THE CORPORATION OF THE CITY OF COURTENAY

NOTICE OF
COMMITTEE OF THE WHOLE MEETING

DATE: **Monday, April 28, 2014**
PLACE: City Hall Council Chambers
TIME: 4:00 p.m.

AGENDA

1.00 STAFF REPORTS/PRESENTATIONS

1. Comox Valley Transit Briefing Note
2. Downtown Revitalization

2.00 ADJOURNMENT

THE CORPORATION OF THE CITY OF COURTENAY

BRIEFING NOTE

To: Council **File No.:** 8500-01 Bus Transit

From: Senior Advisor, Strategic Initiatives (via CAO) **Date:** April 24, 2014

Subject: April 29, 2014 Elected Officials' Forum – Draft "Transit Future Plan"

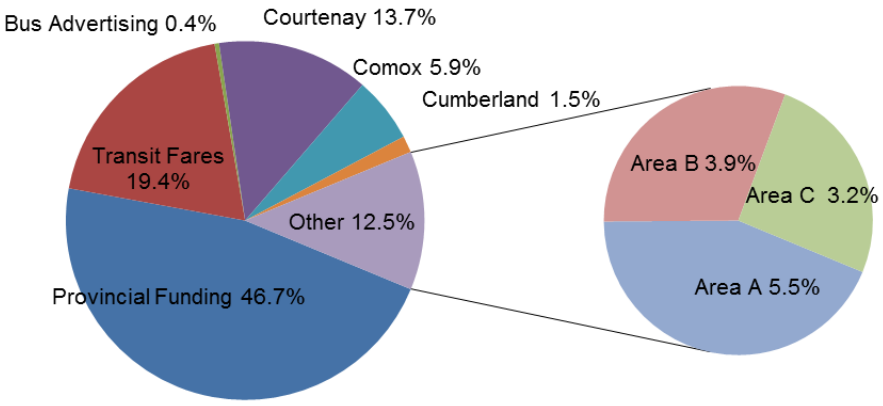
ISSUE:

This Briefing Note is intended to provide speaking points to council members on the potential impacts of the "Transit Future Plan" on City Operations and Finance. This is not an exhaustive review of the Service, but is limited to the information provided in the "Elected Officials Forum Discussion Papers, April 2014 (attached for convenience).

BACKGROUND:

The former Comox-Strathcona Regional District adopted the *Comox Valley Transit Service Local Service Establishment Bylaw, 1990* and, in partnership with BC Transit, provides public transit services to most of the Valley. The establishing bylaw has been amended from time-to-time, most recently in July of 2006. BC Transit operates under the authority of the *British Columbia Transit Act* and the *British Columbia Transit Regulation.* Services are provided through a series of agreements: a Transit Service Area Agreement, Master Operating Agreement and an Annual Operating Agreement between CVRD, BC Transit and the contracted service delivery partner, Watson & Ash Transportation Co. of Comox, BC.

As provided in the "Transit Future Plan", the 2013 Transit Revenue was ~$2.5M and the Funding Split was as below. Courtenay ratepayer's 2013 Requisition was $562K.



From *Schedule 'A' Comox Valley Regional Growth Strategy Bylaw No. 120, 2010:*

> **GOAL 4: TRANSPORTATION** *Develop an accessible, efficient and affordable multi-modal transportation network that connects Core Settlement Areas and designated Town Centres, and links the Comox Valley to neighbouring communities and regions.*
>
> **Objective 4-A: Increase public transit use.**
>
> **Objective 4-B: Improve bicycle and pedestrian infrastructure to increase the use of active transportation options.**
>
> **Objective 4-C: Develop and maintain an inter-regional transportation system that efficiently and safely facilitates the movement of people and goods.**

From the *Local Government Act, Part 26, Division 3, s. 865(3):*

> A regional growth strategy does not commit or authorize a regional district, municipality, greater board or improvement district to proceed with any project that is specified in the regional growth strategy.

From the *Community Charter:*

> **Municipal purposes**
>
> **7** The purposes of a municipality include
>
> (a) providing for good government of its community,
>
> (b) providing for services, laws and other matters for community benefit,
>
> (c) providing for stewardship of the public assets of its community, and
>
> (d) fostering the economic, social and environmental well-being of its community.

As council members are aware, the *Community Charter* is superior in effect within Courtenay to the *Comox Valley Regional Growth Strategy (RGS)* and, as stipulated in the *Local Government Act,* an RGS does not commit or authorize the CVRD Board to act. Therefore, Council retains the authority to continue its support of the Comox Valley Regional Transit System, or to revoke it.

KEY CONSIDERATIONS:

1. Performance Measurement

Widely acknowledged as a Public Administration Best Practice, objective setting and performance measurement has been increasingly adopted in federal, provincial and local governments across Canada. The Municipal Annual Report is an example of how it is moving from a voluntary practice to a statutory requirement. The outcome of this practice is the opportunity to evaluate a service following pre-chosen operational periods. Its purpose is to provide the opportunity to improve service delivery.

As a provincial Crown Corporation, BC Transit has provided performance measures in its "Transit Future Plan". At **Table 2: Peer Transit System Comparison 2012/13** on p. 4 it clearly identifies the Comox Valley Regional Transit System was on the poor side of average of every performance measure. **Table 3: Peer Transit System Comparison 2038** provides projections that include some improvements in performance however, the comparisons are to "Peer" systems different from those used in Table 2. This is confusing and brings into question the validity of the projections.

For purposes of Peer Transit System comparison, the set of performance measures would benefit from the addition of another measure: the ratio of total rural travel by all transit vehicles on all routes versus the total urban travel. The Comox Valley Regional Transit System appears to have a preponderance of rural travel and the "Transit Future Plan" proposes inter-regional service between Comox Valley and Nanaimo, Saratoga Beach and Union Bay. If a rural/urban ratio performance measure were developed to compare the Comox Valley system to peer systems, it may demonstrate measurable inefficiencies that could be addressed through operational improvements rather than increased funding.

2. Financial Considerations

The Comox Valley Regional Growth Strategy (RGS) set a target of transit mode share (percentage of total travellers) of 3 percent by 2038. The "Transit Future Plan" encourages an aggressive 5 percent investment growth per annum to meet the RGS target. As noted above, compliance with the RGS is not mandatory, so basing a 25-year investment plan on that target is tenuous. Interestingly, the CVRD 2014-2018 Five-Year Financial Plan (adopted last month) shows increases in the Courtenay Transit Requisition of more than $100K in every out-year beginning in 2015. This appears to demonstrate tacit intent to proceed with the 5 percent investment growth option that is specifically linked to the 3 percent mode share target.

Despite the demonstrated poor performance, the "Transit Future Plan" offers four funding options ranging from a 2 Percent rise to 5 percent rise per annum. Noteworthy by their absence are the options to keep funding at present levels or a range of options to decrease funding. The conclusion provided in the transit plan is that performance will improve by developing and sustaining ridership growth on primarily "the proposed Frequent Transit Network (FTN)" that will link the key centres between the Anfield Centre, downtown Courtenay, North Island College and Comox Mall. Public perception might be that the operating authority is being awarded budget increases regardless of performance. While simplistic, it is a concern.

Unfortunately, implementing this new FTN will introduce further direct capital costs to Courtenay beyond the Requisition increases used to fund any budget rise. Capital investments in transit facilities such as bus shelters, benches, lighting, sidewalks, crosswalks, curb ramps, bus bulges, traffic lanes, etc. may be feasible in areas of new development if funded by developers (a financial disincentive to development). However, in built-out areas within the proposed new route(s) there already exists the significant funding challenge of renewing our existing assets with limited funds. It is expected that new transit facilities would be funded by the City regardless that these upgrades would be in competition with limited asset renewal funding.

The "Transit Future Plan" acknowledges that "continuously increasing property tax to fund the local share of transit projects and operations, particularly for major capital investments, is a challenge". They suggest a set of alternative local funding options such as a Local Fuel Tax, Parking Meters and a Vehicle Levy. One additional suggestion is that "a portion of property taxes could be put aside each year to build a capital reserve for transit infrastructure and services". This latter suggestion is a circular argument with no merit and serves only to demonstrate a severe lack of understanding of the local government fiscal reality.

3. Engineering and Maintenance Considerations

Part of the Frequent Transit Network is proposed to run from 5th Street at Cliffe Avenue to Ryan Road and east to Lerwick Road. This will dramatically increase bus traffic on the 5th Street Bridge. Engineering Staff are fairly certain the bridge can withstand the dynamic loading of extra moving buses, but don't know if it can support the static load of multiple busses at a standstill during peak hours. Regardless of such City Staff objections, the FTN is being actively promoted as the solution to poor performance of the system.

Other characteristics of the FTN are active promotion of bus priority lanes and a large transit exchange on the new hospital site as infrastructure priorities. City Staff have explained that the existing roads within the FTN area have very little space to build bus priority lanes and no infrastructure funding has been budgeted to support the proposal. Council and VIHA have endorsed locating a bus stop on the grounds of the new hospital, but no land an no support have been given to construct a large transit exchange (parking for four busses, WiFi, inside and outside seating, bathrooms for drivers, etc.). Irrespective of these realities, bus priority lanes and the hospital transit exchange are being publicly promoted in the attached materials released by BC Transit and the Comox Valley Regional District.

Because of their weight, busses are a great contributor to the breakdown of asphalt, particularly if frequent use by busses was not foreseen in the original road design and construction. Simply put, the more busses travel over a road, the faster the infrastructure will breakdown, requiring more frequent repair and/or earlier replacement. Before the FRN is implemented, it is considered essential that condition and risk assessments be done on the bridge and road network within the proposed corridor. While it would be unwise to pre-judge the outcomes of these assessments, one fact remains: the Comox Valley Regional Transit System will not fund the increased maintenance and capital costs resulting from increased use.

4. Governance Considerations

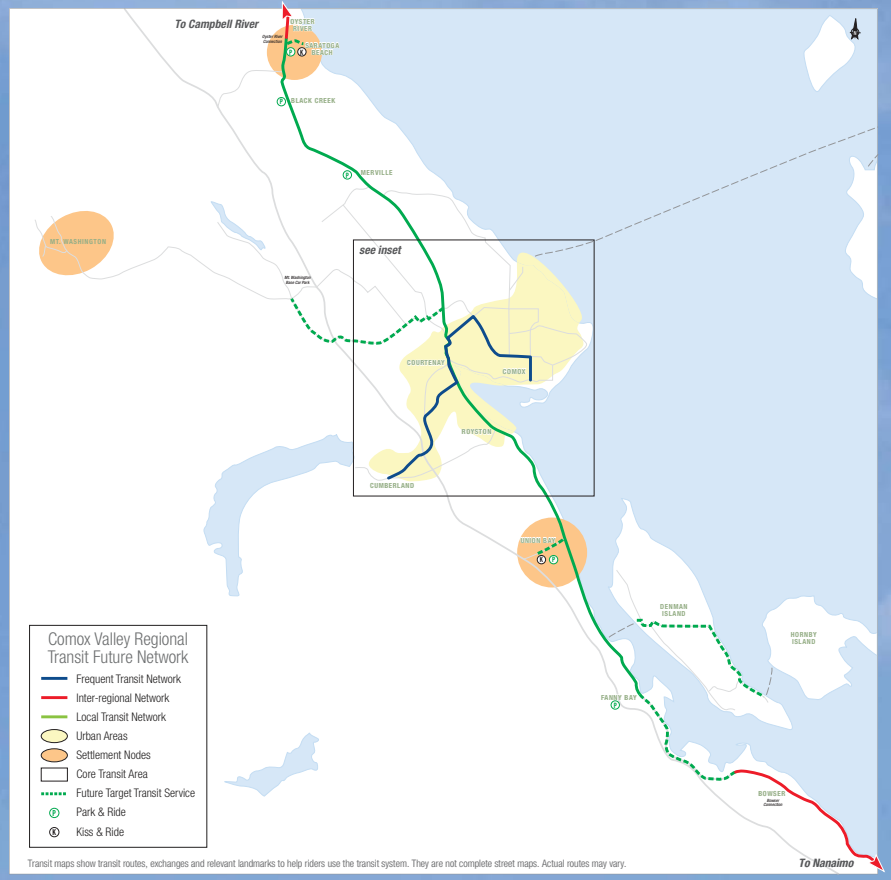
It is common for a local government service to evolve with time. Council would make the decision to provide (or withdraw) a particular service and, with time, make decisions that affect the level of service delivered. These policy decisions are often shaped by interactions between Council and the community. However, it is an unfortunate characteristic of a regional shared service that once Council has entered into this type of service, it evolves into something unlike what was originally consented to. If, for example, the proposed 5 percent per annum funding rise were to take place, by 2018 the Courtenay Requisition will be $942K – equal to the entire annual budget when the service was created.

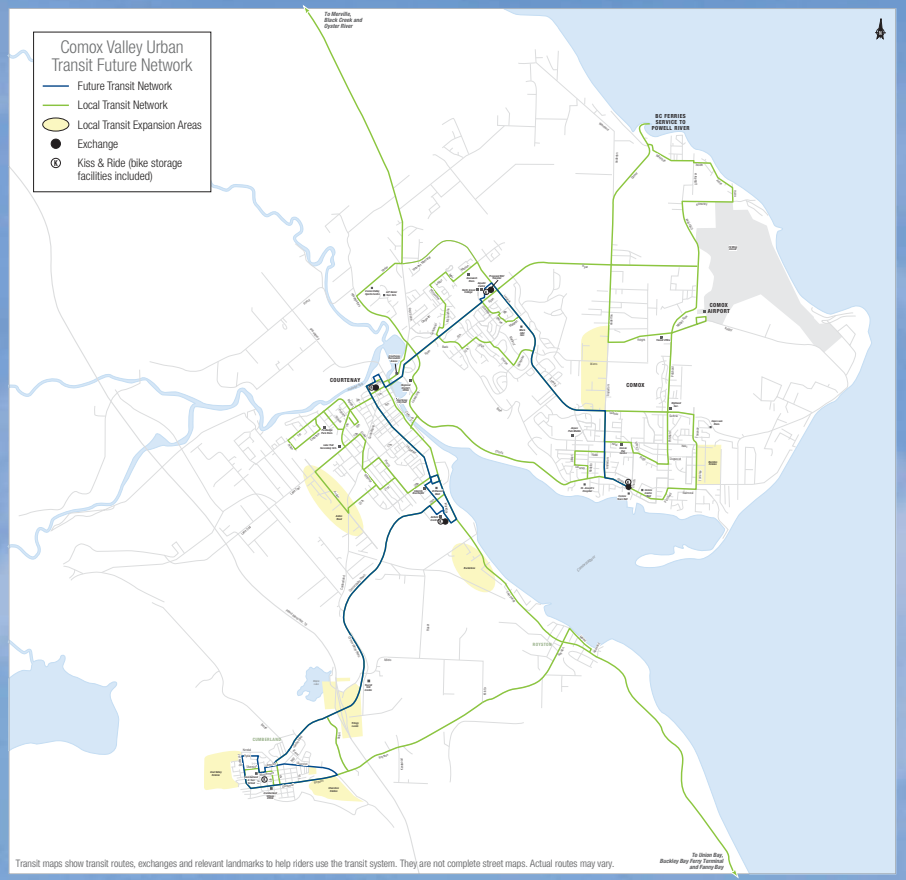
The present service delivery model allows for the service delivery body (CVRD and BC Transit) to design the service, determine service levels and budget, undertake an information campaign directed at the public acceptance of the concepts and do all that before presenting background information and options to City Council. Given the profound change in the scale and scope of the transit system plus the large Requisition and additional capital costs also to be paid by City ratepayers, it is possible the service has entered the realm of "Municipal Purposes" clearly identified in the *Community Charter.* If that premise is accepted, perhaps it has become time to revisit the service delivery model.

The Future is now

BC Transit is working with the Comox Valley Regional District to develop a 25-year Transit Future Plan.

Transit Future Plan → Transit Service Design Standards → Proposed Infrastructure → Proposed Service → **Service Changes**





Tell us your comments

Tell us your priorities for the next 25 years

www.bctransit.com

and click on Transit Future

Tell us your priorities

Proposed Service Priorities

The proposed system improvements were developed based on customer feedback and route performance analysis.

Transit Future Plan → Transit Service Design Standards → Proposed Infrastructure → **Proposed Service** → Service Changes

Service	Service Priorities	#1 Priority	Next Priorities	Not suppport
Frequent Transit Network 	**Develop Frequent Transit Network** Between the Anfield Centre, downtown Courtenay, North Island College and Comox Mall with: • Weekday: 15 minutes peak service • Weekday: 30 minute frequency 6: 00am to 10:00 pm • Saturday service 8:00am to 10:00pm • Sunday service 9:00am to 6:00pm			

Local Transit Network 	**Enhance Service on Local Transit Network**
	• Enhance Service on Local Transit Network
	• Increase transit service on Route # 6 Uplands
	• Improve route structure and frequency on #7 Arden, and #8 Willemar
	• Introduce direct service to Comox Valley Airport to and from downtown Courtenay and downtown Comox – coordinate schedules with Powell River Ferry
	• Expand Saturday service to the Comox Valley Farmers Market and Comox Valley Sports and Recreation Centre
	• Expand service on Route #10 Royston – coordinate schedule with Buckley Bay Ferry
	• Realignment of Route #12 North Valley Connector, improve connections at Oyster River
	• Increase service and realign Route #2 Cumberland to include Ulverston Station and Coal Valley Estates
	• Expand Local Transit Network as development warrants to:
	  ◦ Cumberland
	  ◦ Buckstone
	  ◦ Arden Road area
	  ◦ Beckton Estates
	• Expand Holiday and weekend services
	• Expand evening services
	• Expand Summer beach services			

Targeted Transit	• Introduce inter-regional weekday service between Comox Valley Transit and Nanaimo Transit
	• Plan for increased transit services in rural areas, such as:
	  ◦ Saratoga Beach
	  ◦ Union Bay
	• New Community Services in rural areas outside of the designated Settlement Nodes:
	  ◦ Cape Lazo/ Point Holmes
	  ◦ Huband Road/ Seal Bay
	  ◦ Merville and Black Creek
	• Examine implementation of Community Transit Services connecting Hornby and Denman Islands with the mainland
	• Introduce service to the Mount Washington base car park			

Custom Transit	• Improve handyDART service in the existing area: • Service on Holidays • Expanded weekday service at peak times • Expanded hours of service on weekdays and weekends			

Proposed Infrastructure Priorities

We need an infrastructure to support an efficient transit network. The infrastructure priorities have been developed based on customer feedback and application of the Transit Service Design Standards

Transit Future Plan → Transit Service DesignStandards → **Proposed Infrastructure** → Proposed Service → Service Changes

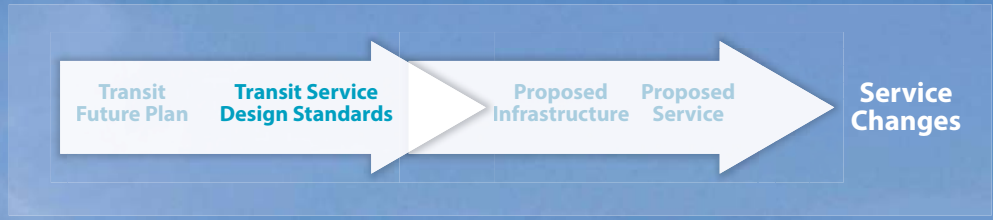
Infrastructure Priorities	#1 Priority	Next Priorities	Not suppport

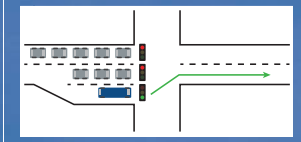
• Match transit vehicle size to service demand
• Establish a new Transit Hub servicing North Island College, new Comox Valley Hospital and Aquatic Centre
• Establish a new downtown Courtenay Transit Exchange
• Establish a new Transit Exchange at Anfield Centre
• Improve the Transit Exchange operation and facilities at Oyster River
• Examine construction of Kiss & Ride stations at:
  ◦ Downtown Cumberland
  ◦ Anfield Centre
  ◦ North Island College Transit Hub
  ◦ Downtown Comox
  ◦ Downtown Courtenay
• Examine construction of Park & Ride stations within the rural areas of Comox Valley such as:
  ◦ Merville
  ◦ Saratoga Beach
  ◦ Black Creek
  ◦ Union Bay
• Improve Transit signage and schedule information at transit stops
• Improve passenger on-street facilities
  ◦ Improve accessibility of stops
  ◦ Invest in shelters, benches, etc
  ◦ Invest in bicycle storage at key stops
• Upgrade the Operations Centre
• Implement transit priority measures on the Frequent Transit Network			

Tell us your ideas

Transit Service Design Standards

Service design standards help guide decision making and how a transit system evolves. The standards create consistency and improve customers' ease of use.



Type	Service Description	Frequency (Service Hours)	Passenger Amenities at Bus Stops		Transit Priorities
Frequent Transit Network 	• operates on a 15-20 minute frequency depending on time of day • serves corridors with mixed land use • provides connections between urban centres	Frequency / Service Hours Weekday 15/30 6:30am-11:30pm Saturday 30/60 7:00am-11:30pm Sunday 60/60 7:30am-7:00pm		• Transit Shelter • Bike storage • Quality customer information (transit schedule and map information) • Universally accessible • Bench and garbage receptacles May include Park & Ride facilities	 Frequent Transit Network includes Queue Jumper lanes and signal priorities
Local Transit 	• suburban and rural routes that serve more densely populated residential and/or commercial neighbourhoods • focus on connections to local centres and the Frequent Transit Network	Frequency / Service Hours Weekday 30/120 7:00am-10:00pm Saturday 30/120 7:00am-10:00pm Sunday 60/120 7:00am-9:00pm		• May include transit shelters • Universally accessible • Bench and garbage receptacles May include Park & Ride and Kiss & Ride facilities in rural areas	Only if part of the Regional Transit Network
Targeted Transit	• provide targeted service to schools, universities, community transit to rural areas, or interregional connections	• Varies depending on service		Only if part of the Regional Transit Network	Only if part of the Regional Transit Network
Custom Transit	• Demand responsive service primarily for people with disabilities who cannot use the regular, accessible conventional transit system some or all of the time	Frequency / Service Hours Weekday 7:00am-7:00pm Saturday 8:00am-4:00pm Sunday 8:00am-4:00pm			

Tell us what you think

COMOX VALLEY

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Discussion Papers

April 2014

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Comox Valley Regional Transit System Transit Benefits and Influences

Transit underpins a range of social objectives by allowing people who may be disadvantaged to be able to participate in their local community. Importantly, access to good transit allows people with low incomes, aged people and people with disabilities to live independently and be able to affordably access medical, health, community, social and economic opportunities with minimal government subsidy.

It is now generally accepted in various transport planning and urban planning fields that car dependence and urban sprawl are, in turn, linked to fossil fuel use for transport energy. Increasing links are also being found between car dependence, public health and the environment.

In addition, there are increasing research links to the lack of transit access and increased car dependence with social justice issues – people with limited income and decreased mobility struggle to participate in work and community life.

Investment in transit has a number of associated benefits, all of which positively affect Comox Valley's triple bottom line. Transit impacts and benefits are multifaceted and collectively these benefits create more liveable communities.

Building communities

Social capital

A key consideration in designing a transit network is the provision of services to areas of high transportation disadvantage. Transport disadvantage is defined as either someone who is too young to drive, too old to drive, financially unable to use private transport, disadvantaged through location or disabled.

By providing low-cost transit in areas of high need, people can connect to the broader community, building both individual and collective social capital. This results in an improved lifestyle as a direct result of additional personal travel options that would not otherwise exist, particularly for those who are transport disadvantaged.

Benefits include:

- access to training and employment opportunities
- access to essential community services, especially since this subset of the community traditionally has a greater need for these services
- access to entertainment, commercial and other social events to reduce social exclusion and build social capital
- assists the elderly in maintaining independence through providing an accessible transit option.

Improving health

The health benefits of using transit are well-researched.

The conclusions show that transit users on average walk or cycle more than those who use private transport.

In addition to active health benefits, transit provides a health benefit by generating more accessibility to health services, as well as general accessibility to community and social destinations that provide more opportunities for the public to be more active.

Transit also provides a much safer way to travel as it has a much lower accident rate than private transport. This also indirectly benefits labour markets, as the labour base will remain productive for longer.

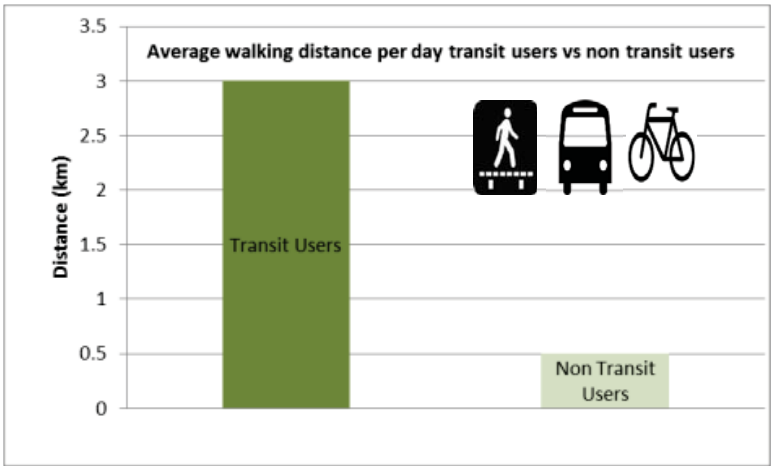


Figure 1: Average walking distance per day transit users versus non transit users. Travel survey conducted in South East Queensland, Australia 2009

Walking to and from the bus helps transit users get some of the Canadian Heart and Stroke Foundations suggested minimum of 30 minutes of physical activity a day needed to stay healthy.

Decreased congestion

It is generally accepted that road congestion decreases with increased use of transit, as it generally uses a more efficient system of travel. As congestion is most prevalent during peak hour travel, improved traffic flow as a result of mode share shifts will improve economic productivity. Additionally, travel times during peak hour will speed up for commuters, resulting in more time spent at home and less time in traffic.

From an environmental perspective, decreased congestion will also result in decreased idle time on roads, thus lowering emissions. From a financial perspective, the improved efficiencies on the road network will mean lower demand for investment in road infrastructure so funds can be directed to other community-building investments.

Economic resilience

Oil is a finite and non-renewable resource. As global oil reserves are limited there is a point, or ‘peak’, in the productive life of the industry in which the cost-benefit of extraction begins to decline. Once this peak is passed it cannot be reversed.

The transport sector is almost 100% dependent on fossil fuels for energy. This degree of oil dependency is largely due to the level of car dependency in our communities: 85% of all household trips in the Comox Valley are made by private motor vehicle.

Comox Valley's Transit fleet consumes over 374,000 litres of diesel fuel per year. Although BC Transit has been actively implementing new technologies to reduce fuel usage, the future of oil and other energy supplies represents a real risk to transit. Increasing energy prices impact the cost of vehicle fuel, the cost of facilities and parts, and the ability of provincial and local governments to fund services. An abrupt change in world energy pricing may also affect demand for transit with a shift to the Comox Valley transit network likely to be seen. The type and timing of the shift is relative to the pricing increases and the ability of the population to continue to afford private vehicle travel for all trips.

Statistical evidence shows that regional populations like the Comox Valley are less resilient to fuel price spikes due to lower than average annual incomes when compared with larger regions within BC. Transit options will become increasingly important. This is why it is imperative that the Comox Valley Transit Future Plan provides some forward-thinking strategic direction to manage these changes.

Climate change

The transport sector accounts for a large percentage of British Columbia's total consumption of fossil fuels and is responsible for almost 40% of the climate change problem. Transport has a central role to play in achieving the BC Governments declared mitigation target of a 33% reduction in greenhouse gas emissions by 2020 over levels in 2007 and the long term target of an 80% reduction below 2007 levels by 2050. The Comox Valley Regional Growth Strategy has adopted a long-term target of 80 percent reduction of GHG emissions from 2007 levels by 2050, with a mid-term target of 50 percent reduction by 2030.

A key element in the BC government's strategic response as outlined in the *Provincial Transit Plan* and the Comox Valley RGS is to induce a mode share shift away from the private motor vehicle by transit as a smart travel alternative.

A car trip saved in Comox Valley has the same emissions abatement benefit as the equivalent car trip saved in larger cities located in British Columbia. The responsibility for encouraging more trips by transit is a province wide challenge, especially for car dependent smaller regional centres like the Comox Valley.

Figure 2: Average private vehicle occupancy verses full bus capacity
31 cars = 1 Bus

Development outcomes

Transit serves an important role in the urban systems that make centres function. It is often hard to define where a system is either supportive or directive, and in the case of the transit system it plays both roles. For instance, as new developments come online in the Comox Valley urban areas, the transit network needs to expand and cater for change.

However, where there is already an intensification of the network, transit-oriented developments will emerge around key nodes and corridors. These developments foster a more livable community with a greater variety of land use options around transit corridors. For example the Town of Comox as stated in the OCP, will continue to strategically encourage density and growth including mixed use development along the proposed key transit corridors. See figure 3.

Transit-oriented developments also reduce the need for car parking space around activity centres. This can make way for other uses such as parkland and community or commercial spaces. **Transit today is a major factor in determining how liveable our communities will be tomorrow.**

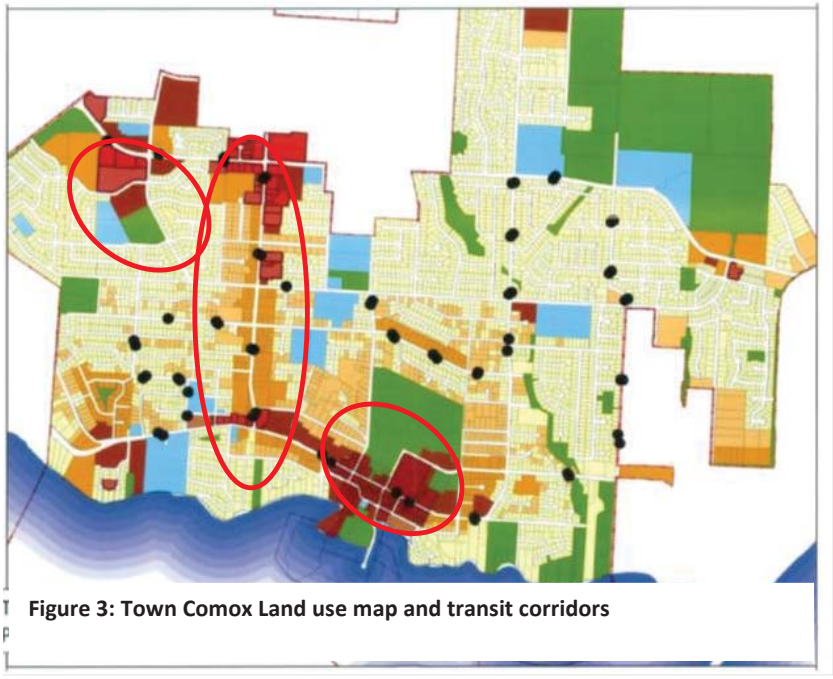


Figure 3: Town Comox Land use map and transit corridors

Investment in transit acts as an incentive for further planned development in an area and this leads to economic growth: transport plans require significant government investment for infrastructure and operating costs. This will, in turn, trigger private sector investment into business activity and housing nearby. Retail, commercial and residential activities near transit can make more efficient use of the services as it provides proximity to labour markets and improves amenities.

Cost saving benefits

Investment in low-cost transit options can create cost savings both for the Comox Valley and the users themselves. For example, in certain instances, the cost benefits of upgrading road infrastructure to carry higher capacities of private vehicles can be lower than the cost benefit of investing in a more intensive transit network to carry those same people.

From a customer's point of view, residents who redirect their travel from personal vehicles to transit can reduce costs of maintenance, depreciation, annual fixed costs. The Canadian Automobile Association in its 2013 driving cost estimate has suggested that the average annual ownerships and operating costs range from between $,8,000 to $14,000 per year. These costs are based on depreciation values, finance payments and operating costs estimated over a range of actual kilometers driven by a vehicle per year. These personal savings can be even greater in towns where there is a greater reliance on cars for personal transit. For instance, the ratio of registered motor vehicles per persons between the ages 15-65 in Courtenay is roughly 1.8[1] vehicles per person, indicating many households may have two or motor vehicles per household. Distances travelled by car in rural communities are typically further than in metropolitan areas. By directing a greater percentage of household daily trips to transit would increase the savings from having to own and maintain multiple vehicles per household.

[1] A calculation of motor vehicles registered in the Courtenay ICBC Motor Vehicle District in 2011 and City of Courtenay 2011, BC Stats population data.

Labour market

Transit also helps in workforce skill and capacity building by connecting individuals to educational institutions such as colleges and schools. All of these benefits ultimately improve overall labour force participation and efficiency.

Transit investment also stimulates employment and improves access to employment opportunities for people who have limited transport options and rely on transport options beyond personal vehicles. Transit increases the mobility options for these people and widens their employment opportunities.

Additionally, transit generally has a lower cost for users against most other options (exclusive of active transport). Consequently, some employment opportunities will become more viable to potential employees as commuter costs are lower.

Comox Valley Regional Transit System Service Performance Guidelines

BC Transit in compliance with the Independent review has been working with communities to develop service design standards and performance guidelines, as part of Transit Future Plans. Recommendation 12 of the August 2012 report included:

BC Transit should work with local governments to set appropriate service standards for each transit system and provide annual data on system and route performance.

This discussion paper presents the rationale and evidence for the setting of the Comox Valley Regional Transit System- and Route-Level Performance Targets. These targets will be included in the Service Monitoring chapter of the 2014 Comox Valley Transit Future Plan.

The Report Structure

1.0 Performance guidelines, measures and targets and how they are defined

2.0 System-level performance guidelines

3.0 Route-level performance guidelines

4.0 Conclusions and future assessment

5.0 Appendix A and B

6.0 Appendix Glossary

1.0 Performance Guidelines

What they are and what they define: Performance Guidelines define numerical thresholds and targets for a particular system and its routes and services.

Why they matter: Working in tandem with Service Design Standards, Performance Guidelines are tools that evaluate existing services, identify trends in performance and, based on this evidence, determine how service and supporting features (fares, marketing, facilities, etc.) should be adjusted to improve the effectiveness and efficiency of the system to optimize resources.

For a service to be efficient and productive, a balance should be achieved between oversupply and overcrowding. A number of measures can establish this equilibrium such as:

- Implementing transit priority
- Altering frequency
- Reducing/Increasing coverage
- Targeted marketing/Corridor branding
- Service span changes
- Bus stop spacing changes
- Bus route changes
- Vehicle type allocation

When performance falls below the set guidelines, recommendations to the CVRD will focus on the utilization of the above tools to maximize efficiency.

1.1 Performance Measures

Performance measures have been chosen that evaluate the effectiveness of service planning investments on a system and route level.

System level: The measures used for the system-level guidelines are:

- **Average boardings per revenue service hour** - Measures the total volume of ridership as compared to the supply of transit service.
- **Cost per passenger trip** – Measures the average cost to provide service per passenger trip
- **Cost recovery** – A measure of the financial performance of the transit system usually expressed in terms of total operating revenue/total operating expenses.
- **Passenger trips per capita** – Measures the ratio between transit trips and the population of the service area

Route level: The measures used for the route-level guidelines are:

- **Average boardings per revenue service hour** - Measures the total volume of ridership as compared to the supply of transit service.
- **Average boardings per trip** - Measures the total number of people that board a vehicle on a specific trip.

To acknowledge different performance expectations based on a route's objective, route-level performance guidelines have been classified under the four network categories: Frequent Transit, Local Transit (ridership based), Local Transit (coverage based), and Targeted Transit.

1.2 Performance Targets

As well as monitoring existing performance against the targets, historical trends will also be monitored to determine if the system or routes are becoming more or less efficient over time. Significant variance (+/- 25%) from the target will place a route on an action list for further investigation and will require more detailed analysis. Routes that fall below the 25% variance will be candidates for recommending corrective adjustments and routes that fall above the 25% variance will be candidates for recommending service enhancements. BC Transit will report on an annual basis how the system and routes are performing and this will help guide planning decisions.

Proposed system-level targets are detailed in Section 2.1 Table 1 and proposed route-level targets in Section 3.0 Table 5.

2.0 System-Level Performance Targets

The purpose of monitoring system-wide performance is to identify trends in system performance and compare the performance of the transit system with other peer transit systems. These measures are designed to monitor the Comox Valley Transit System and guide annual service planning recommendations.

This can be particularly useful when identifying system-wide impacts of major investments in the transit network such as development of the Frequent Transit Network and new transit hubs and exchanges.

2.1 System-Level Targets

Table 1 outlines the proposed Comox Valley system-level targets as well as the current baseline results and benchmark figures determined through comparison of peer transit systems. Benchmarking is further explored in section 2.2 following.

Table 1: Comox Valley System-Level Performance Targets, Baselines and Benchmarks

System Measure	Target	Baseline 2013	Benchmark*
Boardings per service hour	25-30	20	22
Cost per passenger trip	$4.60	$5.05	$5.00
Cost recovery	25%-30%	22%	25%
Passenger trips per capita	27***	9**	14

**Benchmarks are the average measures developed as a comparison of peer transit systems within both BC and Canada. See section 2.2 of this report*

*** Comox Valley population 2011 actuals used for this calculation*

**** 2038 projections used for this calculation*

2.2 Benchmarking the Future System

Using the analysis of the existing Comox Valley network and making comparisons of performance measures with peer transit systems helps to understand the Comox Valley system's capacity to satisfy or exceed its future targets.

The Comox Valley Transit Future strategy proposes to deliver a more direct Frequent Transit Network, moving people more efficiently between the key centres and increasing transit opportunity and ridership on the entire network over the next twenty-five years.

For the Comox Valley transit system to make substantial steps towards both achieving its mode share target of 3% by 2038 and improving the affordability of the network, boardings per service hour and trips per capita ratios will need to be sustained at higher measures than the 2013 baseline results in Table 1. Table 2 below provides a comparison of the existing Comox Valley System performance measures against peer transit systems for the year 2012/13. Service hours per capita are 45 per cent below the average of peer transit systems with boardings per service hour are 10 per cent below the average peer transit system.

In Table 3 the Comox Valley Transit Future Plan 2038 projections were compared to other similar communities in Canada operating in 2012/13 and against Prince George's expected Transit Future Plan performance projections for 2038. This peer transit system comparison shows that with the right set of transit strategies, increased ridership levels can be achieved helping to improve cost recovery, rides per capita and overall performance. These peer community transit system comparisons have been used to inform the Benchmark targets used in Table 1.

Table 2: Peer Transit System Comparison 2012/13

Regional System	*Approx. Service Area Population*	*Annual Service Hours*	*# Fixed Routes*	*Annual Ridership*	*Boardings per Service Hour*	*Cost Recovery (%)*	*Trips per Capita ($)*	*Cost per Passenger Trip ($)*	*Service Hours per capita*
Vernon Regional	*51,600*	*25,917*	*8*	*445,330*	*17*	*22*	*9*	*6.62*	*0.50*
Brandon, Man	*53,000*	*60,951*	*20*	*1,100,000*	*18*	*22*	*20*	*4.60*	*1.15*
Fredericton, NB	*56,000*	*46,060*	*8*	*1,350,000*	*30*	*39*	*24*	*2.99*	*0.82*
Comox Valley	*63,538*	*26,907*	*12*	*544,172*	*20*	*22*	*9*	*5.05*	*0.42*
Prince George	*60,100*	*64,793*	*16*	*2,000,000*	*31*	*30*	*10*	*3.31*	*1.07*
Cowichan Valley	*38,500*	*26,331*	*13*	*362,508*	*14*	*17.5*	*9*	*7.48*	*0.68*
Average	*50,817*	*41,827*	*13*	*967,002*	*22*	*25*	*14*	*5*	*0.77*

Table 3: Peer Transit System Comparison 2038

Regional System	*Approx. Service Area Population*	*Annual Service Hours*	*Annual Ridership*	*Boardings per Service Hour*	*Boardings per Capita ($)*	*Cost Recovery (%)*	*Cost per Passenger Trip ($)*
Comox Valley*	***99,366***	***90,000***	***2,700,000***	***30***	***27***	***30***	***$4.60***
Prince George *	***93,500***	***167,500***	***5,400,000***	***32.7***	***58.8***	***25.5***	***$4.60***
Red Deer, AB (2013)	***91,877***	***143,978***	***3,776,354***	***25.2***	***41***	***37***	***$3.55***
Nanaimo(2012/13)	***98,500***	***101,404***	***2,750,000***	***24.5***	***27.9***	***35.4***	***$4.23***
Lethbridge,AB(2013)	***90,417***	***106,510***	***1,220,426***	***11.45***	***13.5***	***35***	***$5.15***
Average	***94,732***	***121,878***	***3,169,356***	***24.77***	***33.6***	***33***	***$4.43***

**2038 Prince George Transit Future Plan estimations based on a 5% mode share target.*

*** Comox Valley estimation based on 3% mode share target by 2038, assumes 30 boardings per hour which in turn estimates approximately 90,000 service hours required*

3.0 Route-Level Performance Guidelines

3.1 Types of Transit Service

A hierarchy of transit services will support implementation of the long term transit strategy for Comox Valley and satisfy the various market segments, including the regular transit rider and potential new users.

Table 4 provides a summary of the different types of transit service, with the existing Comox Valley routes allocated to their expected route-level categories in the short- and medium- to long-term horizon of the Transit Future Plan.

Table 4: Comox Valley Transit Service Types

Type	Service Description	Existing (Bus Route #)	Short-term (Bus Route #)	Medium- to Long-term (Bus Route #)
Frequent Transit	Frequent routes that operate at a 15-minute frequency in the peak between 6am-10pm. Routes generally operate on arterial roads, serve corridors with mixed land use, and provide connections between key centres.	None	FTN -Between Anfield Centre , downtown Courtenay, NIC and downtown Comox	FTN Cumberland Extension (Route 2)
Local Transit **Ridership Based**	These routes generally serve urban areas with a focus on connections to local centres and Frequent Transit routes. some have 30 min frequency in the peak and generally 60 min frequency all other times	1, 3, 4, 6	2, 3, 4, 6, 8	5, 6, 7, 8, 10 and 12 New Comox to Airport New Courtenay to Airport
Local Transit-Coverage Based	These routes generally serve less densely populated suburban and rural areas, with a focus on connections to local centres and the Frequent Transit route. These routes operate at 60 to 120-minute frequency	2, 7, 8, 10, 11	5,7, 10, 11,12,	21, 22 New routes as they emerge to settlement nodes
Targeted Transit	Targeted routes are created to provide service to specific areas such as regional and interregional locations, and may include limited, on-demand service or seasonal service. Frequency varies depending on service type.	12, 5, 99, Summer Beach Bus Community Bus 21, 22	99, Summer Beach Bus Community Bus 21,22 New South Connector (Bowser)	99, Summer Beach Bus New South Connector (Bowser) New Denman Island community service
Custom Transit	Demand responsive service for people with disabilities who cannot use the regular accessible conventional transit system some or all of the time.	handyDART	handyDART	handyDART

3.2 Route Level Performance Targets

Table 4 below details the route level performance targets allocated to the four Comox Valley transit route categories. Elements considered when determining route-level targets include:

- Density of locality being served
- Frequency of service
- Span of service

Table 5: Route-Level Performance Targets

Route Level	Boardings per Trip	Boardings per Service Hour
Frequent Transit	**25**	**30**
Local Transit (Ridership)	**15**	**25**
Local Transit (Coverage)	**6**	**18**
Targeted Transit (School)	**40**	**60**
Targeted Transit (Other)	**6**	**18**

3.3 Route Level Performance Analysis

Analysis on a route-by-route basis gives a detailed indication of how individual components of the transit system are performing. A route-by-route analysis allows observations of the impact of service changes and investments made in the past and identifies future opportunities for strategic investment or reinvestment.

The following sections provide a route-level analysis of the fiscal 2013 annual weekday ridership results against the proposed performance targets by service type. Comparison data between the fiscal 2012 and 2013 weekday ridership data is provided in Appendix A and B. This comparative analysis indicates the average ridership for each route has remained relatively consistent over the last two years.

3.3.1. Local Transit Network (LTN)—Coverage

Table 6 provides the route analysis against the proposed LTN- Coverage targets. This shows several of the Comox Valley routes operate below the proposed performance targets and may require corrective actions that could include route restructuring (more direct, less circuitous) and improved frequency of operations. The majority of these routes operate with limited 60 to120-minute frequency, in comparison to the proposed LTN Ridership routes 3, 4, and 6 (detailed in the table 7), which operate at a 30-minute peak frequency and provide some express trip services.

The draft Transit Future Plan includes implementation priorities to develop a direct Frequent Transit Route between the key centres, with local transit routes operating as feeder routes. This type of network structure will provide opportunities for increased ridership and improved performance on all routes over the next twenty-five years.

Table 6: Analysis of LTN (Coverage) Performance Guidelines

Local Transit Network Coverage	Annual Trips Operated	Annual Revenue Hours	Boardings Per Trip	Boardings Per Revenue Hr
Performace Target			**6**	**18**
1 Fitzgerald	6500	1117.5	4	22
2 Cumberland	7000	2055	4	15
3 Comox	6750	3705	13	23
4 Comox	7500	4413	12	20
6 Uplands	3750	2150	13	23
7 Arden	5500	800	2	13
8 Willemar	7000	2312.5	6	19
10 Royston Buckley Bay	5750	2202.5	5	14
11 Little River	4000	1512.5	4	10
12 North Valley Connector	2500	1917.5	3	12
Average			7	17

Investigate for Corrective action

Investigate for Service Enhancements

3.3.2 Local Transit Network (LTN)—Ridership

Table 7 provides analysis of routes 3, 4, and 6 against the proposed LTN-Ridership targets. This shows no significant variance (+/- 25%) from the targets. Any future service alterations and/or enhancements for these existing routes should ensure ridership performance is maintained or improved. The introduction of the proposed Frequent Transit Route will provide increased transit opportunities for users of these existing routes.

Table 7: Analysis of LTN (Ridership) Performance Guidelines

Local Transit Network (Ridership)	Annual Trips Operated	Annual Revenue Hours	Boardings Per Trip	Boardings Per Revenue Hr
Performance Target			**15**	**20**
4 Comox	7500	4413	13	23
3 Comox	6750	3705	12	20
6 Uplands	3750	2150	13	23

3.3.3. Targeted Transit Network

The Targeted Transit Network operating in the Comox Valley includes:

- Route 99 and Route 5, which both primarily function as limited school services
- Route 12 North Valley Connector and Route 10 Royston the regional routes
- The Comox Valley summer beach bus
- Community routes 21 and 22 servicing Point Holmes and Lazlo (also known as “trip window” services).

Two route level performance targets have been set for the Targeted Transit Network; Target Transit (School) and Targeted Transit (Regional).

Table 8 following provides the annual analysis for routes 99 and 5. Analysis of these routes against the proposed performance targets suggests that Route 5 operates within the +/-25% acceptable variance. Route 99 however shows some significant ridership above the suggested target of 40 boardings per trip. Watson and Ash the bus operator have advised that there have been no recorded pass ups on this service. It is envisioned that the implementation of the Frequent Transit Route in the locality of the schools will provide additional opportunity for students to access additional transit services at a reasonable walking distance from their school, providing the improvements required to meet any additional demand.

Table 9 following provides the annual analysis for the regional routes 10 Royston and 12 North Valley Connector. The proposed performance targets for these Targeted Regional routes are similar to the Local Transit (Coverage) targets as these routes will provide a large percentage of local coverage as well as the important interregional connections. Draft strategies within the Transit Future Plan envisage service improvements to both routes. The proposed improved connections at Oyster River and the provision of a more direct service to the North Island College for route 12 North Valley Connector should improve the performance of this route in the future.

Due to limited data, analysis for the summer beach bus has not been completed for this background report.

Anecdotal evidence suggests that Community routes 21 and 22 operate only 1 to 2 trips per week. The level of service provided for these “trip window” community services are not considered as targeted services and are best referenced and assessed as on demand Custom Transit type services. Future community transit service options may seek to include these areas into a limited fixed-route structure accommodating the current intermittent users. Further detailed analysis is recommended.

Table 8: Analysis of Targeted Transit (School) Performance Targets

Targeted Transit Network (School)	Annual Trips Operated	Annual Revenue Hours	Boardings Per Trip	Boardings Per Revenue Hr
Performance Target			**40**	**60**
5 Vanier	1436	360	7	29
99 VMP connector	372	533	68	48

Investigate for Service Enhancements

Table 9: Analysis of Targeted Transit (Regional) Performance Targets

Targeted Transit Network (Regional)	Annual Trips Operated	Annual Revenue Hours	Boardings Per Trip	Boardings Per Revenue Hr
Performance Target			**6**	**18**
10 Royston Buckley Bay	5750	2203	5	14
12 North Valley Connector	2500	1917.5	3	12

Investigate for Corrective action

4.0 Conclusion

Growing transit mode share is strategically aligned with developing and sustaining ridership growth primarily on the proposed Frequent Transit Network (FTN) that will link all key centres. The FTN is expected to increase ridership across all routes with improved connections to and from Local Transit services. The proposed system-level targets have been set at a range between 25 to 30 boardings per service hour to allow for incremental increased investment and ridership growth in the transit system over the next 25-years. The proposed FTN route-level targets have been set moderately high at 25 boardings per trip and 30 boardings per service hour to account for the expected ridership gains this service will provide.

Performance targets set for the Local Transit Network- Ridership route of 15 boardings per trip and 25 boardings per service hour reflect the proposed function of these routes to act as the main feeder routes to the FTN. In the short term existing routes 3, 4 that are similar in alignment to the proposed FTN could be transitioned with service enhancements and would not be expected to perform as at the full function FTN category.

Performance targets set for the Local Transit Network–Coverage route level of 6 boardings per trip and 18 boardings per service hour reflect the function of the service on these routes, providing limited daily connections to and from the Comox Valley key centres.

4.1 Future Assessment

Assessment of routes against the performance targets will occur annually and will set the trigger for further detailed investigation of a route. This includes a greater level of ridership examination across the service span and finer investigation of route segments. Investigation would include analysis of data captured through Automated Passenger Counters (APC), fare box (also known as GFI) and onboard passenger surveys.

When examining performance of the system and routes in the future, external factors such fuel price rises, changes in vehicle parking costs and/or availability, or increased cost of living will also need to be considered. In addition, any introduction of increased transit fares may result in lower ridership gains.

Future service changes and the subsequent assessment of the change against the performance targets, will also allow for a delay in take-up of the new service change and a possible spike in demand. Spikes in ridership can occur as result of a service change and often taper over time until subsequent service refinements or improvements occur.

System and route performance assessment can be undertaken over select periods of time (e.g. summer, fall, to account for school sessions). Generally, performance monitoring will occur at the same period each year to provide historical annual data comparisons moving forward.

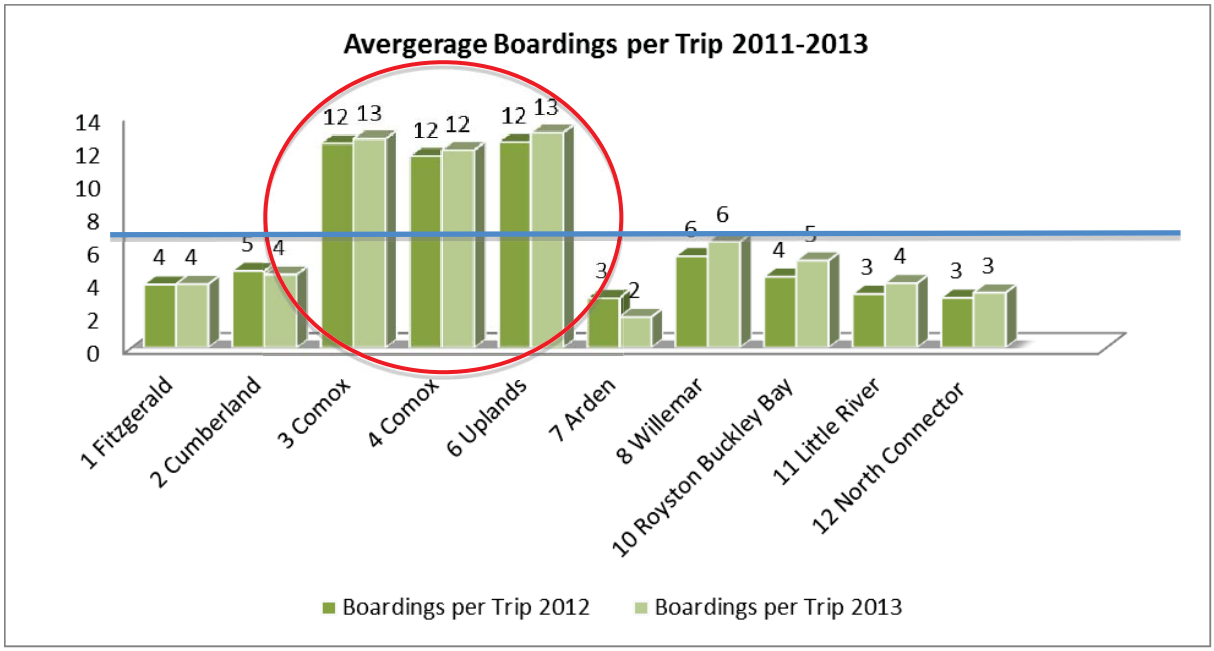
System and route performance monitoring will include discrete assessment of weekday service separated from Saturday and Sunday services to ascertain performance against the targeted measures of boardings per service hour and boardings per trip. Weekday service performance results are to be the main data used to indicate the need for service changes.

Targets are to be reviewed annually and a Transit Future Plan review will occur every five years, allowing for measures and targets to be reassessed and adjusted as the Comox Valley Transit system transforms to its 25-year Transit Future Plan vision.

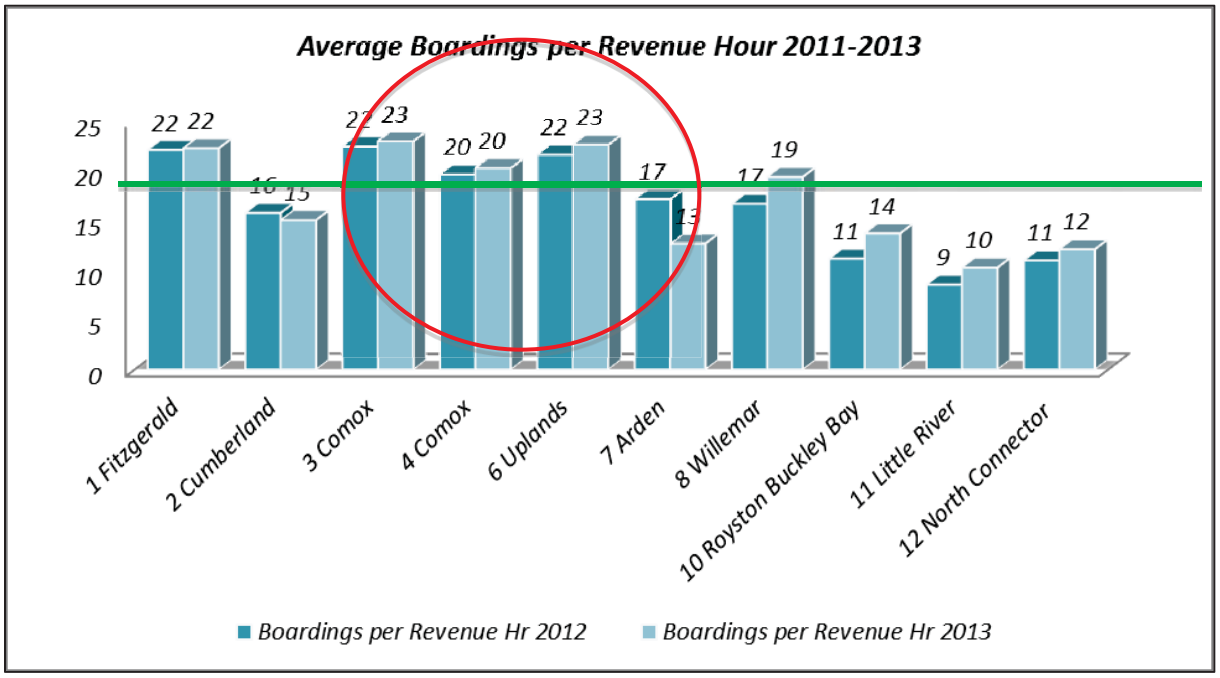
Appendix A

Annual Comparative Route Analysis

The following two graphs represent the average boardings per trip and average boardings per revenue hour for the Comox Valley urban routes 1-12, for the 2012 and 2013 fiscal years. Data for these weekday only results is gathered through GFI total riders reports, and is shown in tabular form in Appendix B.



2012 and 2013 Average Weekday Boardings per Trip = 7



2012 and 13 Average Weekday Boardings per Revenue Hour = 17

Appendix B

Weekday April 2011_March 2012

ROUTE	Annual Weekday Trips Operated	Annual Weekday Revenue Hours	Annual Passenger Boardings	Boardings per Trip	Boardings per Revenue Hr
1 Fitzgerald	6500	1,118	24680	4	22
2 Cumberland	7000	2,055	32363	5	16
3 Comox	6750	3,705	83137	12	22
4 Comox	7500	4,413	86520	12	20
5 Vanier	1436	360	17493	12	49
6 Uplands	3750	2,150	46469	12	22
7 Arden	5500	800	13707	2	17
8 Willemar	7000	2,313	38521	6	17
10 Royston Buckley B	5750	2,203	24555	4	11
11 Little River	4000	1,513	12919	3	9
12 North Connector	7000	1917.5	21010	3	11
99 VMP Connector	372	532.5	19551	53	37

Weekday April 2012_March 2013

ROUTE	Annual Weekday Trips Operated	Annual Weeekday Revenue Hours	Annual Passenger Boardings	Boardings per Trip	Boardings per Revenue Hr
1 Fitzgerald	6500	1,118	24858	4	22
2 Cumberland	7000	2,055	30883	4	15
3 Comox	6750	3,705	84952	13	23
4 Comox	7500	4,413	89366	12	20
5 Vanier	1436	360	10281	7	29
6 Uplands	3750	2,150	48586	13	23
7 Arden	5500	800	10132	2	13
8 Willemar	7000	2,313	44782	6	19
10 Royston Buckley Bay	5750	2,203	30151	5	14
11 Little River	4000	1,513	15505	4	10
12 North Valley Connector	7000	1,918	23172	3	12
99 VMP Connector	372	533	25445	68	48

Appendix C

GLOSSARY

Boardings
The number of times passengers board public transportation vehicles. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination and regardless of whether they pay a fare, use a pass or transfer, ride for free, or pay in some other way.

Revenue Hour
The time when a vehicle is available to the general public and there is an expectation of carrying passengers, revenue service includes layover and recovery time but excludes deadhead.

SERVICE MONITORING

SERVICE DESIGN STANDARDS AND PERFORMANCE GUIDELINES

As part of the ongoing management of the transit network, service standards and route performance guidelines have been developed as tools that can be used to help make service planning decisions and measure how well the transit system is progressing towards achieving its vision, goals and targets.

- **Service standards** define service levels, the service area and when new service should be introduced to an area.
- **Performance guidelines** measure service effectiveness and monitor how well the transit system is progressing to achieving the vision of the Transit Future Plan.

These measures are meant to ensure an acceptable level of service quality to the customer, and along with the Transit Future Plan, guide planning decisions and recommendations to the Comox Valley Regional District. The performance guidelines will be monitored and will inform the Annual Performance Summary (APS) reports presented to the Comox Valley Regional District on an annual basis. Over time, the APSs will provide a quick reference library from which to develop trend analysis, performance comparison year to year as well as to provide a benchmark for financial efficiency and ridership.

Service standards and route performance guidelines should be re-examined and renewed periodically (every 5-10 years depending on community size), since standards and performance guidelines are evolutionary and should grow with the system and development of the community and its changing needs.

Service Design Standards

What they are and what they define: Service standards define minimum levels of transit service desired to meet community needs. They are specific to a particular transit system and the communities it serves. Service standards usually define features such as:

- Service span (the hours and days of service when it operates);
- Frequency of routes or groups of routes;
- Walking distance to bus stops;
- Level of accessibility; and
- How new service will be triggered for additional areas of service (subdivision density, population, etc.).

Why they matter: The key benefit of service standards are that they guide local governments and BC Transit staff in determining and managing community expectations regarding the level of transit service to be provided. They also inform decisions regarding system design such as whether to provide new service or increase or decrease existing service.

Comox Valley Transit System Standards

Network Design Principles

- Transit service should be focused on key centres and residential areas within the urban areas.

- Transit Routes should be kept as direct and frequent as possible to be competitive with the automobile.
- Ensure that transit routes connect residents to their local neighborhood centre and that transit trips between neighbourhood centres can be made with no more than one transfer.
- Transit service should connect to other transportation systems to allow passengers to conveniently connect to other modes, including cycling and pedestrian networks, and custom transit services.
- Transit service should be operated on the arterial and collector road network and have limited operations on the local road network. Future arterial and collectors roads should be designed to accommodate transit stops and transit priority measures.
- Transit service coverage -Transit routes and bus stops should be within:
  - 400m walking distance of 90 percent of the residences,
  - 250m of all future medium and high-density residential developments,
  - 250-300m for stops on a route with greater than 10% grade, and
  - 15m walking distance of all designated senior's residences and major institutional facilities.

Ease of Use Principles

- To make the transit system easy to understand and use for all passengers, routes should be direct and straightforward, and service frequencies and schedules should be consistent on each route and during each time period, where possible.
- Customer information should be designed to be straightforward with simple route and schedule information. BC Transit will work with the Comox Valley Regional District to develop a comprehensive branding package in the future, specific issues to be addressed include:
  - Information and branding for the Future Transit Network, including naming convention, logo/identifier, visual identity and style guide for additional fleet (vehicle colour schemes or logos), print and electronic channels.
  - Identity and numbering for the Local Transit Network and Regional and Interregional services.
  - Strategies for route identification e.g. name/number that align with the layers of service.
- Persons with mobility and cognitive disabilities should be provided with a range of transit options, including handyDART service, taxi programs, and fully accessible conventional transit vehicles and bus-stop infrastructure.

Types of Transit Service

Table 18 describes a hierarchy of transit services that will support implementation of the long- term transit strategy and satisfy various market segments, including the regular transit rider and potential users.

Table 18: Comox Valley Types of Transit Service

Type	Service Description	Existing (Bus Route #)	Short-term (Bus Route #)	Medium to Long-term (Bus Route #)
Frequent Transit	Frequent routes that operate at a 15-minute frequency in the peak between 6am-10pm. Routes generally operate on arterial roads,	None	FTN	FTN Cumberland

	serve corridors with mixed land use, and provide connections between key centres			Extension (route 2)
Local Transit-Ridership Based	These routes generally serve urban areas with a focus on connections to local centres and Frequent Transit routes. some have 30 min frequency in the peak and generally 60 min frequency all other times	1, 3,4,6,	2,3,4,6,8	5,6,7,8 10 and 12 New Comox to Airport New Courtenay to Airport
Local Transit-Coverage Based	These routes generally serve less densely populated suburban and rural areas, with a focus on connections to local centres and the Frequent Transit route. These routes operate at 60 to 120-minute frequency	2,7,8,10,11	5,7,10,11,12	22,21 New routes as they emerge to settlement nodes
Targeted Transit	Targeted routes are created to provide service to specific areas such as regional and interregional locations, and may include limited, on-demand service or seasonal service. Frequency varies depending on service type.	12,5,99 Summer Beach Bus,	99,Summer Beach Bus Community Buses 21,22 New South Connector Bowser	99, Summer Beach Bus Community Buses New South Connector Bowser New Denman Island Community service
Custom Transit	Demand responsive service for people with disabilities who cannot use the regular accessible conventional transit system some or all of the time	HandyDART Community bus service 21,22	HandyDART	HandyDART

Span of Service

Span of service defines the operating hours for each service type, as described in Table 19. In general most routes operate from 7:00am to 10:00 pm on weekdays with more limited service on weekends. Span of service extension shall be considered when the first and last hour of service has productivity greater than the average productivity on the route.

- **Service should be available 7 days per week and 365 days per year.**
- **Service should start early enough to allow for a 7:00 am arrival to key centres on weekdays, and an 8:00 am arrival on weekends using all major routes.**
- **Service should start early enough to allow for an 8:00 am arrival at other major transit nodes on weekdays, and a 9:00 am arrival on weekends using all regular service routes.**
- **Outbound service from downtown Courtenay should be provided until at least 10pm, Monday to Saturday, on all major routes.**

- **Outbound service from other major nodes should be provided until at least 9:00 pm, Monday to Saturday, on all major routes.**
- **Span of service extension shall be considered when the first and last hour of service has productivity greater than the average productivity on the route.**

Table 19: Comox Valley Span of Service

Type	Period	Existing	Short-term	Medium to Long-term
Frequent Transit	Weekday	N/A	6:00 to 10:00 pm	5:30 to 12:30 am
	Saturday	N/A	8:00 to 10:00 pm	7:30 to 12:00 am
	Sunday & Holidays	N/A	9:00 to 6:00 pm	7:30 to 12:00 am
Local Transit	Weekday	Varies 6:00 am to 10:00 pm	7:00 am to 10:00 pm	6:00 am to 11:00 pm
	Saturday	Varies 8:00 am to 10:00 pm	7:00 am to 10:00 pm	6:00 am to 11:00 pm
	Sunday & Holidays	Varies 10:00 am to 7:00 pm	7:00 am to 9:00 pm	6:00 am to 10:00 pm
Targeted Transit	Weekday	Varies depending on service	Varies depending on service	Varies depending on service
	Saturday	Varies depending on service	Varies depending on service	Varies depending on service
	Sunday & Holidays	Varies depending on service	Varies depending on service	Varies depending on service
Custom Transit	Weekday	8:00 to 16:00	7:00 to 7:00pm	7:00 to 10:00pm
	Saturday	None	8:00 to 4:00pm	7:00 to 10:00pm
	Sunday &Holidays	None	8:00 to 4:00pm	7:00 to 10:00pm

Service Frequency

Level of service defines the minimum frequency at which a route operates, subject to meeting the performance standards. Investments to increase service levels will be considered to strategically develop the network or when route performance indicates the route is performing 25% above the target for the routes class. See Table 20.

Table 20: Transit System Standard – Service Frequency

Type	Period	Existing Regular Service (Peak Service)	Short-term Regular Service (Peak Service)	Medium to Long-term Regular Service (Peak Service)
Frequent Transit	Weekday	N/A	30 min (15min)	30 min (15min)
	Saturday	N/A	60 min (30 min)	60 min (30 min)
	Sunday	N/A	60 min (60 min)	60 min (60 min)
Local Transit-Ridership	Weekday	Varies depending on service. Generally 30 min – 60min	60 min (30 min)	60 min (30 min)
	Saturday	Varies depending on service. Generally 30 min – 60min	60 min (30 min)	60 min (30 min)
	Sunday	Varies depending on service. Generally 60 min – 120min	60 min (60 min)	60 min (60 min)
Local Transit-Converge	Weekday	Varies depending on service. Generally 60 min – 120min	60 min (60 min)	60 min (30 min)
	Saturday	Varies depending on service. Generally 60 min – 120min	120 min (60 min)	60 min (60 min)
	Sunday	Varies depending on service. Generally 60 min – 120min	120 min (60 min)	60 min (60 min)
Targeted Transit	Weekday	Varies depending on service	NA	NA
	Saturday	N/A	NA	NA
	Sunday	N/A	N/A	NA
Custom Transit	Weekday	NA	NA	NA
	Saturday	NA	NA	NA
	Sunday	NA	NA	NA

Vehicle Type

Vehicle Type Classification

Table 21 describes the vehicle type's attributes such as capacity and length, as well as the operating guidelines such as life span and maximum annual hours of operation and kilometres.

Table 21: Vehicle Type Attributes

High Capacity	Heavy Duty	Medium Duty	Light Duty
			
Low Floor/Accessible Minimum of 2 wheelchair positions 35 or more seats, 95 passengers with standees Double Deck or Articulated 13 / 20 year lifespan 40 feet or greater in length 2,500 maximum annual operating hours 75,000 maximum annual kms Midlife upgrade after 4 years	Low Floor/Accessible Minimum of 2 wheelchair positions 13 – 15 year lifespan 30 or more seats, 70 passengers with standees 35 feet or greater in length 2,500 maximum annual operating hours 75,000 maximum annual kms	Low Floor/Accessible Minimum of 1 wheelchair position 8 – 10 year lifespan Fewer than 25 seats, 40 passengers with standees Less than 35 feet in length 2,500 maximum annual operating hours 75,000 maximum annual kms No midlife extention	Low Floor/Accessible Capable of having more than 2 wheelchair positions 5 year lifespan Up to 20 seats, No standees Less than 35 feet in length 2,000 maximum annual operating hours 60,000 maximum annual kms (300,000km life) No midlife or life extension

Vehicle Type by Service Layer

Vehicle type is driven by passenger loads during the peak hour of the relevant operating period. On routes where bus capacity is exceeded, consideration should be given to operating buses with additional capacity or service with increased frequency. On routes where a small bus would accommodate passenger loads at peak time consideration should be given to operating a smaller bus and maintaining existing frequency. A typical approach is to allow standing passengers during peak periods but to provide sufficient capacity for seated passengers during the off-peak hours. Table 22 describes the vehicle types associated with the Transit Future layers of service.

Table 22: Vehicle Type by Service Layer

Service	Existing Vehicle	Short-term	Medium to Long-term

Frequent Transit	N/A	Heavy Duty Vehicles and Medium Duty Vehicles	High capacity and Heavy Duty Vehicles
Local Transit	Heavy Duty Vehicles	Medium Duty Vehicles and Light Duty Vehicles	Medium Duty Vehicles and Light Duty Vehicles
Targeted Transit	Heavy Duty Vehicles and Light Duty Vehicles	Heavy Duty Vehicles and Light Duty Vehicles	High Capacity , Medium Duty Vehicles, and Light Duty
Custom Transit	Light Duty Vehicles	Light Duty Vehicles	Light Duty Vehicles

Transit Facilities

Design principles for transit facilities should conform to the BC Transit infrastructure and design Guidelines, as well as the federal guidelines for transportation and transit infrastructure.

Transit Stops

Transit stops and facilities for waiting passengers should include a hard surface landing/waiting area and be universally accessible. They should also include on-street passenger facilities such as benches, shelters, lighting, waste receptacles, and route/schedule information. Priority should be given for snow clearing at transit stops and the pedestrian connections to them.

Direct pedestrian connections should be provided to bus stops via sidewalks, pathways and crosswalks, with curb ramps and barrier-free access. Bus stops should be located on the far side of crosswalks, or at least 10 m in advance of a crosswalk. Buses may stop in the traffic lane (with a bus bulge where on-street parking is provided), at curbside out of the traffic lane, or in a dedicated bus bay. Adequate sight distances should be achieved for motorists approaching the bus stop as well as transit passengers crossing the road from the bus stop.

Passenger amenities at transit stops can enhance the quality of service for customers and can also have a significant impact on attracting new users. Table 23 describes what transit stop amenities should be associated with each type of service.

Table 23: Transit Service Type and Associated Stop Amenities

Service	Short-term	Medium-term	Long-term
Frequent Transit	• Universally accessible • Bench	• Transit Shelter • Universally accessible • Bench	• Premium Transit Shelters at key locations • Transit shelters • Real time schedule information at key locations • Bike storage • Quality customer information (such as transit schedule and map information) • Customer wayfinding information at key locations (such as directional signage) • Universally accessible • Park & ride facilities
Local Transit	• Universally accessible • Bench	• Universally accessible • Bench	• Transit Shelter • Universally accessible • Bench • May include Park & Ride facilities in rural areas

Targeted Transit	• Universally accessible • Bench	• Universally accessible • Bench	• Transit Shelter • Universally accessible • Bench
Custom Transit	• Not required	• Not required	• Not required

Stop Intervals

Transit stops should be spaced along a corridor at an appropriate interval, in urban areas this is typically between 300m - 400m. Transit stops that are spaced too close together lead to slower transit trips and higher transit stop maintenance costs and stops that are too far apart limit passenger access to the system. Outside the urbanized area, bus stops should be limited to major destinations, points of interest, and residential concentrations. Spacing of stops should be limited on select type of service. Table 24 provides the appropriate standard for each service type.

Table 24: Service Type and Appropriate Stop Intervals

Service	Stop Interval
Frequent Transit	Frequent stops along a corridor, 300-500 meters apart.
Local Transit	Frequent stops along a corridor, 250-300 meters apart. Gradient > 10%, 250- 300m apart.
Targeted Transit	Varies depending on service
Custom Transit	Not applicable

Transit Exchanges and Park & Rides

Transit exchanges are typically located within the activity centres of the community, such as downtown, centres, and shopping malls, in order to reinforce the relationship with land use patterns. If properly planned and designed, transit exchanges can become effective multi-modal exchanges and pedestrian-oriented sites. Transit exchanges should provide weather protection, seating, transit route and schedule information, lighting, bicycle parking and other amenities as shown in the passenger amenities section below.

Park & Rides should be located in suburban and semi-rural areas to provide residents who live in areas with no transit service or poor transit service an access point to higher quality transit services. Below are the basic functional requirements for transit exchanges and Park & Ride facilities:

Site requirements:

- Sites with no significant safety concerns, which provide for direct and safe pedestrian access, and which minimize the interaction between buses and general traffic on adjacent roads;
- Sites that can be accessed safely and efficiently, avoiding traffic congestion and queuing;
- Sites that provide high visibility to pedestrians, motorists and others, minimizing personal safety concerns for transit passengers using the terminals in evenings and at other off-peak times; and
- The sites must be located to minimize additional routing and costs.

Physical requirements

- All platforms should accommodate standard 12m buses, including heavy duty buses in the future.

- Buses must be able to arrive and depart from platforms independently.
- Passenger facilities should include:
  - Passenger amenities, including weather protection, seating, illumination, and bicycle storage;
  - Accessibility to all areas of the terminal for persons with disabilities; and
  - Wayfinding signage and information.
- Transit terminals should also incorporate operator washrooms.
- In addition, Park & Ride sites should include parking for automobiles, bicycles and bus stops for transit access.

Transit Priority Measures

Transit Priority measures should be provided on the FTN network to improve travel time and reliability as required. These measures include, signal timing optimization, transit signal priority, regulatory signage such as yield to buses, and geometric measures such as queue jumper lanes and transit only lanes as outlined in Table 25 and 26.

Table 25: Transit Priority Measures

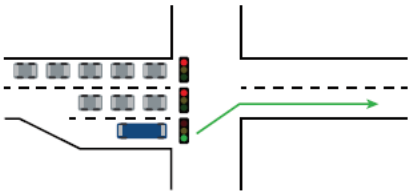
Signal Priority Measures		• Transit is given signal priority along the corridor at the majority of intersections
Lane Priority Measures		• Bus only lanes for part or all of the route corridor, or bus queue-jumper lanes at key areas of congestion
		• Queue-jumper lanes at key areas of congestion

Table 26: Transit Service Type and Transit Priority Measures

Service	Priority	Existing	Short-term	Medium-term	Long-term
Frequent Transit	Signal	None	Signal timing is optimized to benefit transit	Signal timing is optimized to benefit transit	Transit is given signal priority at key delay points
	Lane	None	Not required	Not required	Not required
Local Transit	Signal	None	Only if part of the FTN	Only if part of the FTN	Only if part of the FTN
	Lane	None	Not required	Not required	Not required
Targeted Transit	Signal	None	Not required	Not required	Only if part of the FTN
	Lane	None	Not required	Not required	
Custom Transit	None	None	Not required	Not required	Not required

Introducing New Service

The following guidelines have been identified to determine when it may be feasible to introduce transit service into new residential, industrial, commercial and recreational developments. The following conditions should be met:

- Minimum density of 10 residents per hectare (1,000 residents per square kilometre) or 10 jobs per hectare (1,000 jobs per square kilometre) measured over a minimum developed area of 10 hectares (i.e. suburban development of single family homes); and
- Road and pedestrian access that provides for safe access and efficient operation of transit service.

Performance Guidelines

What they are and what they define: Performance guidelines define numerical thresholds and targets for a particular system and its routes and services.

Why they matter: Working in tandem with service standards, performance guidelines are a tool that can be used to evaluate existing services, identify trends in performance and, based on this evidence, determine how service and supporting features (fares, marketing, facilities, etc.) should be changed to improve the effectiveness and efficiency of the system.

For a service to be efficient and productive, a balance should be achieved between oversupply and overcrowding. A number of measures can establish this equilibrium such as:

- Targeted marking/corridor branding
- Fleet type allocation
- Implement transit priority
- Change service span
- Alter frequency
- Change bus stop spacing
- Reduce/increase coverage
- Bus route changes

When system performance falls below or above the set guideline, recommendations to the City of Vernon and the NORD will focus on those tools above that maximize efficiency.

Measures

Performance measures have been chosen that evaluate the effectiveness of service planning investments on a system and route level for conventional service.

System Level

The measures used for the system guidelines are:

- **Average boardings per service hour** - Measures the total volume of ridership as compared to the supply of transit service.
- **Cost per passenger trip -** Measures the average cost to provide service per passenger trip.
- **Cost recovery -** Measures the financial performance of the transit system usually expressed in terms of total operating revenue/total operating expenses.
- **Passenger trips per capita -** Measures the ratio between transit trips and the population of the service area.

Route Level

The measures used for the route level guidelines are:

- **Average boardings per service hour** - Measures the total volume of ridership as compared to the supply of transit service.
- **Average boardings per trip** - Measures the total number of people that board a vehicle on a specific trip specific trip and route.

Route level performance guidelines have been classified into three categories (frequent transit, local transit and targeted transit) to acknowledge different performance expectations based on a route's objective.

Performance Targets

Table 27 and 28 outline the performance targets set for the conventional system at a system and route level. As well as monitoring existing performance against these guidelines, historical trends will also be monitored to determine if the system or routes are becoming more or less efficient over time. Significant variance (+/ – 25%) from the target will place a route on an action list for further investigation and will require more detailed analysis. Routes that fall below the 25% variance will be candidates for corrective action and routes that fall above the 25% variance will be candidates for service improvement. BC Transit will report on an annual basis how the system and routes are performing and this will help guide planning decisions.

System Level

The purpose of monitoring system wide performance is to identify trends in system performance and compare the performance of the transit system with other peer transit systems. These measures are designed to monitor the Comox Valley transit system and guide service planning.

This can be particularly useful when identifying system wide impacts of major investments in the transit network such as development of the Frequent Transit Network.

Table 27: Comox Valley Urban System Level Performance Guidelines

Measure	Target	Baseline 2013	Benchmark*
Boarding per service hour	25-30	20	22
Cost per passenger trip	$4.60	$5.05	$5.00
Cost recovery	25%-30%	22%	25%
Passenger trips per capita	27**	9**	14

**Benchmark is the average measure developed as a comparison of peer transit systems both with BC and Canada see section xx of the report*

*** Comox Valley population 2011 actuals and 2038 projections used for this calculation*

Route Level

Analysis on a route-by-route basis gives a detailed indication of how individual components of the transit system are performing. A route-by-route analysis allows observations of the impact of service changes and investments made in the past and identifies future opportunities for strategic investment or reinvestment.

Table 29: Route Level Performance Guidelines

Route Level	Boardings per Trip	Boardings per Service Hour
Frequent Transit	**25**	**30**
Local Transit (Ridership)	**15**	**25**
Local Transit (Coverage)	**6**	**18**
Targeted Transit (School)	**40**	**60**
Targeted Transit (Other)	**6**	**18**

Comox Valley BIG BUS small bus

Comox Valley Transit
Fleet Opportunities and Challenges

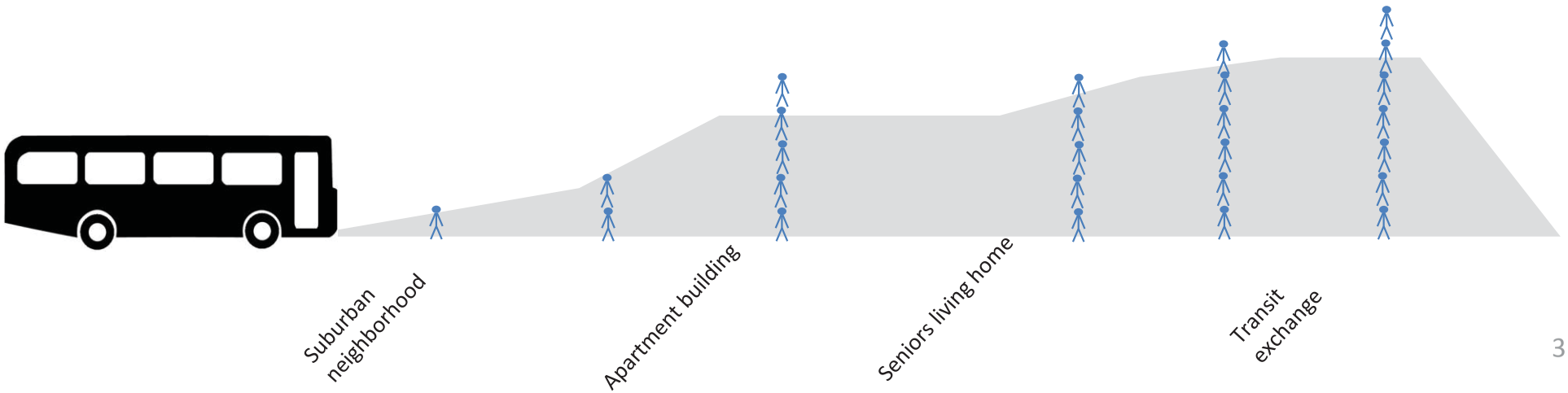
A lot of public and stakeholder comment for smaller buses on the network:

- "Why are our buses running around empty?"
- "Why don't we have smaller buses?"

This presentation provides background and answers to these questions and addresses the central question: Can the Comox Valley Transit System accommodate a network that has a fleet of predominately smaller vehicles?

Why are all of the buses running around empty?

- Just like any other service, transit use fluctuates by time of day and by season. How full the buses "look" will depend on **when** you see them and **where** you see them on a route. For instance, if you see a bus at the end of the line, it will likely not have many passengers on board.
- Transit routes are busiest when people travel most often. This is often in the morning and afternoon commuter peak times. In the Comox Valley, peak times are directly correlated to secondary school start and finish times.
- Transit is synonymous with land use. Just like single family residential areas **house fewer people** than downtown apartment buildings, transit routes in single family residential areas **carry fewer people** than routes that operate in downtown core areas.
    - **Neighborhood routes are often important feeder routes to the more frequent routes in the community core.** In other words, like smaller streams flowing into a larger river, neighbourhood routes may look less busy but they are integral to the success of the system.



Why don't we use smaller buses?
We could save costs by using smaller buses?

- **Transit is a "people-intensive" business**: In the Comox Valley, **over 50%** of the transit operational budget is for staff who make transit happen everyday: transit drivers, dispatchers, mechanics, etc.
    - This means that the actual savings to be derived from using a smaller vehicle may not actually affect the bulk of a transit system's costs.
- Similarly, there are some fuel and maintenance savings from smaller vehicles, but again these are not substantial.
- Generally, the use of smaller vehicles can be useful in a community but it is normally **best driven by the goal of "matching service to demand"** rather than just trying to save costs.
    - In other words: if possible, match smaller more neighbourhood-friendly vehicles with lower ridership neighbourhood level services.

Cost Effective use of the Comox Valley Transit Fleet

Utilizing the Comox Valley fleet in the most cost effective manner means sometimes the buses are perceived to be “running around empty.” Transit scheduling uses a technique known as interlining to reduce cost and unnecessary deadhead to maximize service delivery.

Interlining

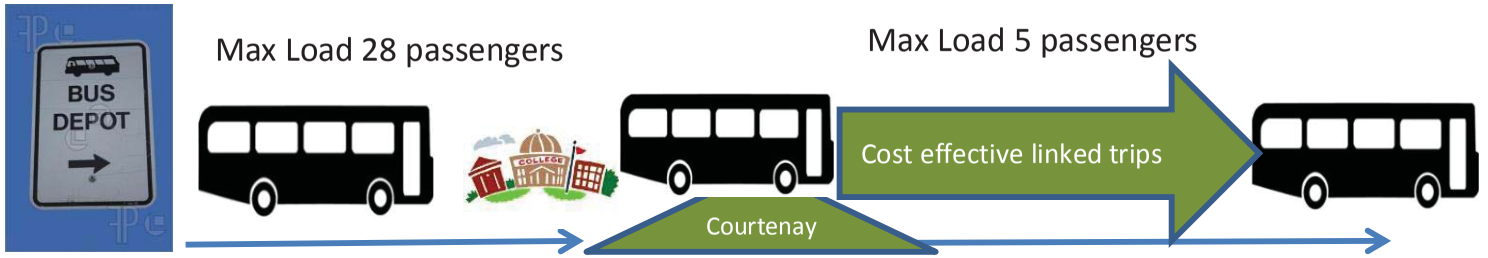
- **Where one bus is used to go from one route to another.** For instance, to most effectively use schedule time, a bus may operate as a route 6 and then become a route 2 trip, and then do further trips on other routes.

Deadhead

- **Driving the bus to and from the depot - *out of service***
- **Interlining avoids unnecessary costs** of running a bus back to the depot (out of service) to swap to a vehicle that is better suited to the ridership demand on that route.
- How many “big buses” are actually required at peak times (when buses are most full) determines the base required capacity for the make up of a fleet.
- Achieving cost effective use of the large transit vehicle means that a “big bus” is often seen in neighbourhoods where demand is low

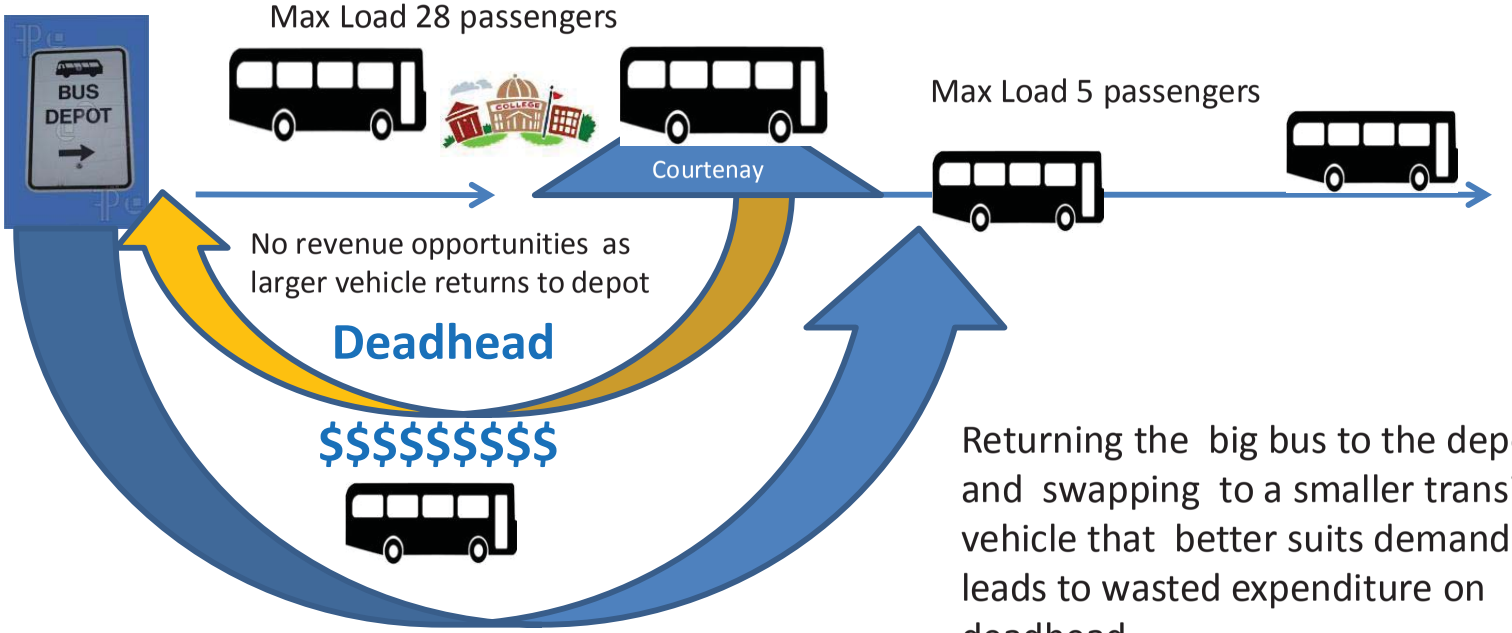
Interlining the Comox Valley Transit Fleet

Scenario 1 Interlining – reduces deadhead



Route 3: Downtown Comox to NIC- to Courtenay Route 7: Downtown Courtenay to Driftwood Mall

Scenario 2 Swapping Vehicle size – increases deadhead



Returning the big bus to the depot and swapping to a smaller transit vehicle that better suits demand leads to wasted expenditure on deadhead.

Pros/ Cons

Scenario 1

- Better frequency of trips
- Reduces lost revenue opportunities as bus does not return to depot "out of service"
- Efficient use of driver shifts
- Overall operational savings
- Bus appears very empty on Route 7 service

Scenario 2

- Good public perception that vehicle size is matching demand
- Delay in service frequency
- Additional service expenditure
  - extra driver time
  - extra KM's
  - added maintenance costs
  - lost service time to deadhead

Comox Valley Conventional Fleet - Today

- The Comox Valley operates a range of vehicle sizes. **The Transit Future Plan is a key strategic tool to help direct how the fleet transitions over the next 25 years.**
- There may be opportunities to transition to smaller transit vehicles as buses in the Comox Valley fleet come up for renewal

Conventional	#	Type	Renewal	Specification's
Heavy Duty 	4	35’ Denis Darts	2018/19	• Heavy Duty • 31 seats 57 max capacity (1 Wheel Chair)
Heavy Duty 	4	Nova	2028	• Heavy Duty • 32 seats -70+ max capacity (3 wheel chairs)
Medium Duty 	4	30’ Denis Darts	2016/17	• Medium Duty • 27 seats 49 max capacity (1 wheel chair)
Total	12	Average fleet age 11.5 years		

Comox Valley Paratransit Fleet - Today

Paratransit	#	Type	Renewal	Specification's
Light Duty 	1	Arboc	2017	• Low Floor Light Duty • Max Capacity 20 with No wheelchair facility • Max capacity 16 with wheelchair capacity • No Standees
Light Duty 	7	Ford Polar	2013-2015	• High Floor • Light Duty • Max capacity 20 • No Standees
Total	8	Average fleet age 4.6 years		

The 2013 Makeup of the BC Transit Vehicle Fleet

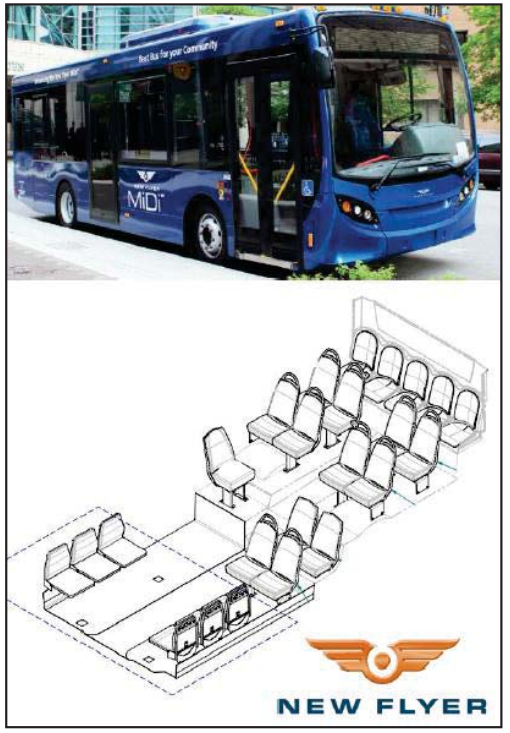
High Capacity	Heavy Duty	Medium Duty	Light Duty
			
Low Floor/Accessible Minimum of 2 wheelchair positions 35 or more seats, 95 passengers with standees Double Deck or Articulated 13 / 20 year lifespan 40 feet or greater in length 2,500 maximum annual operating hours 75,000 maximum annual kms Midlife upgrade after 4 years	Low Floor/Accessible Minimum of 2 wheelchair positions 13 – 15 year lifespan 30 or more seats, 70 passengers with standees 35 feet or greater in length 2,500 maximum annual operating hours 75,000 maximum annual kms	Low Floor/Accessible Minimum of 1 wheelchair position 8 – 10 year lifespan Fewer than 25 seats, 40 passengers with standees Less than 35 feet in length 2,500 maximum annual operating hours 75,000 maximum annual kms No midlife extention	Low Floor/Accessible Capable of having more than 2 wheelchair positions 5 year lifespan Up to 20 seats, No standees Less than 35 feet in length 2,000 maximum annual operating hours 60,000 maximum annual kms (300,000km life) No midlife or life extension

How is BC Transit Supporting a Range of Vehicle Sizes?

BC Transit's Changing Fleet

- BC Transit has sustainably increased its fleet of Light Duty low floor vehicles (Arbocs) in 2014
- BC Transit is trialing **new style** low floor Medium Duty vehicles that it hopes systems such as the Comox Valley can transition to in the medium to long term as vehicle lease/life expires
- The **first new style low floor is** the recent introduction of the **Vicinity,** a smaller transit vehicle currently being trailed in some systems across the province
  - Vicinity is a smaller version of the "big bus"
  - Vicinity is only 27' in length and has fewer than 23 seats, with 2 wheelchair positions and a single front door
- BC Transit has also commenced trialing another smaller vehicle the "Midi" (a 30' foot Flyer) to provide more opportunities to grow its fleet of smaller medium size vehicles

27' New Vicinity – looks big acts small !



Evolving the Comox Valley Transit Fleet

- The BC Transit Fleet strategy allows the flexibility and affordability for local governments like the Comox Valley to lease vehicles and to adapt their system to a smaller vehicle fleet if desired.

- The process for ordering new vehicles requires approximately an 18 month lead in time. This includes:
  - Detailed analysis of trip by trip ridership and all route vehicle assignments.
  - Discussions with local government and operating staff.

- The Comox Valley Regional District recently approved the acquisition of a new Heavy Duty vehicle as part of upcoming expansion.
  - CVRD staff through consultation with BC Transit have chosen instead to lease a light duty vehicle (Arboc).
  - This acknowledges the opportunity to operate smaller vehicles within the Comox Valley conventional fleet.
  - The new Light Duty Arboc is to be fitted out for use as both a dual handyDART and conventional vehicle.
  - New vehicle is due for service in the Comox Valley fleet late 2014.

- As the life cycle of the Comox Valley fleet matures and expansion vehicles are required, negotiations about the fleet size and the possibility of taking on newer smaller transit vehicles as they become available in the BC Transit fleet can be discussed.

Comox Valley Average Maximum Passenger Loads September to December 2013

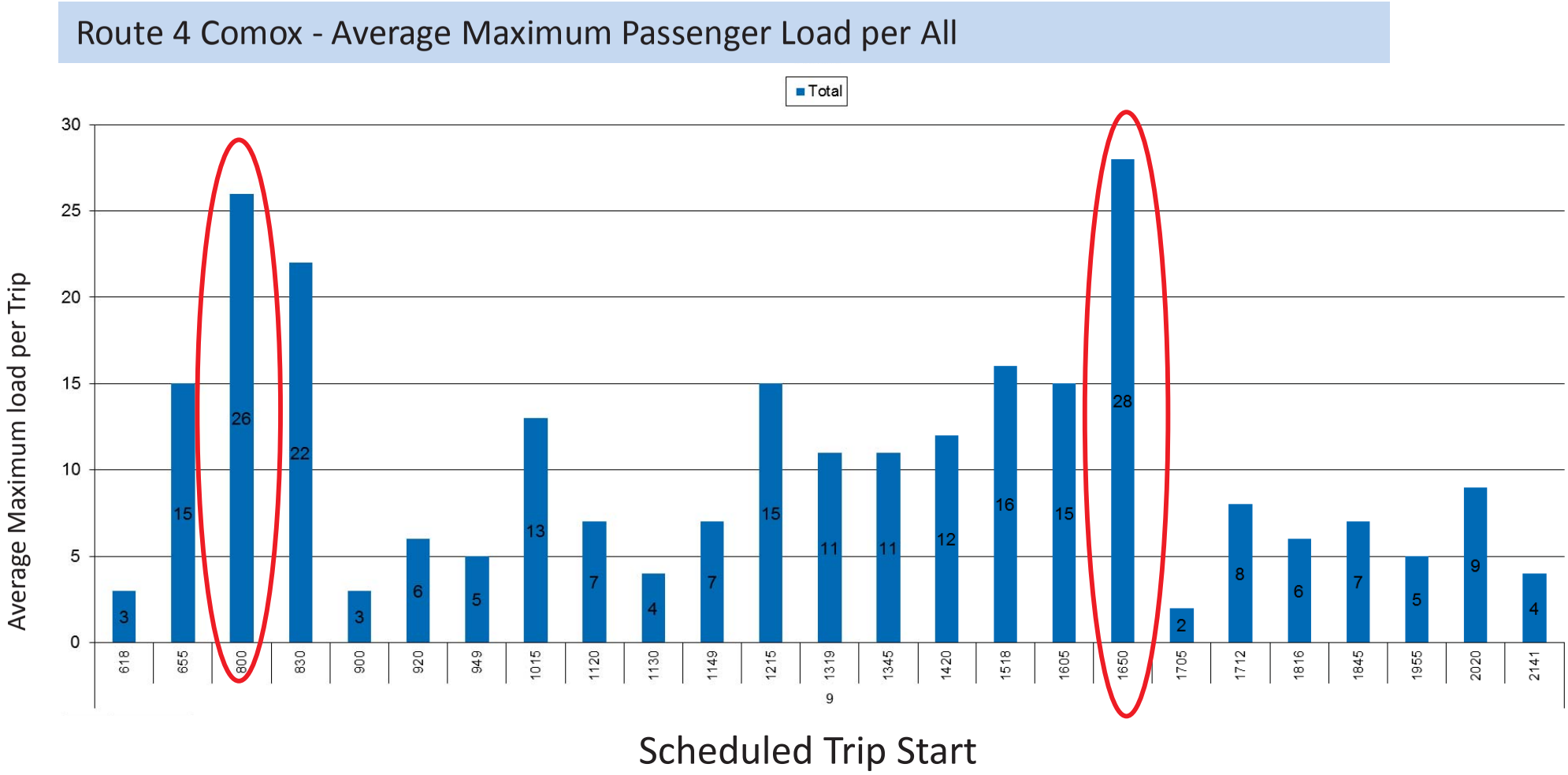
- The section of slides provide a look at each route and define the AM and PM trip time that carried the greatest number of passengers (i.e. the maximum passenger load). This data was sourced through Automated People Counters (APC) that currently operate on 4 of the Comox Valley vehicles which are rotated throughout trips in the system.
- More detailed daily maximum passenger loads are provided for routes 4, 2, 10 and 12
- **This evidence suggests that the Comox Valley Transit Network could operate many of the neighbourhood routes with smaller Medium or Light Duty transit vehicles.**

Route	AM Average Maximum load Trip Time	PM Average Maximum Load and Trip Time	Recommended Bus Size Transit Future
Route 1 Fitzgerald	8:06am 6 passengers	15:35pm 14 passengers	Likely this route will be replaced by the Frequent Transit route (**Heavy Duty bus recommended)**
Route 2 Cumberland to Courtenay	8:12am 8 passengers	12:46pm 11 passengers	**Medium Duty bus** (25 seats less than 30") performance target is 15 rides per trip
Route 3 Comox (Courtenay to NIC, Comox St Josephs, Driftwood Mall)	8:15am 18 Passengers	15:23pm 23 Passengers	Expected this route will reduce to a LTN between downtown Comox and Driftwood Mall. **Medium Duty bus** would suit as performance target is 15 rides per trip
Route 4 Comox (Courtenay to Driftwood to St Josephs, Comox and NIC)	8:00am 26 passengers	16:50pm 28 passengers	Likely this route will be replaced by the Frequent Transit route (FTN) **Heavy Duty bus** recommended as a performance target of 25rides per trip has been set for the FTN
Route 5 Vanier (Courtenay to Sports Centre and Vanier High)	No AM trips sampled	Poor sample	**Light Duty bus**, performance target 6 rides per trip however route primarily functions as a school service for Vanier Secondary College carrying and **Medium Bus** may be required for continued school services

Comox Valley Average Maximum Passenger Loads September to December 2013

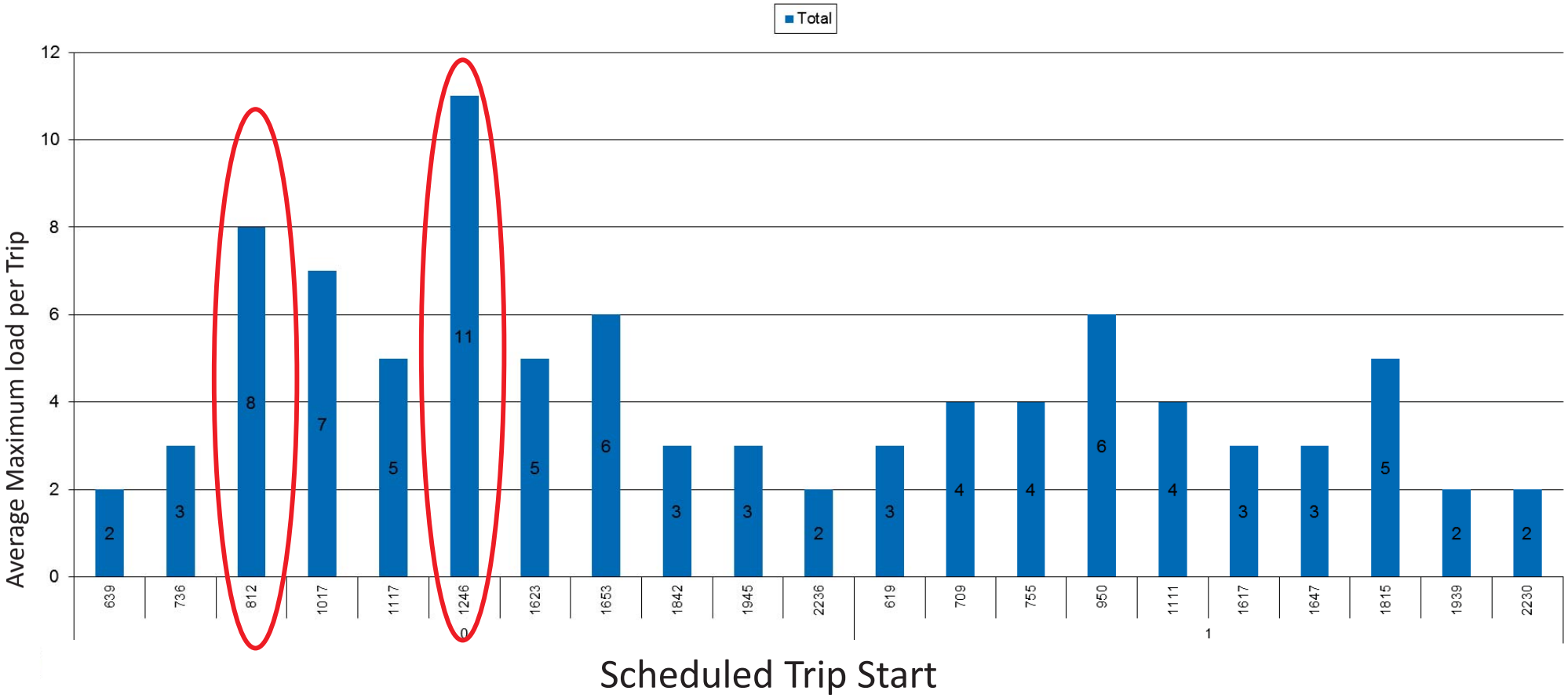
Route	AM -Average Max load & time	PM -Average Max load & time	Recommended Bus Size Transit Future
Route 6 Uplands (Courtenay to Valley View, NIC, Muir at Mission	12:15am 17 Passengers	15:28pm 16 Passengers	**Medium Duty** bus would suit as performance target is 15 rides per trip .
Route 7 Arden (Courtenay Driftwood via Arden return)	9:00am 5 Passengers	16:15pm 21 Passengers	**Light duty** . (Future option is to consider consolidation of route 7 and 8 as one route requiring a **Medium Duty** bus and an expected performance target 15 rides per trip
Route 8 Willemar (Courtenay to Anfield & Driftwood mall via Willemar St)	8:45am 22 passengers	16:21pm 18 passengers	**Medium Duty** bus would suit as performance target 15 rides per trip and residents will have good walking access to FTN service also
Route 10 Royston- Buckley Bay (Courtenay to Fanny Bay via Royston: some return trips via Cumberland)	10:00am 13 passengers	17:13pm 12 passengers	**Light Duty vehicle** in the short term to suit performance target of 6 rides per trip, however would expect better frequency and more direct service in medium to long term with a larger medium size vehicle likely to be appropriate
Route 11 Little River (Courtenay to NIC, Ferry, 19 Wing and Airport)	10:40am 10 passengers	13:48pm 13 passengers	**Light Duty bus in the short term** would suit as performance target 6 rides per trip. Medium to longer term considers route split into 2 and demand and extra load carry likely to be better suited to medium size vehicles
Route 12 North Valley Connector (Courtenay to Oyster River return	12:15am 16 passengers	17:15pm 11 passengers	Light Duty bus would suit in short term as performance target is 6 rides per trip. However **Medium Duty** buses are considered the safer and more comfortable option when providing service on longer regional routes
Route 99 VMP Connector (School Special)	8:02am 20 passengers	15:25pm 24 passengers	**Heavy Duty T**argeted School Service performance targets of 40 rides per trip

Comox Valley Average Maximum Passenger Loads Weekdays
September to December 2013



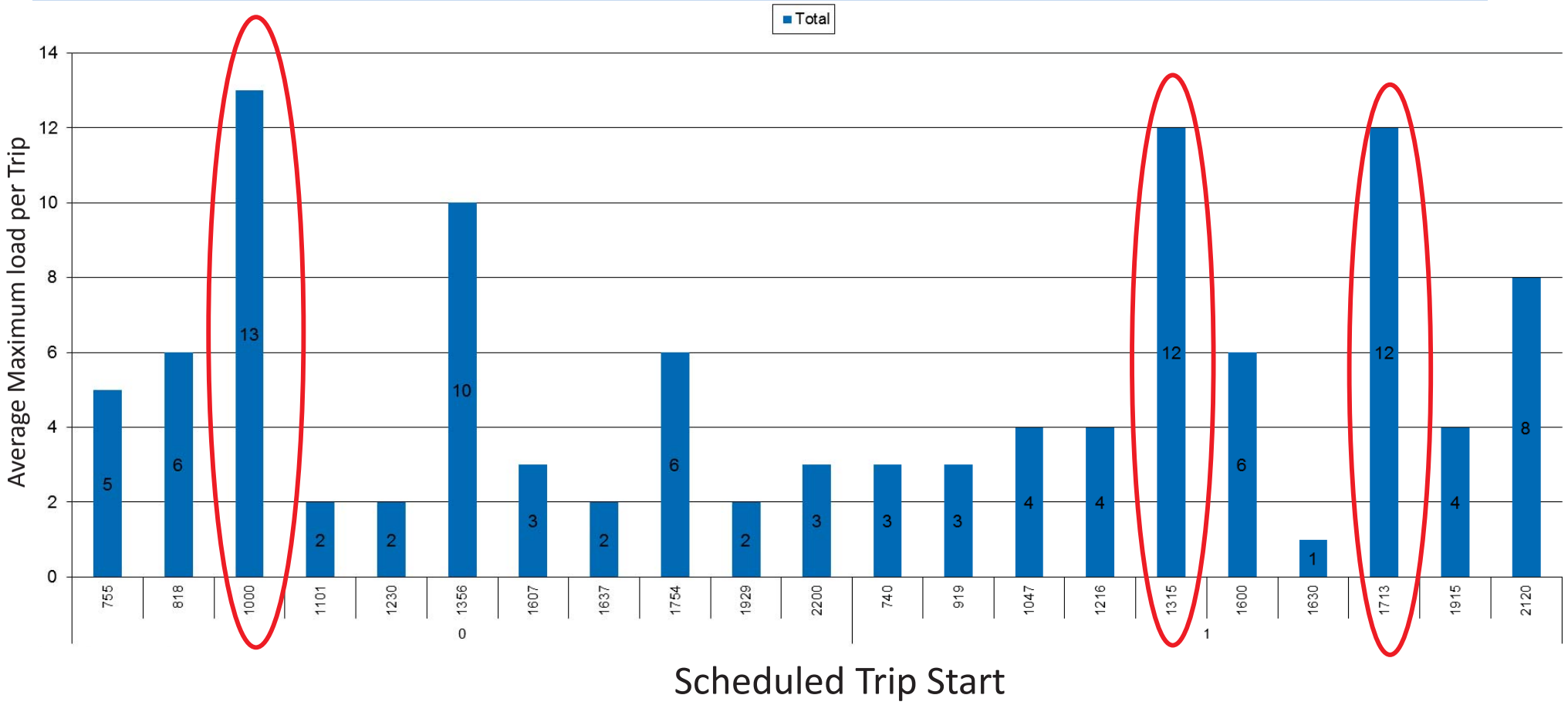
Comox Valley Average Maximum Passenger Loads Weekdays
September to December 2013

Route 2 Cumberland - Average Maximum Passenger Load per All Trips



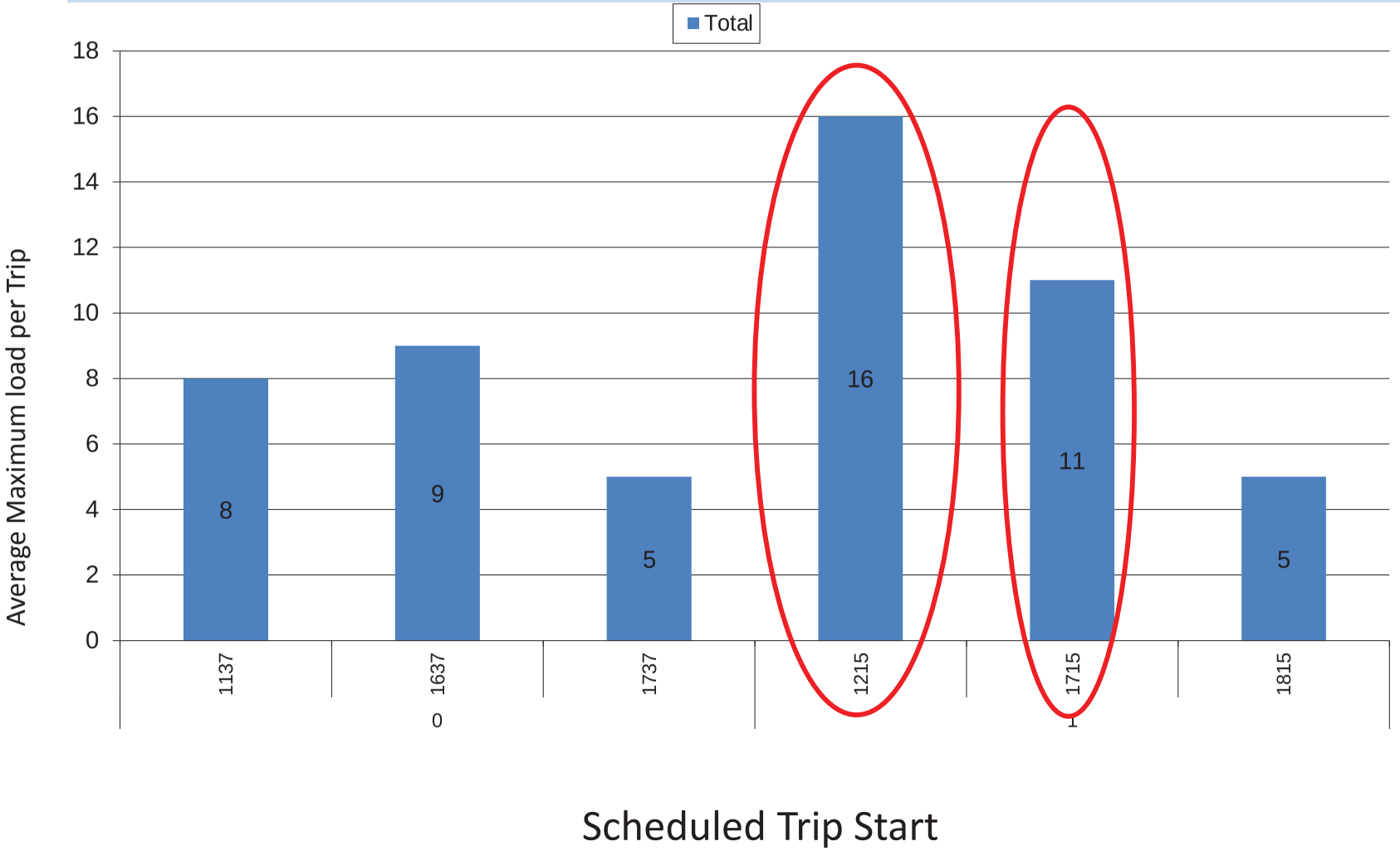
Comox Valley Average Maximum Passenger Loads Weekdays
September to December 2013

Route 10 Royston Average Maximum Passenger Load per Trip



Comox Valley Average Maximum Passenger Loads Weekdays September to December 2013

Route 12 North Valley Connector Average Maximum Passenger Load per All Trips



Comox Valley - Future Fleet Options

Fleet Strategy	Pros	Cons
Develop a fleet of all light duty vehicles deploying 2 or more vehicles where demand is greater than the small vehicle capacity	• Good public perception that vehicles are all matching demand • Lower maintenance and running costs per vehicle • Lower (debt servicing) lease cost for vehicles	• More driver intensive around peak times. Increased driver costs . • Need for greater spare capacity increases in overall costs • Use of Light Duty vehicles not recommended on longer regional type routes • Light Duty Vehicles not able to carry standees. Pass up of some passengers could occur. • Light Duty Vehicles have a shorter life span, therefore higher turnover of lease renewal
Develop a mixed fleet size	• Less actual vehicles required • Cost effective, efficient use of vehicles across network • Provides greater adaptability of vehicles as transit ridership increases in the Comox Valley	• Some poor public perception that vehicles are too large and not matching demand on all trips, but many trips would be “right sized”
Develop a fleet of all heavy/medium size Vehicles	• Future proofs Comox Valley fleet to react to increased ridership demand	• Some poor public perception that vehicles are too large and not matching demand

Comox Valley Future Transit Fleet

- The Comox Valley Transit Future fleet could be served by a mixture of predominately small and medium size transit vehicles.
- The projected performance targets for some of the Comox Valley routes suggest a smaller medium transit vehicle could be accommodated on these routes.
- A transit fleet that predominantly consists of smaller vehicles does not translate into reduced total operational costs.
- Some Heavy Duty transit vehicles would still be required in the Comox Valley fleet to serve the Frequent Transit route and the Targeted school services.
- A mixture of vehicle sizes and the strategy of interlining services to achieve cost effectiveness would result in some route trips using larger vehicles than warranted by estimated demand.
- There is an opportunity as the life cycle of the Comox Valley fleet matures and expansion vehicles are required, to begin negotiations about the fleet size and the possibility of taking on newer smaller transit vehicles as they become available in the BC Transit fleet.

Comox Valley Regional Transit System
Selecting an investment strategy for future service expansion

This paper looks at the Comox valley Transit ridership and investment change over the past 22 years and discusses possible future growth scenarios for the consideration of local decision makers.

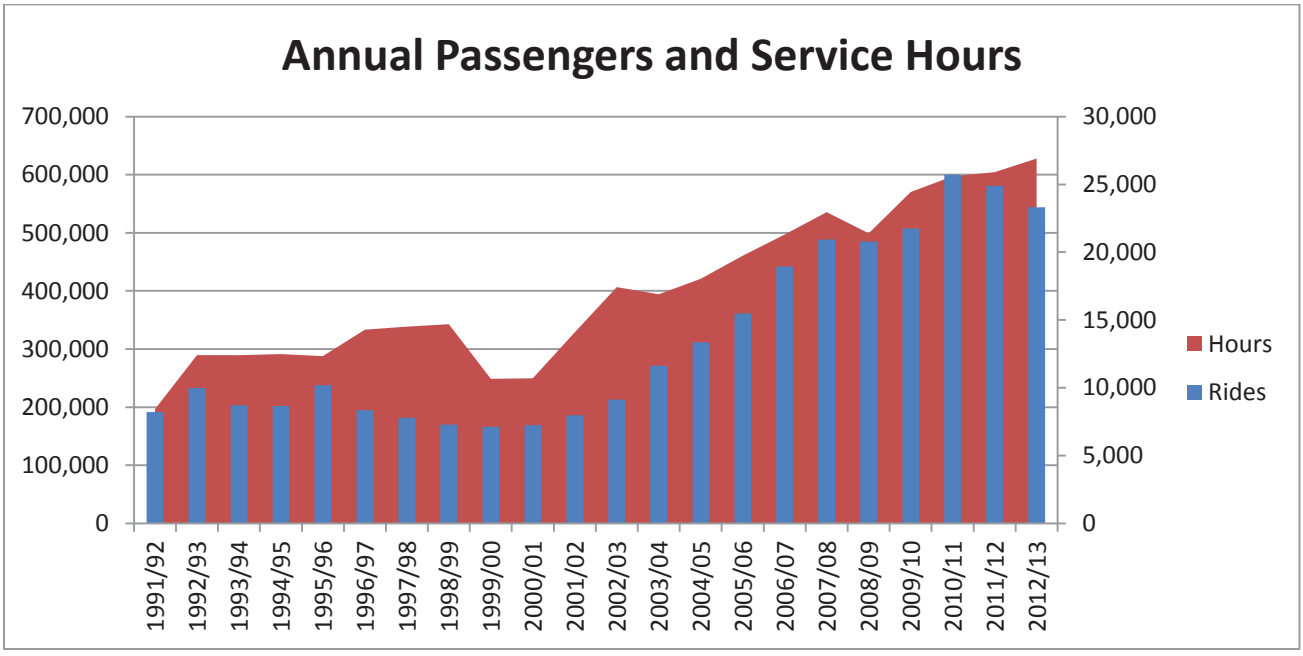
An investment strategy of five per cent growth per annum would best position the Comox Valley Transit system to respond to a growing need for transit services and to help deliver the targeted transit mode share for the Comox Valley by 2038. Five per cent investment growth per annum also aligns with the current trend of service hour investment.

The Comox Valley Regional Growth Strategy (RGS) targets a transit mode share (all trips[1]) of 2.5 per cent by 2031. The Comox Valley Transit Future Plan expands the expected 2031 population projections out to 2038 and projects a transit mode share target expressed in a linear calculation to 3% by 2038. BC Transit has estimated that 1.2% of all trips[2] occurred by transit in the Comox Valley in 2011.

Ridership Response to Past Transit Service Hour Investment

Transit ridership in the Comox Valley Regional District (CVRD) has grown to approximately 600,000 annual rides. Since 1991, service hours have increased by 68.7% while ridership has increased by 64.8%. Figure 1 below displays the steady growth in the Comox Valley Transit System over the past 22 years. **In general, Comox Valley Transit has responded very well to past service hour investment.**

Figure 1: Comox Valley Transit Conventional Service Hours and Ridership, 1991 - 2013



[1] All Trips refers to all trips purposes taken by transit in comparison BC Census data provides a Journey to Work calculation of 2% trips taken by transit in 2011.
[2] Based upon a population of 65,358 (2011 Census) and assuming 2.9 total trips for all modes of transportation per day for 301 days per year resulting in 57,050,998 annual trips and 581,000 transit rides per year (2011)

Over the past fifteen years, the Comox Valley Transit System has demonstrated an annual average of 5% change in service hour growth that equates to approximately 800 additional service hours each year. In comparison over this same period, an average ridership growth of approximately 8% per year (or 24,793 rides) has been achieved. Table 1 documents the actual changes in service hours and ridership from 1998 and 2014.

Comox Valley is expected to continue the trend of growing transit ridership over the next 25 years. **The draft Comox Valley Transit Future Plan encourages an investment strategy of 5% growth in service hours per year, which will more than triple the current level of service by 2038. This type of an investment in service hours is expected to more than quadruple the Comox Valley's transit ridership by 2038.**

Table 1: Comox Valley Service Hour and Ridership Trend 1998 - 2014.

15 Year Service Change Trend				15 year Ridership Trend		
Year	Service Hours	# Change	%Change	Boardings	# Change	%Change
1998	14,510			181,741		
1999	14,692	182	1%	170,210	-11,531	-6%
2000	10,661	-4,031	-27%	166,475	-3,735	-2%
2001	10,704	43	0%	168,702	2,227	1%
2002	14,096	3,392	32%	186,044	17,342	10%
2003	17,423	3,327	24%	212,894	26,850	14%
2004	16,895	-528	-3%	271,497	58,603	28%
2005	18,039	1,144	7%	311,368	39,871	15%
2006	19,742	1,703	9%	361,203	49,835	16%
2007	21,305	1,563	8%	442,246	81,043	22%
2008	22,953	1,648	8%	488,344	46,098	10%
2009	21,393	-1,560	-7%	484,915	-3,429	-1%
2010	24,435	3,042	14%	507,890	22,975	5%
2011	25,599	1,164	5%	600,129	92,239	18%
2012	25,903	304	1%	581,018	-19,111	-3%
2013	27,080	1,177	5%	544,172	-36,847	-6%
2014	27,159	79	0%	578,436	34,264	6%
Average		791	5%	**Average**	24,793	8%

Local Cost per Service Hour

The Comox Valley Regional District on average pays approximately 35% of the actual costs to deliver the conventional transit system, with the remainder paid for by provincial funding, passenger fares and advertising revenue.

Comox Valley Transit when compared with similarly sized transit systems in the BC (networks with service populations greater than 25,000 and less than 50,000) Comox Valley Transit has one of the lowest total operating costs per service hour, with the actual local net cost per service hour for 2012/13 at $35.50[3] compared to the average local net cost for similar sized communities of $38.88.

[3] Source: BC Transit 2012/13 Information and Performance Summary (IPS) year-end actuals

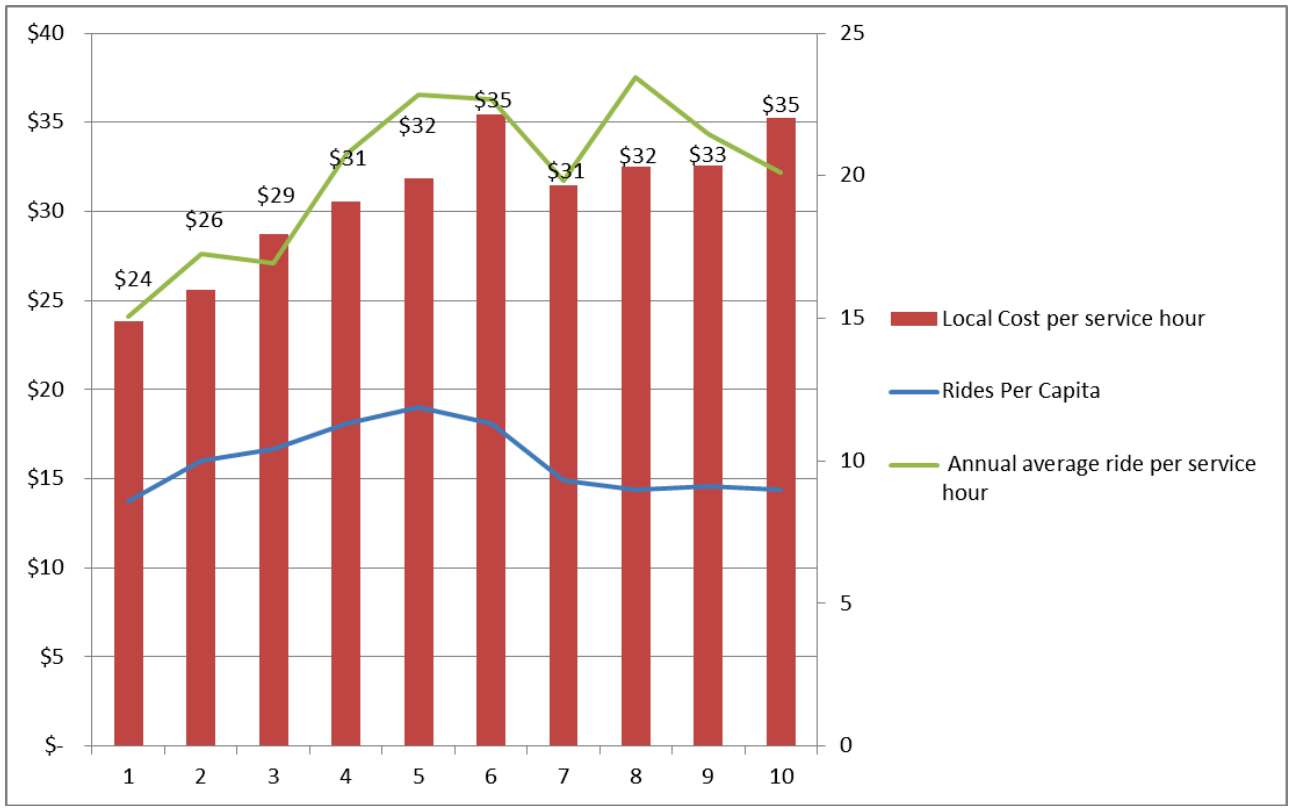
It is estimated that over the last ten years the average Comox Valley local government share of cost (which is an estimate of the total local net cost per annum minus the revenue per annum) is $31 dollars per service hour. In correlation to this the annual average rides per service hour have increased from 15 rides to 20 rides per service hour and annual rides per capita have fluctuated between 9 and 12 rides averaging out at 10 rides per capita over the last ten years. See figure 2.

A Transit Future Plan goal has been established to deliver cost and service efficiencies in the network over the next twenty five years. This will require a network design that provides the transit routes and frequencies where increased ridership can be encouraged. The proposed Frequent Transit route between the key centres will deliver a higher quality, direct service along the most heavily used transit corridor in the community and this is expected to generate higher ridership.

As established through the public consultation and stakeholder workshops, transit is becoming increasingly important to the Comox Valley community. There is an opportunity to deliver a more cost effective network where greater revenue opportunities other than revenue from ridership gains on the future network can also be explored.

To coincide with the development of the Comox Valley Transit Future Plan, BC Transit in partnership with the CVRD will be undertaking a fare review and engaging in discussions and research on suggested additional revenue strategies that the Comox Valley could explore. This will help position the CVRD to develop other revenue strategies locally, to reduce the local cost against additional service hour expenditure as the system expands over the next 25 years.

Figure 2: Correlation between local cost per service hour, rides per capita and annual average rides per service hour



Selecting a Path for Future Transit Growth

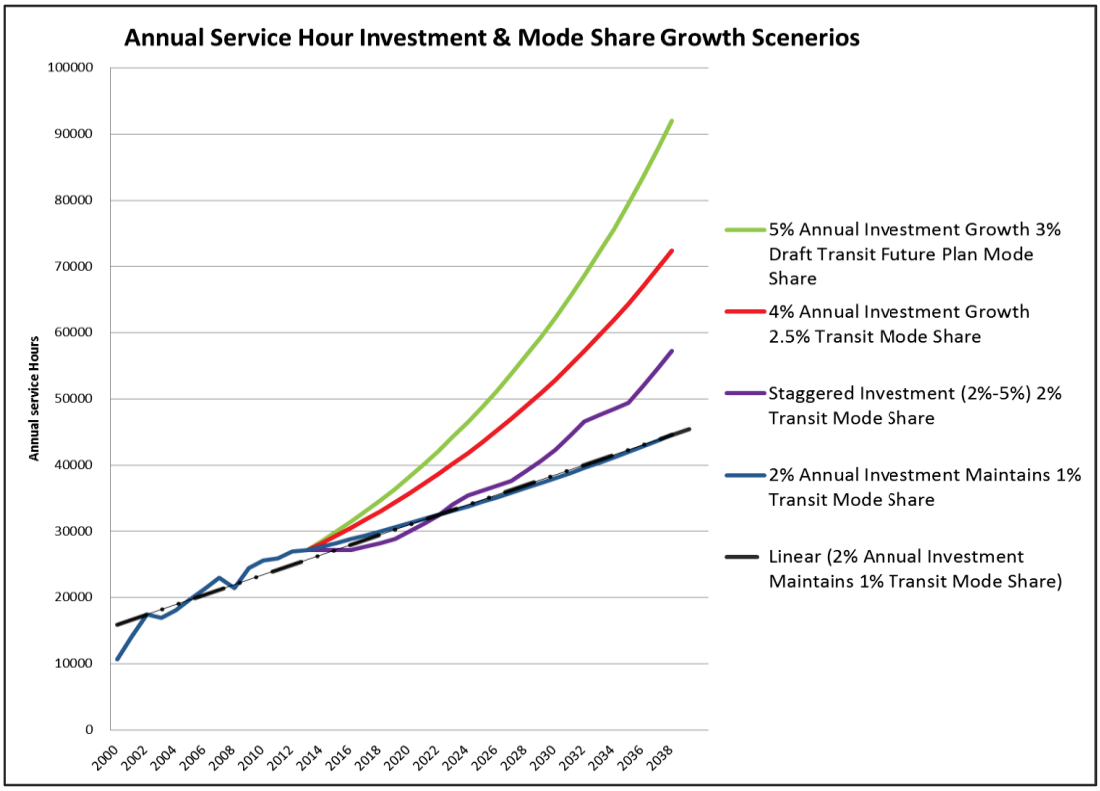
Selecting a plan for growth over the next twenty five years allows for more accurate transit service, vehicle and infrastructure planning, as well as budget development in the short, medium and long terms. **Proposed service expansion and associated services changes, annual budgets and three year budget projections will be presented to the CVRD for approval on an annual basis for implementation consideration.**

The growth strategy selected will determine when short-term priorities could be achieved. A five per cent investment in growth of transit services per year is the estimated level of investment needed to meet the Transit Future Plan targets of a three per cent transit mode share and support the Regional Growth Strategy aspirations.

Other investment percentage options however could be considered in the short term. This could include an initial investment strategy that first seeks to develop efficiencies in the current network. This strategy would still require some expansion hours to be directed towards delivering the initial steps to develop the Frequent Transit route.

Figure 3 below represents the level of service hour expansion achievable under four different investment strategies. These strategies are also calibrated to reference the likely mode share that each investment strategy could achieve. The proposed transit mode share scenarios range from the 1% 'status quo' required to meet population growth to the 2.5% RGS target and the preferred 3% Transit Future Plan target for 2038.

Figure 3: Twenty - Five Year Annual Investment Strategies



Investment in Service Hour Growth Strategies

The following describes the growth strategies represented in figure 3 and further detailed in table 2 and figure 4. Table 3 provides a comparison of these strategies in terms of how each might meet local objectives and various criteria

- **2% annual investment maintains 1% mode transit share** – this investment per annum provides a status quo in mode share growth and an increase of approximately 17,000 service hours by 2038.
- **Staggered investment 2% to 5% (average 3.5%) 2% transit mode share –** this approach provides an initial short term period of reduced investment in service growth (to first deliver service efficiencies) and an initial step to restructure existing routes to the Frequent Transit Network. This type of strategy could also position the local government to banking or saving transit funding. Local funding saved could then be invested at future intervals to deliver greater service expansion and only as provincial funding becomes available. This type of investment would equate to an approximate average of 6,000 additional service hours every 5 years over the 25 year Transit Plan horizon and a respectable 2% mode share target by 2038.
- **4% annual investment 2.5% mode share-** per annum equates to an additional 45,000 total service hours by 2038 at an average of 8,800 services per the five year cohorts. This 4% investment strategy would deliver the RGS mode share target of 2.5% by 2031.
- **5% annual investment 3% mode share** – an addition of 64,800 total service hours by 2038 at an average of 12,600 service hours every five years. This is the most aggressive approach that could likely deliver a fully operation Frequent Transit Network in the short term, linking the key centers. This strategy also achieves the desired 3% mode share target by 2038 and aligns directly with the Comox Valley RGS and local OCP's.

Investment Strategy Costs

Table 2 details and compares for each investment strategy the estimated service hours in five year increments to the year 2038 and includes a calculation for the estimated total future cost and the Comox Valley's local net share cost[4] for the service hour expansion. **These cost estimates are based on the 2012/13 actual costs and are provided as a calculation to demonstrate that over the 25 year horizon of the Transit Future Plan the majority of additional funding would be facilitated through provincial budgets and the expected revenue based on historical ridership patterns**. As the Transit Future Plan develops and annual service plan options are presented to the Local Government, actual expected local costs and estimated revenue against proposed changes will be calculated using the most up to date financial and ridership data.

[4] The calculation for the local net share of cost for this discussion paper was determined through the average calculation of local cost per service hour for the last ten years. This calculates the local net share of cost over the last ten years to be on average 35 per cent of the total operational costs per annum.

Table 2: Five year Service Change Investment Strategy – Additional Annual Hours

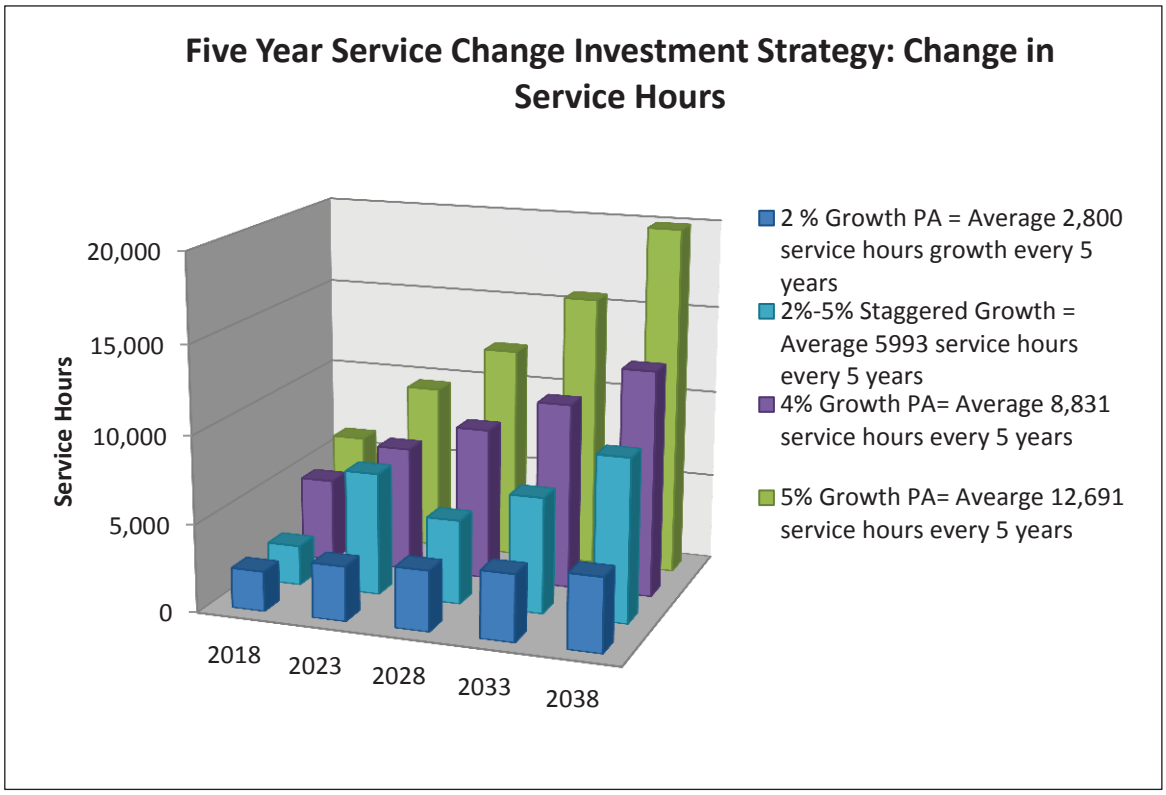
Five Year Service Change Investment Strategy - Additional Service Hours				
Year	**2% Additional Hours**	**Staggered (2-5%) Additional Hours**	**4% Additional Hours**	**5% Additional Hours**
2018	2,284	2,284	4,798	6,146
2023	3,121	6,984	7,159	9,577
2028	3,446	4,802	8,710	12,222
2033	3,804	6,594	10,597	15,599
2038	4,200	9,300	12,893	19,909
Average Service Hour Expansion Every 5 years	3,371	5,993	8,831	12,691
Total Service Hours 2038	44,577	60,741	72,401	91,970
Total Service Hour Increase	17,418	33,582	45,242	64,811
Projected Gross Cost *	$4,502,277	$6,195,626	$7,384,902	$9,380,940
Local Net Cost **	$1,575,797	$2,168,469	$2,584,716	$3,283,329
Local Net Cost less 2013 Cost	$615,721	$1,198,893	$1,615,134	$2,313,753

*Cost estimated on 2012/13 actual costs per service hour ** Costs estimated as 35% of projected gross cost

Change in Service Hours

Figure 4 represents the comparison and change in service hour for each proposed investment strategy over the five year service hour cohorts.

Figure 4: Five-Year Service Change Investment Strategy: Change in Service Hours



Evaluation and Effectiveness against the Transit Future Goals and Targets

The final step in determining the appropriate investment strategy for expansion of service hours for the Comox Valley is to assess each investment strategy against the drafted Transit Future Plan goals and targets. These goals and targets have been linked to key service priorities that have developed through the planning process.

Table 3 following provides the comparison of the proposed investment strategies and evaluates the effectiveness of each strategy against the key evaluation criteria.

Table 3: Comparison short term investment scenarios against the Draft Transit Future Plan key implementation criteria

Comparison of Short- term Expansion Scenarios	Option 1 2% Investment Growth Maintain mode share 1%	Option 2 Between 2% and 5% Staggered Investment Growth (average 3.5%) Achieves a 2% Mode Share	Option 3 4% Investment growth to meet the RGS mode share target of 2.5%	Option 4 5% Investment growth Achieves a mode share target of 3%
Conventional Transit System Growth Strategies				
Short Term (Five Year) Growth Service Hours	2,284	2,284	4,798	6,146
Short term (Five Year) Growth Transit Vehicles	1	1	2	3
Key Evaluation Criteria				
Be efficient and cost effective– improves existing route structure and delivers services where most required in the most cost effective manner.				
Attract new riders and increase ridership -Allows for some expansion of transit service on key routes				
Attract new riders and increase ridership - Provides more coverage to neighborhoods poorly served by transit				
Direct and align the Regions town centres and Rural neighbourhoods- Allows for development of the FTN- Provides more direct frequent service				
On track to meet the Transit Future Plan Mode Share Target of 3% by 2038				
Attract new riders and increase ridership and revenue – ability to meet demand at peak times and improve weekend and evening service in the medium term				

 Achieves Criteria  Does Not Achieve Criteria

Comox Valley Regional Transit System

Moving Forward - Funding the Plan - Alternative Revenue Strategies

Funding the Plan

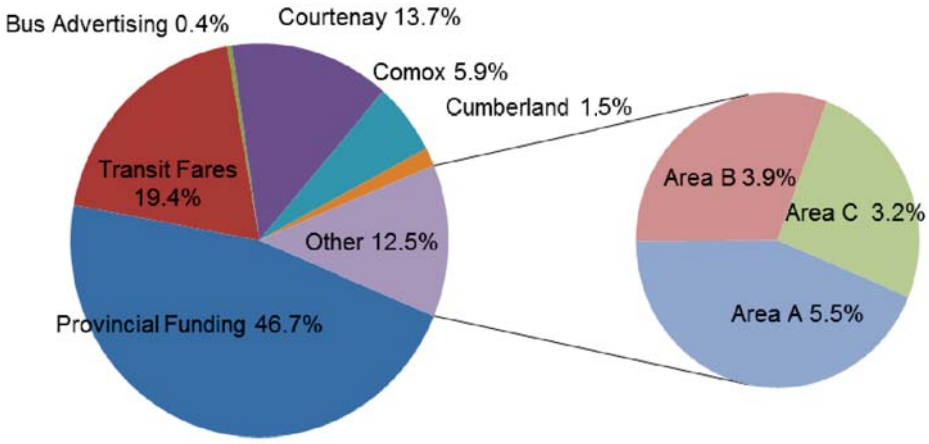
The draft Transit Future Plan for Comox Valley is in the process of being finalized to address the region's growing demands on the transit network 25 years from now, and identifies the services, infrastructure and investments needed to achieve the area's long-term transit planning objectives. To meet these growing service objectives, the area's transit fleet of 12 conventional vehicles could triple to 36, while service hours could grow from 27,000 hours to approximately 65,000 by 2038.

Given the significant increases in transit investment required over the coming decades, the way in which transit is funded needs to be re-examined. Today, the Comox Valley transit system is funded through a combination of provincial funding, local property tax, passenger fares and advertising revenue.

Figure 1 outlines the 2013 funding split for transit services in the Comox Valley Regional District, including provincial funding, revenue from transit fares, advertising and the local government property tax contribution percentages from each municipality and electoral area.

The provincial government provides the greatest share for conventional transit funding at 46.7% and transit revenue attained through ridership accounts for almost 20%. The Municipal area of Courtenay which also has the largest residential population contributes approximately 13.7% in property taxes. In comparison the Comox Valley rural jurisdictions, Electoral Areas A, B and C[1] provide a combined percentage of 12.5% property tax funding for the transit system.

Figure 1: Comox Valley 2013 Transit Funding Split



Rural jurisdictions Electoral Areas A, B and C, a combined property tax contribution of 12.5%

[1] Property Taxes collected in the Comox Valley for transit requisition are from a defined portion of Electoral area C only.

Transit has heard from local government that continuously increasing property tax to fund the local share of transit projects and operations, particularly for major capital investments is a growing challenge. To this end, local governments are asking for alternative funding sources.

As a part of BC Transit's 25-year Strategic Plan, one of the priorities is to "develop stable and predictable revenue sources." The proposed actions for this are to:

Develop stable revenue sources

- Assess various approaches to developing stable, secure provincial investment in transit;
- Work to identify and implement new revenue sources;
- Assess various approaches to developing stable, secure local investment in transit; and,
- Initiate a revenue committee to manage fare revenue strategies in partnership with local authorities.

Increase predictability

- Examine and implement improvements for conveying transit system budget information to local governments, such as the provision of multi-year budgets aligned to municipal calendar years; and,
- Continue to confirm the Provincial Government's BC Bus Pass program pricing (an annual pass program for lower income seniors and people with disabilities).

Implement new partnerships and revenue opportunities

- Seek to revise legislation, policies and procedures to encourage profitable commercial use of BC Transit assets and resources for reinvestment to further transit service objectives;
- Explore opportunities to offset BC Transit costs by leveraging BC Transit expertise and scope with other organizations (for example, synergies with other local transportation providers, BC Transit fleet procurement expertise or bulk fuel contracts); and,
- Continue to support local governments to offset costs from identifying and creating local transit funding partnerships with other agencies.

Alternative Local Funding Options

BC Transit has heard from local government that continuously increasing property tax to fund the local share of transit projects and operations, particularly for major capital investments, is a challenge. Reducing the local share funded through property taxes might be achievable through alternative funding sources. BC Transit is interested in developing concepts for alternative funding methods with local partners and the provincial government. Below are a number of concepts for further consideration. These options may require legislative changes and/or provincial government approval.

Local Fuel Tax

A tax on fuel could be collected at the pump at all gas stations in Comox valley to help fund transit.

- Already utilized in Metro Vancouver and Greater Victoria to fund local transit. This tax discourages driving and encourages public transit use, although by itself the effects in changing behavior are small. Public acceptance seems to be relatively high.

Community Pass

Each household could receive an annual transit pass paid for as part of their property taxes. Cost could be approximately half the cost of an annual transit pass.

- Has very high revenue potential and is likely to have large gains in transit use. May garner public opposition from non-transit users. This type of program would be best suited to a very mature and comprehensive transit system.

Parking Tax (meters)

A parking tax could be used to offset transit costs. It acts as an incentive to decrease parking demand, which in turn can make transit more attractive.

- Distributes costs broadly, collecting a relatively modest amount
- These fees would have moderate implementation costs and possible political opposition. It would be imperative that installation of parking meters occurs in both downtown Courtenay and downtown Comox and any collection of parking fees should be specifically directed to transit improvements.

Capital and Operational Reserve

A portion of property taxes could be put aside each year to build a capital reserve for transit infrastructure and services.

Vehicle Levy

An annual vehicle levy could be collected when vehicle insurance is renewed.

- These fee charges vehicle owners for external costs they impose and benefits they could gain from reduced congestion, but does not reflect the amount a vehicle is used.

Budget Development Process

Once the Transit Future Plan is approved it will act as a source of initiatives that drive BC Transit's operational and capital expansion process. This in turn guides budget development for BC Transit and the Comox Valley, as well as BC Transit's provincial budget submission.

Since provincial funding for transit is confirmed on an annual basis, implementation of any option requiring expansion is dependent on BC Transit's fiscal year budget, normally confirmed in mid-March each year. Implementation of specific service options and packages is also dependent on allocation of available provincial transit expansion funding between transit systems as determined through BC Transit's Transit Improvement Program (TIP).

Once local government has approved a service option or combination of options for implementation – and local and provincial funding has been approved, if required – an Implementation Agreement Memorandum of Understanding (MOU) will be developed for signature by all required parties including BC Transit. This MOU outlines the service changes to be developed for implementation and the roles and timeline for implementation. Once signed, changes to scope may change timelines. Detailed costing will be confirmed throughout implementation.