2018

TRANSIT SERVICE GUIDELINES

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TRANSLINK


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MAIN

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Introduction

TransLink is the transportation authority for the Vancouver metropolitan area. It has responsibility for planning, managing, and delivering an integrated regional transit network—including rapid transit, commuter rail, and bus services—to provide access and mobility for people across the region.

In consultation with stakeholders and customers, TransLink determines where demand is greatest, what types of service are most appropriate, and how resources are prioritized.

The Transit Service Guidelines provide a framework for achieving these objectives and delivering a transit network useful to the greatest number of people.

1.1 What are the Transit Service Guidelines?

The Transit Service Guidelines bring clarity and consistency to the process of adjusting and improving transit services to meet changing customer needs. They are founded on the principles of being:

- **Accountable.** Has clear expectations for performance, demand, service quality, and customer expectations.
- **Balanced.** Considers customers first, along with the needs of local communities, while ensuring the efficient and appropriate use of resources.
- **Collaborative.** Builds upon partnerships with the public, local government partners, and stakeholders to identify and address issues and opportunities proactively and collaboratively.

The Transit Service Guidelines are designed to provide flexibility in response to customer needs and community expectations in an accountable, equitable, and efficient manner. They also communicate expectations for service delivery to partner agencies and local governments, as well as to TransLink's customers and the public. The guidelines typically define minimum thresholds, which are often exceeded when applied to actual service.

The guidelines apply to conventional transit services, which include bus, ferry (SeaBus), and rail (SkyTrain, Canada Line, and West Coast Express). Other services, such as Access Transit services, are not included. Key components of transit service—e.g., safety, accessibility, facility design, and fleet design—are covered in separate standards and guidelines documents developed by TransLink.

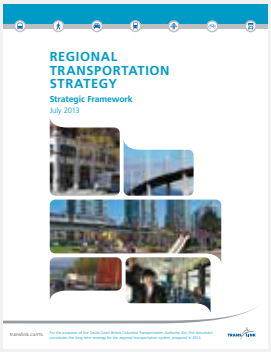
HOW ARE THE GUIDELINES USED?

The guidelines are used to:

- determine where service should be provided
- design service characteristics
- determine appropriate service levels
- measure and establish minimum levels of service performance

TransLink's ability to provide services consistent with the Transit Service Guidelines is influenced by available resources (in particular, available funding for transit operations), and by the investment priorities set out in the Regional Transportation Strategy and 10-year investment plans. If resources become constrained, TransLink will meet these guidelines as closely as possible and will work to achieve consistency as resources permit.

The guidelines can also help local governments make decisions about land use, which has a significant impact on the success of transit services. These and other guidelines, such as the Transit-Oriented Communities Design Guidelines, can assist local government partners to develop land use plans that support the type of transit they envision for their communities.



REFERENCE: REGIONAL TRANSPORTATION STRATEGY

The Regional Transportation Strategy (RTS) sets the vision, goals, principles, strategies, and key initiatives to help guide transportation decisions in the Vancouver metropolitan area over the next 30 years. It integrates TransLink's strategies for investing in system expansion, managing travel demand, and coordinating land use and transportation. The RTS also commits TransLink to advance performance-based transportation solutions that best serve the region and its citizens.

The 2013 RTS identifies the Transit Service Guidelines as the tool used to "develop and communicate meaningful, manageable, and measurable transit service performance guidelines to clarify the conditions under which different levels of transit will be provided."

1.2 Using the Transit Service Guidelines

TransLink uses the Transit Service Guidelines to support decision-making related to adding, adjusting, or eliminating transit service. Application of the guidelines and resulting changes to transit service planning and delivery are supported by the Transit Service Performance Review, a regular monitoring program on the performance of individual transit lines and services.

The TransLink publication Managing the Network Primer explains how TransLink makes transit service decisions to respond to service requests and evaluate potential new services. Changes may be considered to improve performance on routes that do not meet minimum performance guidelines. These changes could include a variety of options, depending on the reason(s) for not meeting the guidelines, such as reconfiguring the route alignment to attract more passengers, adding more trips or using a larger vehicle to alleviate overcrowding, considering how to provide an appropriate level of service on unproductive segments, or more closely matching service levels to demand.

REFERENCE: MANAGING THE NETWORK PRIMER

TransLink regularly monitors the transit network to see how people use the various services available to them. Based on what is seen, adjustments are made to improve both the efficiency and usefulness of the network. This task is called managing the transit network. It involves overseeing the service planning process and developing policy guidelines and performance indicators for transit service in the interest of maximizing personal mobility. This primer deals mostly with the management of bus services in the region, but many of the concepts can be applied to other forms of transit as well.

Processes to Plan and Manage the Network

The Transit Service Guidelines are applied during TransLink's regular transit service performance reviews, transportation investment plans, and ongoing community-based area plans.

TRANSIT SERVICE PERFORMANCE REVIEWS

To help manage the transit network, TransLink regularly reviews and modifies its transit services to increase efficiency and effectiveness. Each year, TransLink analyzes all transit routes in the system and publishes the Transit Service Performance Review. This review helps identify trends and opportunities for improvement by looking at the performance of the transit system and its components. TransLink tracks several performance indicators, including those contained in the Transit Service Guidelines. This analysis informs TransLink's annual service change process to improve service across the region and to match service levels with demand.

TRANSPORTATION INVESTMENT PLANS

Every three years (or more frequently, as needed), TransLink creates a 10-Year Investment Plan, which outlines the key initiatives, capital investments, and transportation services to be delivered. The plan details projected revenues and program expenditures on transit services, as well as on capital, operating, financing, and administration expenses for transit, roads, bridges, and cycling facilities across the region. The Transit Service Guidelines play a role in shaping expenditures for future transit services.

AREA PLANS

TransLink works with its municipal partners and consults with the public to develop geographically-focused, sub-regional, and community-based area plans. They provide a blueprint for aligning the local transit network with existing and expected land use and travel patterns. They also guide future investment in, and changes to, the regional transit network. To develop an area plan, the range of local issues, opportunities, needs, and constraints are balanced against the regional transit network priorities detailed in TransLink's Regional Transportation Strategy. Area plans work toward achieving the performance objectives articulated in the Transit Service Guidelines.

1.3 Understanding Service Types

TransLink provides a range of transit service types designed to meet different purposes, markets, travel demand levels, and objectives.

These service types are organized into seven categories: Rapid, All Day Frequent, Peak Frequent, Standard, Basic, Peak Only – Limited, and Special. All routes in TransLink's network are categorized based on purpose, frequency, and hours of operation.

Service types are defined independent of specifications for vehicle type (e.g., standard bus or articulated bus) and mode (e.g., bus, rail, or ferry). These characteristics are not defined because different vehicle types and transit modes could be used for different service types.

Transit Service Typology

SERVICE TYPE	SERVICE CHARACTERISTICS
Rapid	10 minutes or better frequency throughout the day, every day Evening service provided Exclusive, or predominantly exclusive, right-of-way like a bus-only lane or rail corridor; could be rail or bus
All Day Frequent	15 minutes or better frequency throughout the day, every day Evening service provided
Peak Frequent	15 minutes or better frequency in peak period and/or in peak direction; less frequent at other times
Standard	15 to 30 minutes' frequency throughout the day, every day Evening service provided
Basic	30 to 60 minutes' frequency on weekdays; may or may not operate throughout the entire day or 7 days per week
Peak Only – Limited	Service offered only in peak periods and only on weekdays; service frequency may vary
Special	Special services that perform unique purposes; covers NightBus, SeaBus, and West Coast Express

WHAT ARE "SPECIAL" SERVICES?

Special services are planned and designed to leverage unique circumstances in the region. The three types of special services include:

- NightBus – basic overnight service provided after regular transit service has ended
- SeaBus – passenger ferry connecting Downtown Vancouver (Waterfront Station) with the North Shore (Lonsdale Quay Station)
- West Coast Express – commuter rail service operating between Mission and Downtown Vancouver

Frequent Transit

Frequent transit means customers can expect reliable, convenient, easy-to-use services that are frequent enough to eliminate the need to refer to a schedule. Three key transit network elements provide frequent transit and, though they are not service types listed in the Transit Service Guidelines, the terms are used publicly to describe lines or corridors with frequent service.

FREQUENT TRANSIT NETWORK

TransLink's Frequent Transit Network (FTN) is a network of corridors where daily transit service runs at least every 15 minutes in both directions until 9:00 pm, every day. FTN service may be provided by one or more types of transit along the same corridor as long as the combined services provide 15-minute or better service.

SKYTRAIN

The SkyTrain network provides fast, convenient service within an exclusive right-of-way with high levels of frequency and reliability throughout the day and evening. SkyTrain services act as the backbone of the transit network, connecting key destinations across the region.

B-LINE

TransLink's B-Lines provide limited-stop bus services that run every 15 minutes or more often, throughout the day, every day of the week. To improve bus speed and reliability, streets with B-Line service may include enhanced service features, such as transit priority and customer amenities. B-Line service branding is currently being updated.

2

Transit Service Guidelines

The Transit Service Guidelines are intended to remain a flexible tool to plan and manage the transit system. This flexible approach—rather than a standards/policy-based approach—aligns with best practices for service guidelines. It also recognizes the role of the Regional Transportation Strategy and future Investment Plans in establishing priorities for transit resources. These guidelines are one tool available to inform service planning decisions.

2.1 Overview

The Transit Service Guidelines are organized around three key themes:

Demand-oriented Service

TransLink coordinates with municipal and regional partners to align the transit network with existing and planned growth and development to ensure services meet demand and grow ridership. Guidelines under this theme help TransLink provide access across the region, including connectivity to local and regional destinations, and opportunities for added service in growing areas.

Useful Service

To make transit a convenient, reliable, and comfortable choice for customers, the guidelines under this theme help to deliver service with reliable travel times, convenient points of connection, and appropriate time spans and frequencies. Focusing on the customer, TransLink's services should be useful to as many people as possible.

Productive and Efficient Service

To ensure delivery of productive and cost-effective transit services to the region, guidelines under this theme help TransLink balance agency and regional goals related to equity, efficiency, and effectiveness.

OVERVIEW TO THE DESIGN GUIDELINES

The guidelines within each theme outline service performance, quality thresholds, and targets that strike a balance between being aspirational and achievable. These guidelines were developed based on transit performance in the region, and are backed with best practices in developing service guidelines from other major metro regions.

Guideline values are subject to periodic updates, as the values are derived from actual performance of routes within each of the service types which change from time to time.

2.2 Layout and Organization

Section Title: presents the theme title with colour-coded label

Section Introduction: provides an overview of the theme and important considerations

U

Useful Service

TransLink strives to make its services useful for as many people as possible. By making transit a reliable, convenient, and comfortable choice, TransLink provides more options for its customers, alongside high-quality transportation services to as many people as possible.

Providing useful service relates to TransLink adapting services to meet the region's travel and mobility needs in ways that maximize ridership, provide basic coverage, and/or support long-term ridership growth. While the design of service will not be the same in every part of the region, TransLink's approach to providing service will be consistent. TransLink has a variety of policy, planning, and design guideline documents that identify approaches to improving access to transit and accessibility, including the Transit-Oriented Communities Design Guidelines.

There are many elements of a transit trip—on the website or looking at a map, at the stop or station, on the bus or train—that impact a person's perception and experience of the quality of service. While it is important for TransLink to measure as many elements of the customer experience as possible, many of these factors fall outside of the realm of service planning and decision-making.

Such passenger amenities as good lighting, covered bicycle parking, and real-time bus arrival information are addressed in TransLink's Transit Passenger Facility Design Guidelines.

TIME PERIODS FOR SERVICE PLANNING

Because service levels and demand vary throughout the day, many guidelines have different targets and thresholds for different time periods:

Peak Weekday:
6:00 – 9:00 am and
3:00 – 6:00 pm

Midday Weekday:
9:00 am – 3:00 pm

Evenings (all days):
6:00 pm – 12:00 midnight

Saturday:
8:00 am – 6:00 pm

Sunday:
9:00 am – 6:00 pm

U.1 Passenger Load

What is it?

Passenger load is a measure of how full a transit vehicle is, on average, at its busiest point or peak on a route.

Why does it matter?

Passenger load helps TransLink determine how full or crowded our services become while in service. If a bus or train only ever has a low passenger load, it could mean either there is too much service on a route for current demand or a lower-capacity transit vehicle should be used.

If a bus or train has a high passenger load, it could mean there is not enough service or a higher capacity transit vehicle is needed. A high passenger load can contribute to a negative riding experience, such as standing for an uncomfortable amount of time, struggling to get on or off the vehicle, or being passed up, which can lead to customers being late or missing an important connection.

How is it measured?

Passenger load is measured using the peak load factor. The peak load factor is the ratio of average passengers carried versus the capacity or space available on a vehicle, expressed as a percentage. A passenger load factor of 100% means the vehicle is at capacity.

The peak load factor is calculated by dividing the average load on a transit vehicle at its busiest point by the number of spaces (seats plus standing space) provided on each trip.

The capacity of TransLink's various transit vehicles is provided in 3.1 Vehicle Capacity Reference Table. These capacities account for a reasonable amount of space for both seated and standing passengers.

REFERENCE: TRANSIT PASSENGER FACILITY DESIGN GUIDELINES

Responsibility for delivering effective transit facilities is often shared between local jurisdictions, developers, and TransLink and its many project partners. With so many potential players involved in the delivery of transit passenger environments, the Transit Passenger Facility Design Guidelines serve as a principal reference for ensuring design consistency and excellence across all modes, projects, and environments. The Guidelines are intended for all parties involved in the planning, design, implementation, and operation of transit passenger facilities.

Context Sidebar: offers useful context for the information provided in the section

Reference Sidebar: identifies other supporting guidelines or standards

Guideline Title: identifies the guideline

Guidelines: provides the guideline details for each service type

Useful Service

U.2 Stop Spacing

What is it?

Stop spacing is the distance between stops along a route.

Why does it matter?

Stop spacing has an impact on the speed and reliability of a service, as well as on a customer's ability to access a service. Too many stops make travel slow and transit less useful and convenient. Too few stops mean less opportunity to access a service, even if it travels close by. The need for fast and reliable transit service is balanced with providing convenient access to the system when considering where stops should be placed.

How is it measured?

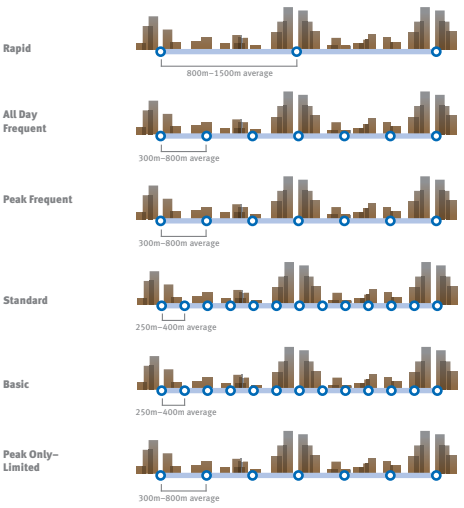
Stop spacing is measured by dividing the total distance of a given route by the total number of stops on the route minus 1. This measure provides average stop spacing in metres.

While the average stop spacing on a line should fall between the ranges provided in the guidelines, the actual distance between any two stops on a route can vary, depending on such factors as:

- topography
- road design
- land use
- location of sidewalks

Useful Service

Guideline: Stop Spacing



Notes:

- B-Lines or routes operating on highways will have wider stop spacing.
- For areas where existing land uses will not generate passenger trips—e.g., agricultural, heavy industrial, or low-density areas—exceptions to the stop spacing guidelines may be applied.
- **Special:** stop spacing for these services is provided on a case by case basis.
- **Standard & Basic:** stops in areas with high concentrations of seniors, people with disabilities, and other special needs may be spaced closer together to facilitate easier access to transit.

Theme Tab: identifies the relevant theme related to the guideline

Description: explains what is it, why it matters, and how it is measured

D

Demand-oriented Service

Transit and land use work hand-in-hand to support strong, sustainable communities. The design of the transit network should meet different levels of demand across the region to support an effective transit system that benefits the most people. Though TransLink provides service throughout the region, different types of land use and neighbourhood design support different levels of transit service. TransLink works together with the region's municipalities and other key partner agencies towards the alignment of land use and transportation investments, and to proactively address new opportunities to increase demand, seek efficiencies, and align plans to meet shared goals.

TransLink's Transit-Oriented Communities Design Guidelines provides context for this theme. The 6 Ds—destinations, distance, design, density, diversity, and demand management—are described in the guidelines as important to framing land use considerations.

Guidelines in this section are not intended to be used as a formula for providing transit. Coordinating service with land use is, however, an ongoing and evolving effort between TransLink and local partners. The Vancouver metropolitan area is a diverse region, and local context is an integral part of the decision-making process. The guidelines help to strike a balance between providing a basic level of service across the region and providing faster and more frequent service in areas where demand is higher. These guidelines are intended to be a resource in framing this discussion among TransLink, local government partners, other key partner agencies, developers, and the public about where different types of services may be most appropriate.

TransLink applies different guidelines for appropriate types of service, based on the characteristics of the areas within walking distance of such service. These guidelines come into consideration when providing new service or changing existing service.

REFERENCE: TRANSIT-ORIENTED COMMUNITIES DESIGN GUIDELINES

Transit-oriented communities are places that, by their design, allow people to drive less and to walk, cycle, and take transit more. In practice, this means they concentrate higher-density, mixed-use, human-scale development around frequent transit stops and stations. Transit-oriented communities also make it possible to operate efficient, cost-effective transit service. The Transit-Oriented Communities Design Guidelines provide a more detailed resource for municipalities and other stakeholders involved in community planning processes across the region to further the development of more transit-oriented communities in Metro Vancouver.

The 6 Ds of Transit-Oriented Community Design

The Transit-Oriented Communities Design Guidelines are organized around the 6 Ds, characteristics that describe the land use and built environment elements that influence demand for transit.

DESTINATIONS

Coordinate land use and transportation

When land use and transportation are well coordinated, transit can provide fast, direct, and cost-effective access to more destinations for more people. Proximity to regional destinations provides an anchor for routes, and also influences transit ridership.

DISTANCE

Create a well-connected street network

A well-connected street network shortens travel distances, making it possible for people to quickly and conveniently connect with transit en route to their destination.

DESIGN

Create places for people

Transit-oriented communities are carefully designed with the needs of people in mind. Multi-modal streets and great public spaces enable people of all ages and abilities to access and enjoy a comfortable, safe, delightful, and inviting public realm.

DENSITY

Concentrate and intensify activities near frequent transit

Transit-oriented communities concentrate most growth and development within a short walk of frequent transit stops and stations. A higher density of homes, jobs, and other activities creates a market for transit, allowing frequent service to operate efficiently.

DIVERSITY

Encourage a mix of uses

A vibrant mix of land uses helps to create complete, walkable neighbourhoods around transit stations and stops, and supports a transit system that is well-utilized throughout the day.

DEMAND MANAGEMENT

Discourage unnecessary driving

Transit-oriented communities use transportation demand management strategies, such as parking management, to discourage unnecessary driving and to promote walking, cycling, and transit.

D.1 Transit-supportive Land Use and Demand

What is it?

The 6 Ds describe land use and built environment elements that influence demand for transit. Interactions among these six characteristics help to estimate potential demand for transit. Transit-supportive land use and demand guidelines indicate the characteristics of adjoining land uses that will allow transit to be productive and effective in meeting the needs of the community.

Land use characteristics help shape demand for transit, which in turn shapes the level of service provided. No single land use characteristic, or combination of characteristics, provides an accurate indicator of how transit service will perform in a given land use setting; rather, it is often the combination of all six indicators that determines which particular service type is the best match for an area.

Passenger demand is the level of consumer demand for transit services in a community or area. It can be thought of as the output of these land use and built environment characteristics. Demographic factors also shape passenger responses to varying levels of transit service and must be accounted for in any decision process. These distinctions explain why some routes with nearly identical land use characteristics can have widely differing performance, and why a simple formula cannot be applied to forecast ridership response to a particular type of service for a given set of land use characteristics.

Why does it matter?

Land use guidelines provide one indication to assist TransLink in matching the right service to the potential level of demand for transit service in a given area. Different land use and built environment elements provide one indicator of the potential demand for transit. Passenger demand is a key outcome of these land use indicators, which drives many decisions made by TransLink about where and what kinds of transit service to provide. Once service is provided, changes in the level of demand or ridership provide the impetus for a change in service type.

Land use characteristics alone will not always predict transit ridership response to a given level of service. When considering deploying transit service in new markets, additional factors are important in addition to land use, such as route and network connectivity, other mobility options, built environment characteristics, and demographics.

How is it measured?

There are many ways to measure and describe the 6 Ds. Some are easy to measure (e.g., the density of people living in an area), while others are more subjective and difficult to capture in a single measure. These guidelines use definitions of the 6 Ds identified in TransLink's Transit Oriented Communities Design Guidelines:

- **Destinations.** The number and type(s) of route anchors and major destinations along a corridor. Major destinations include rapid transit stations, post-secondary education institutions, regional shopping malls, and regional and municipal town centres.
- **Distance.** The number of intersections per hectare within walking distance of a transit corridor.
- **Design.** How people-friendly urban design is, such as sidewalks on both sides of the street, buildings oriented toward the street, and parking tucked behind buildings.
- **Density.** The number of people and jobs per hectare within walking distance of a transit corridor.
- **Diversity.** The mix and variation of land uses along a corridor, such as the mix of residential, employment, and/or retail land uses.
- **Demand Management.** The number and types of demand management programs in place along a given route, such as paid parking and parking availability.

Passenger demand is a key outcome of the 6 Ds. For this guideline, the potential for passenger demand is measured by weekday boardings, which are indexed by service revenue hour. Passenger demand is also used as an efficiency guideline (see PE.1 Boardings Per Revenue Hour).

Because the 6 Ds are indicators of demand, the service types also relate to the level of demand experienced along a corridor. Land use characteristics and transit service characteristics build off of each other. A high-frequency service is unlikely to produce significant ridership in an area with characteristics that are not transit-supportive.

If both service and land use characteristics are in harmony, the ridership and productivity will likely follow from the appropriate level of service.

WHAT INFLUENCES TRANSIT RIDERSHIP?

The 6 Ds are one influence on how effective a service might be in meeting regional objectives. Equally as influential is the demographic make-up of potential riders. Transit ridership is influenced by such demographic characteristics as age, income level, employment type and level, auto-ownership, household size, housing tenure, and cultural identity.

Similar to the physical characteristics of an area, no one or two combinations of these factors is an absolute indicator of a successful transit service. But, taken together, physical and demographic characteristics can explain why transit ridership is more responsive to a given service type in one area over another.

Guideline: Transit-Supportive Land Use

SERVICE TYPE	DESTINATIONS	DISTANCE	DESIGN	DENSITY	DIVERSITY	DEMAND MGMT	MIN AVG PASSENGER DEMAND/ REVENUE HOUR
Rapid	Rapid transit investments have been, and will continue to be, the result of specialized studies focused primarily on high-performing All Day Frequent routes. Investment decisions on these corridors will be reached regionally on a corridor-by-corridor basis.						
All Day Frequent	High number of anchors along corridor, connection with Rapid stops and stations are key	0.6–0.9 intersections/ hectare	Generally operates in highly walkable and bikeable environments	40–100 people and jobs/hectare (median)	High level of land use mix, high levels of retail activity	Moderate to high parking cost with low to moderate supply	50–60*
Peak Frequent	High number of anchors along corridor, connection with Rapid stops and stations are key	0.3–0.9 intersections/ hectare	Moderately walkable and bikeable environments	35–80 people and job/hectare (median)	Medium-high level of land use mix along corridors, often dominated by high employment not related to retail	Low to moderate parking cost with moderate supply	35–40*
Standard	Medium number of anchors along corridor	0.5–0.9 intersections/ hectare	Generally operates in moderately walkable and bikeable environments	30–70 people and jobs/hectare (median)	Medium level of land use mix along corridor; often has a dominant land use form, such as housing or office/ industrial type employment	Low to no parking cost, with moderate to high supply	27–32*
Basic	Low number of anchors along corridor	0.2–0.7 intersections/ hectare	Generally operates in moderate-low walkable and bikeable environments	30–60 people and jobs/hectare (median)	Lower level of land use diversity along corridor, often	No parking cost, with high supply	15–20*
Peak Only – Limited	This specialized service type is directed to assist in accommodating peak loads in particular locations. It generally supplements regular service, based more on exhibited passenger demand than on surrounding land use characteristics. As such, no land use criteria have been established for this service type.						
Special	NightBus, SeaBus and West Coast Express are specialized services that have unique characteristics and transit planning contexts; therefore, no land use criteria have been established for this service type.						

*Weekday boardings per service revenue hour in peak and midday periods.

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Useful Service

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Providing useful service relates to TransLink adapting services to meet the region's travel and mobility needs in ways that maximize ridership, provide basic coverage, and/or support long-term ridership growth. While the design of service will not be the same in every part of the region, TransLink's approach to providing service will be consistent. TransLink has a variety of policy, planning, and design guideline documents that identify approaches to improving access to transit and accessibility, including the Transit-Oriented Communities Design Guidelines.

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Such passenger amenities as good lighting, covered bicycle parking, and real-time bus arrival information are addressed in TransLink's Transit Passenger Facility Design Guidelines.

TIME PERIODS FOR SERVICE PLANNING

Because service levels and demand vary throughout the day, many guidelines have different targets and thresholds for different time periods:

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3:00 – 6:00 pm

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U.1 Passenger Load

What is it?

Passenger load is a measure of how full a transit vehicle is, on average, at its busiest point or peak on a route.

Why does it matter?

Passenger load helps TransLink determine how full or crowded our services become while in service. If a bus or train only ever has a low passenger load, it could mean either there is too much service on a route for current demand or a lower-capacity transit vehicle should be used.

If a bus or train has a high passenger load, it could mean there is not enough service or a higher capacity transit vehicle is needed. A high passenger load can contribute to a negative riding experience, such as standing for an uncomfortable amount of time, struggling to get on or off the vehicle, or being passed up, which can lead to customers being late or missing an important connection.

How is it measured?

Passenger load is measured using the peak load factor. The peak load factor is the ratio of average passengers carried versus the capacity or space available on a vehicle, expressed as a percentage. A passenger load factor of 100% means the vehicle is at capacity.

The peak load factor is calculated by dividing the average load on a transit vehicle at its busiest point by the number of spaces (seats plus standing space) provided on each trip.

The capacity of TransLink's various transit vehicles is provided in 3.1 Vehicle Capacity Reference Table. These capacities account for a reasonable amount of space for both seated and standing passengers.

REFERENCE: TRANSIT PASSENGER FACILITY DESIGN GUIDELINES

Responsibility for delivering effective transit facilities is often shared between local jurisdictions, developers, and TransLink and its many project partners. With so many potential players involved in the delivery of transit passenger environments, the Transit Passenger Facility Design Guidelines serve as a principal reference for ensuring design consistency and excellence across all modes, projects, and environments. The Guidelines are intended for all parties involved in the planning, design, implementation, and operation of transit passenger facilities.

Passenger load is a key indicator of a passenger's level of comfort. Passengers who have a choice between sitting or standing or, if required to stand, have enough space to move freely through the vehicle and will feel more comfortable during their journey.

Definition of Load Factors for Passenger Comfort

LOAD FACTOR (% OF CAPACITY UTILIZED)	RAPID SERVICE TYPE	ALL OTHER SERVICE TYPES
 100% or higher	» All seats are full and all standing space is occupied. » The vehicle is overcrowded, and accessing the doors may be difficult for many passengers. » Standing passengers will need to step off the bus to let others exit. » Pass-ups are likely at some stops.	
 84% to 99%	» All seats are full and most standing space is occupied. » The vehicle is crowded, and accessing the doors may be difficult for some passengers. » Standing passengers will need to shift position as other passengers board/exit.	
 67% to 83%	» All seats are occupied, and half of the passengers are standing. » Some passengers will have to move around for others to board or exit the train.	» All seats are occupied, and several passengers are standing. » Some passengers may have to move around for others to board or exit the bus.
 51% to 66%	» All seats are occupied, and about one-third of all passengers are standing. » Boarding or exiting the train occurs without difficulty.	» Most seats are occupied, and a few passengers are standing. » Boarding or exiting the bus occurs without difficulty.
34% to 50%	» All seats are occupied, and about one-quarter of all passengers are standing. » Boarding or exiting the train occurs without difficulty.	» Most seats are occupied, and people need to sit next to each other if they want a seat. » Passengers standing are doing so by choice, not necessity.
0% to 33%	» Seats may be available for some boarding passengers. » A few passengers will choose to stand.	» Half of the seats (or less) are occupied, and no passengers are standing. » Few passengers need to sit next to someone. » Passengers have some freedom in where they can sit.

Note: The load factor range may change as the number of seats on a vehicle changes. Descriptions of load factors for passenger comfort are adapted from the Transit Capacity and Quality of Service Manual.

Acceptable average peak load factors vary by service type and time of day. Most customers expect transit to be busier (with fewer seats available) during peak commute periods, and acceptable load factors are set higher during these periods.

Guideline: Maximum Acceptable Average Passenger Load Factor

SERVICE TYPE	PEAK WEEKDAY	MIDDAY, SATURDAY, SUNDAY	EVENING
Rapid	No more than 15% of trips. No more than 50% of trips.	No more than 25% of trips.	No more than 5% of trips. No more than 25% of trips.
All Day Frequent*	No more than 10% of trips. No more than 50% of trips.	No more than 15% of trips.	No more than 5% of trips. No more than 25% of trips.
Peak Frequent	No more than 10% of trips. No more than 50% of trips.	No more than 15% of trips.	No more than 5% of trips. No more than 25% of trips.
Standard	No more than 10% of trips. No more than 50% of trips.	No more than 5% of trips. No more than 25% of trips.	No more than 5% of trips. No more than 10% of trips.
Basic	No more than 10% of trips. No more than 50% of trips.	No more than 5% of trips. No more than 25% of trips.	No more than 5% of trips. No more than 10% of trips.
Peak Only – Limited	No more than 10% of trips. No more than 50% of trips.	No more than 15% of trips.	No more than 5% of trips. No more than 25% of trips.
Special – NightBus	In recognition of the different type of service that NightBus provides, TransLink has different expectations for crowding on NightBus which are addressed through a separate strategy.		
Special – SeaBus	SeaBus, by regulation, has a fixed capacity that cannot be exceeded, and measures of its usability will vary from other service types.		
Special – West Coast Express	West Coast Express does not conform to load factor guidelines, but rather responds to passenger capacity levels.		

Load factor

100% or higher

84% to 99%

67% to 83%

51% to 66%

*For services operated with vehicles designed for highway operation, the load factor guideline remains the same as the load factor guideline for the service type; these vehicles are designed to have a higher seated capacity and lower standing capacity.

U.2 Stop Spacing

What is it?

Stop spacing is the distance between stops along a route.

Why does it matter?

Stop spacing has an impact on the speed and reliability of a service, as well as on a customer's ability to access a service. Too many stops make travel slow and transit less useful and convenient. Too few stops mean less opportunity to access a service, even if it travels close by. The need for fast and reliable transit service is balanced with providing convenient access to the system when considering where stops should be placed.

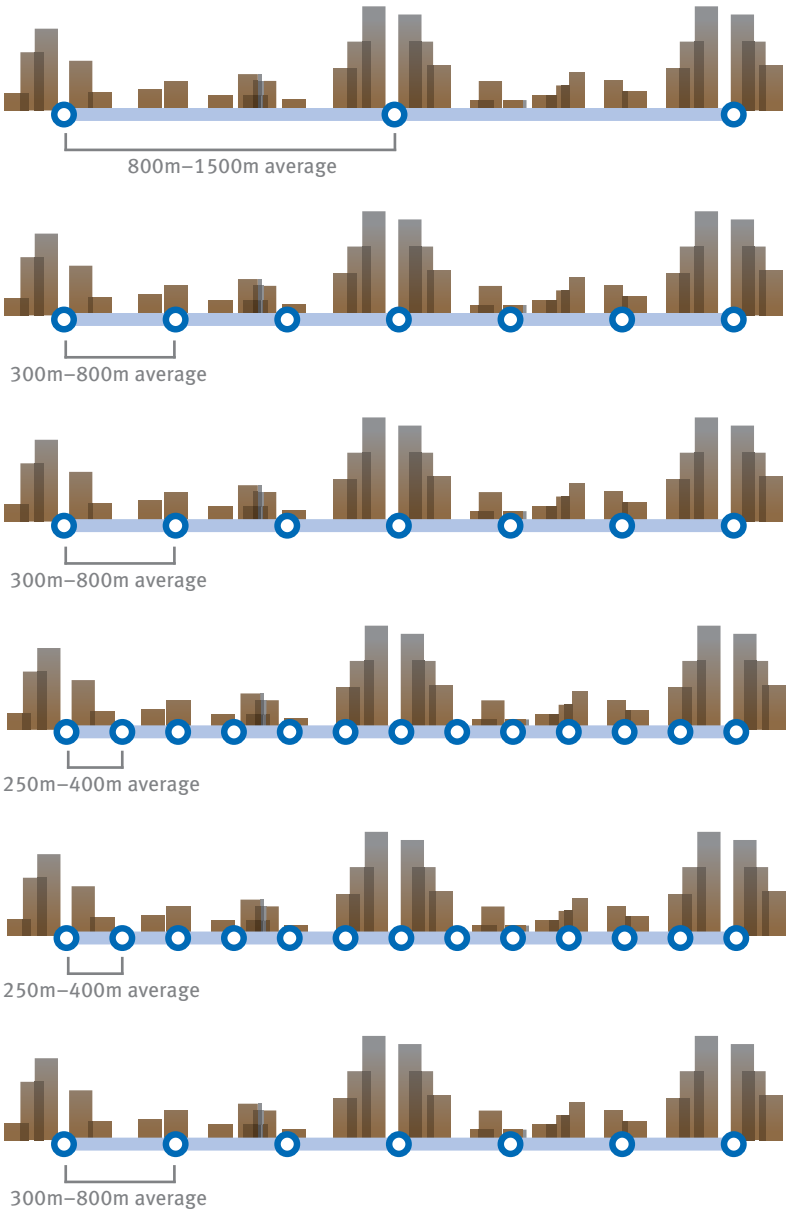
How is it measured?

Stop spacing is measured by dividing the total distance of a given route by the total number of stops on the route minus 1. This measure provides average stop spacing in metres.

While the average stop spacing on a line should fall between the ranges provided in the guidelines, the actual distance between any two stops on a route can vary, depending on such factors as:

- topography
- road design
- land use
- location of sidewalks

Guideline: Stop Spacing



Notes:

- B-Lines or routes operating on highways will have wider stop spacing.
- For areas where existing land uses will not generate passenger trips—e.g., agricultural, heavy industrial, or low-density areas—exceptions to the stop spacing guidelines may be applied.
- **Special:** stop spacing for these services is provided on a case by case basis.
- **Standard & Basic:** stops in areas with high concentrations of seniors, people with disabilities, and other special needs may be spaced closer together to facilitate easier access to transit.

U.3 Service Frequency

What is it?

Service frequency is how often a transit vehicle picks up passengers at a stop; for example, a bus might arrive every 10 minutes during peak commute periods, while a West Coast Express train might arrive every 30 minutes.

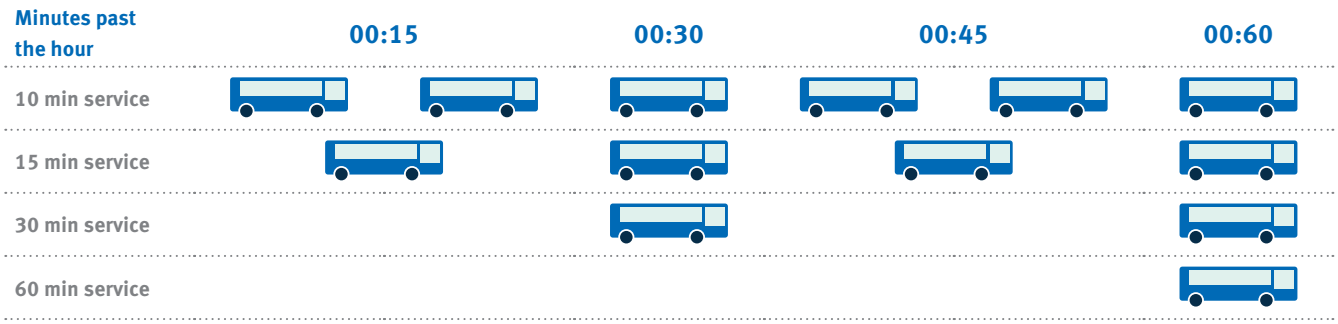
Why does it matter?

The higher the frequency and the more attractive and useful the service, the less coordination is required to time connections between routes. TransLink balances needs for frequency across the network and allocates resources to provide the most efficient service to the most riders.

How is it measured?

Service frequency is measured by how often, on average, a trip occurs on a given transit line. Guidelines include minimum and target frequencies that vary depending on type of service, time of day (e.g., peak, midday, evening, night), and direction of travel.

Overview of Service Frequency



Guideline: Service Frequency

SERVICE TYPE		PEAK WEEKDAY	MIDDAY WEEKDAY	EVENING	WEEKEND/HOLIDAY
Rapid		Every 10 minutes or better in both directions.	Every 10 minutes or better in both directions.	Every 15 minutes or better in both directions.	Every 10 minutes or better in both directions.
All Day Frequent		Every 15 minutes or better in both directions.	Every 15 minutes or better in both directions.	Every 15 minutes or better in both directions, dropping to every 30 minutes or better in late evening.	Every 15 minutes or better in both directions.
Peak Frequent		Every 15 minutes or better in peak direction. Every 30 minutes or better in non-peak direction.	Service frequency during other time periods will vary.		
Standard		Every 15 to 30 minutes in both directions.	Every 15 to 30 minutes in both directions.	Every 15 to 30 minutes in both directions, dropping to every 60 minutes or better in late evening.	Every 15 to 30 minutes in both directions.
Basic*		Every 30 to 60 minutes in both directions.	Every 30 to 60 minutes in both directions (if provided).	Every 30 to 60 minutes in both directions (if provided).	Every 30 to 60 minutes in both directions (if provided).
Peak Only – Limited		Every 15 to 30 minutes in the peak direction.	No service provided.	No service provided.	No service provided.
Special	NightBus	Every 15 to 60 minutes during late night period only, depending on demand.			
	SeaBus	Every 15 minutes or better in both directions.	Every 15 minutes in both directions.	Every 15 to 30 minutes in both directions.	Every 15 to 30 minutes in both directions.
	West Coast Express	Every 30 minutes.	No service provided.	No service provided.	No service provided.

*Basic services are tailored based on community needs; they may not offer service for all day or time periods.

U.4 Span of Service

What is it?

Span of service is the hours of operation for a specific transit service, from the time of departure of the first trip of the day at the first stop, to the time of arrival of the last trip of the day at the last stop.

Some services run only during weekday commute times, some services operate all day, and others run all day and late into the night.

Why does it matter?

Span of service, like frequency, is influenced by demand and travel patterns along a route. The more passenger demand is spread out over an entire day and into the evening, the longer the span of service.

How is it measured?

Span of service is measured as the minimum time period service is provided. Minimum span of service guidelines define the earliest and latest times different types of service should operate. Higher ridership services will have longer spans of service, and lower ridership services will have shorter spans of service.

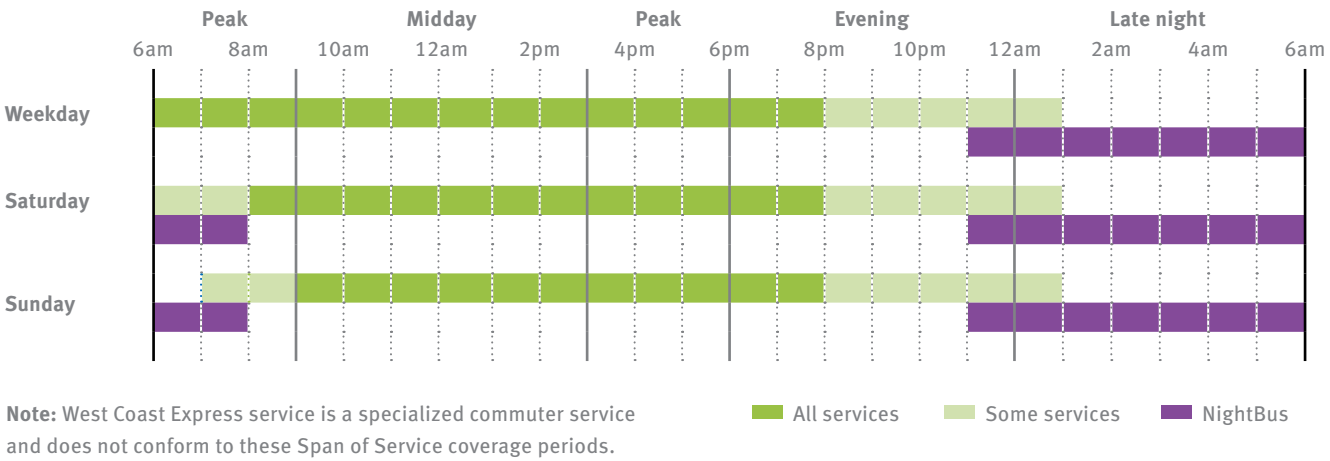
Span of service guidelines vary depending on service type, current travel patterns—as indicated by ridership levels during different times of day—and expected travel demand patterns, such as service to new employment centres.

KEY CONSIDERATIONS

Span of service decisions consider several factors, including:

- performance of the earliest and latest trips on the route
- demographic or land use changes to an area served by the route
- service to connecting rapid transit stations to meet the first or last train

Minimum Span of Service for all services types



Note: West Coast Express service is a specialized commuter service and does not conform to these Span of Service coverage periods.

Guideline: Span of Service

SERVICE TYPE		WEEKDAY	SATURDAY	SUNDAY/HOLIDAY
Rapid		5:00 am to 1:00 am	6:00 am to 1:00 am	7:00 am to 1:00 am
All Day Frequent		5:00 am to midnight	6:00 am to midnight	7:00 am to midnight
Peak Frequent		5:00 am to midnight	6:00 am to midnight, if provided	7:00 am to midnight, if provided
Standard		6:00 am to 9:00 pm	7:00 am to 9:00 pm	8:00 am to 9:00 pm
Basic*		6:00 am to 8:00 pm	8:00 am to 8:00 pm	9:00 am to 8:00 pm
Peak Only – Limited		6:00 am to 9:00 am and/ or 3:00 pm to 6:00 pm	No service provided	No service provided
Special	NightBus	Span may vary greatly between 11:00 pm and 8:00 am depending on route and day, but core hours are 1:00 am to 5:00 am		
	SeaBus	6:00 am to 1:00 am	6:00 am to 1:00 am	8:00 am to 11:00 pm
	West Coast Express	Westbound: 5:00 am to 9:00 am Eastbound: 3:00 pm to 8:00 pm	No service provided	No service provided; holiday service varies

*Basic services are tailored based on community needs; they may not offer service for all day or time periods.

U.5 Punctuality and Regularity

What is it?

Punctuality means the transit service will arrive and leave on schedule and is also referred to as on-time performance or schedule adherence. Regularity refers to a consistent time between transit vehicles along the same route.

Punctuality and regularity are factors of reliability. Reliable services arrive on time, or close to it, every day or arrive within consistent headways between vehicles (e.g. every 15 minutes). Reliability is one of the most important qualities of great transit service.

Why does it matter?

Inconsistent services that arrive late or depart early result in unreliable service and longer, inconsistent wait times for passengers. Unreliable service can also lead to overcrowded buses followed closely by near-empty ones—called "bus bunching." As buses get delayed, there will be more passengers than normal waiting at the next stop. The extra boarding time will make the bus even later, and the delays greater.

Many factors can delay transit and impact punctuality and regularity, such as traffic, construction, collisions, detours, volume of passengers, and weather.

As service becomes more frequent there is a reduced dependence on the punctuality of any single transit vehicle. In these instances, a consistent headway, or regularity, between vehicles is an important factor in measuring reliability.

CONNECTIONS BETWEEN SERVICES

TransLink plans for timed-transfers between low frequency services (basic and standard types) and other low frequency or special service types. Timed connections between low frequency services should continue to be established, when appropriate, at transit exchanges, bus loops, rapid transit stations, and other key locations to allow safe and convenient transfers. Un-timed transfers/connections are expected for trips on, or between, more frequent services.

How is it measured?

Punctuality is measured by comparing the number of on-time trips leaving at timing points along a route to the total number of trips for the route.[1] A trip is considered on time if it leaves a timing point between one minute earlier and three minutes later than the scheduled time (this definition is adopted from the International Bus Benchmarking Group, which provides industry standards).

Punctuality is largely driven by location or corridor served (not service type), which can be impacted by unavoidable factors such as traffic, construction, congestion, weather, and other road events; therefore, guidelines for punctuality of services sharing rights-of-way with automobiles are set well below 100%.

Guideline: Punctuality

Note: SeaBus trips must also arrive no more than 3 min late; West Coast Express trips must arrive at the terminus station no more than 5 mins late.

[1] In this document, punctuality is measured using departure times, but we recognize that there are other ways to measure this criteria, including using arrival times.

Regularity is measured by determining whether a consistent headway (i.e., the number of minutes between transit vehicles) is maintained.[2]

This measure is used only for high-frequency services, when transit vehicles are scheduled along a route to run a consistent number of minutes apart, such as service every 15 minutes or better.

Guideline: Regularity

SERVICE TYPE	SERVICE CHARACTERISTICS
Rapid	Vehicle will arrive within 3 minutes of the scheduled headway, 95% of the time.
All Day Frequent	Service will operate at no more than 120% of scheduled headway (gapping), 80% of the time. Service will operate at no less than 25% of headway (bunching), 95% of the time.

TRAVEL TIME COMPETITIVENESS

Travel time is the amount of time a customer spends completing a journey, from start point to end point. Transit services competitive with single-occupant vehicle (SOV) travel times are attractive to customers and can encourage transit use. Significantly slower transit trips than the SOV alternative are less attractive to customers and, without other demand management factors such as priced parking, can discourage people from using transit, especially those with other travel options.

Many factors play into how competitive a transit service is, and these factors must be balanced with customer access to destinations. As development occurs in busy areas, travel time competitiveness can be maintained by, among other measures, providing transit service priority and reducing or combining bus stops.

[2] In this document, regularity is measured by evaluating headway consistency. This measures the same data and characteristics as excess wait time, another tool for evaluating regularity.

Transit Priority

Making transit faster and more reliable, by giving it priority over regular traffic, can be done through various interventions to increase reliability. Strategies to enhance bus service can be implemented by improving speed and reliability along specific corridors. Implementing these measures requires coordination and partnership with local municipalities.

Transit priority measures include:

DEDICATED LANES

Allocating road space exclusively for public transit vehicles (e.g., bus lanes, queue jump lanes, and shoulder bus service on highways).

INFRASTRUCTURE AND POLICY CHANGES

Changes to infrastructure and policies to improve bus speeds and reduce dwell times at stops (e.g., bus-bulbs and in-lane stops, all-door boarding, bus stop locations, bus turn exemptions).

TRAFFIC CONTROL AND SIGNAL PRIORITY

Giving public transit vehicles preferential treatment in the general traffic flow (e.g., transit signal priority and bus only signals).

U.6 Route Design

What is it?

Route design refers to how long and direct a service is, and whether the service uses a consistent path or adjusts its path, depending on demand. A direct route follows a straight, logical path. A circuitous route meanders and curves to serve many different places between its starting and end points. A deviating route will have one or two offshoots from an otherwise direct route.

Why does it matter?

The design of a transit route can influence its usefulness, and TransLink considers various elements of physical design when planning to create high-quality service for riders. The influence of land use is a critical element of service design, and helps to determine where a service is needed. Design choices are then made to ensure an easier route and more desirable service for customers.

SERVICE DESIGN PRINCIPLES

TransLink's services are intended to meet the basic transportation needs of residents who cannot drive, and to provide compelling transportation options for those who can drive. For both types of riders—and those in between—certain design principles will improve service for nearly all riders:

- make service simple
- operate routes along a direct path
- minimize route deviations
- operate major transit routes along arterials
- make routes symmetrical
- serve well-defined markets
- coordinate services effectively
- provide consistent service
- space stops appropriately
- maximize ridership through service design

How is it measured?

Route design is measured by three elements of physical routing: route directness, route deviations, and fixed and variable routing.

Route Directness. The straightness of a route between key destinations. The straighter the route, the more customers can understand and use the line; conversely, circuitous alignments are disorienting and difficult to remember. Directness also reduces opportunities for service disruption. Routes operating as directly as possible can maximize average service speeds. Even if a trip requires a connection between two routes, it is likely to be faster than a route with a circuitous alignment.

Route Deviations. When a route leaves its typical path, most often to serve a special destination. In general, routes should not deviate from the most direct alignment without a compelling reason. Adding deviations to an existing route can have a negative impact on customers and increase the cost of operating the service. Potential destinations appropriate for a route deviation include schools, employment sites, and major shopping centres. In these cases, the benefits of operating the service off the main route are weighed against the inconvenience caused to customers already on board. Additional considerations include impact on overall productivity, increased time added as a result of the deviation, and coordination with connecting service schedules. In most cases, route deviations, where provided, should be provided throughout the service period. Exceptions include early-morning and late-night trips to schools or employment sites with limited hours.

Fixed and Variable Routing: Whether a route is always the same, or changes during times of the day or days of the week. Fixed routing is generally appropriate in higher-density areas, while variable routing can accommodate travel demand in areas with lower population density and/or areas that only require service during peak commuting.

Guideline: Route Design

SERVICE TYPE		ROUTE DESIGN CHARACTERISTICS
Rapid		Route maintains a consistent and legible path. Route is the same on every trip, every day, with no variation in the route path. Based on demand, however, a trip may not serve the entire length of the route.
All Day Frequent		
Peak Frequent		
Standard		Route maintains a consistent and legible path, with no more than one deviation in the length of the route. If deviated, passengers per service hour served on the deviation must meet the minimum standard of productivity for this type (see Service Productivity) Variations in routing may be considered, provided each variation meets the minimum productivity standard for the type.
Basic*		Route may be designed to serve activity centres not on a straight-line path; however, route should only deviate from the most direct alignment when there is a compelling reason. Compelling reasons include major local destinations that would otherwise be missed or topography that prevents access to a line by other means, such as walking or cycling. If a passenger experiences a deviation away from their intuitive pathway, for example, they would still expect to see passenger activity. The deviation then makes more sense to the passenger, and there is a reduced risk of feeling disconnected from their desired path of travel. Route design should avoid re-routing passengers away from an intuitive path toward their destination, or where a passenger perceives the bus to be travelling in circles. If deviated from a legible path, the passengers per service hour served on the deviation must meet the minimum standard of productivity for this type (see Service Productivity). Variations in routing may be considered, provided each variation meets the minimum productivity standard for the type.
Peak Only – Limited		Route is designed to meet special needs of commuters during peak hours and might, therefore, have design needs different from other all-day services.
Special	NightBus	Route provides limited service during late night hours, and is designed based on connectivity between key destinations and resource availability.
	SeaBus	Services are operated on segregated, fixed routes, with no opportunity to change route design.
	West Coast Express	

Network Design Principles

As defined in Managing the Network Primer, the issues TransLink considers when designing transit networks, regardless of service type, include:

CORRIDOR/ROUTE DUPLICATION

A best practice in network design, to facilitate high and sustained ridership, is to avoid duplication or competition between transit services. Duplication occurs when route spacing enables customers to easily walk between parallel routes serving several common destinations. Transit services should be far enough apart to not be competing for passengers. Services close together or overlapping will reduce ridership on both lines. Guidelines for route spacing should account for population and employment density, along with time of day and day of week (for service that varies based on demand). TransLink aims to space out parallel transit corridors by about 800 metres, so locations in between are within walking distance but avoid competition.

ROUTE CONSISTENCY

Routes should operate along the same alignment in both directions to make it easy for riders to return to their origin location. Exceptions can be made in cases where such operation is not possible, due to one-way streets or turn restrictions or near the end of a route where the bus must turn around. In these cases, routes should be designed so the opposite directions parallel each other as closely as possible. While routes with large loops or several deviations maximize transit coverage, they also result in out-of-direction travel that is not intuitive or attractive to potential customers.

PE

Productive and Efficient Service

TransLink's strategic financial objectives are to provide a cost-efficient transit service and to ensure the most effective service is delivered within the available resources to the appropriate level of customer demand. Cost-efficiency and effectiveness are driven by many factors, including route and network performance.

To both serve its customers and ensure financial accountability, TransLink strives to plan and design the most useful services to the most people. There is a strong relationship between efficient service and the characteristics of good transit service, as described in the themes above. For customers, efficient transit service means an adequate level of service is being provided. For the public, efficiency guidelines ensure TransLink is deploying public resources effectively.

While productivity is important, it is balanced with opportunities to support long-term ridership growth and the need to provide coverage services. A more efficient system will help maximize the amount of service provided throughout the region, which is beneficial for TransLink's customers and partner municipalities.

3.2 Service Productivity Reference Tables provides transit service performance from TransLink's annual service performance reporting, as a reference point against the service guidelines. The data is intended to provide context against guideline thresholds and does not reflect recommended future conditions.

PRODUCTIVITY AND EFFICIENCY GUIDELINES

Rather than establish specific guidelines, the efficiency guidelines are intended to provide thresholds for each service type group, highlighting routes with exceptional or poor performance. This approach ensures that similar routes are compared against one another, and that the guidelines can respond to changing conditions over time. Comparing all lines to each other would not be appropriate, as different services have different objectives.

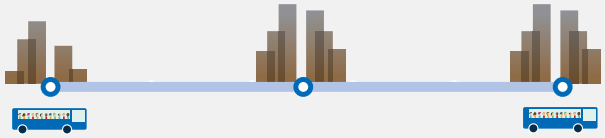
A line far above the maximum or below the minimum in an efficiency guideline indicates adjustments to such factors as service levels, vehicle size, stop spacing, and routing may be warranted.

Evaluating Productivity and Efficiency on Transit

To address the fact that one productivity measure does not provide a full picture of how well a service is performing, the Transit Service Guidelines use several factors to measure productivity and efficiency. TransLink will consider each of these factors when assessing routes. Similarly, TransLink understands that new or recently changed services may also take time to meet productivity thresholds.

These examples illustrate that different types of services may have high levels of productivity in one measure, but low levels in another, so it is important to assess the range of measures against similar types of services.

Highway Context



Boardings/ Revenue Hour	Few stops to board; passengers ride long distances
Capacity Utilization	Buses are full from end to end
Passenger Turnover	Few stops to board/alight; passenger ride long distances
Cost/ Boarded Passenger	Full buses operating but low turnover results in higher costs

Urban Context (wider stop spacing, higher frequencies)

Boardings/ Revenue Hour	Higher frequencies respond to more passengers demand
Capacity Utilization	Buses aren't as full due to higher frequencies
Passenger Turnover	Wider stop spacing results in less turnover
Cost/ Boarded Passenger	Higher ridership provide lower costs

Urban Context (closer stop spacing, Standard/Basic service)

Boardings/ Revenue Hour	Lower demand for these routes but turnover means more boardings
Capacity Utilization	Lower demand results in less full buses
Passenger Turnover	More stops allows easier access and passengers take shorter trips
Cost/ Boarded Passenger	Lower demand so fewer passengers, but higher turnover results in lower costs

Productivity and Efficiency

- Low
- Moderate
- High

PE.1 Boardings per Revenue Hour

What is it?

Boardings per revenue hour is an industry-standard key performance indicator that measures the volume of riders compared to the supply of transit service.

Why does it matter?

Boardings per revenue hour helps TransLink determine how well a route is being used relative to the amount of service being provided. It provides a snapshot of a transit route's overall performance. It does not take into consideration the size of different transit vehicles; for example, articulated buses can hold more passengers than standard buses or mini-buses. As such, boardings per revenue hour should be used in conjunction with other criteria to give a more holistic view of service performance.

How is it measured?

Boardings per revenue hour is measured as the average number of passengers who board a route during a given hour of service provided. It accounts for total passenger activity, and considers the length of time a vehicle is in revenue-generating service. With limited exceptions, all routes should attract a minimum number of passengers for each hour of bus service. Guidelines are based on how specific routes perform in comparison to all routes in the service type for each time period.

Guideline: Boardings per Revenue Hour

SERVICE TYPE	MEET GUIDELINE	EXCEED GUIDELINE
Rapid	Rapid services provide a unique, high-capacity role in the transit network and are not compared to other services.	
All Day Frequent	Perform better than the lowest 15% of all routes in the service type.	Perform better than 90% of all routes in the service type.
Peak Frequent		
Standard		
Basic	Perform better than the lowest 20% of all routes in the service type.	
Peak Only – Limited		
Special	Special services fill unique gaps in the transit network and are not compared to other services.	

Note: These values are subject to periodic updates, as the values are derived from actual performance of the type and the constituent route. See Section 3.2 for additional detail on reported performance values.

PE.2 Capacity Utilization

What is it?

Capacity utilization measures the percentage of delivered capacity (seats and spaces) utilized by customers along an entire route.

Why does it matter?

Capacity utilization helps TransLink understand how efficiently passenger space or capacity is used. In some instances, a bus route may have full buses, but they might travel long distances between stops; if efficiency is only measured by passengers per revenue hour, it would appear quite low. Capacity utilization is another way to look at efficiency that could be more representative of routes carrying passengers over longer distances. It is a perfect partner to passengers per revenue hour as another way to consider the performance of a route from an efficiency perspective.

How is it measured?

Capacity utilization is measured as a ratio of passenger-kilometres per space-kilometre (total vehicle capacity). Passenger-kilometres measure how many kilometres passengers travel on a particular route. If stops are one kilometre apart, for example, and a vehicle has 10 passengers on board between those two stops, it is 10 passenger-kilometres.

Space-kilometres are measured by taking the length of each trip and multiplying it by the number of passenger spaces on each vehicle (seats and standing spaces). A trip that is 10 kilometres in length, for example, and has a capacity of 50 spaces, is measured as 500 space-kilometres.

The hypothetical maximum is a trip with a measure of one passenger-kilometre per space-kilometre, indicating that every space on the bus is full for the length of the trip.

COMPASS CARD DATA

Compass Card data is a more recent source of information on ridership patterns and allows a more substantial and dynamic review of the performance of the Rapid service type.

A measure comparable to passenger-kilometres per train space kilometre, for example, will be possible as Compass data becomes available.

Guideline: Capacity Utilization

SERVICE TYPE	MEET GUIDELINE	EXCEED GUIDELINE
Rapid	Rapid services provide a unique, high-capacity role in the transit network and are not compared to other services.	
All Day Frequent	Perform better than the lowest 15% of all routes in the service type.	Perform better than 90% of all routes in the service type.
Peak Frequent		
Standard		
Basic	Perform better than the lowest 20% of all routes in the service type.	
Peak Only – Limited		
Special	Special services fill unique gaps in the transit network and are not compared to other services.	

Note: These values are subject to periodic updates, as the values are derived from actual performance of the type and the constituent route. See Section 3.2 for additional detail on reported performance values.

PE.3 Passenger Turnover

What is it?

Passenger turnover is a measure of the degree to which passengers are using the number of seats and spaces provided on a given route or service.

Why does it matter?

Passenger turnover tells TransLink how well its services are being used, how efficiently it fills seats and, by extension, how much revenue is being generated by full-fare customers. The optimal amount of use depends on the type of service. A disadvantage of passenger turnover is that it does not consider the length of time a vehicle is on the road. As such, it favours longer services with a greater number of stops and a greater opportunity to generate boardings.

How is it measured?

Passenger turnover is measured as the ratio, expressed as a percentage, of the total number of passengers boarding compared to the total number of spaces provided by transit vehicles. In many cases it is possible for passenger turnover to be greater than 100%. This indicates a service that is generating multiple passenger boardings and alightings using the same number of spaces. These guidelines are expressed as a percentage of how each route performs, relative to all other routes in the service type. The guidelines are designed to highlight exceptional and poor performance.

Guideline: Passenger Turnover

SERVICE TYPE	MEET GUIDELINE	EXCEED GUIDELINE
Rapid	Rapid services provide a unique, high-capacity role in the transit network and are not compared to other services.	
All Day Frequent	Routes in this type are expected to exhibit high passenger turnover in each direction in all time periods.	Perform better than 90% of the routes in this type in both directions in all time periods.
Peak Frequent		
Standard	Routes meeting the guideline will exceed the lowest 15% of all routes in this type in all time periods.	
Basic	Routes meeting the guideline will exceed the lowest 20% of all routes in this type in all time periods.	
Peak Only – Limited	Routes in this type are expected to exhibit high passenger turnover in each direction in all time periods.	
Special	Special services fill unique gaps in the transit network and are not compared to other services.	

Note: These values are subject to periodic updates, as the values are derived from actual performance of the type and the constituent route. See Section 3.2 for additional detail on reported performance values.

PE.4 Cost per Boarded Passenger

What is it?

Cost per boarded passenger measures the cost of providing revenue service compared to the total number of boardings generated by that service.

Why does it matter?

Analyzing the cost of providing service to each passenger is a way to evaluate the cost-effectiveness of TransLink's services. Having efficient and productive ridership-generating services helps to offset the costs of providing service in other areas, while contributing to the overall usefulness of the network to all customers.

How is it measured?

Cost per boarded passenger is measured by taking the average cost per service hour divided by the average number of passenger boardings per service hour on a given route. Costs per service hour can vary by vehicle and time of day, and often change each year due to inflation, fluctuating fuel prices, and other considerations. In general, the cost to provide one hour of service using a conventional bus—such as a 12-metre standard bus or an 18-metre articulated bus—is greater than providing the same hour of service using a minibus.

Like boardings per revenue hour, these guidelines are expressed as a percentage of how each route performs, relative to all other routes in the type. The guidelines are designed to highlight exceptional and poor performance. For this measure, a relative threshold is important because an absolute threshold—such as actual cost per boarded passenger—will change over time, relative to economic factors and cost of operations. In this case, using a relative threshold based on an assessment of all routes in a service type avoids the issue of accounting for those factors, as all service types will experience increased or decreased costs in the same manner.

Guideline: Cost per Boarded Passenger

SERVICE TYPE	MEET GUIDELINE	EXCEED GUIDELINE
Rapid	Rapid services provide a unique, high-capacity role in the transit network and are not compared to other services.	
All Day Frequent Peak Frequent Standard Basic Peak Only – Limited	Routes in each service type are expected to exhibit low cost per boarded passenger in each direction in all time periods. Routes meeting the guideline will have lower cost per boarded passenger than the highest 15% of all routes in their same type in all time periods.	Routes exceeding the guideline will perform better than 90% of the routes in their same type in both directions in all time periods.
Special	Special services fill unique gaps in the transit network and are not compared to other services.	

Note: These values are subject to periodic updates, as the values are derived from actual performance of the type and the constituent route. See Section 3.2 for additional detail on reported performance values.

3 Reference Information

Section 3.1 provides information on passenger capacity for each of the vehicle types TransLink utilizes, including seated and total capacity.

The tables in Section 3.2 provide service productivity data from TransLink's annual Transit Service Performance Review, which relates to the guidelines provided in PE Provide Productive and Efficient Service. The tables are intended to provide a snapshot of performance and are not indicative of current circumstances or recommended future conditions. This section may be updated as new performance data becomes available.

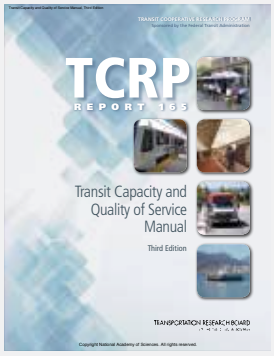
3.1 Vehicle Capacity Reference Table

Vehicle Capacity Reference Table

VEHICLE/CAR TYPE	AVERAGE SEATED CAPACITY	AVERAGE PRACTICAL CAPACITY
Standard Trolley	31	47
Articulated Trolley	49	70
Standard Bus	35	50
Articulated Bus	48	75
Highway Coach	47	50
Mini-Bus	20	24
SkyTrain Mark I Car	35	68
SkyTrain Mark II Car	33	111
SkyTrain Mark III Car	30	111
Canada Line Car	44	144

Notes

- Averages provided are due to differences in internal vehicle layouts and seating configurations within the same vehicle/car type.
- Assumes available space per standing passenger to estimate total capacity; e.g., for buses it is 0.35 m^2, and for rail vehicles it is 0.25 m^2, including what each available space assumption feels like (from the TRB's Transit Capacity and Quality of Service Manual).
- Differences between vehicles are based on service characteristics; e.g., as buses have more stops that require more passenger circulation, more space for standing passengers allows for better circulation.
- All transit vehicles can, and often do, hold more passengers than capacity, and passengers may experience higher loads than these values.



REFERENCE: TRANSIT CAPACITY AND QUALITY OF SERVICE MANUAL

The Transportation Research Board's Transit Cooperative Research Program (TCRP) Report 165: Transit Capacity and Quality of Service Manual provides "guidance on transit capacity and quality of service issues and the factors influencing both, as well as a framework for measuring transit availability, comfort, and convenience from the passenger and transit provider points of view."

3.2 Service Productivity Reference Tables

Boardings per Revenue Hour – 2016 Minimum Levels

SERVICE TYPE	2016 DATA	
Rapid	Not applicable	
All Day Frequent	Weekday Peak	56 boardings per revenue hour
	Weekday Midday	49 boardings per revenue hour
	Nights (7 days per week)	37 boardings per revenue hour
	Saturday	50 boardings per revenue hour
	Sunday	47 boardings per revenue hour
Peak Frequent	Weekday Peak	34 boardings per revenue hour
	Weekday Midday	31 boardings per revenue hour
	Nights (7 days per week)	22 boardings per revenue hour
	Saturday	29 boardings per revenue hour
	Sunday	24 boardings per revenue hour
Standard	Weekday Peak	31 boardings per revenue hour
	Weekday Midday	23 boardings per revenue hour
	Nights (7 days per week)	16 boardings per revenue hour
	Saturday	19 boardings per revenue hour
	Sunday	19 boardings per revenue hour
Basic	Weekday Peak	11 boardings per revenue hour
	Weekday Midday	11 boardings per revenue hour
	Nights (7 days per week)	6 boardings per revenue hour
	Saturday	9 boardings per revenue hour
	Sunday	7 boardings per revenue hour
Peak Only – Limited	Weekday Peak	22 boardings per revenue hour

Note: This reference data shows the minimum threshold of services in each type to meet the guideline in 2016.

REFERENCE: 2016 TRANSIT SERVICE PERFORMANCE REVIEW

TransLink regularly reviews and modifies the transit network to promote system efficiency, effectiveness and productivity. Our focus is on improving the customer experience and increasing ridership by maximizing the use of available resources. The 2016 Transit Service Performance Review is a comprehensive review of ridership and service productivity for bus, SeaBus, SkyTrain and West Coast Express measured from January to December 2016. It informs the management of our integrated regional transit network and guides decision-making regarding the allocation of transit service resources.

Passenger-Kilometres per Space-Kilometre – 2016 Minimum Levels

SERVICE TYPE	2016 DATA	
Rapid	Not applicable	
All Day Frequent	Weekday Peak	0.25 passenger km per space km
	Weekday Midday	0.22 passenger km per space km
	Nights (7 days per week)	0.17 passenger km per space km
	Saturday	0.22 passenger km per space km
	Sunday	0.21 passenger km per space km
Peak Frequent	Weekday Peak	0.20 passenger km per space km
	Weekday Midday	0.17 passenger km per space km
	Nights (7 days per week)	0.12 passenger km per space km
	Saturday	0.15 passenger km per space km
	Sunday	0.14 passenger km per space km
Standard	Weekday Peak	0.15 passenger km per space km
	Weekday Midday	0.10 passenger km per space km
	Nights (7 days per week)	0.08 passenger km per space km
	Saturday	0.10 passenger km per space km
	Sunday	0.11 passenger km per space km
Basic	Weekday Peak	0.05 passenger km per space km
	Weekday Midday	0.06 passenger km per space km
	Nights (7 days per week)	0.03 passenger km per space km
	Saturday	0.03 passenger km per space km
	Sunday	0.03 passenger km per space km
Peak Only – Limited	Weekday Peak	0.21 passenger km per space km

Note: This reference data shows the minimum threshold of services in each type to meet the guideline in 2016.

Passenger Turnover – 2016 Minimum Levels

SERVICE TYPE	2016 DATA	
Rapid	Not applicable	
All Day Frequent	Weekday Peak	0.70
	Weekday Midday	0.60
	Nights (7 days per week)	0.40
	Saturday	0.60
	Sunday	0.50
Peak Frequent	Weekday Peak	0.40
	Weekday Midday	0.30
	Nights (7 days per week)	0.20
	Saturday	0.30
	Sunday	0.20
Standard	Weekday Peak	0.40
	Weekday Midday	0.30
	Nights (7 days per week)	0.20
	Saturday	0.30
	Sunday	0.20
Basic	Weekday Peak	0.10
	Weekday Midday	0.10
	Nights (7 days per week)	0.10
	Saturday	0.10
	Sunday	0.10
Peak Only – Limited	Weekday Peak	0.30

Note: This reference data shows the minimum threshold of services in each type to meet the guideline in 2016.

Cost per Boarded Passenger – 2016 Maximum Levels

SERVICE TYPE	2016 DATA	
Rapid	Not applicable	
All Day Frequent	Weekday Peak	$1.56
	Weekday Midday	$1.65
	Nights (7 days per week)	$2.23
	Saturday	$1.84
	Sunday	$2.63
Peak Frequent	Weekday Peak	$2.02
	Weekday Midday	$2.28
	Nights (7 days per week)	$3.62
	Saturday	$3.02
	Sunday	$3.59
Standard	Weekday Peak	$2.82
	Weekday Midday	$3.16
	Nights (7 days per week)	$11.75
	Saturday	$9.27
	Sunday	$4.08
Basic	Weekday Peak	$5.53
	Weekday Midday	$5.18
	Nights (7 days per week)	$25.00
	Saturday	$24.11
	Sunday	$10.62
Peak Only – Limited	Weekday Peak	$4.50

Note: This reference data shows the maximum threshold of services in each type to meet the guideline in 2016.

Appendix

A Glossary

A

Accessibility (to destinations) – the ease of obtaining desired goods, services, and activities from a particular location; usually related to the time and/or distance required to access destinations.

Area Plans – TransLink works with its municipal partners and consults with the public to develop geographically-focused, sub-regional, and community-based area plans. They provide a blueprint for aligning the local transit network with existing and expected land use and travel patterns. They also guide future investment in, and changes to, the regional transit network.

B

B-Line Service – bus routes that provide frequent, fast, limited-stop service from early morning through late evening.

Boardings per revenue hour – an industry-standard key performance indicator that measures the volume of riders compared to the supply of transit service.

C

Capacity – the amount of space on a transit vehicle that can carry passengers. Available space not occupied by passengers is called unused capacity.

Capacity utilization – measures the percentage of delivered capacity (seats and spaces) utilized by customers along an entire route.

Commuter – a person who travels regularly between home and work or school.

Cost per boarded passenger – measures the cost of providing revenue service compared to the total number of boardings generated by that service.

D

Dedicated lanes – reserving or reallocating road space exclusively for public transit vehicles (e.g., bus lanes, queue jump lanes, and shoulder bus service on highways). See Transit Priority.

Demand management – strategies that discourage unnecessary driving and promote sustainable modes of travel to make the most effective use of the transportation network, thereby shifting travel by mode and time of day to take advantage of available capacity and reduce crowding and congestion. Strategies can include hard measures (e.g., transit improvements and parking measures) and soft measures (e.g., incentives, education, and marketing).

Density – the amount of a given characteristic (e.g., jobs, people, and housing units) present within a given geographic area (usually hectares in Canada and acres in the USA).

E

Efficiency – maximizing output with minimum waste. For transit customers, efficient transit service means an adequate level of service is being provided. For the public, efficiency guidelines ensure TransLink is deploying public resources effectively.

Effectiveness – producing an optimal outcome that successfully achieves predetermined goals.

A Glossary

F

Frequent Transit – see Frequent Transit Network.

Frequent Transit Network (FTN) – a network of corridors in Metro Vancouver along which transit service is provided at least every 15 minutes in both directions, throughout the day and into the evening, every day of the week; a high frequency and span of transit service within a corridor, which may be provided by a single route or by a combination of routes and/or technologies within the same corridor (the FTN does not refer to specific routes, technologies, or vehicle types).

L

Load factor – the ratio of passengers actually carried versus the capacity of a vehicle expressed as a decimal number, where a factor of 1.0 means that the vehicle is full. Minimum levels of service performance.

M

Mobility – the movement of people or goods; one of several means of gaining access (see Accessibility) to destinations.

Mode –refers to method of transportation. Examples include walking, cycling, transit and driving. Transit mode may also be disaggregated further; for example, train, bus, single occupant vehicle, and rideshare.

Multi-modal – activities that involve more than one mode of transportation, including transportation connections, choices, cooperation, and coordination of various modes.

P

Passenger demand – the level of consumer demand for transit services in a community or area. It can be thought of as the output of land use and built environment characteristics. Demographic factors also shape passenger responses to varying levels of transit service.

Passenger-kilometres – a measure of how many kilometres passengers travel on a particular route. If stops are one kilometre apart, for example, and a vehicle has 10 passengers on board between those two stops, it is 10 passenger-kilometres.

Passenger load – a measure of how full a transit vehicle is, on average, at its busiest point or peak on a route.

Passenger turnover – a measure of the degree to which passengers are using the number of seats and spaces provided on a given route or service.

Peak – refers to peak period(s) – times during the day when demand for transit services are highest. The morning peak is generally 6:00 – 9:00 am and the afternoon peak is generally 3:00 – 6:00 pm, though these periods may vary.

Peak load factor – the ratio of average passengers carried versus the capacity or space available on a vehicle, expressed as a percentage. A passenger load factor of 100% means the vehicle is at capacity. The peak load factor is calculated by dividing the average load on a transit vehicle at its busiest point by the number of spaces (seats plus standing space) provided on each trip.

A Glossary

R

Rapid transit – an urban transit service characterized by high carrying capacity and by speed, frequency, and reliability (high speed and reliability are usually achieved by separation from other modes of travel); typically provided by transit technologies such as rail rapid transit, light rail transit, and bus rapid transit.

Regional Transportation Strategy (RTS) – defines and outlines the overall transportation plan for a given region. In Metro Vancouver, the RTS is prepared by TransLink in consultation with the stakeholders in the region and the public and covers a period of at least 30 years. The RTS sets out the goals, directions, and key initiatives for the regional transportation system.

Route Design – how long and direct a service is, and whether the service uses a consistent path or adjusts its path, depending on demand. A direct route follows a straight, logical path. A circuitous route meanders and curves to serve many different places between its starting and end points. A deviating route will have one or two offshoots from an otherwise direct route.

S

Safety – the condition of being protected against any type of non-criminal harm.

Service frequency – how often a transit vehicle picks up passengers at a stop; for example, a bus might arrive every 10 minutes during peak commute periods, while a West Coast Express train might arrive every 30 minutes.

Service types – designed to meet a range of different purposes, markets, travel demand levels, and objectives. The service types are organized into seven categories: Rapid, All Day Frequent, Peak Frequent, Standard, Basic, Peak Only – Limited, and Special.

Service reliability – how consistently services operate according to schedule. A reliable service arrives on time, or close to it, every day. Reliability for more frequent service can also be evaluated based on regularity, or a consistent headway between vehicles. Unreliable service has poor on-time performance and inconsistent gaps between vehicles.

Service revenue hours – represents the time that transit vehicles are in revenue service, from the time they leave the trip start terminus to the time they arrive at the trip end terminus, and exclude recovery (layover) time at terminuses and deadheading times (i.e., time used by vehicles to travel from a depot to a service start point and to return to the depot from a service end point).

Single-occupant vehicle (SOV) – a private vehicle operated by a single person.

Space-kilometres – measured by taking the length of each trip and multiplying it by the number of passenger spaces on each vehicle (seats and standing spaces). A trip that is 10 kilometres in length, for example, and has a capacity of 50 spaces, is measured as 500 space-kilometres.

Span of service – the hours of operation for a specific transit service, from the time of departure of the first trip of the day at the first stop, to the time of arrival of the last trip of the day at the last stop. Some services run only during weekday commute times, some services operate all day, and others run all day and late into the night.

A Glossary

Station – broadly defined as passenger facilities serving high-capacity and rapid transit services, including SkyTrain, West Coast Express, SeaBus, future Bus Rapid Transit, and light rail.

Stop – a transit passenger facility service by bus-based transit.

Stop spacing – the distance between stops along a route. Stop spacing has an impact on the speed and reliability of a service, as well as on a customer's ability to access a service.

T

The 6 Ds – the 6 Ds are characteristics that describe the land use and built environment elements that influence demand for transit. The 6 Ds are destinations, distance, design, density, diversity, and demand management.

Traffic Control Measures – giving public transit vehicles preferential treatment in the general traffic flow (e.g., transit signal priority and bus only signals). See Transit Priority.

Transit-oriented-community (TOC) – a place (neighbourhood, corridor, municipality, or region) that, by design, facilitates decreased reliance on driving and higher levels of walking, cycling, and transit use. In practice, it means concentrating higher-density, mixed-use, human-scale development around frequent transit stops and stations–in combination with parking management and TDM measures–to discourage unnecessary driving.

Transit priority – an infrastructure measure that gives transit vehicles priority over other road users to improve the speed, efficiency, and reliability of the service. Such measures include dedicated lanes, traffic control measures, and regulatory measures.

Transit ridership – the number of customer trips, or revenue rides, taken on transit services every month. Ridership is measured separately for each of the main transit modes.

Transit-supportive land use – together with demand guidelines, indicate the characteristics of adjoining land uses that will allow transit to be productive and effective in meeting the needs of the community.

Travel time competitiveness – the amount of time a customer spends completing a journey, from start point to end point. Transit service travel times that compete with single-occupant vehicle (SOV) travel times are attractive to customers and can encourage transit use. Significantly slower transit trips than the SOV alternative are less attractive to customers and–without other demand management factors–can discourage people from using transit, especially those with other travel options.

W

Wayfinding – how people orient themselves and navigate their movements from place to place. The design, coordination, and location of information (e.g., signs, maps, and diagrams), in conjunction with the architectural and interior design, all serve to aid wayfinding and help travellers plan and execute their journeys.

B References

TransLink Reference Documents

Regional Transportation Strategy: Strategic Framework (2013). https://www.translink.ca/Plans-and-Projects/Regional-Transportation-Strategy

Transit-Oriented Communities Design Guidelines (2012). https://www.translink.ca/-/media/Documents/plans_and_projects/transit_oriented_communities/Transit_Oriented_Communities_Design_Guidelines.pdf?la=en&hash=8E80E1695DEE1C932294CFEB31503A04CF2DBA7D

Transit Passenger Facility Design Guidelines (2011). https://www.translink.ca/-/media/Documents/plans_and_projects/transit_oriented_communities/TPFDG-Print-Version.pdf

TransLink Wayfinding Standards Manual (2014).

Transit Infrastructure Design Guidelines (2002).

Universal Accessibility Guidelines for TransLink Fleet and Facilities (2007). https://www.translink.ca/-/media/Documents/rider_guide/access_transit/Universal-Accessibility-Guidelines-for-TransLink-Fleet-and-Facilities.pdf

Managing the Transit Network: A Primer on Key Concepts (2012). https://www.translink.ca/networkmanagement

Bus Service Performance Review (2013). https://www.translink.ca/-/media/Documents/plans_and_projects/managing_the_transit_network/2013-BSPR/2013_bus_service_performance_review.pdf

Transit Service Performance Review (2016). https://www.translink.ca/Plans-and-Projects/Managing-the-Transit-Network/Transit-Service-Performance-Review.aspx

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