embed transportation and building energy indicators with greenhouse gas (GHG) reduction targets, along with achieving carbon neutrality for corporate facilities and fleet vehicles by 2012. Surrey also aims to reduce GHG emissions by 33% per capita by 2020 and by 80% per capita by 2050, as mandated by the Provincial Green Communities Act, 2008 (Bill 27).⁸

Surrey's Transportation Strategic Plan acknowledges, "location of the various types of land-uses, transportation choices, density, and the mix of land uses and development practices are key ecological footprint determinants for the City." It advocates for supporting "higher density and mixed land uses, and ... with significantly higher modal shares for walking, cycling and transit in an effort to reduce congestion, GHGs and energy."⁹ Its vision is linked to TransLink's SoTF TP by acknowledging shortfalls with current transportation infrastructure along with changing socio-demographics:

"Not everyone in Surrey is being fully served by the transportation system. A poor transportation system disproportionately affects the young, the elderly, low waged or recent immigrants."¹⁰

⁷ City of Surrey Sustainability Charter. Available August 5, 2011 from <http://www.surrey.ca/files/COSSC5final.pdf>

⁸ See OCP Updates. Available August 5, 2011 from <http://www.surrey.ca/plans-strategies/3479.aspx>

⁹ See updates to Surrey's Transportation Strategic Plan. (2008). Available August 5, 2011 from <http://www.surrey.ca/files/TransportationStrategicPlan2008.pdf> for example, EN9 p. 51, EN9 p. 53, & EC16 p. 60.

¹⁰ Transportation Strategic Plan. (2008). Available August 5, 2011 from <http://www.surrey.ca/files/TransportationStrategicPlan2008.pdf>.

Socio-demographic trends suggest that *one in three Surrey residents will not have access to drive a motor vehicle by 2031* (italics added) due to age or mobility challenges.

Public consultation for the Transportation Strategic Plan identified poor transit service as the top issue requiring attention. Furthermore, 88% agreed that, “Transit should be as convenient and attractive as driving a car and 12% (~50,000) of the public did not have unhindered access to a car.”¹¹

These findings suggest that many residents are dependent on automobiles, yet desire improved accessibility. Residents want more walkable communities with better bus frequency, connections, hours of operation, and TOD. The City acknowledges that “access to opportunity and the ability to fully participate in society should not be dependent on access to a car,” as reiterated by the need for sustained investment in transit (e.g. see principle 5, p. 14) and greater integration of transit with new development (e.g. see principle 6, p. 15).¹²

Accessibility for customers and employees, movement of goods and services and access to shops and services are particularly critical for future development in the Surrey Centre Neighbourhood. With increased population and density, public transportation investments will be critical to avoid congestion. Across North America, the private sector is calling for improvements to public transportation, recognizing that improved public transit is pivotal to the creation of vibrant urban environments that attract the “creative class” – the sector of educated and skilled workers increasingly being relied on to drive local economic development.¹³

Surrey’s intentions underlie similar trends across North America to remove or narrow roads and redesign streets to add bike lanes, speed up transit and improve pedestrian safety.¹⁴

¹¹ Transportation Strategic Plan. (2008). Available August 5, 2011 from <http://www.surrey.ca/files/TransportationStrategicPlan2008.pdf> p. 11.

¹² Transportation Strategic Plan. (2008). Available August 5, 2011 from <http://www.surrey.ca/files/TransportationStrategicPlan2008.pdf>.

¹³ Florida, R. (2005). *Cities and the Creative Class*. Routledge: New York.

¹⁴ Richards, G. (2011). FHWA Finds Reduced Lane Roads Have Fewer Accidents. San Jose Mercury News: Across the Bay Area. Available August 5, 2011 from http://www.mercurynews.com/news/ci_18561104?source=rss.

Populations Forecasts for the South of the Fraser Region

In 2001, the South of the Fraser (SoF) area (Delta, Surrey, White Rock, the Township and City of Langley) had a combined population of 570,000, comprising of 29% of Metro Vancouver's population. By 2006, the population base had grown to 30% of the region (Surrey 13.5%), while the entire region's population increased over 6%. Estimates forecast the SoF's population will increase 58% to 950,000 people, while Metro Vancouver will increase 44% to 2.9 million by 2031. The SoF area is forecast to encompass 33% of Metro Vancouver's total population in 30 years (see Table 1). Much of the population and job growth in the SoF area is anticipated to be absorbed in the Surrey Centre neighbourhood. As a result, the long-term vision of Surrey Centre will no longer act as a transfer point to access downtown Vancouver, but as a final destination for jobs, cultural amenities and housing.

Table 1 Surrey, South of Fraser and Metro Vancouver Population Growth

	2001	2006	Percent Growth	2031	Growth #s
Delta	96,950	96,723	-0.23%		(227)
Langley City	23,643	23,606	-0.16%		(37)
Langley Township	86,896	93,726	7.86%		6,830
Surrey	347,825	394,976	13.56%		47,151
White Rock	18,250	18,755	2.77%		505
South of Fraser	573,564	627,786	9.45%	950,000	54,222
Metro Vancouver	1,986,965	2,116,581	6.52%	2,900,000	129,616
<i>Surrey as Percent of Region</i>	<i>17.5%</i>	<i>18.7%</i>		<i>0.0%</i>	
<i>South of Fraser as Percent of Region</i>	<i>28.9%</i>	<i>29.7%</i>		<i>32.8%</i>	

Credit: TransLink South of Fraser Area Transit Plan. (2008). The Fraser Area South of Fraser Area Transit Plan. Available August 5, 2011 from <http://www.TransLink.ca/en/Be-Part-of-the-Plan/Plans/Area-Transit-Plans/South-of-Fraser-Area-Transit-Plan.aspx> p.10.

Regional Transportation Planning Challenges

In 2007, the Province of BC restructured TransLink to include new revenue-generating measures, a restructured executive and increased area of jurisdiction. The former board was replaced by a Council of Mayors from the municipalities served by TransLink and a Board of Directors of non-political experts appointed by the provincial government. These changes were somewhat controversial because the new Board of Directors was no longer directly accountable to the public.

The provincial fiscal framework stymies a municipality's ability to invest substantially in transportation improvements.¹⁵ Municipal governments received 8% of Canadian tax dollars, yet face a \$123 billion infrastructure deficit that continues to grow by \$2 billion per year.¹⁶ Prior to TransLink's existence (1999), almost half of transit funding came from the Province, but this figure has declined by almost one-third over the past ten years, signifying the erosion of local municipal decision-making, yet expansion of municipal fiscal responsibilities for transit.

The SoFA TP, a key policy document to establish a long range vision for transit in Surrey serves as a mechanism to improve transit options in corridors designated for future rapid bus and rail connections and to double bus service.¹⁷ TransLink funding availability (2006-2009) expanded bus service hour expansion by 50% South of the Fraser during this time period, and SoF municipalities are hopeful to receive funding for the remaining 50% bus expansion in TransLink's 2012-2014 Supplemental Plan to ensure SoFA TP's full implementation.

SoFA TP recommends TransLink's Frequent Transit Network (FTN) expansion by developing a Transit Improvement Plan, providing appropriate levels of transit infrastructure to match bus service expansion within Surrey's city limits and giving transit greater priority by establishing future fixed rail alignment and technology.¹⁸ These initiatives will subsequently produce new or updated Neighbourhood Comprehensive Plans (NCP) that align transit infrastructure improvements with compact, mixed-use, TOD along transit corridors and exchanges.

¹⁵ Municipal governments in the US generally operate within a more permissive fiscal framework than in Canada. US municipal governments rely on property taxes as the single largest revenue source, but have diversified financing mechanisms, user fees, and sales taxes. See Federation of Canadian Municipalities. (2006). *Canada's Communities: Keys to our Prosperity*. Available August 5, 2011 from <http://www.fcm.ca/english/documents/platform2006.pdf>.

¹⁶ In Canada, municipal revenues grew at a fraction of the pace of federal and provincial revenues, failing to keep up with cost of living adjustments between 1999-2003. In 1993, municipal revenue from other jurisdictions accounted for 25 cents per dollar and by 2003 they accounted for 16 cents per dollar. See Infrastructure Canada. (2006). *From Restless Communities to Resilient Places*. June. Retrieved August 5, 2011 from http://www.infrastructure.gc.ca/eaccc-ccevc/alt_formats/pdf/eaccc_rep_ccevc_rap_e.pdf and Mirza, S. (2007). *Danger Ahead: The Coming Collapse of Canada's Municipal Infrastructure*. Ottawa: Federation of Canadian Municipalities.

¹⁷ TransLink South of Fraser Area Transit Plan, (2008). The Fraser Area South of the Fraser Transit Plan. Available August 5, 2011 from <http://www.TransLink.ca/en/Be-Part-of-the-Plan/Plans/Area-Transit-Plans/South-of-Fraser-Area-Transit-Plan.aspx>.

¹⁸ City of Surrey. (2008). Transportation Strategic Plan Available August 5, 2011 from <http://www.surrey.ca/files/TransportationStrategicPlan2008.pdf> TP. p 45.

TransLink's FTN consists of two components: 1) the Rapid Transit Network (RTN); and 2) the Frequent Bus Network (FBN). The RTN is set to extend the existing RTN to regional and municipal urban centres with fixed rail and bus connections by focusing on high volume ridership and land densification. The FTN is meant to compliment rapid transit with local bus service and neighbourhood routes to allow mobility for almost one million people over thirty years.

The SFTA TP predicts its implementation will increase transit modal shifts from 4% to 11.5% by 2031, but requires an additional 600+ buses that include Bus Rapid Transit (BRT) and median bus ways, such as on King George Highway, 200th Street and Highway #1. As an initial step, it predicts bus service to increase 76% and fleet expansion to increase 45% by 2015 (or going from 225 buses to 342 buses).¹⁹

Finding the necessary resources for planned transportation improvements are a recurring problem for TransLink. TransLink relies predominantly on fares, property taxes and fuel taxes for revenue. The potential to generate increased revenues from any of these sources is limited. Funding sources need to be diversified, how revenue sources are assessed need to be reconsidered and revenue contributions from other government levels beyond municipalities should be analyzed. For example, property taxes contribute substantially to municipal coffers (approximately 63% in Canada), but municipalities collect property taxes based on land values, rather than on proximity to city services. This is problematic because those residing further from city services cause greater burden on municipal infrastructure (roads and utilities), yet often fail to pay their share for these maintenance and operating costs.

Surrey's contribution to TransLink was approximately \$160 million in 2009 with fuel taxes, property taxes and transit fares accounting for over 95% of this contribution.²⁰ During this year, TransLink invested approximately \$135 - \$146 million in it's operations in Surrey, or between .90 -.95 cents for every dollar Surrey taxpayers contributed (Table 2). Due to data discrepancies, two methodologies were used for estimating SkyTrain ridership.

¹⁹ TransLink South of Fraser Area Transit Plan, (2008). The Fraser Area South of the Fraser Transit Plan. Part 3. Available August 5, 2011 from <http://www.TransLink.ca/en/Be-Part-of-the-Plan/Plans/Area-Transit-Plans/South-of-Fraser-Area-Transit-Plan.aspx>.

²⁰ City of Surrey (2011, September 30). Translink Equity/Value One Page Summary for Surrey BIA.

Table 2 Estimated Contributions by Surrey and TransLink Spending in Surrey

Estimated Contributions by Surrey (2009)		
Expenditures	(000s)	%
Fuel Tax	\$64,500	41%
Property Tax	\$37,000	23%
Transit Fares	\$36,500	23%
Federal Gas Tax	\$15,500	10%
Hydro Levy	\$4,000	3%
Parking Sales Tax	\$500	0%
Total	\$158,000	
Estimated TransLink Spending in Surrey		
Expenditures	(000s)	
Bus Operations & Maintenance	\$86,000	
SkyTrain Operations & Maintenance	\$14,500-\$22,000	
Debt Servicing – Bus & Community Shuttle	\$12,000	
Debt Servicing Roads Capital & Pattullo Bridge	\$7,000	
Major Road Network Operations & Maintenance	\$6,500	
Debt Servicing - SkyTrain	\$1,500	
Bicycle Funding	\$6,500 - \$10,500	
Bus Loop Park & Ride Maintenance	\$500	
Total	\$135,000 - \$146,500	

Credit: City of Surrey. (2011, September 30). TransLink Equity/Value One Page Summary for Surrey BIA. p. 4.

The current transit system South of the Fraser remains relatively unchanged since 1974, outside of bus routes added in Surrey, Langley and White Rock and a few SkyTrain stations. SkyTrain's 25-year old Expo line consists of four SkyTrain stations in Surrey, yet even though Surrey's population has doubled since this time, no future expansion is planned.²¹ TransLink's priorities to build the North of the Fraser (NoF) Evergreen line from Coquitlam to Vancouver is indicative of SkyTrain's high price tag that has met ongoing funding challenges, delays and political turf wars. Significant

²¹ Stueck, W. (2011). Transit a hit-and-miss affair in B.C.'s Lower Mainland The Globe and Mail. Available August 5, 2011 from <http://www.theglobeandmail.com/news/national/toronto/transit-a-hit-and-miss-affair-in-bcs-lower-mainland/article1957867/page2/>.

transit capital projects North of the Fraser would presume Surrey is next in line for major transit expansion.²²

If TransLink is to successfully reach its modal share targets by 2031, additional partnerships and resources are required. Rather than concentrate on connections from Surrey to Vancouver and NoF destinations, greater attention is required to develop SoF suburb-to-suburb segments and connections. Not a small challenge due to the area's relatively less dense patterns of development, however, it is important to consider that the significant Agricultural Land Reserve (ALR) located in Surrey contributes to land use densities. When the ALR and protected areas are removed from land density equations, Surrey's net density of 25.4 persons per hectare is 23% higher than the regional net density of 20.5 persons per hectare.²³ While densities are lower than Vancouver or Burnaby that have far less ALR land, Surrey does have great potential to transform land-use development patterns based on TOD.

When quality transit service is provided, modal shares in Surrey have proven to shift residents out of their private automobiles and onto transit. For example, transit accounts for a 55% share of trips between Surrey and Downtown Vancouver when serviced by SkyTrain and B-Line buses. Transit modal shares in Surrey also increased from 4.4% in 2004 to 6.2% in 2008 with overall improved transit upgrades.

Comparing Road and Transit Infrastructure Investments

Highways and roads cost BC taxpayers billions when traffic congestion, economic and health costs are included in overall project costs. These costs are often not fully evaluated when infrastructure for automobiles are developed. Adding to these discrepancies are transport mode cost comparisons. Costs associated with personal automobiles, local bus service, bus rapid transit and trolley buses are difficult to determine when construction and maintenance costs are omitted because they operate on existing roads. There is a lack of consensus about which external cost valuations

²² For example, major transit capital projects that total almost \$4.5 billion include the Canada Line, Millennium Line, SkyTrain fleet & Operations & Maintenance Centre expansion, new diesel/natural gas buses, new trolley buses, the Vancouver Transit Centre, a third SeaBus and the Broadway Station upgrade. Surrey received improvements, such as new SkyTrain cars and upgraded transit service, new transit buses, expenditures on the Surrey City Centre Plan and cycling infrastructure, new standard buses and community shuttles from the Urban Transportation Showcase, Major Road Network (MRN) funding and a park & ride facility in South Delta used by Surrey residents. These upgrades do not balance out with the aforementioned NoF municipalities.

²³ City of Surrey (2011, September 30). Translink Equity/Value One Page Summary for Surrey BIA.

apply, which results in the omission or under-valuing land values and resources dedicated to automobile infrastructure.²⁴

For the purpose of illustrating local dilemmas and impacts of transportation inequities, we look at what might Surrey's future look like under improved transit compared to a business-as-usual approach. We specifically examine how light rapid transit could improve the region's mobility by discussing potential to develop the Interurban Railway corridor.

Interurban Right of Way

The Interurban Railway operated from 1910 until the 1950's from Chilliwack to Vancouver. The Interurban corridor does not play a significant role in TransLink's creation of the Rapid Transit Network (RTN), due to a perceived lack of population and job growth potential in the corridor.²⁵ Some suggest that TransLink's estimates are skewed due to a reliance on assumptions based on heavy rail rather than light rail and the significant discrepancy in capital costs.²⁶ TransLink also tends to focus on long, high-speed commuter links rather than shorter, local routes that would be relevant in an analysis for Surrey.

Others claim that bus service is cheaper than rail, but as performance and passenger features are added (e.g. grade separation, larger seats, better stations, alternative fuels, etc.), bus system capital costs approach fixed light rail costs, which may even be offset by light rail's lower operating costs over the long run.²⁷ Lower operating costs, for

²⁴ Condon, P. & Dow, K. (2011). A Cost Comparison of Transportation Modes. Sustainability by Design, Foundational Research Bulletin. Available August 5, 2011 from http://www.jtc.sala.ubc.ca/bulletins/sxd_FRB07Transport.pdf.

²⁵ The *South of Fraser Area Transit Plan* cites that a rapid transit line should have 100,000 people and 30,000 jobs to sustain 40,000 trips per day. With approximately 10,000 residents and 13,000 jobs it does not justify demand for development of rapid fixed rail, that would only generate 1000 trips per day. The Plan does acknowledge that planning fixed rail should be done in 50-100 year time-frames and TransLink does not rule out long term plans for rapid fixed rail.

²⁶ For example, when a well-known UK rail consultancy firm (Leewood Projects Ltd) undertook a comprehensive light rail implementation study for the Interurban Rail and questioned why ridership data would be included as part of the analysis.

²⁷ Litman, T. (2011). Smart Congestion Reductions II: Reevaluating The Role Of Public Transit For Improving Urban Transportation. Victoria Transport Policy Institute. Available August 5, 2011 from http://www.vtpi.org/cong_reliefII.pdf.

example, are also possible due to load factors and greater operating efficiencies, as is evident in some US cities serving large riderships.²⁸

Rail stations have proven more effective than bus stations at creating improved neighbourhood accessibility and reduced vehicle travel per capita when combined with TOD plans.²⁹ Dr. P. Condon, a light rail expert from the University of British Columbia, suggests light rail is among the most cost effective transportation available. He estimates re-establishing light rail on the existing Interurban Right of Way would cost approximately \$6 million/ per km compared to SkyTrain's \$100-140 million per km.³⁰ As a result the population densities and projected ridership for financial feasibility is much lower for light rail when compared to SkyTrain.

Within Metro Vancouver, we can also examine the West Coast Express commuter rail from Vancouver to Port Moody. The West Coast Express connects Vancouver to Mission and opened in 1995. It runs under a joint partnership operated by TransLink, maintained by VIA Rail and located on CP Rail land.

According to TransLink, the West Coast Express recovers more than 90% of its operating costs, despite as much as half of its budget going toward its lease of the rail line from CPR. The Interurban corridor, on the other hand, does not require a lease fee and would serve a population almost three times larger than the West Coast Express. Besides cost comparisons, environmentally the West Coast Express is a more sustainable mode than driving and is equivalent to taking 4,300 cars off the road and reducing GHG emissions by 21,502 tonnes per day.³¹

Based on lifecycle costs, trip lengths and GHG reductions, light rail represents the most appropriate investment opportunity for communities that support overall vehicle trip reductions. In Surrey's case, light rail is particularly flexible and compelling, since 72%

²⁸ Litman, T. (2011). Smart Congestion Reductions II: Reevaluating The Role Of Public Transit For Improving Urban Transportation. Victoria Transport Policy Institute. Available August 5, 2011 from http://www.vtpi.org/cong_reliefII.pdf.

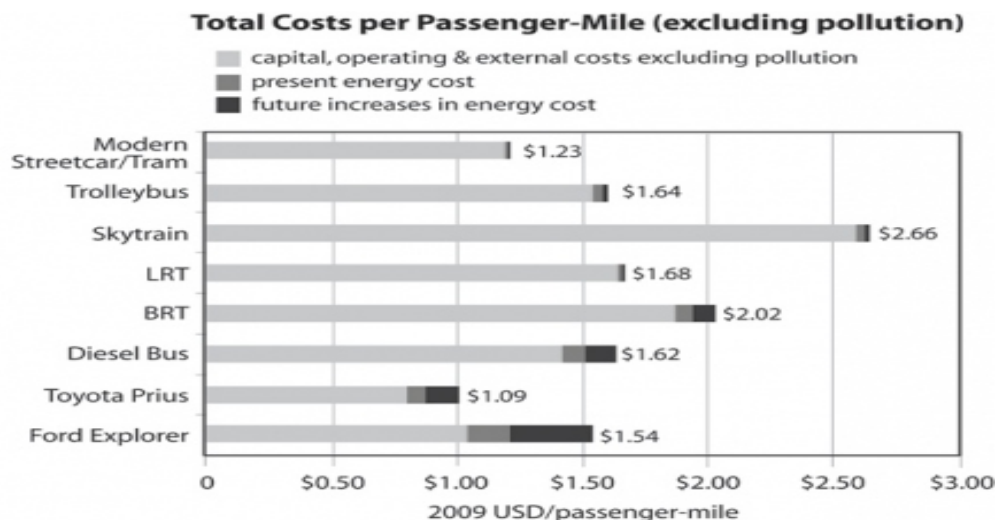
²⁹ Litman, T. (2011). Smart Congestion Reductions II: Reevaluating The Role Of Public Transit For Improving Urban Transportation. Victoria Transport Policy Institute. Available August 5, 2011 from http://www.vtpi.org/cong_reliefII.pdf.

³⁰ Condon, P. (2010, September 16). Why a Streetcar Is Something to Be Desired: Rule 1 for Sustainable Communities: Restore the Streetcar City. Available August 5, 2011 from <http://thetyee.ca/News/2010/09/16/StreetcarToBeDesired/>.

³¹Transport Canada (2010, August 26). New West Coast Express Cars Roll into Town. No. H098/10. Available August 5, 2011 from <http://news.gc.ca/web/article-eng.do?nid=558689>.

of commuter trips are made by residents within city limits, particularly east of 152 St. and south of Highway 10, rather than commuting into Vancouver or North of the Fraser (see Figure 1).³²

Figure 1 Costs Per Passenger Mile By Various Travel Modes



Credit: Condon, P. (2010, September 16). Why a Streetcar Is Something to Be Desired: Rule 1 for Sustainable Communities: Restore the Streetcar City. The Tyee. Available August 5, 2011 from <http://thetyee.ca/News/2010/09/16/StreetcarToBeDesired/>.

Economic Impact of Transportation Improvements

Strategies to invest in transportation upgrades can improve economic impacts for municipalities through higher property values, and improved business performance, productivity rates and labour force. Other public transportation benefits that impact the economy include cost savings from those using public transportation; reduced business operating costs associated with reduced congestion; increased business productivity from broader and more diverse labour market access, and expanded transit service areas.

While capital expenditures for transportation often focus on job creation, they do not inherently have higher multipliers (money that re-circulates in the local economy) than

³² Condon, P. & Dow, K. (2011). A Cost Comparison of Transportation Modes. Sustainability by Design, Foundational Research Bulletin. Available August 5, 2011 from http://www.jtc.sala.ubc.ca/bulletins/sxd_FRB07Transport.pdf.

operational expenditures.³³ Operation expenditures can produce greater economic benefits than capital projects, but are dependent on what type of infrastructure is built and which services are offered.

Creating high quality transit service requires \$250-\$350 in additional average annual per capita expenditures over several decades, although these costs can vary.³⁴ Transit funding can be allocated by shifting money from other sources, such as road infrastructure to alleviate tax increases.

While \$250-\$350 per capita represents a substantial increase in transit spending from a business-as-usual scenario, it consists of a relatively small percentage of transportation budgets or consumer spending on automobiles and their infrastructure.

Recent estimates from the Canadian Automobile Association (CAA) put the annual cost of operating a vehicle at \$8,441.25 (based on a Chevy Cobalt and driving 18,000 kms, per annum), inclusive of operating and ownership costs.³⁵ Data from the US suggests that households, businesses and the public sector spend an additional \$2,000 annually per capita on parking. Governments spend \$600 annual per capita on roadway facilities and traffic services, of which \$300 is from user fees. US taxpayers contribute \$100 and \$50 in transit fares annually to subsidize public transit.³⁶

Capital investments in public transportation, such as vehicles, equipment and infrastructure amount to significant rates of employment. \$1 billion spent on public transportation, for example, supports 24,000 jobs for a year, while \$1 billion invested in public transit operations supports 41,000 jobs for a year. \$1 billion invested in public transportation operations (i.e., management, operations and maintenance of vehicles and facilities) is also a significant source of jobs when combined with public

³³ Wachs, M. (2011). Transportation, Jobs, and Economic Growth. Spring. ACCESS #38. Available August 5, 2011 from http://www.uctc.net/access/38/access38_transportation_growth.shtml.

³⁴ Litman, T. (2010). Raise My Taxes, Please! Evaluating Household Savings From High Quality Public Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

³⁵ CAA. (2009). Driving Costs Brochure. Available November 3, 2011 from <http://www.caa.ca/documents/DrivingCostsBrochure-jan09-eng-v3.pdf>.

³⁶ Litman, T. (2010). Raise My Taxes, Please! Evaluating Household Savings From High Quality Public Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

transportation, capital and operational investments to support 36,000 jobs for one year.³⁷

Subsidies for transportation operational expenditures tend to be scrutinized more than capital spent on road expansion. One challenge for transportation departments is how to overcome distortions introduced by perverse subsidies and externalized costs that fossil-fuel and automobile-related infrastructure receive. Road construction, for example, does not reflect the cost of externalities and drives capital misallocation while ignoring social and environmental externalities.

Authorities could consider systematically evaluating capital investments and subsidies to increase rates of return on transportation projects. Capital projects often include large expenditures on concrete and steel, whereas investing in transit services often increase labour costs, yet these dollars mostly recirculate in the local economy. For this reason, subsidizing transportation operational expenditures is rarely regarded as responsible fiscal management.³⁸

One study investigated incremental costs and benefits of high quality transit service in US cities. It indicated that high quality public transit typically required an additional \$268 per capita annually in subsidies and \$104 per capita in fares, but provided vehicle, parking and road cost savings averaging \$1,040 per capita, including reductions in congestion and pollution, increased traffic safety, improved mobility for non-drivers and improved health. In this case, tax increases were cost effective when invested in high quality public transit systems. Because planning practices tend undervalue transit savings and benefits, taxpayers are prone to under-value transit.³⁹

³⁷ Other economic impacts associated with these public transportation operation jobs includes approximately \$3.6 billion in added sales volume output that provides \$1.8 billion of GDP (gross domestic product), \$1.6 billion of worker income, \$0.2 billion in corporate income and nearly \$500 million in tax revenues. See Weisbrod, G. & Reno, A. (2009). Economic Impact of Public Transportation Investment. Prepared for the American Public Transportation Association, as part of TCRP Project J-11, Task 7, Transit Cooperative Research Program. Available August 5, 2011 from http://www.apta.com/resources/reportsandpublications/Documents/economic_impact_of_public_transportation_investment.pdf.

³⁸ Wachs, M. (2011). Transportation, Jobs, and Economic Growth. Spring. ACCESS #38. Available August 5, 2011 from http://www.uctc.net/access/38/access38_transportation_growth.shtml.

³⁹ Litman, T. (2010). Raise My Taxes, Please! Evaluating Household Savings From High Quality Public Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

Subsidizing transit can contribute to higher quality of life and satisfaction levels by residents. Seven cities with high quality transit service in the largest 50 US cities (2006) averaged \$329 per capita on transit capital and operating expenses, consisting of \$128 (39%) from fares and \$201 in subsidies. The remaining 43 cities averaged \$104 per capita on transit, consisting of \$22 (21%) from fares and \$82 from subsidies.⁴⁰

Critics point out that transit investments are not cost effective at reducing traffic congestion due to high costs of vehicle trip reductions during peak-periods.⁴¹ This debate too often misses the point in understanding the nuances of congestion. Conventional planning approaches evaluate transportation performance by ease of driving, roadway level of service and average traffic speeds. From this perspective, transit investments are validated when they reduce motor vehicle delays.⁴²

Nonetheless, there are many more reasons to reduce auto-dependence beyond simply reducing congestion. They include equity concerns (40-60% of population may not have access to a vehicle), health and safety concerns (automobile related fatalities are the 9th leading cause of death worldwide in 2004⁴³), economic costs (the average Canadian spends almost \$8,500 per year per car⁴⁴), not to mention environmental costs. A more sustainable approach links land-use to transportation strategies to shape compact, mixed-use communities that may even increase congestion intensities (i.e. roadway level-of service or average traffic speeds). Nevertheless, this comprehensive approach reduces total vehicle mode shares and trip distances.

If assessed on a variable by variable basis, transit investments rarely justify their costs to reduce congestion flows. Nevertheless, when analyzed from a broader perspective to reduce overall vehicle trips through a variety of means; such as road pricing, mobility demand management and compact development, transit is more cost effective and a

⁴⁰ Litman, T. (2010). Raise My Taxes, Please! Evaluating Household Savings From High Quality Public Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

⁴¹ See O'Toole, 2004; Stopher, 2004 in Litman, T. (2010). Raise My Taxes, Please! Evaluating Household Savings From High Quality Public Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

⁴² Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

⁴³ World Health Organization. (2008). World Health Statistics 2008. Available August 5, 2011 from [2008 http://www.who.int/whosis/whostat/2008/en/index.html](http://www.who.int/whosis/whostat/2008/en/index.html).

⁴⁴ CAA. (2009). Driving Costs Brochure. Available November 3, 2011 from <http://www.caa.ca/documents/DrivingCostsBrochure-jan09-eng-v3.pdf>.

pivotal link to improved mobility. Using cost-benefit analysis often fails to include road and parking cost savings, consumer cost savings, accident reductions and improved mobility for non-drivers that are of equal or greater value to reduce congestion.⁴⁵

In a comprehensive review of TOD in the US,⁴⁶ R. Cervero found that the top two reasons cities engaged in TOD were to increase transportation ridership and to promote economic development in downtowns by providing better access to transportation options. For example, Baltimore, MD used TOD to redevelop its downtown centre to provide mixed-use office, residential and commercial space that economically benefited from increased foot traffic in the area. Transit investments resulted in the planned development of 1.2 million square feet of office space, 212,000 square feet of retail space and 1,400 high rise apartments that generated an additional 6,500 Metro riders. Corpus Christi, TX established TOD that increased daily transit users by 5,000 and provided an incentive to develop a farmers' market and other retail options. Examples such as these illustrate the benefits to local businesses and have led to the US Chamber of Commerce calling for fuel tax hikes to pay for improved transportation.⁴⁷

Existing Road Network and Transit Priorities

Increasing the efficiency of existing road networks and transit systems through transit priority measures is another missing link. Since transit service and automobile travel impose significant costs, such as congestion and pollution, incentives that attract travellers who would otherwise drive tend to provide large benefits.

Although owning an automobile is expensive, most costs are fixed, giving motorists an incentive to drive rather than use alternative modes. Where most households own one or more automobiles, pay relatively low fuel prices for commuting and often have free parking amenities, providing buses or a rideshare matching service will not necessarily achieve modal shifts on their own.

⁴⁵ Litman, T. (2010). Raise My Taxes, Please! Evaluating Household Savings From High Quality Public Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

⁴⁶ Cervero, R. (2004). Transit Oriented Development in the United States: Experiences, Challenges and Prospects. Transit Cooperative Research Program Report 102: Transportation Research Board of the National Academies.

⁴⁷ Wall Street Journal. (2009). Chamber of Commerce Pushes Increase in Gas Tax. Available November 3, 2011 from <http://online.wsj.com/article/SB124769092956347439.html>.

A priority for High-Occupant Vehicles (HOV), for example, includes lanes, or busways, that are open only to buses and rideshare vehicles. HOV provides travel time savings, operating cost savings and increased travel reliability. HOV lanes typically provide time savings from 0.5-minutes per mile on arterial streets to 1.6-minutes per mile on freeways.⁴⁸

HOV lanes dedicated to transit buses, often incorporate queue-jumping lanes that prioritize HOV over other vehicles that must wait longer to enter an intersection. Queue-jumper facilities can provide savings that reduce unpredictable delays and increase the value of saving time on the road. Intersection controls can also be designed to give priority to HOV, such as having a traffic light remain green to allow a bus to continue through an intersection. Allocating preferred parking spaces or parking fee discounts for rideshare vehicles also reward HOV passengers.

Transit priorities include grade separation and the reallocation of road space in order to reduce transit delays. Comfort improvements, such as reduced crowding, better seating and cleaner vehicles, or upgrades to bus stop shelters and bus pullouts enhance the transit experience. Smart cards for purchasing tickets and real-time information on transit vehicle arrival add to rider convenience. Bicycle and transit integration, such as bicycle racks on buses, bike routes and secure bicycle parking near transit stops along with multi-modal access to maps, schedules and contact numbers can promote sustainable transportation modes.

One key to increasing transit modal share is to adopt strategies that make public transit faster than driving. Often low-cost investments in queue-jumping lanes, transit only lanes and intersection priorities for transit, particularly during rush hour, can significantly reduce transit trip times and generate increased ridership. Queue jumping lanes and by-pass lanes have been shown to reduce travel times by 5% - 15% when applied systematically, providing further incentive for public transit riders.⁴⁹

⁴⁸ Littman, T. (2010, January 26) HOV Priority: Strategies to Improve Transit and Ridesharing Speed and Convenience. Available Oct 26, 2011 from <http://www.vtpi.org/tdm/tdm19.htm>.

⁴⁹ Transportation Research Board. (2007). Bus Rapid Transit Practitioner's Guide. Transit Cooperative Research Program: Report 118. Available November 3, 2011 from http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_118.pdf.

Potential Funding Mechanisms

With current economic conditions, transportation projects require more diversified partnerships and funding streams. One strategy to implement sustainable transportation begins with re-evaluating the full costs associated with traffic and development and more effectively passing on these costs to the appropriate users.

Funding mechanisms include user fees for on-street parking, increasing development permits and fines, road allowance permits, bus shelter and bus bench advertising, cycle parking advertising, the use of city infrastructure for communications and using legislation (i.e. Bill 37 – Carbon Tax) to collect transportation reserve funds in exchange for relaxing parking requirements in new developments. These permitting and regulatory approaches are a start, but more municipalities are experimenting with other sustainable transportation mechanisms to finance improvements.

Motor Vehicle User Fees

User-fees refer to special fees and taxes charged to road users, including tolls, fuel taxes, registration fees and weight-distance fees. In response to increasing costs of operation and maintenance of local and collector roads, Surrey imposed a Road and Traffic Safety levy on all property owners amounting to a 1% property tax increase per year over four years. A more equitable solution would be to shift those costs from property owners to road infrastructure users through a variety of transportation demand management strategies, such as vehicle registration fees, carbon taxes, and road and parking pricing (or congestion pricing).⁵⁰ Due to Canada's car-oriented culture, however, vehicle taxes and fee increases remain politically charged and contentious.⁵¹

Carbon Tax Revenue

The carbon tax recently imposed in British Columbia, applied to carbon emissions generated by fossil fuels, is an example of a tax incorporating externalities into the market economy. Carbon taxes convert into tax rates on fossil fuels (by 2012, the \$30-per-tonne tax will be equivalent to a 7.6¢ per litre tax on gasoline). Tax flows remain neutral, neither increasing nor decreasing government revenue.

⁵⁰ See the Transportation Demand Management Encyclopedia for an overview of different strategies. Available August 5, 2011 from <http://www.vtpi.org/tdm/index.php#TDM>.

⁵¹ CBC News. (2011, Oct 7). 2 Cent Gas Tax Passed by Metro Vancouver Mayors. Available Oct. 26 from <http://www.cbc.ca/news/canada/british-columbia/story/2011/10/07/bc-metro-vancouver-gas-tax.html>.

Vehicle Registration Fees

Pay-As-You-Drive or distance-based vehicle insurance converts distances travelled to variable costs in order to allocate premiums to annual mileage. Distance-based insurance gives motorists an incentive to save money. Average motorists who continue their current driving patterns pay the same amount, while those who drive less save.⁵² Limited-use insurance options could encourage motorists to travel less or in smaller vehicles. Instead, the Insurance Corporation of British Columbia (ICBC) opts for a flat-rate approach that encourages driving rather than opting for other travel modes.⁵³

For example, Real Insurance in Australia offers Pay-As-You-Drive vehicle insurance where motorists report their odometer reading and purchase a certain number of kilometers. Odometer readings are verified if there is a claim, giving motorists an incentive to be accurate. Any unused kilometers are either refunded if motorists cancel or don't renew (upon verification of vehicle odometers if requested by the company) or carried over to the next policy. If kilometers exceed prepayment the policy only provides basic coverage (liability, fire and theft). Policy holders can easily purchase additional kilometers at any time.⁵⁴

Road Pricing

Road pricing, or congestion pricing, means that vehicle users are charged a toll for driving on a particular road, bridge or zone. Road pricing is another user-fee that can harness the market to reduce inefficiencies associated with traffic congestion. It works by shifting peak-hour highway travel to other transportation modes or to off-peak periods. By removing a fraction of the vehicles from a congested roadway through pricing, the transportation system flows more efficiently. Variably priced lanes include express toll lanes and High Occupancy Toll (HOT) lanes. Low occupancy vehicles are charged a toll on HOT lands, while (HOV, public transit buses and emergency vehicles are allowed to use the lanes free of charge or at reduced rates.⁵⁵

⁵² Litman, T. (2011, May, 9). Transportation Cost and Benefit Analysis II – Roadway Costs, Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/tca/tca0506.pdf>.

⁵³ For example, the Canadian Auto Network (CAN) and Zip CarTM are ridesharing services in Metro Vancouver, yet remain marginalized due to the popularity of car ownership. For example, CAN has approximately 2,500 members (2010) compared to the 271,398 small and large passenger cars, light trucks, vans, and sports utility vehicles in the City of Vancouver alone. See Government of BC. (2010, June). Vancouver City: Updated 2007 Community Energy and Emissions Inventory. Retrieved August 5, 2011, from http://www.env.gov.bc.ca/cas/mitigation/ceei/RegionalDistricts/Metro-Vancouver/ceei_2007_vancouver_city.pdf.

⁵⁴ See Pay As You Drive Insurance (n. d.). Retrieved August 5, 2011 from www.payasyoudrive.com.au.

⁵⁵ US Department of Transportation (2006). Congestion Pricing: A Primer. Federal Highway Administration, Office of Transportation Management, Washington, DC. Available August 5, 2011 from <http://www.ops.fhwa.dot.gov/publications/congestionpricing/congestionpricing.pdf>.

For example, one study modelled the effect of congestion pricing on transportation impacts in Los Angeles. It found that a fee averaging 19¢ per mile driven in congested conditions would reduce total vehicle trips by about 3.3%, but reduce delays from congestion by 32%.⁵⁶

Transit-Oriented Developments (TOD)

Transit-oriented developments (TOD) are residential, commercial and mixed-use neighbourhood hubs designed to maximize transit, walking and cycling. Ideally, TOD provides a wide range of local services for shopping and working in order to reduce the reliance on single-occupancy vehicle trips. TOD can also stimulate local economic development.⁵⁷

One study found that TOD generates about half as many automobile trips as conventional, automobile-oriented development due differences in household size and location shifts to high quality transit. For example, Portland, Oregon's TOD households own about half as many vehicles and drive about half as far as residents in more automobile-oriented neighborhoods.⁵⁸ TOD also enhances land values that attract development due to nearby amenities with higher real estate costs. A study estimated that 300 full-service rail transit stations in Chicago generated land value increments of \$1.6 billion annually.⁵⁹

The Center for TOD in Berkeley, CA identified various ways that station location, transit accessibility and associated public amenities benefit property owners. They found that improved marketability of new residential units, increased demand for office and retail

⁵⁶ Victoria Transport Policy Institute (2011, June). Congestion Pricing, Value Pricing, Toll Roads and HOT Lanes. Available August 5, 2011 from <http://www.vtpi.org/tdm/tdm35.htm>. For a Canadian study see, Dachi, B. (2011, August, 31). Congestive Traffic Failure: The Case for High-Occupancy and Express Toll Lanes in Canadian Cities. CD Howe Institute. Available September 5, 2011 from http://www.cdhowe.org/pdf/ebrief_122.pdf.

⁵⁷ See Adams, J. & Van Driessche, B. (2007). Transportation as Catalyst for Community Economic Development, Center for Transportation Studies, University of Minnesota for the American Institute of Architects. Available August 5, 2011 from www.cts.umn.edu/pdf/CTS-07-07.pdf and Smith, J. & Gihring, T. (2004). Financing Transit Systems Through Value Capture: An Annotated Bibliography, Geonomy Society. Available August 5, 2011 from www.vtpi.org/smith.pdf.

⁵⁸ See Cervero & Arrington (2008) in Litman, T. (2010). Raise My Taxes, Please! Evaluating Household Savings From High Quality Public Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

⁵⁹ Litman, T. (2010). Raise My Taxes, Please! Evaluating Household Savings From High Quality Public Transit Service. Victoria Transport Policy Institute. Available August 5, 2011 from <http://www.vtpi.org/raisetaxes.pdf>.

space; transit stops that open up new development sites; up-zoning and higher-density development near transit stops; higher sales prices and rents, financially feasible construction, support for new infrastructure and public facilities, and potential development seed funding or subsidies contributed to a better living environment.⁶⁰

Re-zoning TOD areas for higher density development is the most expedient regulatory mechanism available. Creating TODs should be combined with other incentives to expedite development and public consultation on station designations and upgrades.⁶¹ To counter dispersed development and promote affordable residential and commercial rents, municipalities can reform property taxes and utilize “value-capture” to guide transit improvements. Value-capture mechanisms (see below) applied to TOD may be more equitable than financing capital transit improvements per se.

For example, once Portland’s Westside MAX light rail was approved, the regional government committed to providing greater density residential housing in the light rail corridor. Orenco Station, a greenfield site along the line, was surrounded by high tech jobs but few housing options. After build-out, it features 49-acres of retail development (50,000 square feet of retail) and over 1,800 residences, including cottages, row homes, condominiums and apartments. The extension of MAX light rail in 1998, coupled with improved bus service, led to a 46% increase in transit service that increased transit use 147% in the MAX corridor. Just 19 months after MAX opened, the line surpassed 2005 projections of 25,200 average daily rides.⁶²

Value Capture

Financing transportation infrastructure through taxation of publicly created land value is referred to as “value-capture.” Value-capture is a financial mechanism for TOD by which some or all financial benefits are received through property value increases. It is generated by geographically targeted public capital investments.

⁶⁰ For example, properties within 2 blocks of the Portland Streetcar line realized 75 to 90% of the allowable FAR under the zoning code, compared with development at 43% of the FAR potential for properties located more than 3 blocks away. See Gihring, T. (2009). The Value Capture Approach To Stimulating Transit Oriented Development And Financing Transit Station Area Improvements. Victoria Transport Policy Institute . Available August 5, 2011 from http://www.vtpi.org/gihring_tod.pdf.

⁶¹ Gihring, T. (2009). The Value Capture Approach To Stimulating Transit Oriented Development And Financing Transit Station Area Improvements. Victoria Transport Policy Institute . Available August 5, 2011 from http://www.vtpi.org/gihring_tod.pdf.

⁶² Mehaffy, M. (n. d.). Orenco, Station: Hillsboro, Oregon. Available August 5, 2010, from <http://www.terrain.org/unsprawl/10/>.

Property tax reform can help municipalities capture publicly created land values that arise from transportation infrastructure investments. Value-capture creates economic incentives to develop land adjacent to public infrastructure and amenities, while reducing development pressures in more remote areas. Value-capture recognizes that property taxes should be categorized in two classes, by land and by building structure, because each performs a different economic function.

Land Value Taxation (LVT)

Municipalities can reform property taxes by reducing tax rates applied to building values while increasing tax rates applied to land values. Property tax is referred to as Land-Value Taxation (LVT) if the tax on building values is eliminated and applied to the land.⁶³ LVT separates property assessments from building and land values. Instead of paying tax on the total value of property, only the unencumbered value of the land parcel is charged, without taking into account the value of any improvements or buildings.⁶⁴ Because buildings comprise of the most value in real estate, the prevailing tax rate on land places a relatively high burden on improvement values. LVT also increases land value that results from infrastructure and development financed by the surrounding community.⁶⁵

A municipality can tax the land at a higher rate than the building, which increases taxes on under-utilized and vacant lots, encourages densification and protects agricultural land. A proportionately lower tax rate on building improvement assessments serves as a financial incentive to improve property to encourage transit-oriented developments. An indirect consequence of LVT is a land-to-building value ratio reduction that leads to more efficient development patterns such as developing infill sites and more compact and mixed-use transit district upgrades. It also recoups lost revenue from land

⁶³ Rybec, R. (2004). Using Value Capture to Finance Infrastructure and Encourage Compact Development. Public Works Management and Policy, April, pp. 249-260. Available August 5, 2011 from <https://www.mwcog.org/uploads/committee-documents/k15fV1f20080424150651.pdf>.

⁶⁴ See Just Economics, LLC. (1992). Tax Reform Scenario Analysis. Available August 5, 2011 from <http://www.justeconomicsllc.com/pdfs/TaxReformScenarioAnalysis.pdf>.

⁶⁵ Pittsburgh, PA implements a type of LVT as has Washington DC to fund its Metro. Variations are proposed by the Green Party of Ontario. See Dye, R. F., & England, R. W. (Eds.). (2009). Land Value Taxation: Theory, Evidence, and Practice. Cambridge, MA: Lincoln Institute of Land Policy, and De Jong, F. (2008 February 12). Tax Land, not Homes, Ottawa Citizen, Available August 5, 2011 from <http://www.canada.com/ottawacitizen/news/opinion/story.html?id=97ccfb95-1f45-4356-bd92-a79b2611b84>. Also see George, H. (1879). *Progress and Poverty*. New York: D. Appleton & Co.

speculators who leave prime parcels vacant in anticipation of higher profits upon a sale.⁶⁶

Special Assessment Districts (SAD)

When new transportation investments are committed, US jurisdictions often create special assessment districts (SAD). SAD assumes that the property owners in a designated area will obtain a special benefit from investing in the district (e.g. a new subway station). Municipalities place an additional fee or surcharge on an existing tax or fee to help pay for the infrastructure. When a property owner receives a direct benefit for making an investment in the district, a portion of the benefits are recaptured and appropriated from the increased land values.

Special assessments are used because property owners close to public improvements directly receive greater benefits than those from the larger community. For example, those located near transit improvements may realize benefits because of their proximity to the improvements while the larger community benefit from general economic activity as a result of the transit improvement.

To support a planned TOD or other transportation upgrade, a municipality can estimate the revenue required to finance the project and set the district boundaries for the assessment. Assessments are based on the change in land value from year to year to coincide with leasing arrangements or unearned economic gains instead of assessing total annual land value that is used to assess property taxes.⁶⁷ A municipality amortizes the property's assessment and sets the terms (i.e. percent interest, years, eligible costs and fees, etc.), but rates can differ slightly depending on market conditions at the time of final approval and date of debt issuance.

New York City, for example, drew up proposals to finance its subway lines through special assessments districts in the 1930s, demonstrating that increased land values

⁶⁶ An increase in jurisdictions utilizing a LVT demonstrates its political feasibility. For example, a study of LVT impact in the District of Columbia showed a reduction in the tax burden on most residential and neighborhood business properties, while vacant lots and surface parking lots experienced tax increases. See Rybec, R. (2004). Using Value Capture to Finance Infrastructure and Encourage Compact Development. Public Works Management and Policy, April, pp. 249-260. Available August 5, 2011 from <https://www.mwcog.org/uploads/committee-documents/k15fV1f20080424150651.pdf>.

⁶⁷ Gihring, T. (2009). The Value Capture Approach To Stimulating Transit Oriented Development And Financing Transit Station Area Improvements. Victoria Transport Policy Institute. Available August 5, 2011 from http://www.vtpi.org/gihring_tod.pdf.

near existing lines amounted to four times the cost of construction.⁶⁸ Many US cities have used special assessments to fund the construction of local transit systems, such as Seattle, Portland, Charlotte and Atlanta. Transit-related SAD are often slightly larger than water and sanitation SAD, since the community benefits are broader.⁶⁹

Other Funding Mechanisms

Other mechanisms that help fund development are Development Cost Charges (DCC), Tax Incremental Financing (TIF), developer impact fees and joint development or public-private partnerships.

The degree of land densification is often a consequence of a municipality's DCC. DCC are fees added to building developments with the intended charge to cover development taking place. DCC reflect differential costs for buildings to better reflect the full costs of constructing roads, water lines, drainage and other community amenities. While DCC may cover initial upgrades, they rarely reflect the ongoing maintenance and operational costs of infrastructure in the future. To encourage compact development, areas well serviced by transit with higher density levels should reflect lower charges than lower density levels located in isolated greenfield sites that incur higher servicing costs. Some municipalities, such as parts of Surrey, average out DCC across the entire municipality, rather than allocate specific DCC to reflect actual costs of a development.⁷⁰ Spreading out DCC to dispersed development subsidizes inefficient practices at the expense of building more compact and efficient infrastructure.

Compact development can save 8% in development costs, which by itself could reduce local government deficits 10% by 2025.⁷¹ One study compared a Vancouver neighbourhood to a suburb in the Fraser Valley, finding 38% of Vancouver homes were within a kilometre of rapid transit and 252,000 jobs were within a 5-kilometre radius.

⁶⁸ For example, Seattle's South Lake Union Streetcar project involved an LID that raised \$25 million to pay for half of the total capital costs. The amount paid by each parcel was determined by an agreement between the 750 property owners and the City, that required approval by a margin exceeding the 60% rate required by law.

⁶⁹ Zhirong J. & Larson, K., (2011). Finance Special Assessments as a Value Capture Strategy for Public Transit. Public Works Management Policy. Available August 5, 2011 from <http://pwm.sagepub.com/content/early/2011/02/01/1087724X11408923.full.pdf>.

⁷⁰ Surrey is moving to variable DCC. For example, DCC in City Centre are lower and there are different rates for Campbell Heights and the Hwy 99 corridor. See <http://www.surrey.ca/files/DCCBylawNo17111ScheduleA.pdf>.

⁷¹ See Burchell, R., Downs, A., Mukherji, S., & McCann, B. (2005). *Sprawl Costs: Economic Impacts of Unchecked Development*. Washington, DC: Island Press.

Only 3% of homes in the Fraser Valley suburb of Langley were within a kilometre of rapid transit with 26,000 jobs located within a five-kilometre radius.⁷² Another study revealed that when using lifecycle costing analysis to estimate development costs, high density neighbourhoods were as much as 50% more cost efficient than low density neighbourhoods.⁷³

Another funding mechanism used mainly in the US is Tax Incremental Financing (TIF). TIF evolved to supplement reductions in US grant funding for urban renewal projects in the 1970s.⁷⁴ Rationale for TIF assumes that new private real estate investment will not occur in the absence of new infrastructure. Public improvements are often larger than transportation upgrades that allow for diversion of property taxes over a base year to pay off capital bonds for public infrastructure in a designated area. Revenues in a designated district are benchmarked to a base year from one or more taxes. Any revenue exceeding the benchmarked amount is diverted into a fund used to finance new infrastructure.

TIF can be controversial because new infrastructure investments take on the appearance that there is no burden to taxpayers because in the absence of infrastructure development, property and income tax revenues would remain unchanged.⁷⁵

⁷² IBI Group. (2002). Comparing Neighbourhoods — Vancouver. Retrieved August 5, 2011 from http://www.cmhc-schl.gc.ca/en/co/buho/sune/sune_007.cfm.

⁷³ See Dillon Consulting Limited, IBI Group, Allen Kani Associates, & Metropole Consultants. (2005). Costing Mechanism to Facilitate Sustainable Community Planning. Ottawa, ON, Canadian Mortgage and Housing Corporation. It is noted that while some North American studies indicate a decrease in private motor vehicle travel due to living in closer proximity to urban centres, some Australian studies present a counter perspective. Using household expenditure data, fuel statistics and motor vehicle surveys, researchers found that higher population densities in urban centres had additional consumption impacts when compared to rural statistical local areas (SLA). See, for example, Dey, C., Berger, C., Foran, B., Foran, M., Joske, R., Lenzen, M., & Wood, R. (2007). An Australian Environmental Atlas: Household Environmental Pressure from Consumption. In: G. Birch (Ed.), Water, Wind, Art and Debate: How Environmental Concerns Impact on Disciplinary Research (pp. 280-315). Sydney: Sydney University Press and Dey, C., M. Lenzen, & Foran, B. (2004). Total Energy Requirements of Sydney Households. Ecological Economics, 49, 375-399.

⁷⁴ For example, TIF is authorized in 47 states and is widely used in Oregon. Washington State approved a limited form of TIF, but constitutional prohibitions against lending credit and using property tax revenue for diversion to TIF weakens this financing tool.

⁷⁵ Rybec, R. (2004). Using Value Capture to Finance Infrastructure and Encourage Compact Development. Public Works Management and Policy, April, pp. 249-260. Available August 5, 2011 from <https://www.mwcog.org/uploads/committee-documents/k15fV1f20080424150651.pdf>.

Rockville Town Square in Rockville, Maryland, for example, is a 12.5-acre, transit-oriented redevelopment that used TIF (\$264 million in private funding and \$88 million in public funding) to replace a failed shopping mall with a new civic, retail and residential core in Washington, DC. Property, sales and income taxes have all risen since project's completion with public sector costs expected to be recouped within a decade.⁷⁶

Developer impact fees are fees assessed on new development within a jurisdiction, used to defray the cost of extending public services to development sites. This reflects a policy shift whereby local governments increasingly look to developers to bear direct and indirect development costs.

Joint development programs supportive of TOD include permissive zoning, street improvements and design features such as pedestrian plazas. Most of the land use and value occurs within 400m of transit stations where office rents and housing prices are higher. Joint development or public-private partnerships (P3) are agreements between a public and private agency to build mixed-use development projects on land purchased by a transit agency. Washington, DC and California use these partnerships extensively to build transit communities near rail stations.

Recommendations and Implications

The following strategies and actions should be used to support improved transportation in Surrey:

1. Increase the efficiency of existing transportation and public transit infrastructure through the provision of transit priority measures to reduce the amount of additional funding needed for new services.

Supplying additional public transit will be of decreasing benefit if Surrey becomes marred in increasing levels of traffic congestion. For this reason, concentrating on how existing public transportation infrastructure and ridesharing can function more efficiently through transit priority measures will elevate the service, speed and comfort of passengers taking sustainable transportation modes. These modest investments can allow Surrey to increase the transit experience and decrease single-occupancy vehicle use.

⁷⁶ Buntin, S. (n. d.). Rockville, Maryland. Available August 5, 2011 from <http://www.terrain.org/unsprawl/27/>.

Actions

- Surrey should create a network of HOV lanes, that are open only to buses and rideshare vehicles.
- Surrey should establish queue-jumper facilities for transit and HOVs at key intersections or highways to increase the value of saving time on the road.
- Surrey should consider developing ways to adjust intersection controls that give priority to buses.
- Surrey should allocate preferred parking spaces or parking fee discounts for rideshare vehicles in City of Surrey owned facilities.
- Surrey's priorities for LRT and enhanced BRT connections and other bus services should be clearly outlined.
- Surrey should continue to upgrade bus stops with shelters and bus pullouts to enhance comfort, safety and efficiency.
- Surrey should continue to develop bike routes and secure bicycle parking near key transit stops and multi-modal access to maps, schedules and contact numbers.

2. Identify innovative funding sources for transportation improvements while support the objectives of creating a more sustainable Surrey.

A large barrier for increasing sustainable transportation investments in Surrey is funding. Municipalities, the Province, along with the Federal Government and other partners, require sustained agreements to ensure funding is secured for future investments. Full-cost accounting can assist to target inefficient land-use and single-occupancy vehicle travel. Provincial legislation, such as carbon taxes, cap-and-trade systems⁷⁷ and lifecycle costing is moving in this direction by putting a price on carbon.

⁷⁷ The cap-and-trade system proposed by the Western Climate Initiative (WCI) will place a market price on carbon for a large and expanding portion of North America. Four provinces representing 25 million Canadians have already signed on as partners. The market-based auction system combines regulation with market-based mechanisms and could complement a carbon tax. Cap-and-trade requires a firm to have an emissions permit for every ton of carbon dioxide it releases into the atmosphere. Over time, the cap becomes stricter, allowing less pollution as permits become more expensive. Gains from emissions trading are largest when the inclusion of reduction opportunities is as wide as feasible to allow a range of abatement costs. Because some companies will reduce their emissions below their required limit more rapidly than others, they will sell their extra permits to companies not able to make reductions as easily (see Horne, M. (2008a). Cap and Trade Reducing Pollution, Inspiring Innovation. Available August 5, 2011 from <http://www.pembina.org/pub/1616> and Horne, M. (2008b, August, 15). Letter to Western Climate Initiative Partners About Shortcomings in the Draft Recommendations. Available August 5, 2011 from <http://bc.pembina.org/pub/1679>.

Until economic models are realigned to internalize full costs associated with automobile-oriented development, sustainable transportation will remain under-funded. User-fees that help diversify transit funding can include additional fees on single-occupancy vehicles to better reflect full costs of driving. With this in mind, fuel and property tax are a decreasing source of revenue for TransLink so innovative funding methods are needed.

Actions

- Surrey should look at policy mechanisms within its jurisdiction to set a regulatory foundation that reshapes the urban form and moves sustainable transportation forward.
- Specifically, these mechanisms include TOD, value-capture, land value taxation and special assessment districts to leverage and diversify revenue streams and better reflect the cost of development.
- Surrey and other SoF municipalities should advocate for funding confirmations from TransLink to implement outstanding actions in the TSoF TP.
- Surrey should consider supporting a Metro Vancouver transportation improvement fee on motor vehicles registered to incentivize motor vehicle fuel efficiency from \$65 to \$165 per vehicle that is invested in sustainable transportation.
- If additional user fees on motor vehicles are levied, Surrey should ensure TransLink includes hardship concessions for low-income drivers.
- Surrey should reform its property tax legislation by using land valuation taxation or a variation of split-rate taxation to encourage more efficient land use practices.
- Surrey should advocate for using revenue generated from the provincial carbon tax to support public transit rather than remain revenue neutral.
- Surrey should advocate for ICBC to adopt distance-based vehicle insurance options to encourage demand management travel modes.

3. Improve transit and rideshare approaches in Surrey that generate greater ridership and make costs for transit more equitable.

The current transit system focuses on connecting to Vancouver, yet this is not the primary location for a typical Surrey passenger that desires travel service within the City or the South of the Fraser area. Surrey transit users pay more per capita than other municipalities in Metro Vancouver for transit. Surrey should work on developing win-win

strategies and partnerships with other governmental jurisdictions that increase transit service while ensuring transit is more equitably served.

Actions

- Surrey's City Centre transformation has created different land-use patterns, that are able to shift commuting and transit modes. Surrey should build on this model by identifying other village centres to expand TOD developments.
- Surrey should investigate light rail that develops TOD land-use opportunities in village centres and re-establishes the Interurban Right of Way. For example, locations of existing and planned rapid transit services suggests that there are opportunities for TOD in NW Surrey, Guildford, Newton and Semiahmoo Town Centre, as well as SkyTrain extensions and bus connections.
- Surrey should request improved expenditure data from TransLink on a per municipality basis due to a lack of data availability.
- Surrey should focus on ways to subsidize operational costs of transit. Subsidized operational costs have proven to provide greater value over the long-term and create cities where there is higher quality of life and a sense of place that also improves productivity and caliber of the work force.
- Surrey should continue to demonstrate how investments in transportation might result in improved economic impacts for the City, such as higher property values, improved business performance, and increased productivity and quality work force.
- Surrey should seek funding allocations for rapid transit infrastructure (BRT, LRT and Interurban rail) that link parts of the City in more effective ways and connects Surrey to neighbouring municipalities.

Conclusion

Surrey finds itself caught between a rock and a hard place because areas of relatively low density development can be used to justify a lower investment in transit when compared to other Metro Vancouver municipalities. Surrey faces a cyclical "Catch 22" scenario in which authorities wait for land-use densities to intensify before committing to transportation improvements, or authorities subscribe to a "build it and they will come" approach. While neither approach is entirely wrong or right, the municipality finds itself playing catch-up to develop mobility services that are not dominated by the car. This trend will only grow over time due to volatile fossil fuel prices, increasing levels of congestion and an aging population with reduced access to motorized vehicles.

Surrey has faced transit inequities and public transportation remains under-served. While there is widespread agreement that further transportation investments are critical to achieve its goals and vision laid out in various City policies, the municipality can increase existing transportation efficiencies and public transit infrastructure through the provision of transit priority measures to reduce the amount of additional funding needed for new services.

Innovative funding mechanisms should fully explore and support transportation improvements that take pressure off of property taxes to support capital and operating expenses of transportation system infrastructure. Partnerships between Surrey, TransLink, the private sector, and the provincial and federal levels of government can leverage available funding for transportation improvements.

One longer term approach is to examine the next era of transportation improvements that focus on light rail to anchor the community onto a sustainable trajectory for the 21st Century. Successful light rail systems focus on ridership, a permanent infrastructure and service as three inseparable components that balance the urban form with high quality amenities. Government authorities often opt to focus on only one or two of these elements, citing a lack of population and employment opportunities as reasons for not pursuing light rail transit. Ironically, this outlook contradicts how some cities have approached and established high functioning light rail systems.⁷⁸

While authorities continue to explore suitable and cost-effective options to work in tandem with existing transportation services, all stakeholders including the City of Surrey and Surrey Downtown Business Improvement Association will have to work together to explore the opportunities presented in this report.

Stakeholders should waste no time to increase the efficiencies of the existing transit system, explore innovative funding sources and work towards transit-oriented developments such as what has been initiated at City Centre. As a first step, Surrey should recalibrate its municipal financing mechanisms to fund development more efficiently, more equitably and in a manner that supports the kind of land-use developments that encourage increased public transportation infrastructure.

⁷⁸ Portland, for example, first built 24 kms of track in 1986 that now attracts 130,000 passengers per day on over 105 kms of light rail. Portland acknowledges what some governments appear unable to grasp; the need to take an inter-related stance that balances infrastructure, service and ridership rather than waiting for ridership levels to increase before planning for light rail.