

SOUTH OF FRASER » transit plan



A Long Range Transit Plan and Vision for the South of Fraser



TRANS LINK

September 2007

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Foreword

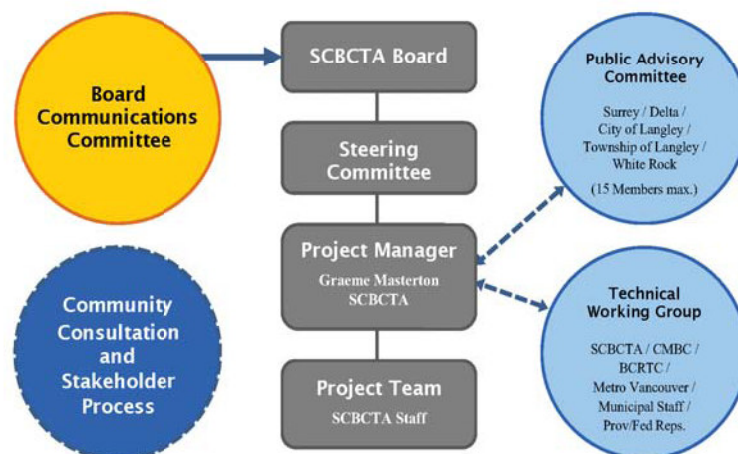
This report is part of the output of the South of Fraser Area Transit Plan (SoFA), a two-year project by the South Coast British Columbia Transportation Authority (TransLink) and the five municipalities of the South of Fraser Region (Surrey, Delta, Langley Township, Langley City and White Rock).

The Long Range Transit Plan and Vision Summary Report (Phase I) provides a future direction for public transit in the South of Fraser sub-region. The vision calls for a significant course change including a major restructuring and investment plan as well as other actions required to significantly increase transit ridership and modal share in the five municipalities South of Fraser. Its planning horizon is 2031, with interim plans for 2011 and 2021.

The South of Fraser Area Transit Plan has been guided by a Steering Committee of senior staff from TransLink, the five municipalities and Metro Vancouver. In addition, the plan has been informed by a Public Advisory Committee comprised of community representatives appointed by the five municipalities and a Technical Advisory Committee including staff from the municipalities, TransLink and Coast Mountain Bus Company. The SCBCTA Board Communications Committee chaired by Mayor Kurt Alberts, Township of Langley and comprised of elected representatives from the five municipalities has played a key role in communications between the TransLink, the municipalities and residents of the South of Fraser sub-region.

TransLink Planning Structure

The project team reports to the Project Manager who is responsible for ensuring that the project moves forward in a



timely manner but provides the appropriate outputs to the public and the committees. Two committees reporting to the Project Manager are the Public Advisory Group and the Technical working Group. The Project Manager reports to the Steering Committee and ultimately to the SCBCTA Board through the Board Communications Committee. The roles of these groups are described below.

SCBCTA Board Communications Committee

The Board Communications Committee was created as a subcommittee of the SCBCTA Board to review the SoFA plan process and outcomes and report back to the SCBCTA Board. This committee is comprised of each of the Mayors of the SoF region and is chaired by Mayor Kurt Alberts from the Township of Langley.

Steering Committee

The Steering Committee is the approval body for the plan and is represented by the General Manager of Engineering or Transportation from each Municipality, the Manager of Policy and Planning for Metro Vancouver, as well as senior executive in TransLink and is chaired by the Vice President of Planning for TransLink. The committee reviews all information and proposed plans, provides clear direction to the Project Manager on issues and approves all plans segments prior to being presented to the Municipal Councils and the SCBCTA Board

Public Advisory Committee

The Public Advisory Committee consists of members of the public put forward by each Council to represent the residents of each municipality. This group plays a key role in reviewing all information that is to be presented to the public and ensuring that the information is understandable and that the input process is logical and fair.

Technical Working Group

The Technical Working Group consists of members of TransLink, Coast Mountain Bus Company, the Metro Vancouver and each municipality in the region. This group reviews the technical details resulting from market research, transit data, travel and land use data as well as vetting all proposals to ensure that each municipality is properly represented and has a voice in the process.

Technical Working Group Members

Paul Cordeiro, Manager, Transportation Engineering Department, Township of Langley
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Technical Memorandum

[Technical Memorandum No. 1:
Technical Assessment of Operating Passenger Rail On the
Interurban Corridor](#)

[Technical Memorandum No. 2:
Suburban Employment Parks Service Strategy](#)

[Technical Memorandum No. 3:
Background on Land use and Travel Patterns in the South of
Fraser](#)

[Technical Memorandum No. 4:
Market Research Results](#)

[Technical Memorandum No. 5:
The Transit Planning Game \(Vision Process\)](#)

[Technical Memorandum No. 6:
2031 Vision – Conclusion of Phase 1](#)

[Technical Memorandum No. 7:
Summary of Public Consultation](#)

[Technical Memorandum No. 8:
A Policy-Based Approach to Service Design in the South of
Fraser Area](#)

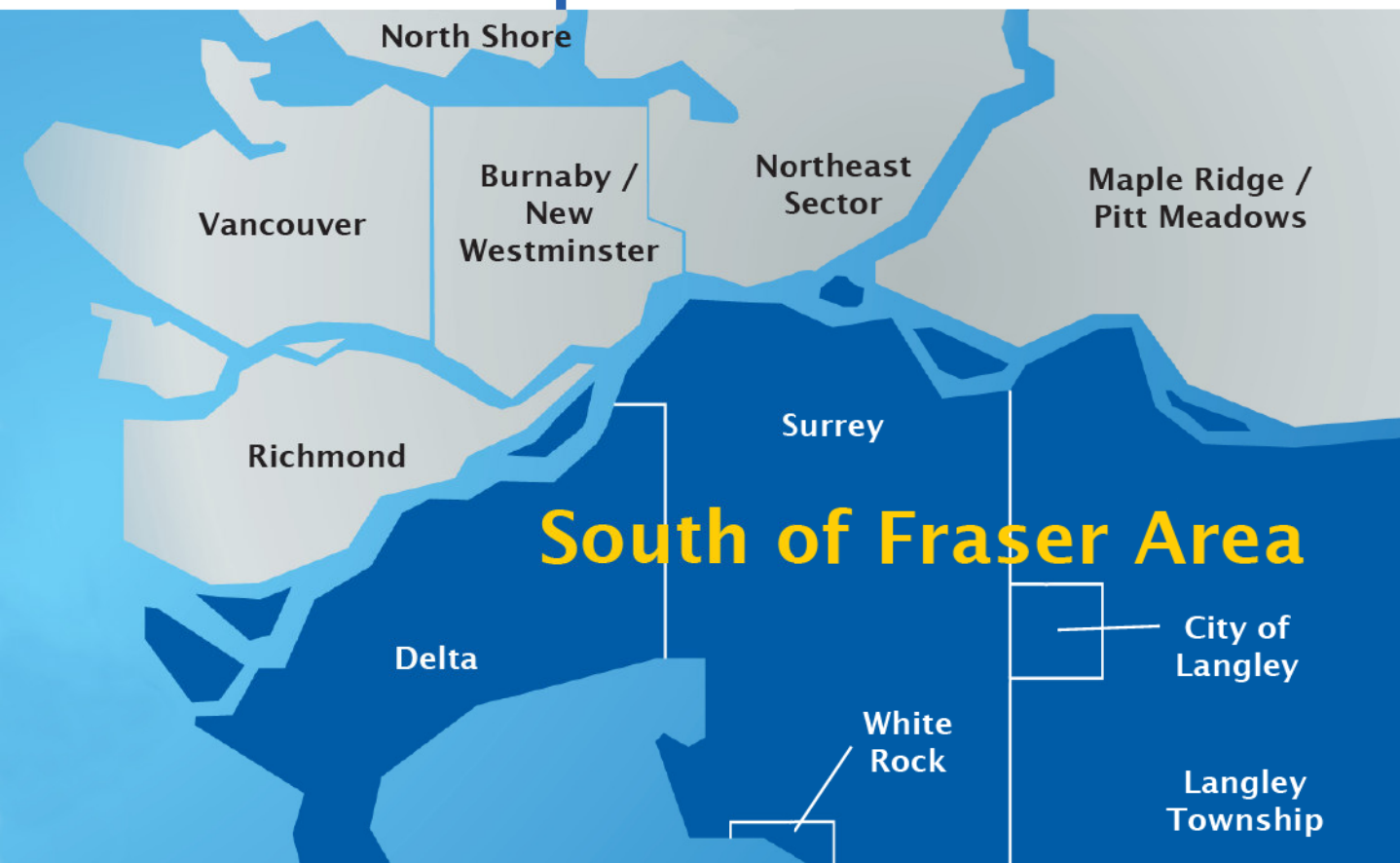
[Technical Memorandum No. 9:
The Social Travel Patterns of Youth and Young Adults](#)



Introduction

Area Transit Plans were created with the formation of TransLink to provide more local involvement in transit planning; to recognize regional differences and inform regional plans. The South of Fraser Area Transit Plan must reflect a changing region. One that is moving from a mix of urban and low density residential towards a future with mixed-use corridors of higher density where transit is a more viable option for movement. Understanding the future growth and transportation patterns is key to creating a new vision for the future. This report will provide a summary of the process utilized in creating the Vision for public transit to 2031.

Figure 1: South of Fraser Area Map



Where Is the South of Fraser Headed?

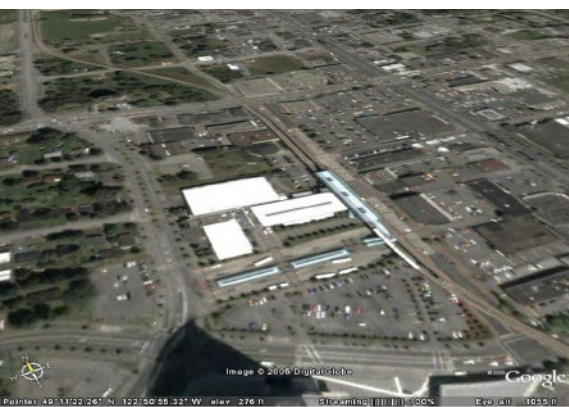
In order to create a vision of how transit can become a more vital part of the transportation landscape in the South of Fraser, it is important to understand what is happening within the region and how the region compares to other areas of Greater Vancouver. Based on the evidence presented in this section, it appears that there is a growing desire for transportation movement within the South of Fraser and a static need for transit into Vancouver. There is also an increase in the number of trips that are desired during off peak times and going to multiple destinations. This creates some challenges for transit and it's ability to become a significant player in the transportation.

Transit was designed to allow long suburban trips to be made through a series of transfers, onto the SkyTrain system. Transit has a competitive advantage crossing the Fraser River because of the limited road capacity and dedicated bus lanes or rapid transit that make transit more attractive. The few connections across the River mean that those crossing become severely congested, therefore, the fact that SkyTrain has it's own access across the river means that travel times are relatively predictable. Also, downtown Vancouver has a limited parking supply that is expensive, therefore, travel by automobile can be costly in time and money. As a result, transit does exceptionally well in providing an alternative, especially in the work/school trip category.

In contrast, movement around the South of Fraser is relatively free of disincentives to the automobile. There are multiple routes to move in any direction, therefore there are few reasons to force people to make a choice. There are no bridges, parking is free and abundant, and outside of peak hour commuting, there is little in the way of congestion. In addition, transit does well competing for single purpose trips such as for school and work, that are constant and predictable. South of Fraser trips are increasing in the off peak periods for personal trips – an area that has traditionally been difficult for transit because the market is variable. Despite these difficulties, there is a positive trend in the South of Fraser in increasing urban densities, more peak period travel along corridors, and an increase in the disincentive in auto travel in the form of increasing congestion in the future along with higher associated costs.



...the vision needs to show a significant increase in transit service...



...the region is going to change significantly over the next 25 years...

In order to make a substantial difference in the travel patterns in the South of Fraser in the future, the vision needs to show a significant increase in transit service to move from capturing 4% of the trips to attracting 11.5% of the trips by 2031. This will require an infusion of 600+ buses over the next 25 years. The vision also needs to incorporate a new urban style of service without detracting from the successes of the existing system. Incorporating higher order transit in the form of Bus Rapid Transit, and associated infrastructure investments such as median busways on King George, Fraser Highway, 200th Street and Highway #1. This report will highlight the rationale for change and present a new vision for transit in the South of Fraser.

Population and Jobs in a Regional Context

In 2001, the South of Fraser Region, consisting of Delta, Surrey, White Rock, the Township of Langley and the City of Langley, had a population of 570,000 (See Table XX) or 29% of the total regional population. By 2006, this share of the population had increased to almost 30% based on the growth of Surrey (up 13.5%) and Langley Township (up 7.9%). The region has grown overall at a faster rate than Metro Vancouver (which grew 6.5%) and is predicted to grow at a faster rate than Metro Vancouver, increasing 58% to 950,000 while the region increases 44% to 2.9 Million by 2031. This will place the SoF region at 33% of the population. Employment demonstrates a similar situation with growth in the SoF outpacing regional growth, rising by 172,000 jobs or 36% of the total employment growth.

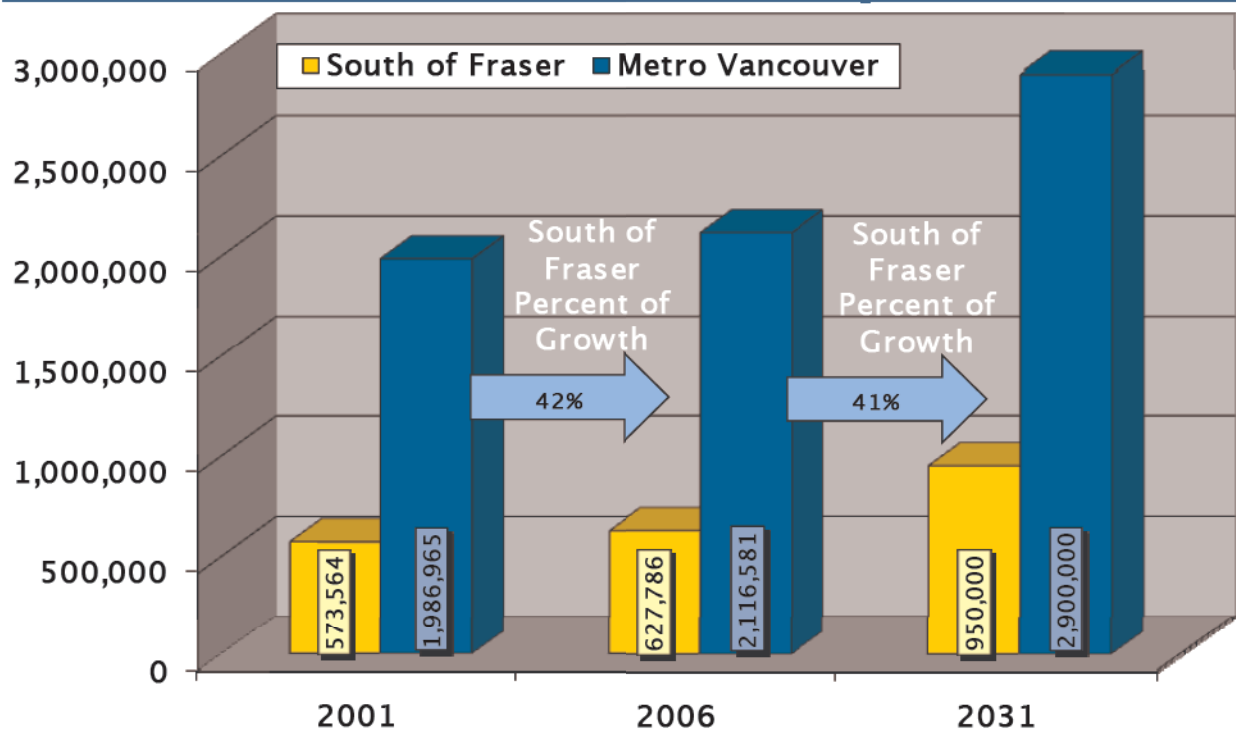
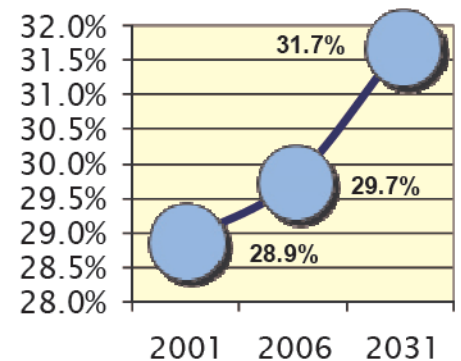
	2001	2006	Percent Growth	2031	Growth #s
Delta	96,950	96,723	-0.23%		(227)
Langley City	23,643	23,606	-0.16%		(37)
Langley Township	86,896	93,726	7.86%		6,830
Surrey	347,825	394,976	13.56%		47,151
White Rock	18,250	18,755	2.77%		505
South of Fraser	573,564	627,786	9.45%	950,000	54,222
Metro Vancouver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

If these trends continue, it means that the region is going to change significantly over the next 25 years. It will change from a mix of low density urban and suburban settlement to a place where there is an increasing number of jobs available within the South of Fraser region and the current transportation infrastructure cannot accommodate all the new trips. Much of the new population and jobs will be in areas that are either not currently served by transit or have a very low level of service.

Regional Population Growth

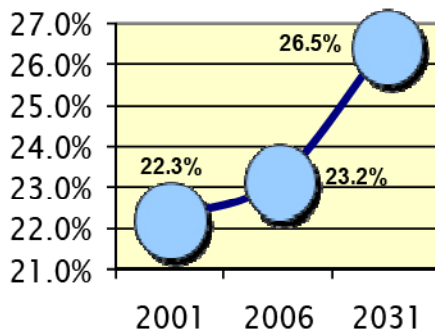
South of Fraser population increased by 27,000 people between the previous two census periods representing 44% of all growth in the region according to Stats Canada. Between the last census period, Metro Vancouver grew by 130,000 residents with the South of Fraser accounting for 54,000 or 42% of the total growth. Surrey accounted for 87% of the growth in the South of Fraser and 36% of the regional growth. It is projected that this growth will continue through to 2031 with almost 40% of all growth happening South of the Fraser River. This shows that there will be a need to increase transit supply considerably in order to keep pace with growth. As much of the new growth will be at higher densities in the past, the transit demand can be expected to grow at a faster rate.

**South of Fraser Population
(% of Total
Metro Vancouver Population)**



**Figure 2: South of Fraser vs. Metro Vancouver Population
from 2001 to 2031**

South of Fraser Jobs (% of Total Metro Vancouver Population)



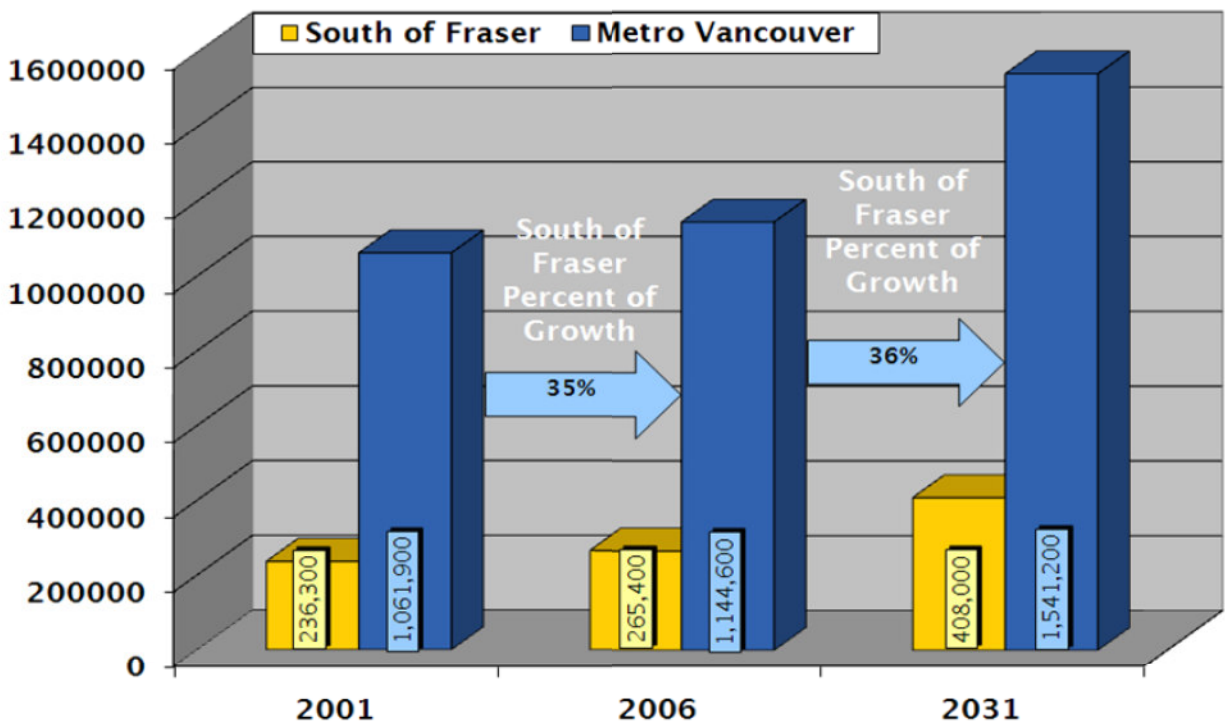
The total population increase estimated for the South of Fraser area between 2006 and 2031 is 320,000. Serving this population with transportation options will require changes to the current system on a substantial scale over the next 25 years. The South of Fraser will be approaching a million habitants and will need a system reflective of those needs.

Regional Job Growth

Similar to population growth, the number of jobs within the South of Fraser grew at a fast pace, accounting for 35% of all the growth in Metro Vancouver in 2006 with a total of 31,000 new jobs created.

This growth rate will continue through to 2031 with a 36% of all jobs in the region being south of the Fraser River.

Figure 3: South of Fraser vs. Metro Vancouver Jobs Growth from 2001 to 2031



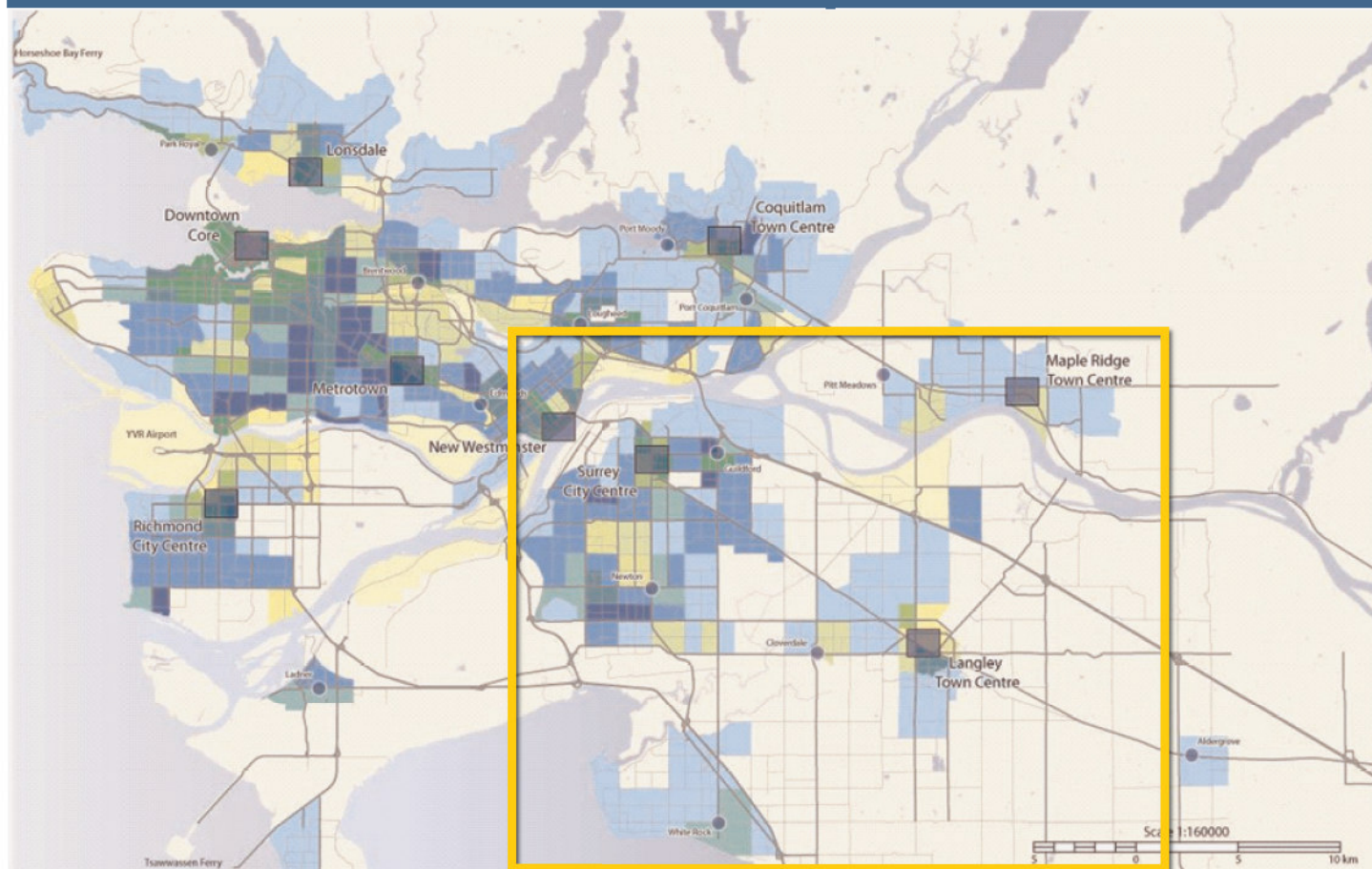
In 2006, the 265,000 jobs in the South of Fraser accounted for 23% of all jobs in Metro Vancouver and the growth of 142,000 jobs between 2006 and 2031 will increase this percentage to 26.5%. This means that along with a large growth in population, there will be 400,000 jobs in the South of Fraser Region, many in town centres or industrial areas creating new transportation movements both within the region and to adjacent regions.

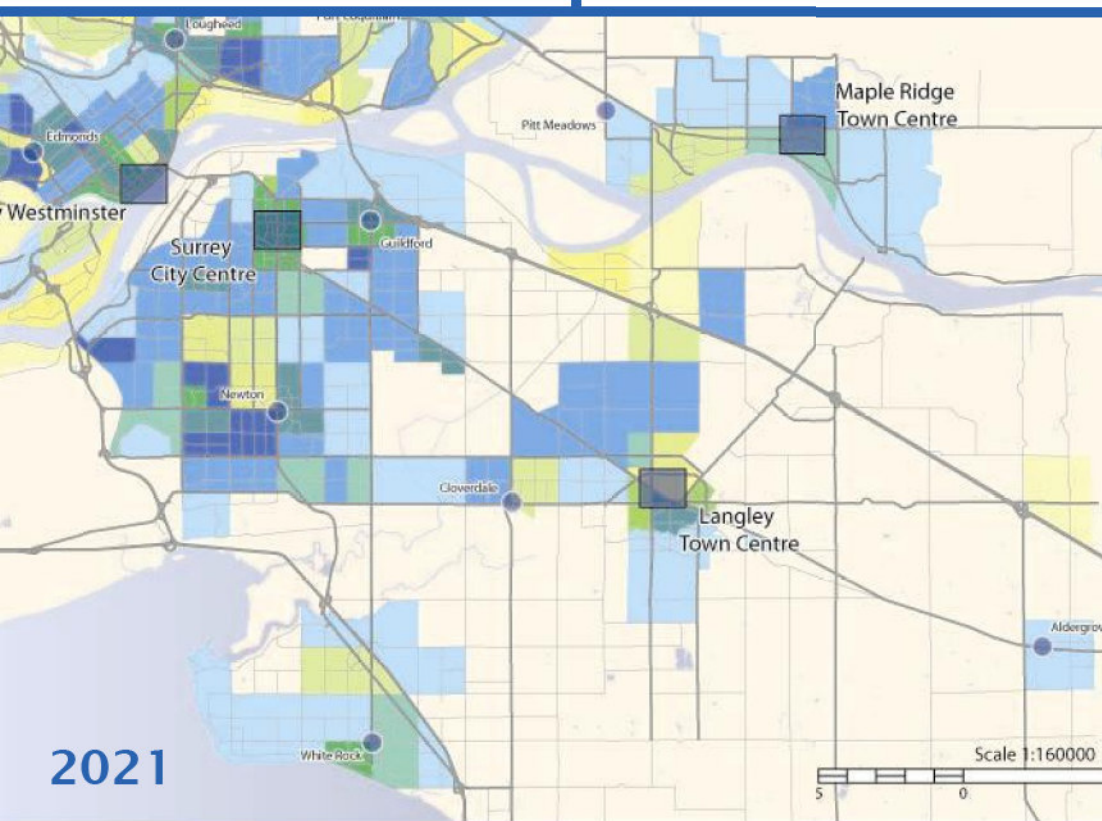
Population Changes

In the next series of maps, blue represents the population density within a given area with the darker the colour the greater the density that is represented. Yellow is used to represent job density. Green sections mean that there is a balance between jobs and population, something that is key in creating a series of corridors that produce transit trips in both directions all day long. There is a strong correlation between increased density and increased demand for transit. 2011 will see a continued development of density in the Langley Township as well as east Surrey in the Clayton Area. South Surrey and White Rock continue to increase density as the area moves more towards multifamily and higher density developments. Similarly, there are increases in density along corridors in Surrey such as 152nd Street, Scott Road, 72nd Avenue, around Surrey City Centre, 104th Avenue and towards Fleetwood. Key corridors that will continue to expand over the following decades, creating potential demand routes for an urban style transit service.

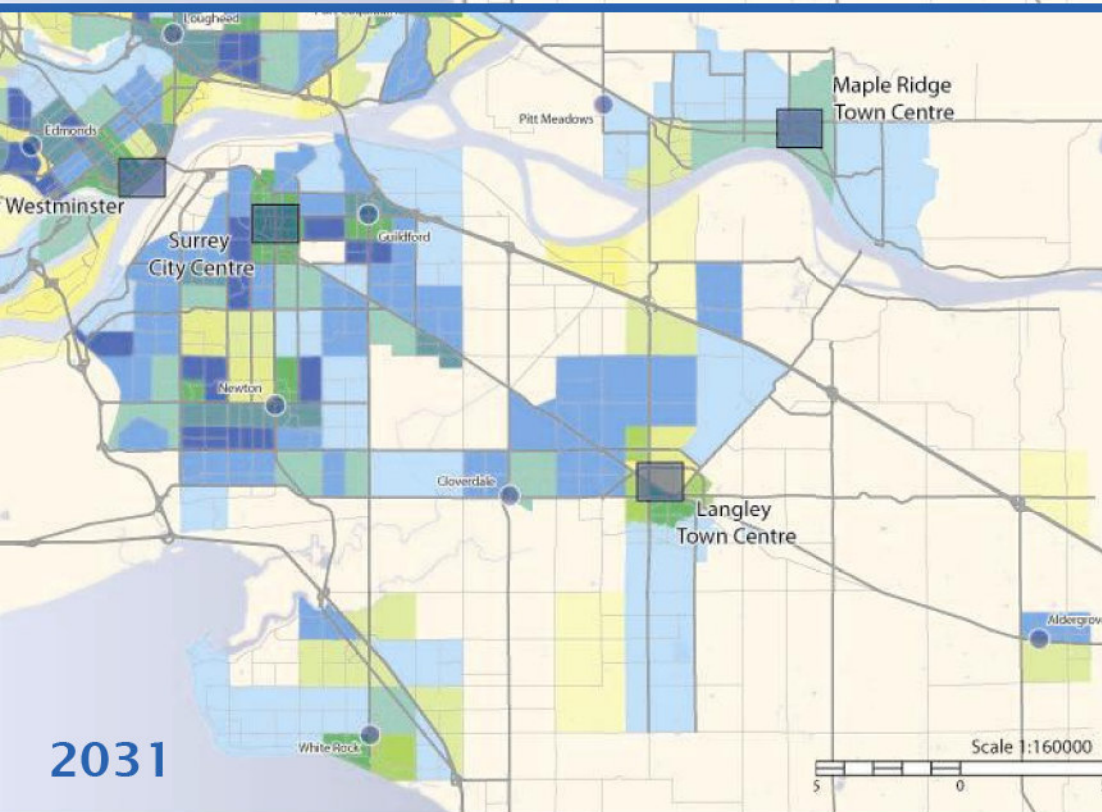
...key corridors...will continue to expand over the following decades, creating potential demand routes for an urban style transit service...

Figure 4: 2011 Projected Population & Employment Density





2021



2031

2021

Figure 5: 2021 & 2031 Population & Employment Density in the South of Fraser Region

Areas of projected growth between 2011 and 2021 are focused in several areas such as along 104th Avenue in Surrey, around the SkyTrain stations, and along Scott Road. White Rock/South Surrey begins to densify as does Willoughby and along 200th in Langley.

2031

Projected growth between 2021 and 2031 continues in the urban areas of Surrey along King George, Scott Road, in Fleetwood and along 104th Ave. The 64th Avenue corridor begins to show significant densities as does 152nd and 200th.

Much of the growth over the next 25 years occurs outside the growth areas originally shown in Metro Vancouver's Liveable Region Strategic Plan, thus creating a challenge that the current transit network will be hard pressed to meet.

The Current Transit System

The current transit system was set up in 1974 as a leading North American example of a Timed Transfer Focal Point system (see Figure to the right). The core of the region has diversified slightly over the years but downtown Vancouver was and remains an important destination. What the system was not created to do well was take residents from town centre to town centre because the demand for transit in the outer areas of the region was low. The system has remained relatively unchanged with the exception of new routes in Surrey as well as the creation of neighbourhood routes in Langley and White Rock.

Figure 6: Timed Transfer Focal Point System

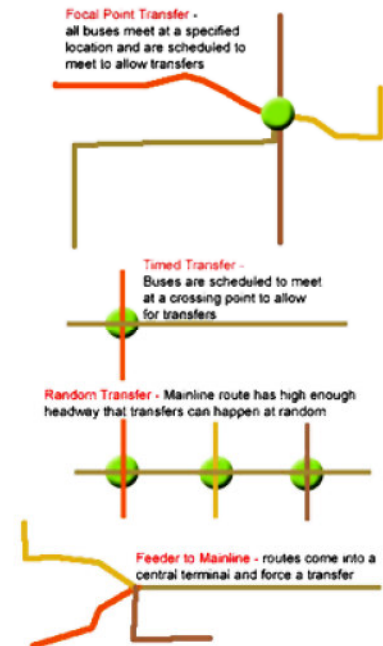
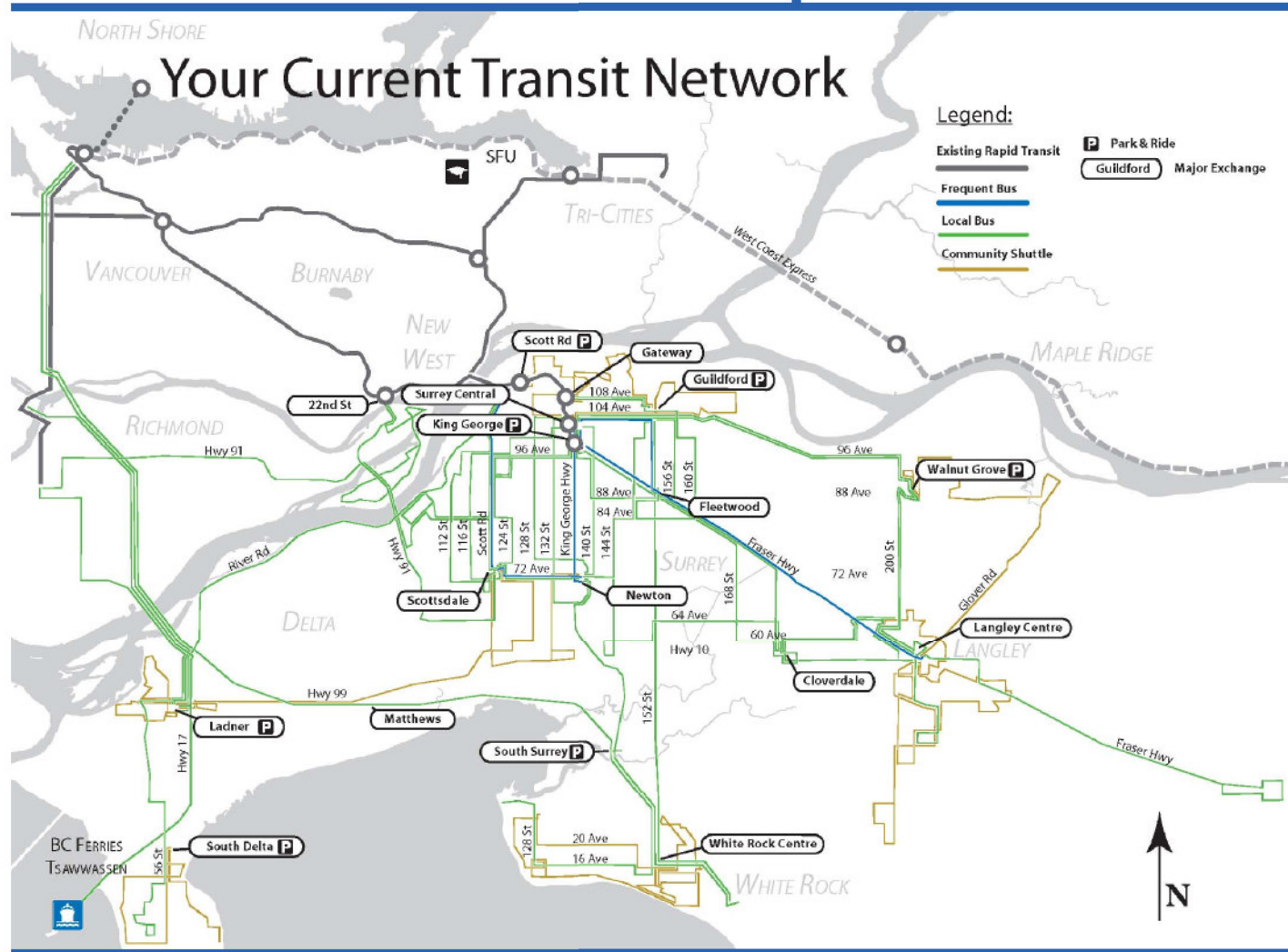


Figure 7: Current Transit Network

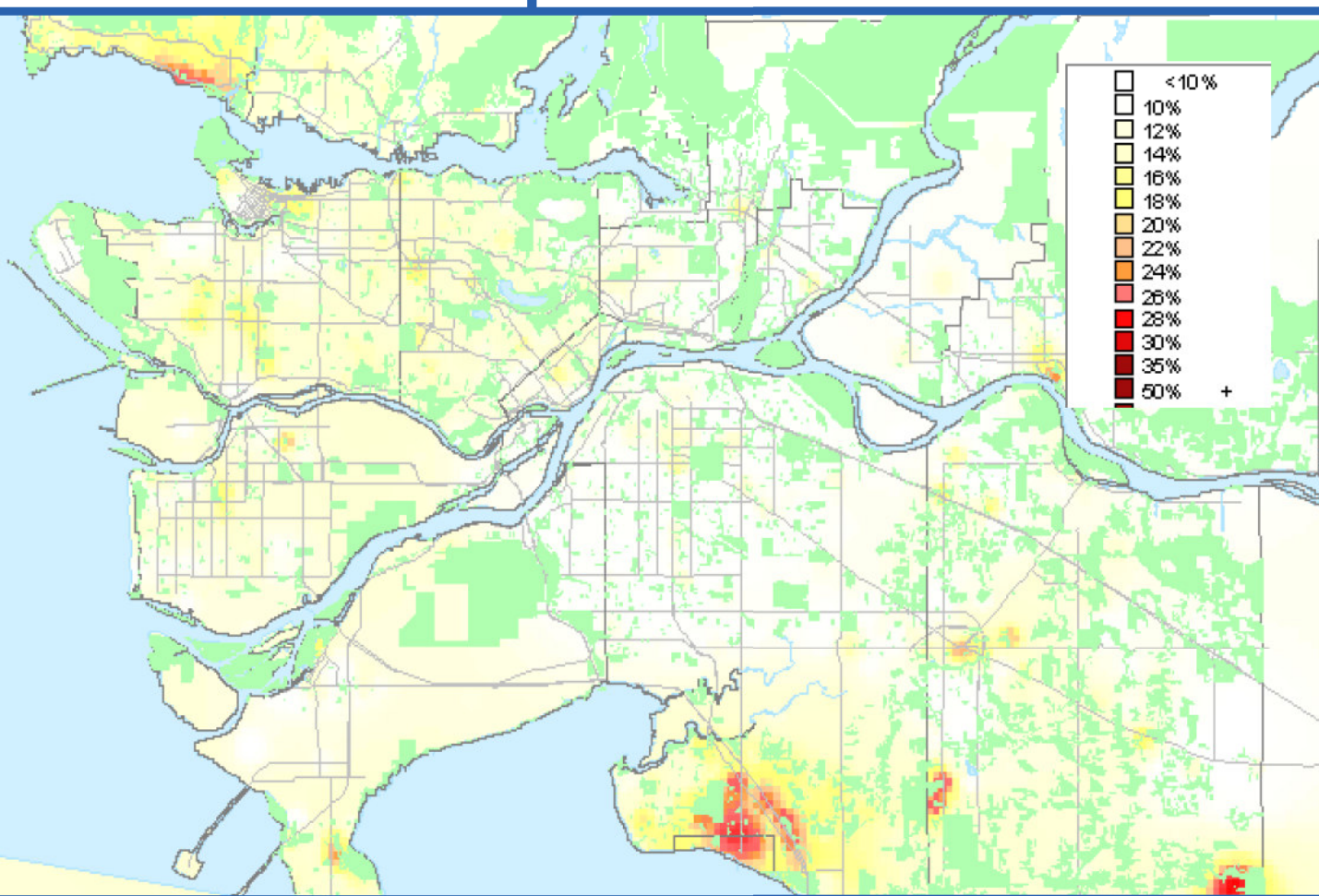


...transit needs to be more accessible in terms of being physically closer to where people live and work as well as being legible in terms of schedules, routes and public information...

Demographic Change

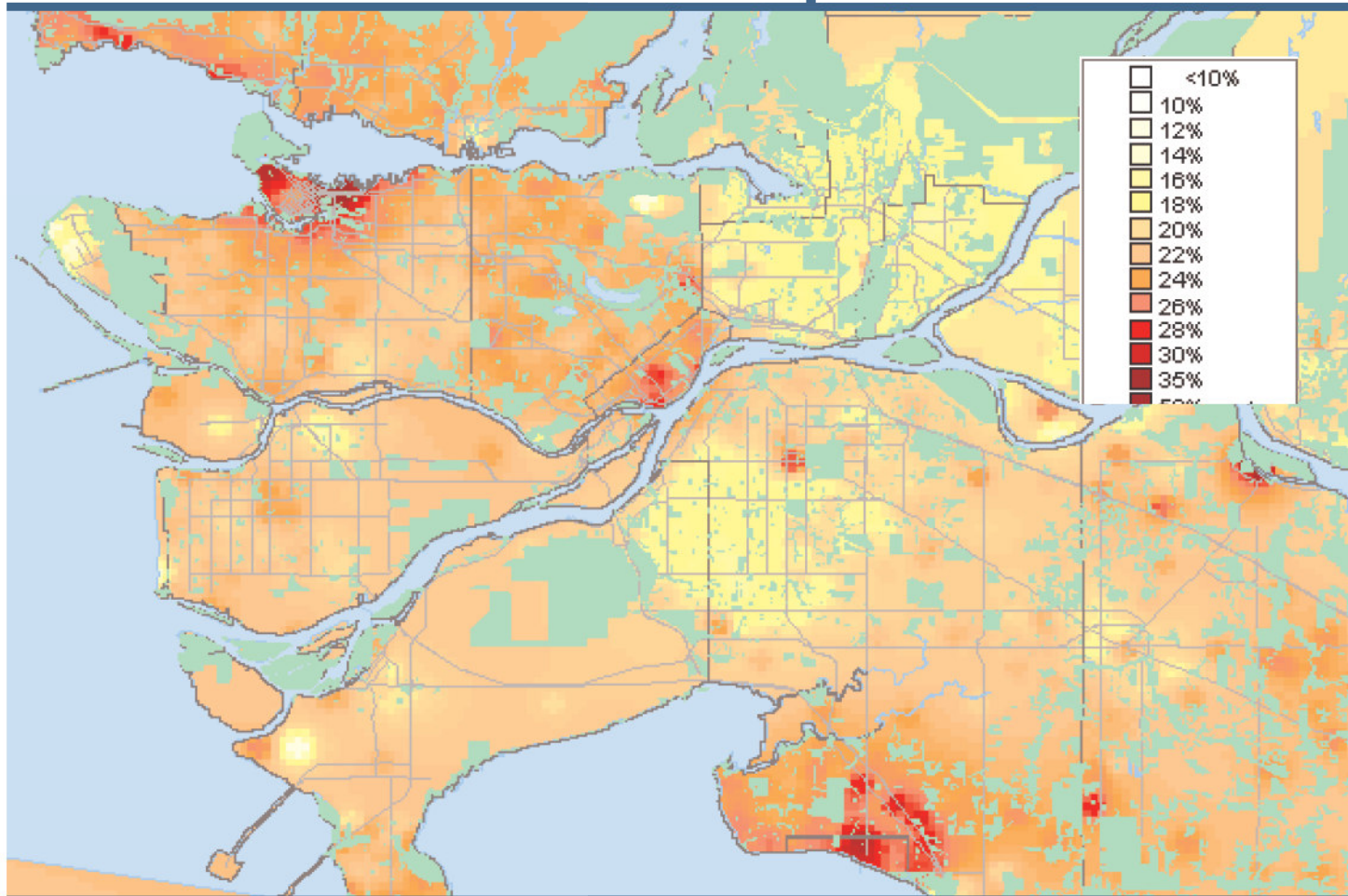
Demographic research has shown that as people age they are now more likely to stay in their existing home and if they choose to move to a facility with in-residence care, they are more likely to do so in the area in which they already live. The old notion of people moving into the city centre to be closer to services has changed and that creates implications for transit in the future. In 2004, there were groupings of residents aged 65 and over, mainly in White Rock/South Surrey and south Langley. Access to transit needs increases as people age because the incidence of mobility and cognitive impairments increases. Therefore, transit needs to be more accessible in terms of being physically closer to where people live and work as well as being legible in terms of schedules, routes and public information.

Figure 8: Percent of Residents Aged 65+ (2004)



When population is projected forward to 2031, the entire Metro Vancouver has greater proportions of seniors spread throughout the region. The SoF intensifies in many areas in terms of the percentage of population over 65 but the majority of the increases are projected for areas where there is new growth and not in the existing urban area of Surrey.

Figure 9: Percent of Residents Aged 65+ (2031)



Travel Patterns

Figure 10: Traditional Suburb to Downtown Travel

For much of the last century, where downtown Vancouver was the focal point of commercial and business activity for the region. As a result, transportation was oriented around this type of “suburb” to downtown trip pattern as shown to the right. The South of Fraser transit network is no exception, created to provide a seamless movement to downtown in the morning and returning home in the evening. However, over the past 30 years, the outer “suburbs” have become more complete communities, allowing residents to live and work south of the



Fraser River. Also increasingly people “reverse commute” from the city and inner suburbs such as Burnaby to South of Fraser employment sites.

The suburb to suburb trip pattern is difficult to serve by transit when the job and population densities are low because there is not enough transit trips generated to make transit investment sustainable. However, as the SoF region grows and densities increase, more attractive transit services become more viable.

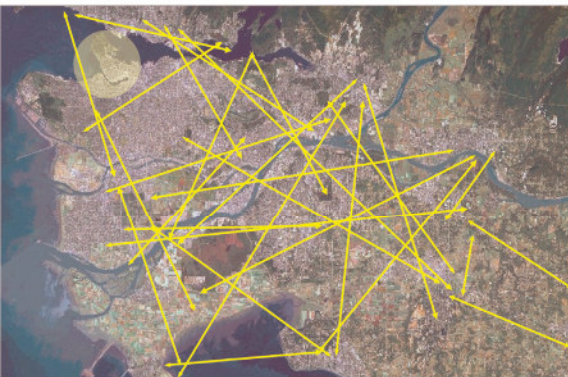


Figure 11: Modern Region to Region Travel

The way that people move through the region, both in terms of time of day and destination, is very important in understanding how effective the transit system is in providing options for travel. With the system geared to moving residents across the Fraser River it is interesting to note that travel within, and between the SoF communities show the greatest increase. This means that the movement of customers between the various communities should also be a focus of the future system in addition to the current focus on taking people to downtown Vancouver.

...traffic congestion is likely now during the daytime and not just the peak periods...

Another interesting change has been the time of day, which people travel. Traditional transit services are based on an AM Peak period of 6AM to 9AM and an afternoon rush period of 3PM to 6PM. Outside of these times, service decreased to match perceived demand. However, studies done in 2005 (Transit Capacity Study) showed that the greatest need for transit improvements were outside the rush periods. Also, as seen in Figure 9, the AM peak has become larger in terms

of absolute trips but has stayed relatively constant in terms of time of day. The midday has seen a large increase in volume, clearly showing that traffic congestion is likely now during the daytime and not just the peak periods.

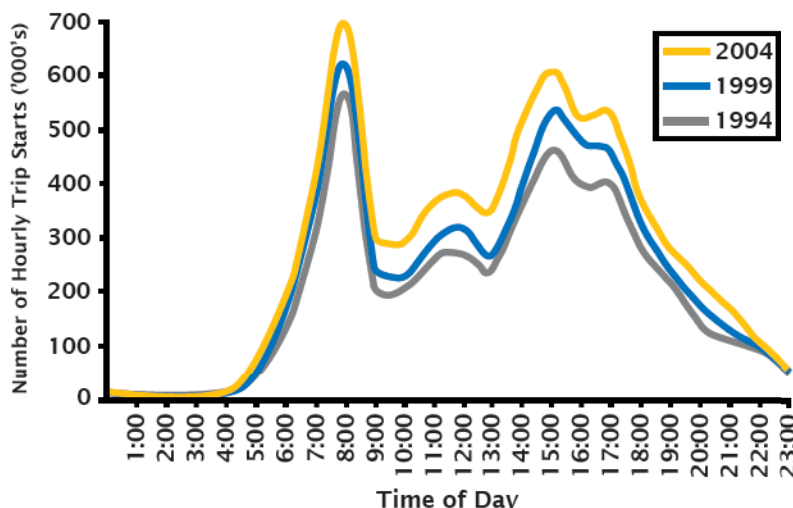
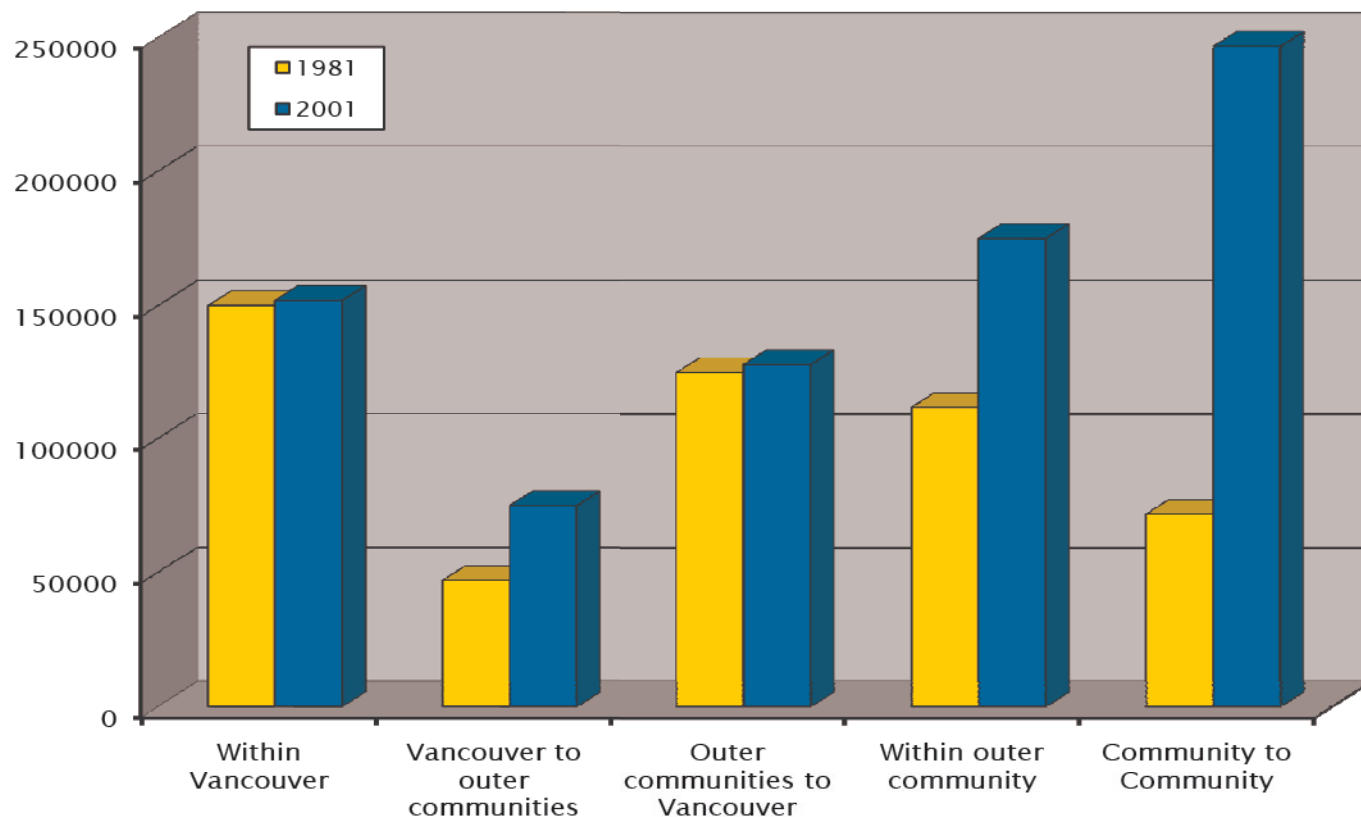


Figure 12: Peak Daily Travel Times

The afternoon rush ‘hour’ has increased to the point where it is now 5 hours in duration and starts higher than the midday volumes at only 1PM and stays higher until 6:30PM. This means that future service changes need to consider higher levels of bus service all afternoon and later into the evening rather than simply 3-6PM as is currently the practice.

Figure 13: Comparison of Regional Travel Volume Patterns Between 1981 and 2001



Also of interest to travel change is where people are going. TransLink's 2004 Travel Diary surveyed all travel movements by all modes of travel over a full 24 hours. These movements were distributed among several large districts around the region and travel between those regions is shown on the following page. The major points to note from both the Surrey/Delta/White Rock and the Langley Township/ City of Langley regions is the high percentage that stay within the region. As seen in Figure 14, 79% of all trips stay within the Surrey/Delta/White Rock region while 70% stay within the Langleys. Travel to other regions also show some interesting patterns such as movement out of Surrey/Delta/White Rock to the combined zones of Vancouver, Burnaby and Richmond versus movement to the Langleys. Each represent approximately the same 5% of the total transportation movements. However, today, much of the travel to the combined zones of Vancouver, Burnaby and Richmond is by transit whereas the majority of the travel to the Langleys would be by car. Also of interest is that more people (17%) travel from the Langleys to Surrey than the reverse indicating that there is likely more jobs or attractors in Surrey than the reverse.

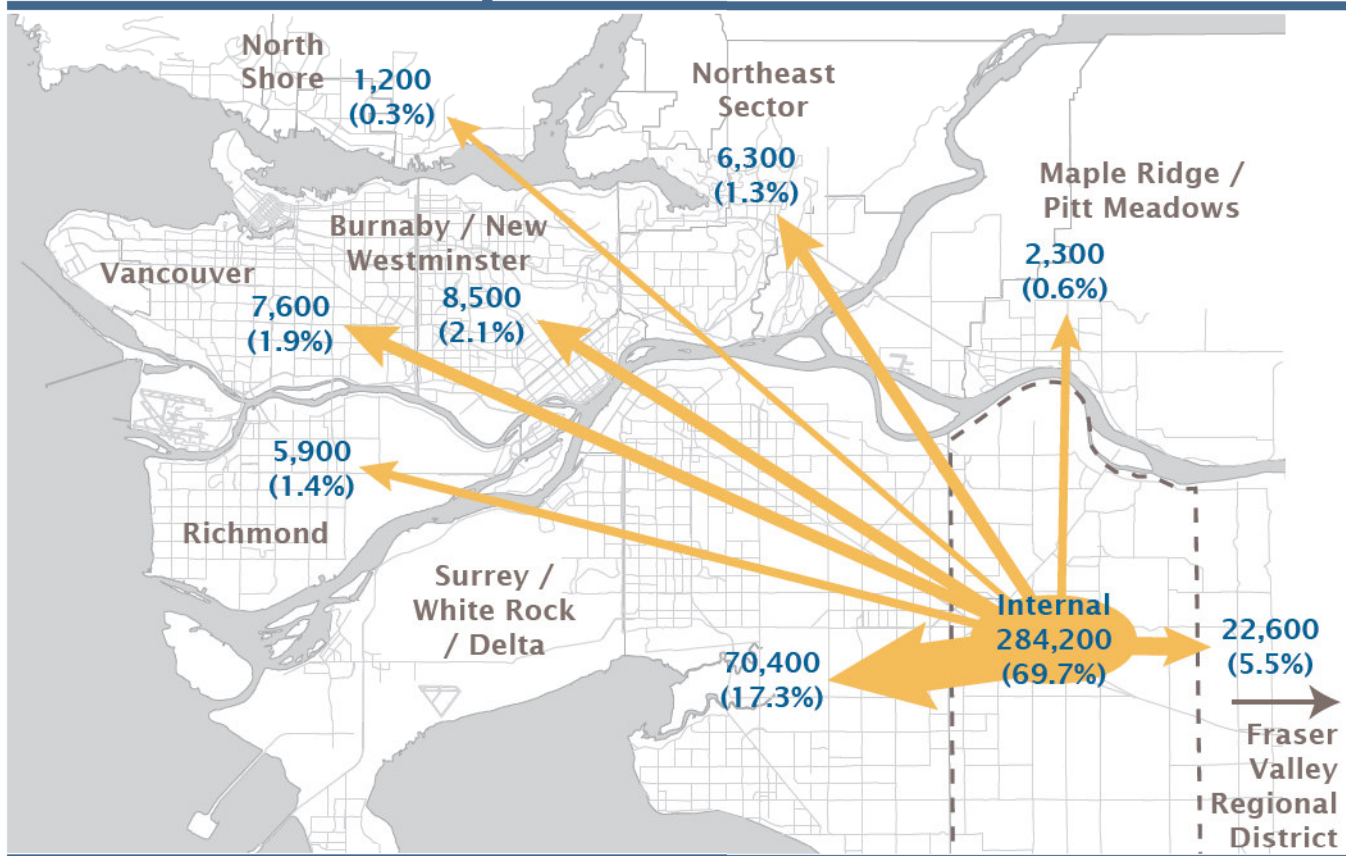


...more people travel from the Langleys to Surrey than the reverse...

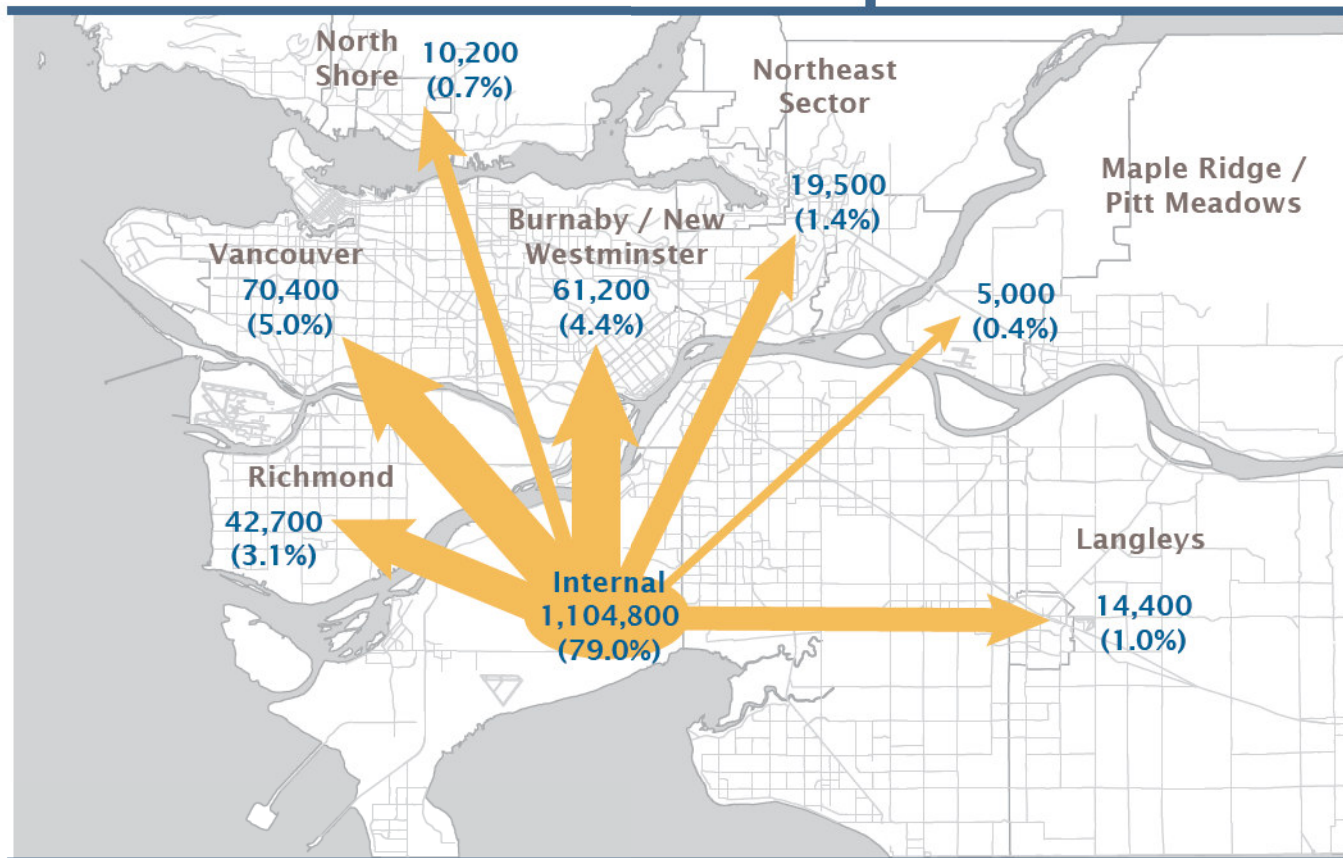
...transit can retain a competitive advantage using key corridors for rapid transit....

The current transit system works well for customers travelling across the Fraser River toward the core of the region. The existing skytrain and express bus services provide competitive service and high modal shares are achieved. The challenge is that if transit is going to significantly increase its modest share of overall travel, it is going to have to increase its share of trips in the fast growing suburb to suburb segment. To date, transit is not a viable option for most of these trips because of the low density and dispersed nature of the trips. This will change in the future with density of both population and jobs focussed on key corridors and centres. In addition, the barriers that make transit across the Fraser River highly competitive will likely come to the South of Fraser in the form of increased traffic congestion and higher travel costs. This will provide the future transit network with higher potential to attract ridership if transit can increase its competitive advantage using key corridors for higher quality transit.

Figure 14: 2004 Travel Diary Survey - Langley's Subregion



**Figure 15: 2004 Travel Diary Survey –
Surrey/Delta/WhiteRock**



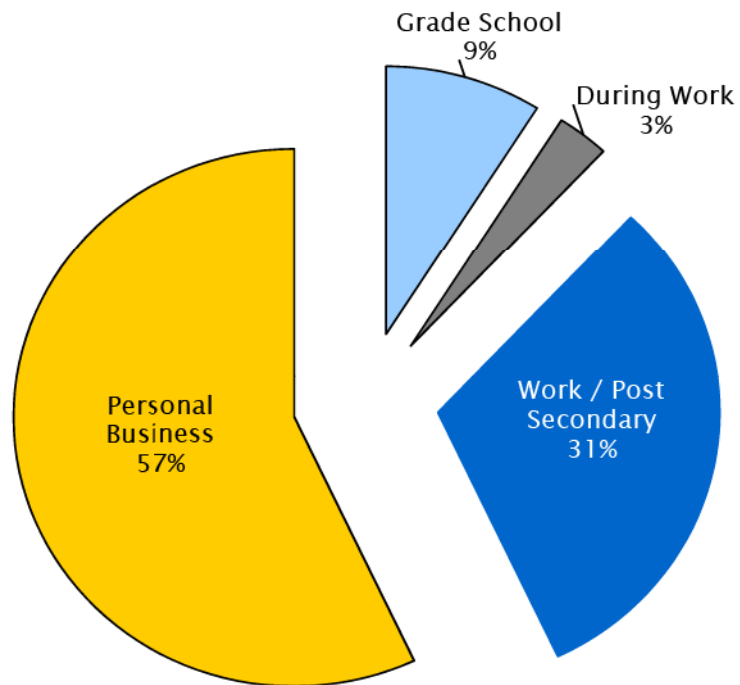
Trip Purpose

Trip purpose is useful in understanding why people are using the transit system and when they need the system to be most effective. When transit was introduced into South of Fraser, work and school trips would have accounted for about 70% of all trips with the remainder split between social/recreational, medical/dental and other. This implied that the most important area market was the peak hours to get customers to and from work or school. The most recent research is showing a vastly different trip purpose as shown below. Work/school (post secondary and grade school) has been reduced to 40% and the other categories combined, which were typically indicative of daytime needs, are now the majority of trips undertaken.

Once again, this highlights the challenge that faces transit in the future within the South of Fraser – serving an emerging market that is challenging for transit to be competitive in because it is unfocussed in terms of time of travel or consistency of travel



Figure 16: Percentage of Trip Purposes

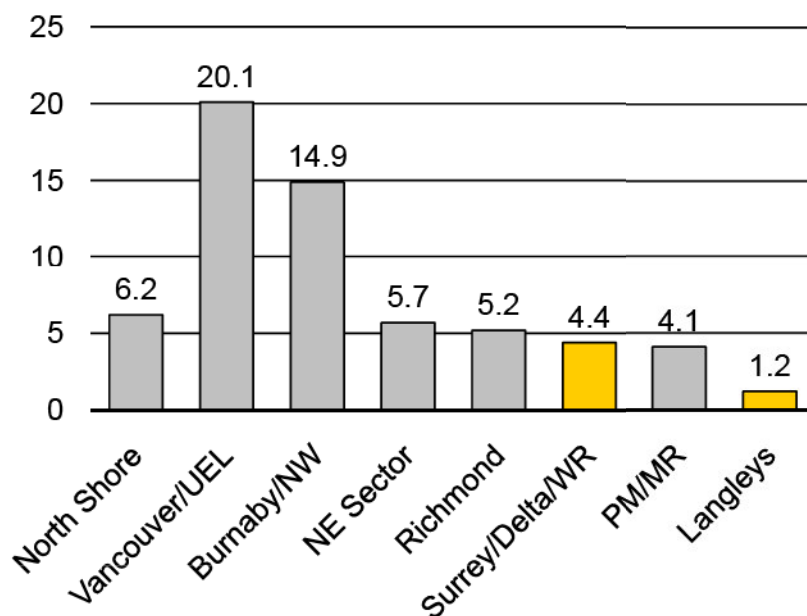


Transit Mode Share

The form of urban development over the past several decades has encouraged more auto-based transportation. The SoF region averages only 4.4% mode share meaning that 95.6% of all transportation trips are made on an alternate mode. To make a significant change in this pattern will require a significant change in the way that transit is provided in the region. However, transit changes alone will not make a dramatic shift in the way people travel around the South of Fraser. Urban development, the density or number of people living and working along key corridors and in town centres, are just as important because creating more clustered origins and destinations creates more demand that will utilize an improved transit system. Finally, providing transit a competitive advantage through the use of transit priority measures, and dedicated lanes for Rapid Transit is the third key in changing the travel patterns of people.



Figure 17: Daily Transit Share by Region
(% of trips by transit)



Urban Form

Challenges

The urban form is changing in the South of Fraser (SoF), however, there is still a lack of sidewalks and pedestrian facilities. This creates a dependency on the car and reduces the impact of transit. As a result, transit service reflects the urban form with low levels of service and caters to the highest potential commuter corridors.



Accessibility is a factor in reaching transit.



Transit passengers wait at Guildford Mall for a bus in an amenity-poor environment

The urban form affects transit ridership by creating an environment that is challenging for pedestrians such as seen in the pictures to the right where the conflict between the pedestrian and the car is high. Bus services rely on pedestrian networks to bring patrons to the stops so typical suburban subdivision patterns with few sidewalks, no pathways and



Cul-de-sac developments make walk distances to transit longer



Car oriented developments often have poor pedestrian facilities

long walk distances make transit only available to those willing to bear the inconvenience or those who have no option. To be competitive against the car, transit needs higher densities, good pedestrian environments and destinations.

Opportunities

The projected growth offers significant opportunities for more urban development as well as a redevelopment to higher densities in town centres and along corridors making transit service more feasible.



Car based development creates a car scale environment where walking is discouraged and transit use is more challenging.



Higher density development in the form of town houses, condominiums, or strata housing can be clustered along key corridors and centres to create neighbourhoods where walking is the scale rather than driving. This promotes and supports non-motorized transportation options and creates enough demand to create desirable levels of transit service.

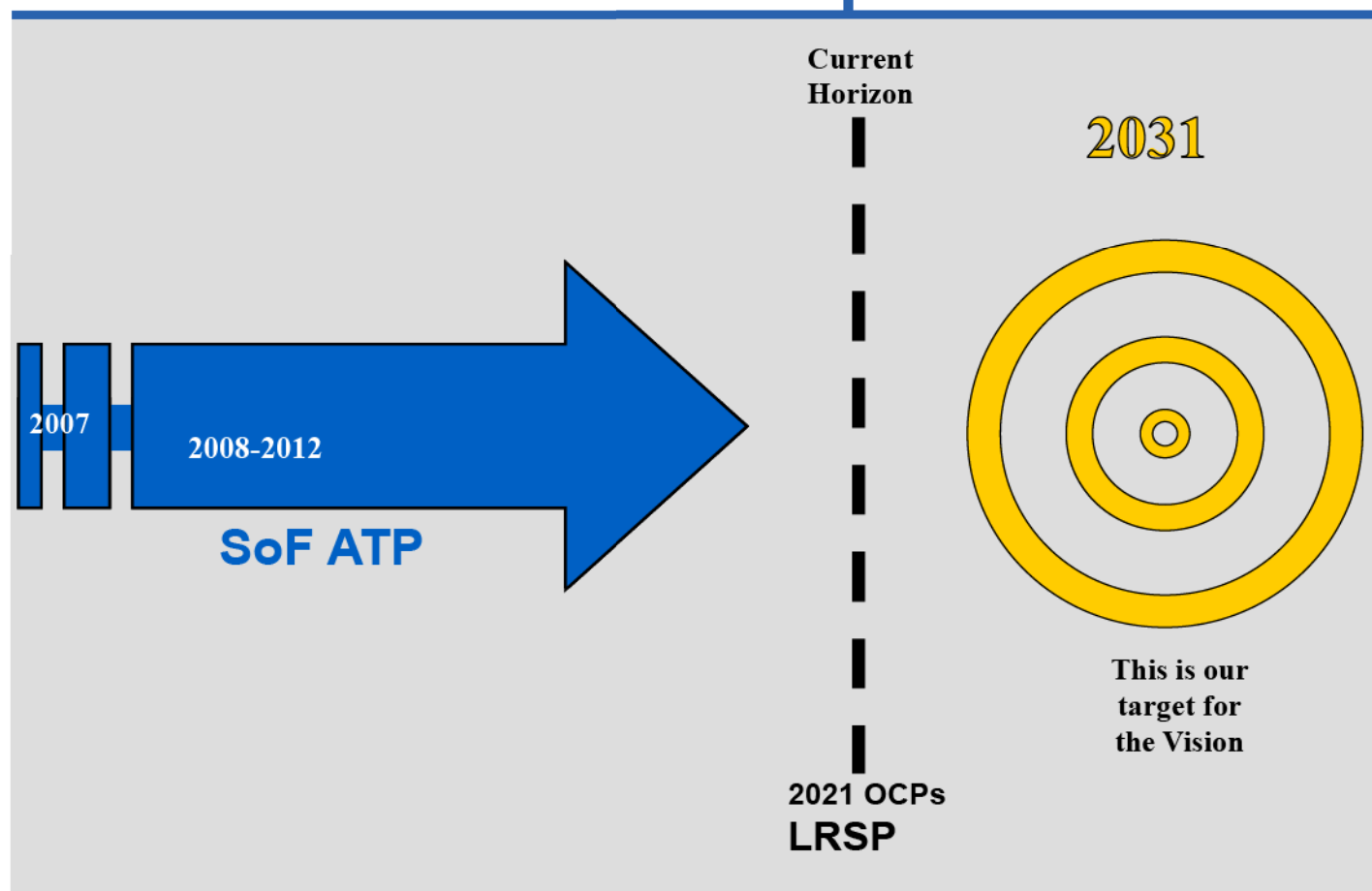


Clustered commercial development that is street-oriented creates a destination for pedestrians, transit users and car based travellers.

Section 2: The Planning Process

The planning process for the South of Fraser Area Transit Plan is intended to create a long-term vision to 2031 to reflect the changing dynamics of transportation and land use in the region. This target will allow future transit decisions to be made towards a specific goal so that there is a sense of purpose in transit and transportation investment. The South of Fraser Area Plan will represent the first five years, starting in 2008, towards that goal. The creation of the vision was a multi-step process that included significant public input from stakeholders, businesses, municipalities and residents of the area.

Figure 18: Working Towards the 2031 Target



...the South of Fraser Area transit Plan planning project has been broken down into four distinct phases...

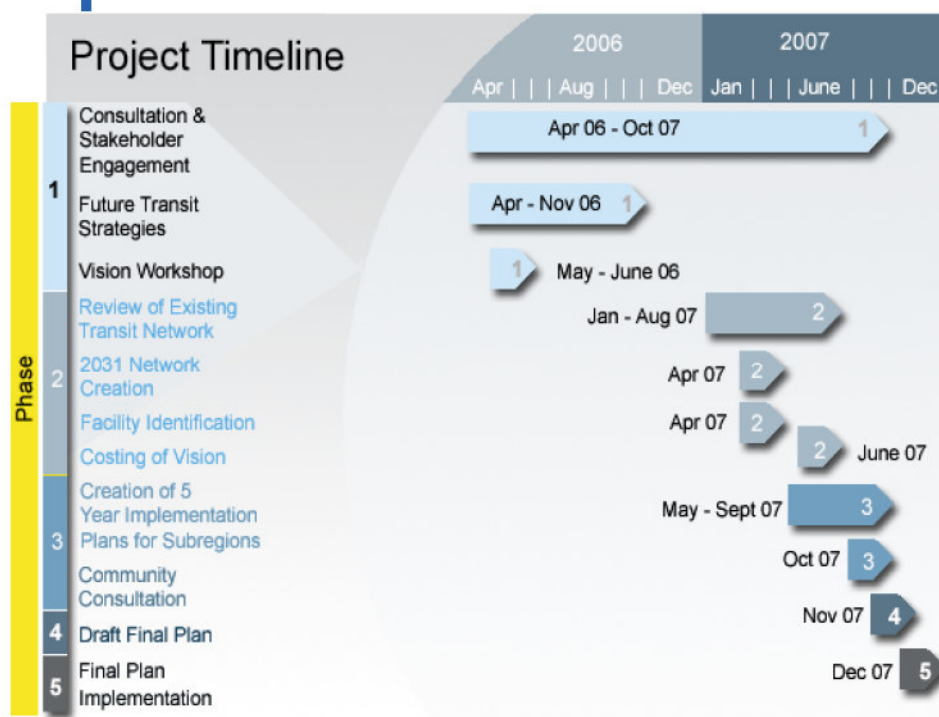
Project Phases

The South of Fraser Area Transit Plan planning project has been broken down into four distinct phases as shown in Figure 19. Phase 1 represents the creation of a long-range transit vision for the SoF region. This involves extensive market research and public input to create an all day network that serves as the backbone of a potential future transit network for the region as it would look in 25 years.

Phase 2 is a detailed examination of the current transit network including counts of passengers boarding or alighting by bus stop. This provides a profile that can be used to compare existing routes to new routes in the vision to determine the impact of changing the current system. This phase will also include a review of all facilities in the system (bus exchanges and terminals) and a creation of a bus network that represents the vision.

Phase 3 will be the creation of short term implementation plans for each area that represent the first years of enhancements in the transit network towards the 2031 vision. This phase will also include a cost summary of the plan. Phase 4 is the final plan that will be presented to the SCBCTA Board by the end of 2007.

Figure 19: Project Timeline



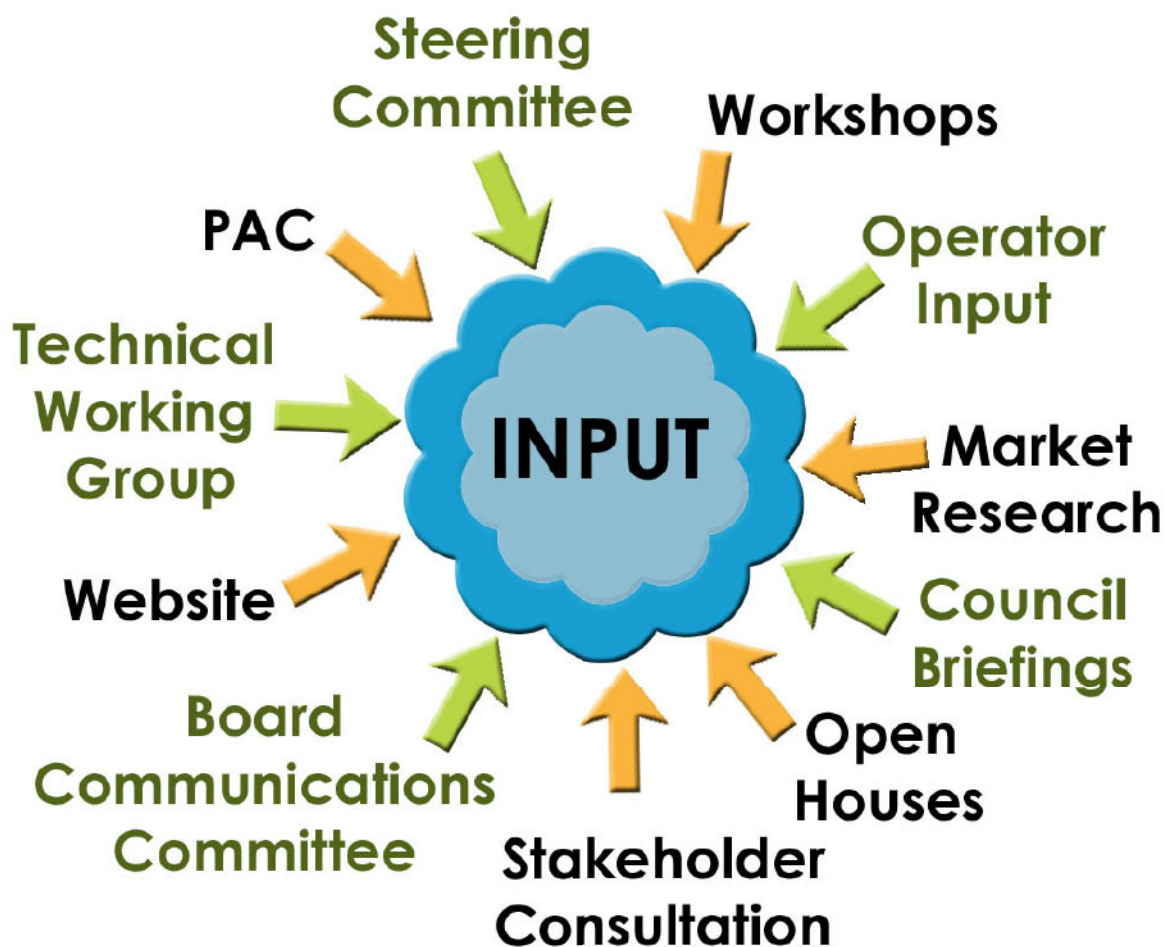
Public Input

Sources

Public input was sought from a variety of sources for this plan to ensure that the vision was truly representative of all the business and population areas in the region. Along with the formal committees noted earlier, there has been significant stakeholder input from the business and commercial community as well as the educational institutions. Well over 100 individual meetings were held in 2006. The general public provided input through the extensive market research program including 24 focus groups, a 1,500-person travel survey, and 11 Open Houses. Additionally, input from all five municipal councils helped inform the vision. The final support was feedback from Coast Mountain Bus Drivers.



Figure 20: Sources of Public Input





...customers wanting more direct services, expanded evening service and service to the new growth areas...

Market Research

The market research objectives were intended to identify consumer travel patterns to, from and within the South of Fraser area; understand strengths and weaknesses in current transit services; and, gather ideas for area transit visioning. The research team consisted of the Mustel Group, Dowe Marketing Group, and Qualitative Research Associates undertaking the travel survey and the focus groups. There were 16 focus groups with South of Fraser River residents (Teens, young adults, adults 25-55, seniors 60+) who were both transit users (3+ trips/week) and infrequent users. In addition there were 8 focus groups with bus operators and SkyTrain attendants. The phone survey screened for travellers to and from the South of Fraser with 1500 full interviews completed.

Some of the main concerns stated by respondents regarding the existing system are:

- The frequency of service (how often the buses run),
- The length of service (how late the buses run) especially in White Rock and Langley
- Weekend service or the lack of service,
- And, unusual because of the technical nature of the issue not normally noticed by passengers, the timed – transfer system that requires all buses to come together at points in the region to allow for transfers. Respondents seem to understand the rationale but note that the inability of the system to ensure reliability means that transfers are often not met.
- In addition, security and signage were noted as concerns.
- Recommendations also included more east-west service, more B-Line type services (there seems to be an understanding of B-Line as a fast limited stop service with high frequencies)

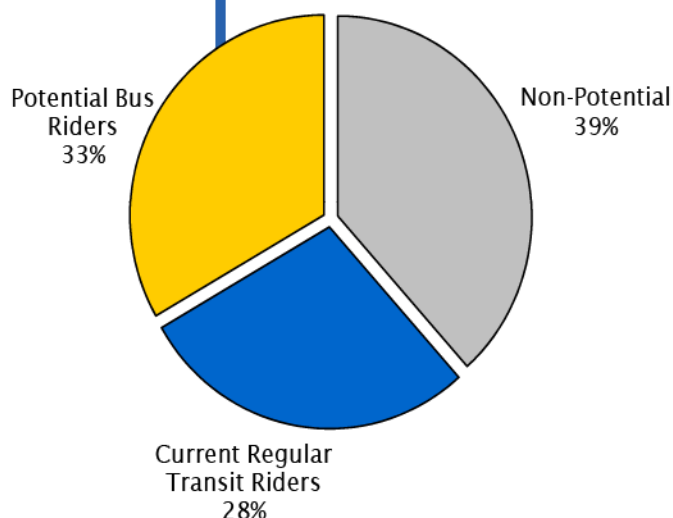
These concerns were echoed in both groups with customers wanting more direct services, expanded evening service and service to the new growth areas.

Figure 21: Potential Market for Improved Bus Service
Total Weekly South of Fraser Area Travellers
(n= 3,708)

People identified as potential users wanted reduced trip times, improved security, more service to new areas, better information, real time schedule information and much more service throughout the region.

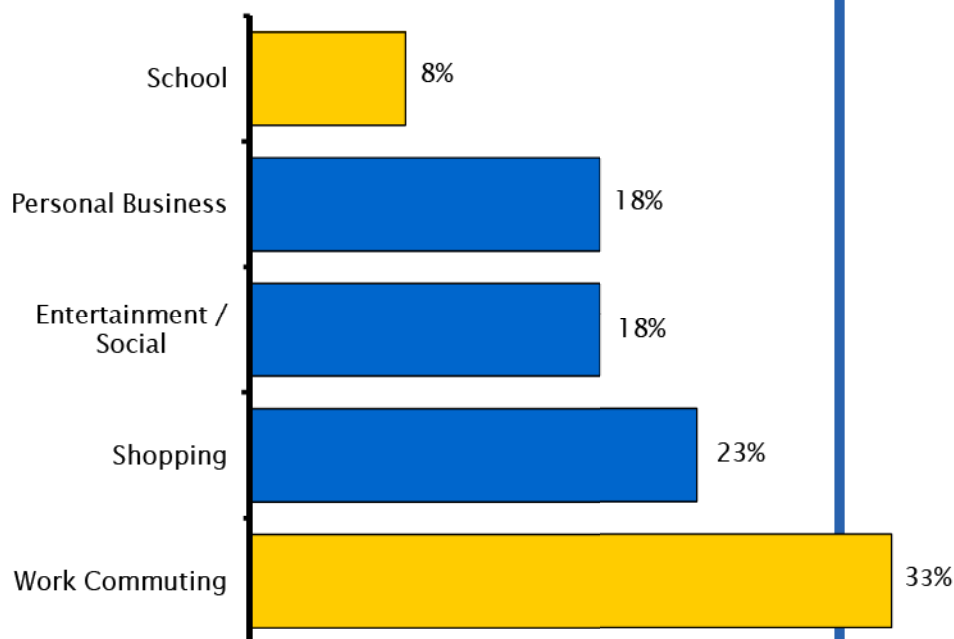
According to the research, there is a potential transit market that was actually larger than the current ridership. Given the low overall mode share, this would support the notion that if there were a significant investment in transit in the SoF, then it would, in all probability, result in higher ridership.

The research also supports the fact that work/school commuting is no longer the top reason for travelling around the SoF. At only 41%, this means that there is a large amount of potential demand in the off peak periods for shopping, social and personal trips. However, these trips are generally more difficult to attract to transit.



...work/school commuting is no longer the top reason for travelling around the South of Fraser...

Figure 22: Past Seven Day Trip Volume by Purpose to, from or within South of Fraser
(Based on Trips Reported by Potential SoF Bus Market (n= 1,500))



The top travel destinations based on the surveys were Willowbrook Shopping Centre, Surrey City Centre, Guildford Town Centre, White Rock Centre, Langley centre, Newton Town Centre, Abbotsford with King George Station and Vancouver ranking only #9 and #10. This list speaks to the increase in transportation for non-work purposes for the majority of travellers. This also shows that a transit system that could link the town centres together in a strong network could prove to be attractive to residents of the SoF.

The Vision Workshops

TransLink staff created a unique methodology to educate stakeholders as well as to provide a realistic insight into the decisions that are typical in planning a transit network. The Planning Game was created for the Vision Workshops held as part of the public input of Phase 1. Participants were given a limited supply of tape (representing the approximate cost of creating and operating a kilometre of service area) to create a network. The supply of tape was intended to represent a realistic budget out to 2031 and allow participants to experience the difficult decision making process that results when trade-offs have to be made between projects.

Participants were provided a blank map of the region, given a bank of tape that they could trade based on the following:

- 1 piece of SkyTrain = 5 pieces of BRT.
- 1 piece of LRT = 3 pieces of BRT; and
- 1 piece of BRT = 1.5 pieces of Frequent Bus services.

The tape was colour coded for ease of use:



SkyTrain



Bus Rapid Transit



Light Rail Transit



Frequent Bus

Participants were also provided with maps of the land use and job density in the region in 2011, 2021 and 2031.

Examples of the maps created by participants represent the range of choices made from a focus on Light Rail extension that left little of the budget for other transit services...



Participants walk through the trade-offs of different types of transit services and networks.

The 24 Focus Groups produced maps that provide a sense of what the community priorities were likely to be given similar fiscal constraints. These maps, along with the Vision Workshop maps were digitized and used as a basis for the creation of the Vision.



Example of map created using local bus to allow for greater penetration into the region.



A map putting more resources into LRT, leaving less for local bus services.

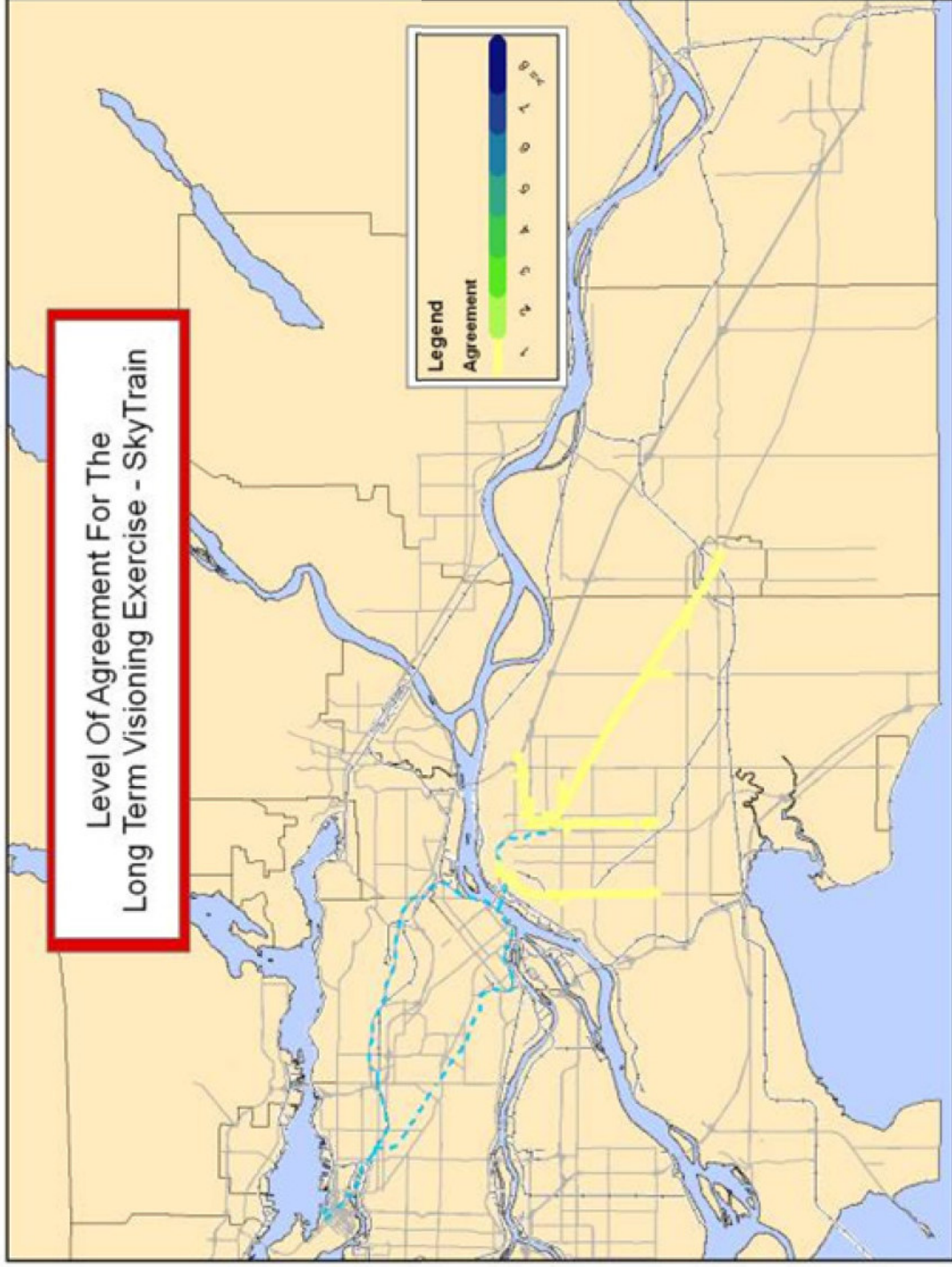
Summary Maps

The four summary maps are a compilation of the 24 focus groups and two Vision Workshops and show the level of agreement with each segment of the transit networks by type of service. The more times a segment is shown in the maps, the darker the colour that will be displayed.

SkyTrain

There was very little agreement for this expenditure, primarily because of the cost and the limited penetration into the South of Fraser that results by spending all available capital on this type of rail. Most participants started out with SkyTrain but then began to understand the trade off between service single corridors versus creating a network of services.

Figure 23: Level of Agreement for the Long Term Visioning Exercise - SkyTrain



Light Rail Transit

There was more agreement on this investment with a number of corridors being highlighted. However, overall, the network remains very thin because rail takes up the majority of the budget. Most participants picked out corridors shown in previous transit strategies such as King George Highway and 104th Street in Surrey or Fraser Highway from Surrey to Langley. The Southern Rail (Interurban) corridor was highlighted in Workshop but it did not appear in the other 24 maps. Interestingly, there was limited support for the northern section of the line.

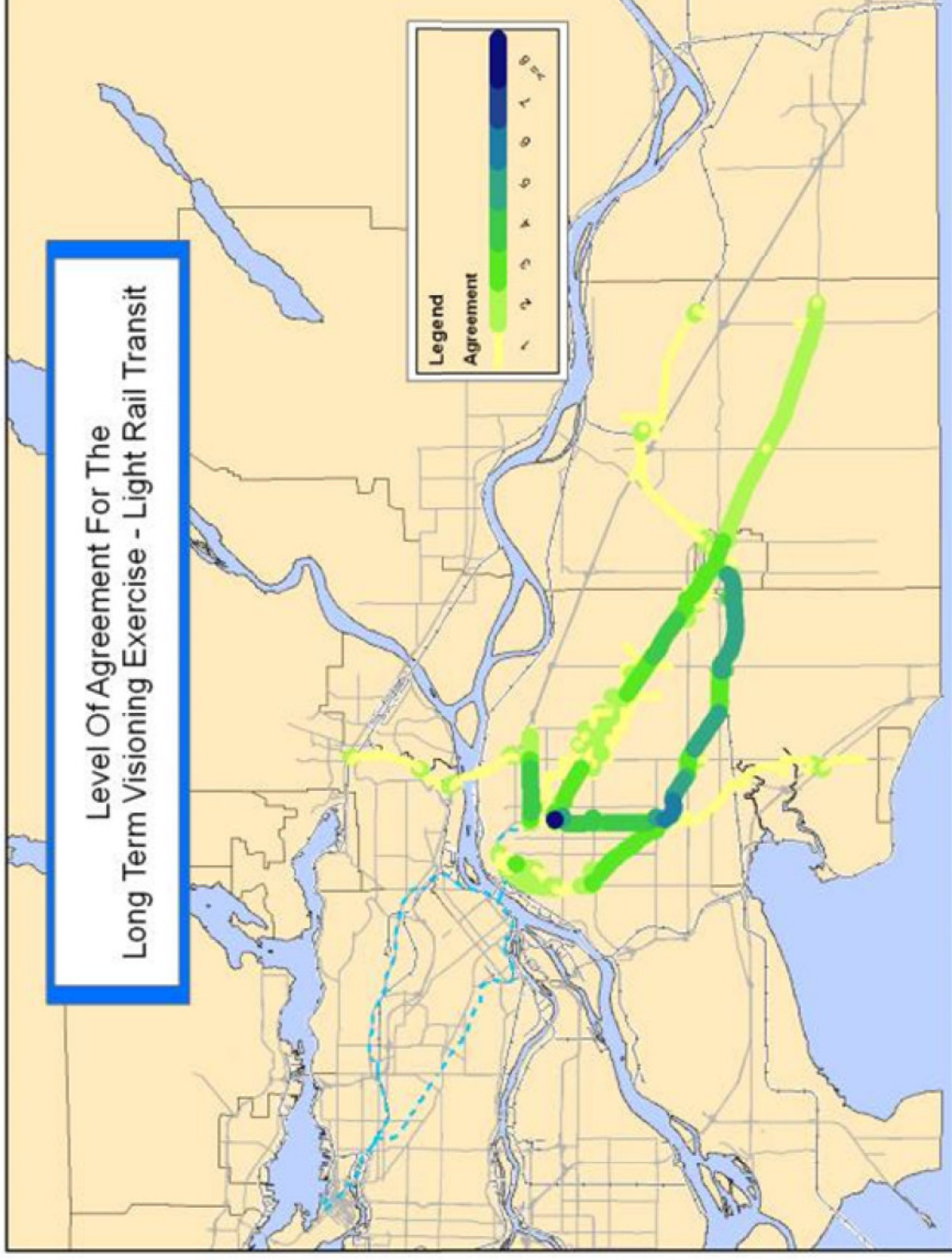
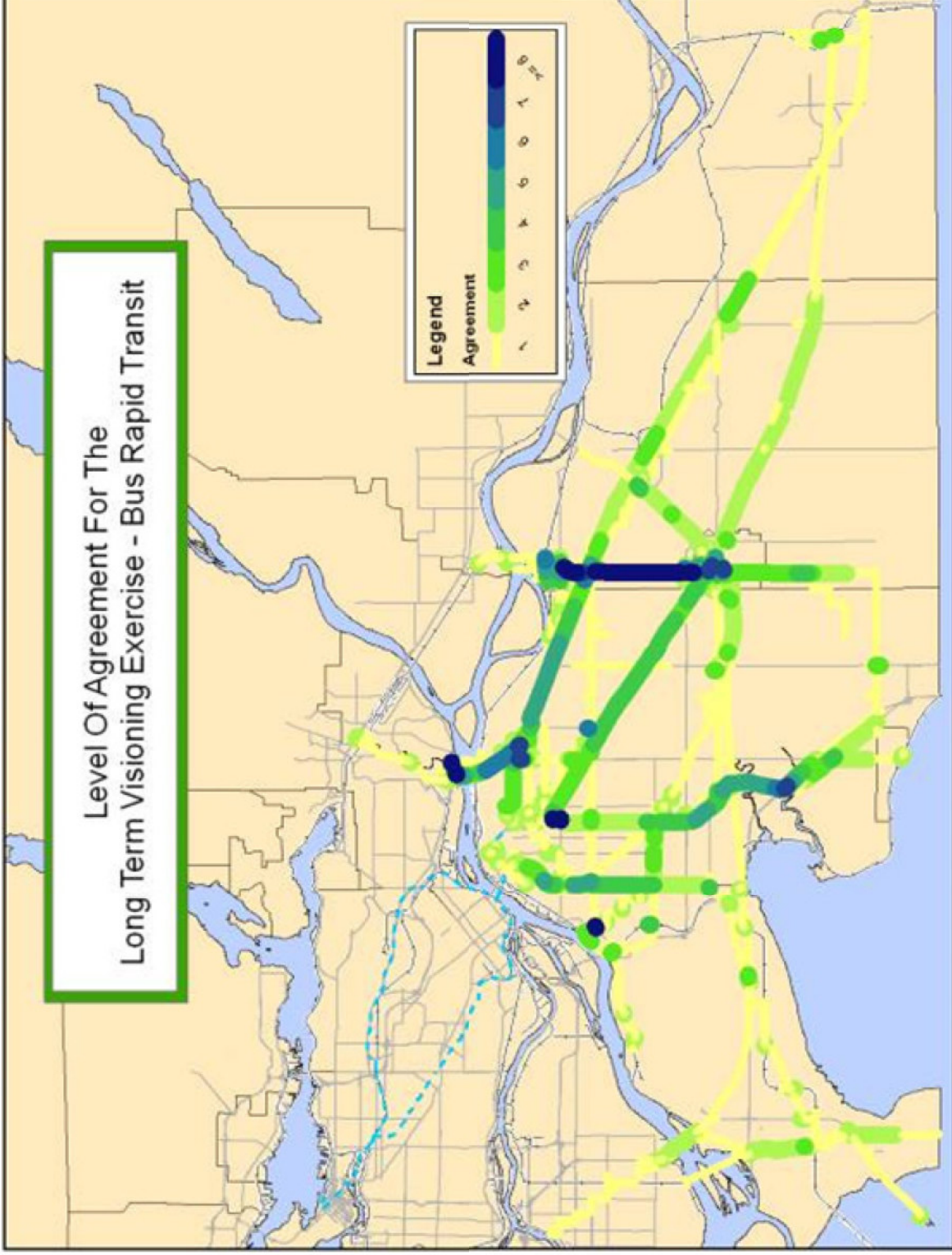


Figure 24: Visioning Exercise – Light Rail Transit

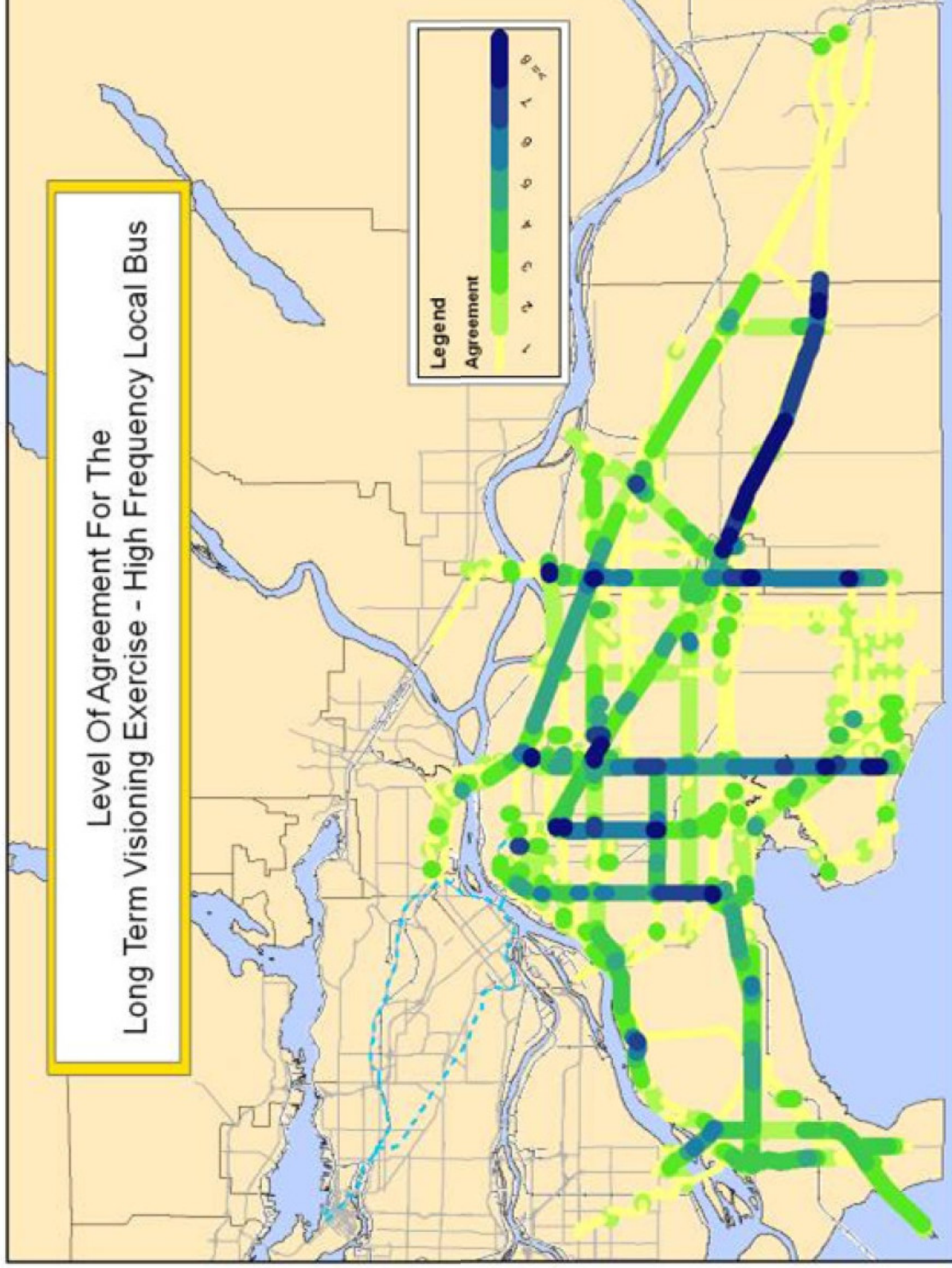


The network and the level of agreement for Bus Rapid Transit echoes the market research. It is interesting to note that as the budget is spread among less expensive alternatives, the network that can be created increases both in scale and popularity. Respondents seemed to understand the concept of the B-Line as Bus Rapid Transit and were interested in extending a similar network throughout the region, including to Abbotsford.

Figure 25: Level of Agreement for the Long Term Visioning Exercise - Bus Rapid Transit

The Frequent Bus network was described as a network of routes that have a minimum 15-minute frequency for up to 15 hours a day, seven days a week. This could be the backbone of the system with peak services or community shuttles layered upon it. The transit network shown is even denser in terms of routes than any of the previous alternatives and features much more of an urban style grid network with a large amount of agreement on the basic routes.

Figure 26: Level of Agreement for the Long Term Visioning Exercise – High Frequency Local bus





...the Frequent Bus Network is the all day service that will act as the backbone for the updated transit service...

What is not in the Vision

The Vision does not contain the suggested 2031 route network that will include neighbourhood and peak services.

What is in the Vision

The Vision includes a Frequent Transit Network (FTN) that has two layers to it: the Rapid Transit Network (RTN) and the Frequent Bus Network (FBN). The RTN is designed to maximize the potential of select corridors to extend the existing rapid transit network from the central sections of the Surrey regional and municipal town centres. The RTN will focus upon high volume, all day movements to support higher intensity land uses along the corridors and in the town centres. The Rapid Transit network will have two segments to it, both with similar features but different technology – Rail and Bus. Bus and Rail Rapid Transit have stations between 1000 and 1500 metres apart, real time passenger information, dedicated right-of-ways and are meant to carry large amounts of customers along specific corridors.

The FTN is designed to help support and guide urban development as well as be simple to understand and use and connect all regional and municipal town centres. The FBN is the all day service that will act as the backbone for the updated transit service.

Vision Goal

The goal of this Vision is to create a transit network that provides effective connections between regional and municipal town centres and is attractive enough to raise the percentage of people using transit from 4.5% to 11.5% by 2031



The Vision – Overview

The Vision is shown through a series of maps that highlight the all day movements rather than routes. This allows a connection of points without the need to reference specifics like transit exchanges, how routes will function etc. It also provides a more generalized map that can provide the concepts without the details that will be part of Phase 2. The maps are divided into 10-year segments meaning that if something new is estimated for 2013, it will show up in the 2021 map. The Vision is segmented as follows:

- **2011 - Creating the Framework**

This refers to the fundamental alteration of the network from a “suburb” to downtown Vancouver network to add a new layer of services focussed on more urban style trips. Routes may be reconfigured and new routes will be shown.

Transit Mode Share Target = 7%

- **2021 - Developing a Rapid Transit Network**

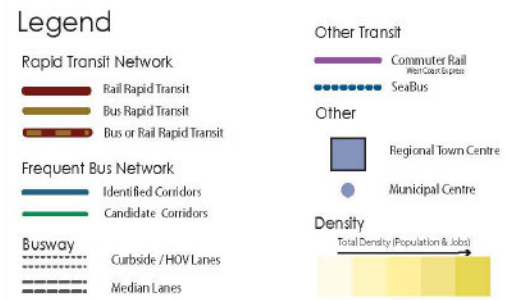
The rapid transit network will be established with a hierarchy of bus rapid transit (and potential LRT) and FBN routes that connect all the town centres in a full network as well as retaining connections to existing the existing SkyTrain lines and the future Canada Line and Evergreen Line.

Transit Mode Share Target = 9%

- **2031 - Enriching the Network**

This phase begins the process of filling in the network by providing more FBN services as well as local and community services. At this point the system will be an urban transit network providing a high quality alternative to the automobile in the South of Fraser.

Transit Mode Share Target = 11.5%





Vision Costing

It is estimated that the 2031 vision would require a bus fleet in the range of 600 buses, or an increase of 375 over the current fleet. This would cost in the range of \$183 Million in new capital costs and additional annual operating costs of \$112 Million (2007 \$s). In addition, there would be 36 kilometres of busways (excluding Highways#1 and #99) at a capital cost of approximately \$433 Million and improvements to transit exchanges, terminals, an additional transit centre, and park and rides are estimated at \$43 Million.

In total, it is estimated that the 2031 Vision would require an investment of approximately \$658 Million in capital costs over the next 25 years to make a reality.

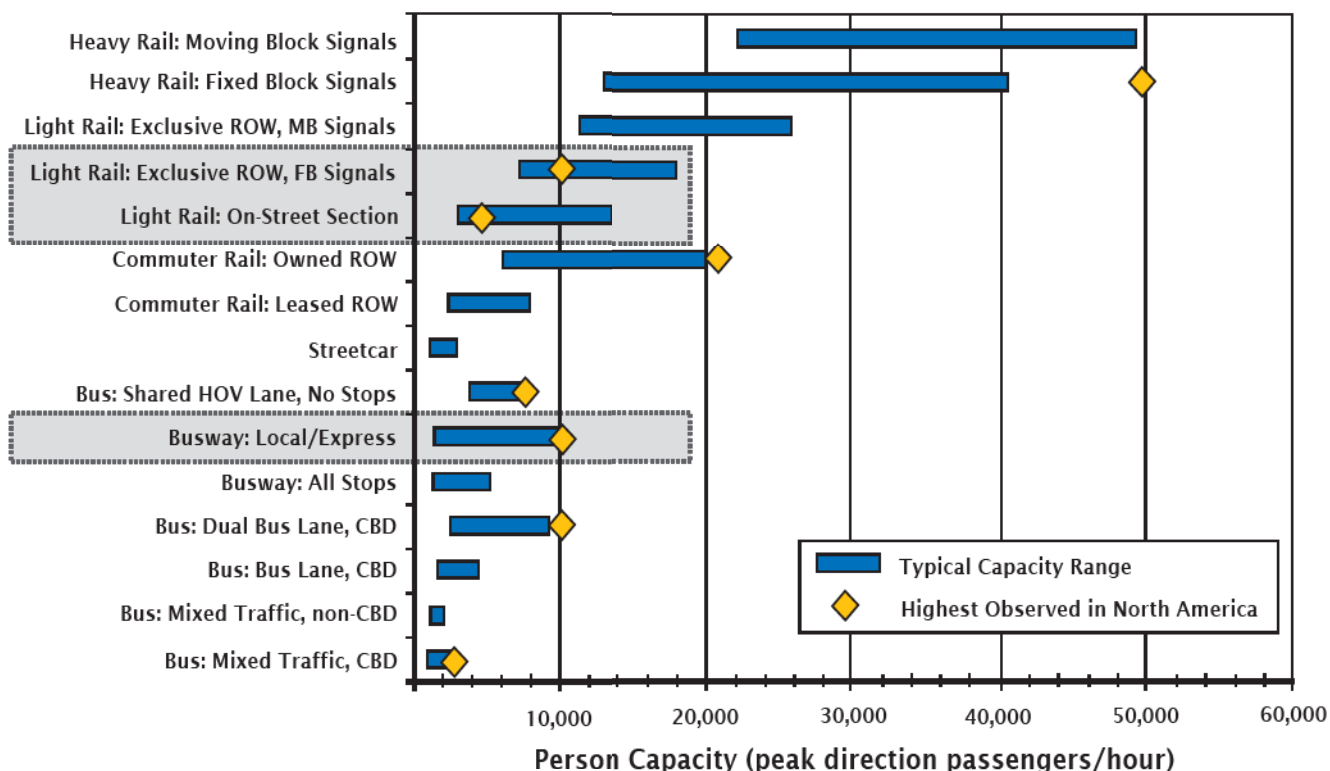
What is Bus Rapid Transit (BRT)?

Bus Rapid Transit (BRT) is defined as having similar characteristics to rail based rapid transit including: Light Rail and SkyTrain:

- Independent Right-of-Way (as much as possible through dedicated median lanes or Bus/HOV lanes on limited access highways)
- Independently Branded from rest of system
- Real-time passenger information and stop annunciation (this includes wayside on on-vehicle)
- Stations not stops
- Transit Priority Measures

The intent is to create a rapid transit network that offers the customers similar conveniences and travel options with a technology that is appropriate to the corridor. BRT can carry similar amounts of passengers per hour as the lower end of LRT but at a reduced cost. BRT corridors can also be upgraded at an appropriate time to LRT status.

Figure 27: Carrying Capacity



Vehicles

Europe has been leading the development of BRT vehicles that have the look and feel of LRT vehicles and look less like a standard transit bus. The buses –have large windows, real time passenger information on board, verbal indicators of stops and are designed inside to be similar to being in a rail rapid transit vehicle.

Traffic Priority

Traffic priority is an important feature of BRT service to allow the buses to keep up a high speed between stops and to maintain reliability. Minimum travel times that are constant and can provide transit with an advantage over the vehicle is key to attracting passengers away from the car. Traffic priority can be signal priority that allows buses to get through a light to keep on time, lanes at intersections or bridges that allow the bus to pass by traffic and gain priority access to the intersection.



Attractive Stations



In order delineate the service from a regular bus and to further the notion of rapid transit, BRT must have stations rather than simple bus stops. This creates a sense of permanence in the infrastructure for customers as well as being a visual clue as to where the bus stops. The stations should have similar attributes to rail stations with shelter, real-time passenger information, benches, and lighting, as well as ticket vending/validating machines.



Real Time Schedule Information

Real time schedule information tells customers when the next buses are arriving. Studies have shown that waiting is the worst part of a customer's journey so alleviating the uncertainty can significantly improve the customer's travel experience. It also provides an estimate of subsequent arrivals to reduce the anxiety that is associated with waiting times.

BRT Infrastructure

BRT Infrastructure includes the signal priority noted earlier, but also includes physical infrastructure that allows for the quick movement of buses along a congested roadway. These are typically bus lanes and can be time based or permanent and may be in the curb lane or as a dedicated set of lanes in the centre of the road. Median bus lanes provide a dedicated right of way for buses separate from other traffic. This increases speed and reliability. The right of ways can be converted to LRT operations when ridership dictates.

Curbside Bus Lanes

Curbside bus lanes require the removal of parking during peak hours as a minimum to allow the bus to travel apart from vehicular traffic. Curbside lanes work better all day because limited operations required significant policing to ensure cars do not park in the lanes. In addition, curb lanes cannot impede right turning cars, therefore, their application is limited and most appropriate in corridors with few cross streets.

Median Busways

A median busway refers to a set of dedicated lanes reserved exclusively for the bus. This allows the bus to both bypass traffic, to travel at a higher average speed and provide a more reliable service. The lanes are separated from general traffic lanes by curbs, landscaping or surface treatments and are designed to be wide enough to be convertible to rail in the future.





Frequent Bus Network

The Frequent Bus Network is a high level of bus-based transit system connecting the town centres and offers a minimum of 15-minute service, all day, every day. Peak hour services will be based on demand but will range from 5-10 minutes on the major corridors. The FTN guarantees a “worst” case service of 15 minutes but does not define the best case as this is defined by demand. The FBN is divided into “Identified” corridors and “Candidate Corridors”. The identified corridors are those where there are sufficient jobs and population along the corridor and where speed of the service can be guaranteed through transportation priority.

When the corridors have potential but don’t currently meet the criteria, they can be monitored to see when the criteria are met. The criteria would be based on the following:

- People – enough density within 450 metres of a bus route
- Jobs – enough density to attract ridership all day in both directions
- Reliability – Priority measures to ensure a minimum average speed
- Comfort – provide a high quality service

The creation of the guidelines will be done using local examples and input will be sought through the MRTAC committee prior to a revised Transit Service Guideline document going to the Board in fall 2008.

It is the intent of TransLink to work with Metro Vancouver to create an MOU around this issue that will state that if the municipality reaches the proposed thresholds along the corridor, then we will provide a stated level of service. It is then up each municipality to determine whether they want to pursue candidate corridors or not. The FTN should be able to respond to changes in growth patterns along corridors, giving flexibility to municipalities to change the direction of growth if conditions dictate.

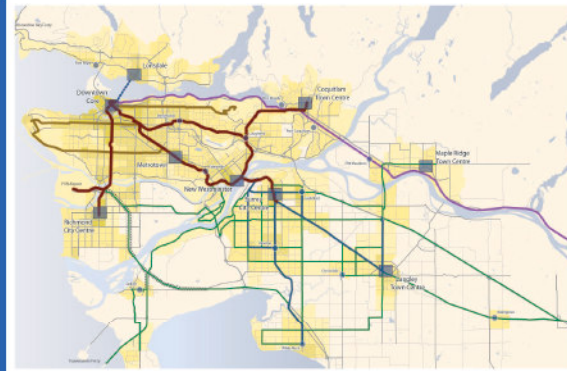
Vision 2011

Creating the Framework

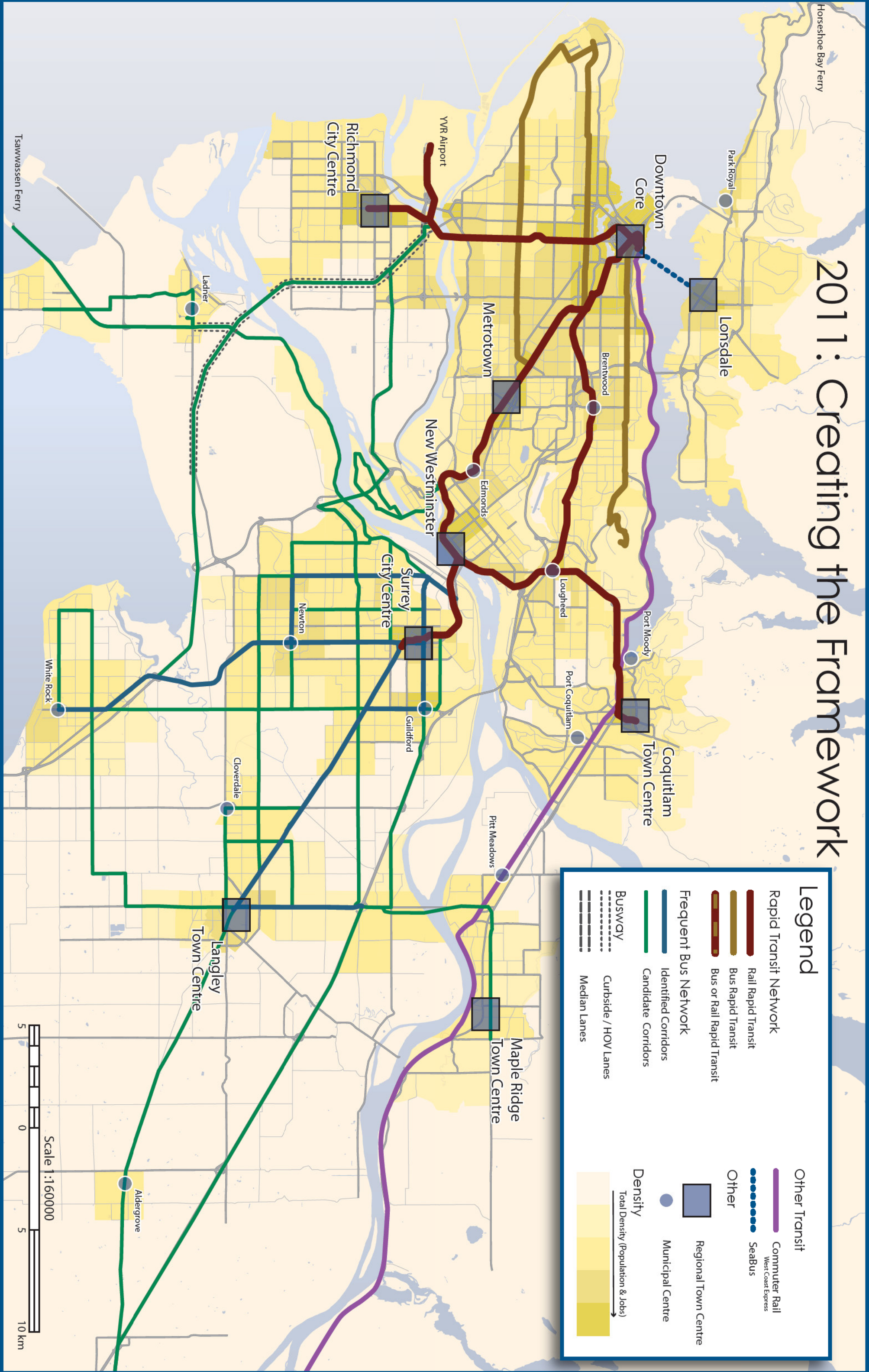
The 2011 Vision features the creation of major transit corridors along:

- Scott Road
- King George Highway
- 104th Avenue
- Fraser Highway

The network vision includes the creation of preliminary stages of rapid transit linking the town centres of Surrey, Langley, White Rock, Newton and Guildford with bus rapid transit services. In addition, the Frequent Bus Network begins the reorganization of the network into connections that are simple to understand and have a specific purpose that is readily identifiable to customers. A new East-West connection along 88th Avenue will connect North Delta, Surrey and Langley to a number of employment centres. In addition a new East-West service will connect Scottsdale in south Surrey/Delta to Langley via 64th Avenue and another will connect Langley with White Rock/South Surrey. Service across the new Golden Ears Bridge will connect Surrey and Langley with Maple Ridge/ Pitt Meadows and services will be in place to connect the Langleys and Surrey with Abbotsford. An expanded Highway #1 with dedicated HOV/Bus lanes will create new links across the Port Mann Bridge to Burnaby and enable fast services to connect Abbotsford, Maple Ridge and Langley to Surrey.



2011: Creating the Framework



Legend

Rapid Transit Network

- Rail Rapid Transit
- Bus Rapid Transit
- Bus or Rail Rapid Transit

Other Transit

- Commuter Rail
- West Coast Express
- Seabus
- Other

Frequent Bus Network

- Identified Corridors
- Candidate Corridors

Busway

- Curbside / HOV Lanes
- Median Lanes

Density

Total Density (Population & Jobs) →

Regional Town Centre

Municipal Centre



Vision 2021

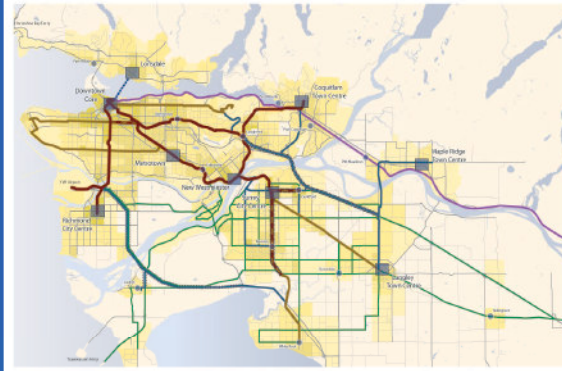
Developing a Rapid Transit Network

2021 creates Rapid Transit corridors that will move large amounts of passengers through the key corridors of King George Highway, 104th Avenue and Fraser Highway. New infrastructure will be implemented to support this with median busway along King George and Highway #1. A rail extension or busway system will connect Surrey City Centre to Guildford. Highway #99/#17 will have curbside bus lanes to allow buses to move fast and efficiently between Delta/Surrey/White Rock and Richmond, including the Canada Line terminus.

King George and 104th could be either Bus Rapid Transit or Rail rapid transit depending on the demand of the service. The median busways will be designed to be rail-convertible to preserve the opportunities in the future.

The FBN will be expanded to include White Rock/ South Surrey to Richmond (Canada Line) with candidate corridors identified along major transit corridors including

- Ladner to Canada Line
- Surrey to Coquitlam
- Guildford to Fleetwood
- 200th Street
- Walnut Grove to Maple Ridge
- Newton to Langley along Highway #10; and
- Scottsdale to Richmond.



2021: Developing a Rapid Transit Network

Legend

Rapid Transit Network

- Rail Rapid Transit
- Bus Rapid Transit
- Bus or Rail Rapid Transit

Frequent Bus Network

- Identified Corridors
- Candidate Corridors

Busway

- Curbside / HOV Lanes
- Median Lanes

Other Transit

- Commuter Rail
- Seabus
- Other

Density

Total Density (Population & Jobs) →

Regional Town Centre

Municipal Centre

Vision 2031

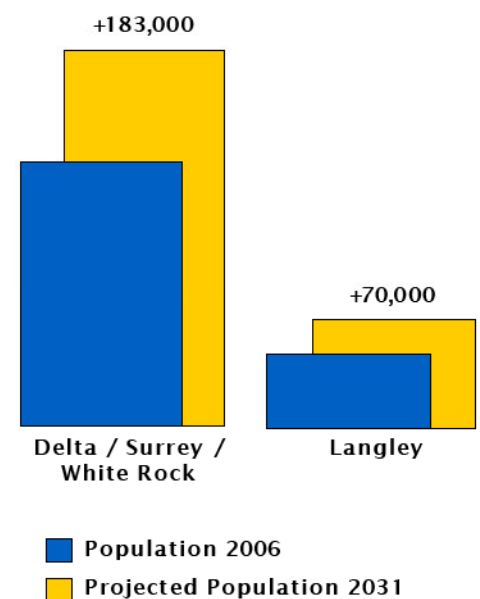
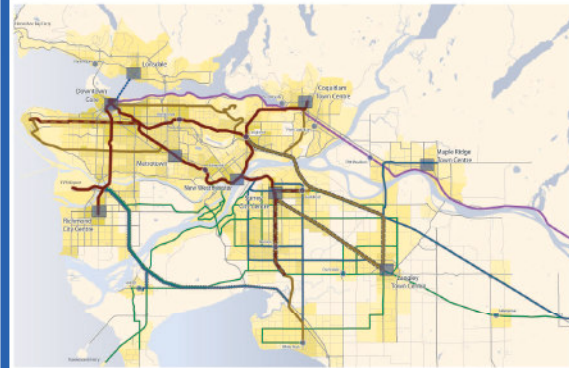
Enriching the Network

The final phase features a further expansion of the Rapid Transit Corridors along Highway #1 and 200th to raise them from the FBN to RTN status. There will be new infrastructure on Fraser Highway and 200th Street and an expansion of service on major transit corridors such as:

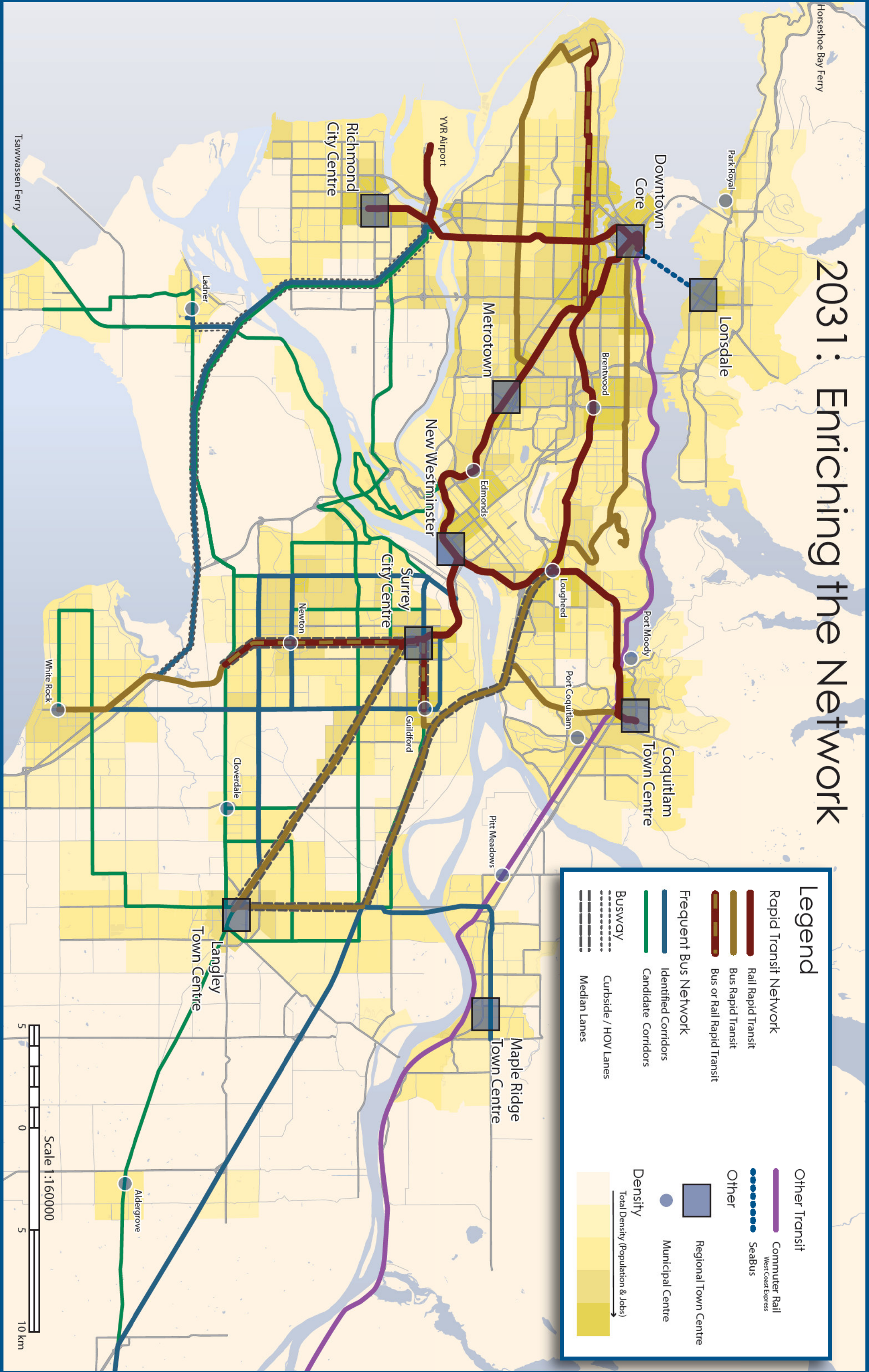
- th Avenue,
- 152nd Street,
- 108th Avenue,
- Across the Golden Ears Bridge, and
- Along Highway #1 to Abbotsford.

There will be new connections from Ladner to Langley and around Willoughby. There will be direct service from Langley to Richmond and numerous local and neighbourhood services will help to create an urban transit network for the South of Fraser.

It is a goal of this plan, within fiscal ability, to change the South of Fraser mode share from the current 4% to 11.5% when the plan is fully complete. Although it has been shown in years, the ultimate completion of the Vision will be dependent upon financial resources as well as the commitment of the municipalities to ensure that transit is a viable and effective option for transportation around the South of Fraser region.



2031: Enriching the Network



Legend

Rapid Transit Network

- Rail Rapid Transit
- Bus Rapid Transit
- Bus or Rail Rapid Transit

Other Transit

- Commuter Rail
- West Coast Express
- Seabus
- Other

Frequent Bus Network

- Identified Corridors
- Candidate Corridors

Busway

- Curbside / HOV Lanes
- Median Lanes

Density

Total Density (Population & Jobs)

Density

Regional Town Centre

Municipal Centre



Issues Arising During the Creation of the Vision



During the process of creating the vision, several research projects were brought forward for study during Phase 1. These projects were studied as independent issues but are part of the legacy of the SoFA Transit Plan.

Interurban Corridor

The issue of the viability of the Interurban corridor as a transportation option for rapid transit use was brought forward during the initial stages of this project and resulted in TransLink undertaking a technical survey of the route. Using consultants specializing in heavy rail transit and transportation, the Interurban corridor was studied in terms of what would be required to enable its use for rail rapid transit. A number of options were reviewed and costed with the full review available in Appendix 1. At this time, this corridor is not contemplated as a transit corridor within the life of this plan but may have application in the future.

Business/Industrial Park Strategy

There are a number of business and industrial parks within the South of Fraser area and it was determined that a proper strategy was required for providing guidance to the businesses and employees within the parks for accessibility to transit services or transportation demand management options, both before there are sufficient jobs or trips to meet the Transit Service Guidelines, as well as after. The reports for this strategy are contained within Technical Memorandum 2.