SECTION 9.1 – SERVICE DESIGN GUIDELINES

This section is an excerpt from of *Connect Spokane: A Comprehensive Plan for Public Transportation* as adopted by the Board of Directors in September 2010. The service design guidelines contained herein draw from both historical planning documents and numerous samples of service planning documents from other transit authorities. They intend to both express ideals and establish expectations for the design, quality, and performance of Spokane Transit Authority's transportation system.

Title VI requires that no person be discriminated against with regard to the routing, scheduling, or quality of transportation service furnished as part of the project on the basis of race, color, or national origin. This includes the frequency of service, age and quality of vehicles assigned to routes, quality of stations serving different routes, and location of routes. As this section demonstrates, the principles guiding the design of Spokane Transit Authority's transit network are non-discriminatory in nature and aim to provide high quality transit service to the greatest number of people and destinations possible.

High Performance Transit Network

The High Performance Transit Network (HPTN) is a network of corridors providing all-day, two-way, reliable, and frequent service which offers competitive speeds to the private automobile and features improved amenities for passengers. The HPTN defines a system of corridors for heightened and long-term operating and capital investments.

High Performance Transit Principles

1. Pedestrian Support

More than any other service type, HPT extends the range of the pedestrian.

Most studies show that people are comfortable walking a quarter-mile for most activities. As the number of destinations within a mile increase, people are likely to increase the proportion of trips executed by walking. Beyond one-half mile to a mile, most persons will prefer other modes, especially if the trip is for purposes other than exercise. Rather than competing with short walking trips, transit can support greater mobility without dependence on the private automobile. The High Performance Transit Network in particular, with its emphasis on all-day, two-way connectivity at reasonable levels of frequency, supports the pedestrian's mobility beyond normal walking ranges. This emphasis on pedestrian mobility is a more effective way to view HPT mobility than looking at congestion relief or other less tangible societal benefits.

2. Ubiquity

HPT service should attempt to serve the greatest number of people possible and the greatest number of destinations possible.

The perceived importance of organic and inorganic properties often is proportionate to their availability and visibility. Despite the perception, ubiquity is not synonymous with importance; however, serving a broad geographic coverage and a broad array of transport needs means that the HPTN can be important to many people. Important things in our lives are things we share, value, and seek to take care of.

3. Activity Centers

HPT should connect the region's cities and centers of population and jobs as much as possible.

Urban studies over the last century have reinforced the intuitive notion that there are hierarchies of place and space. If there are centers, then there are peripheries. For about 50 years, gravity models have been used to express trip distribution in urban areas. Namely, that interaction between two locations declines with increasing distance (or time) between them, but is positively associated with the amount of activity at each location. Another way to say it is a place with more activity is more important to a greater number of places. It is for this reason that connecting activity

centers, particularly those amenable to pedestrian activity, is important with the HPTN.

4. System Effectiveness

The HPTN should improve the effectiveness of the transportation system.

While often misunderstood to be simply about moving traffic, the regional transportation system is successful when it provides mobility for people and goods. All the "good ideas" about transit and transportation can be measured from the perspective of system effectiveness. When replacement costs (fiscal and environmental) and investment life cycles are not considered, it is tempting to create infrastructure that may not be founded upon the principles described within this element. Improving the effectiveness of the transportation system may be less about ensuring certain patterns of travel continue to exist, but about encouraging and facilitating only those travel patterns that can be sustained.

5. Appropriate Scale

The HPTN should be fiscally responsible and scaled appropriately to the region's current and long-term needs given competing demands for scarce public resources.

Many factors beyond planning define the infrastructure realities of metropolitan areas. Try as a metropolitan area might, it has a unique politic, demography, geography and climate that make it impossible to replicate the perceived successes of other metropolitan areas. Appropriate scale of the HPTN reflects the fact that the Spokane region's urban layout, density and fiscal capacity are unique. In order to be functional and achievable, design of the HPTN must respect, and even magnify this unique set of circumstances.

6. Mode Neutrality

Service quality, not mode technology, is the defining feature of HPT.

Although the vehicle type or mode is often the first topic of conversation during transit corridor discussions, the service type is the most important feature. For this reason, the aggregated service quality (relative to travel needs) and not the mode is the defining feature of the HPTN.

7. Permanence

HPT features permanence of investments.

Regardless of mode, HPT should express to the customer through wayfinding, tactile enhancements at stations, or alignments that it will be available in the future. This permanence and definitiveness is also critical in directing those developing the built environment to focus new growth around transit.

8. Integration

HPT should integrate and provide connections with other modes and transport

services.

While the most critical mode with which transit should be integrated is the pedestrian (walking) mode, integration with other modes is important to expand customer base and make use of synergies that can occur by connecting to modes that connect with transit systems in other urban areas. Integration with other modes can expand the customer base to include customers who may use the system less regularly than typical customers.

9. Competitive

HPT should make desired connections better than competing modes whenever possible.

Nearly every transportation alignment in cities is no older than the city itself. Often transportation alignments define how sections of a metropolitan area relate to other sections. As a matter of geographic definition it is easy to assume that these alignments are the only option for future transportation investments. Penetrating barriers and making new connections are features of the HPTN that can enhance its competitiveness with other modes, particularly the private automobile.

High Performance Transit Policies

HP-1.0 – Corridors

STA shall identify service corridors with sufficient ridership to warrant HPT service.

The HPT routes are located in major corridors where there is sufficient need to justify significant investments in passenger amenities and information.

HP-2.0 – HPT Service Type Selection

STA shall assign various HPT service types to reflect distinctions in speed, service, frequency, and access.

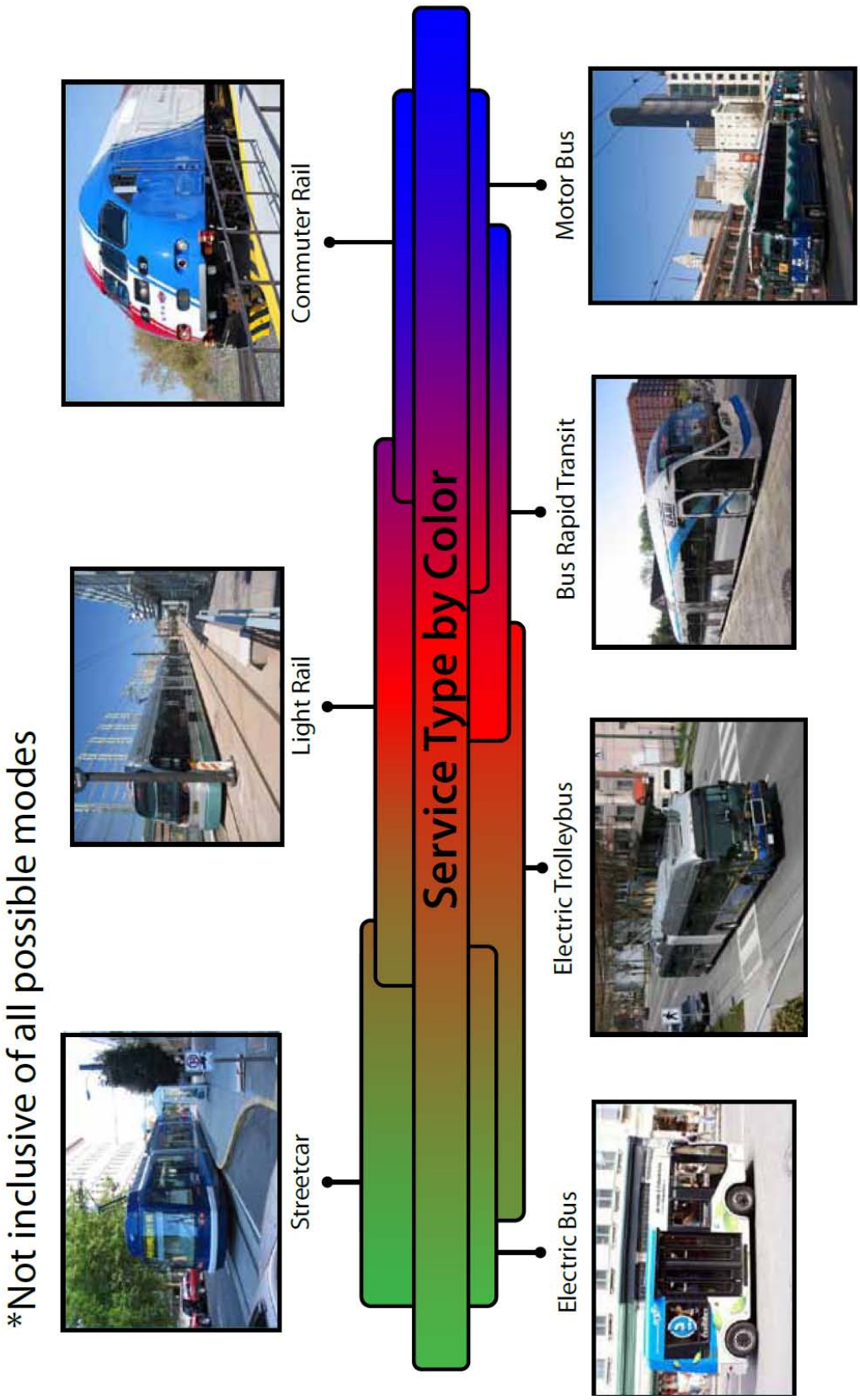
Three service sub-types – Green, Red, and Blue – have been identified to reflect appropriate distinctions in speed, service frequency, and access (distance between stops) for each route or family of routes. At some stage, these service sub-type names may be replaced with more descriptive branding names. A specific route in the HPT service typology is considered a HPT Corridor. The following table describes the general characteristics of the HPT service types in terms of speed, access, frequency and purpose.

Service Type	Speed	Access	Frequency	Purpose
Green Lines	Lower	Higher	6-15 minutes	Support spontaneous travel, short trips and provide quick, easy access to other service types.
Red Lines	Moderate	Moderate	10-15 minutes	Offer direct service to major destinations within a metropolitan area.
Blue Lines	Higher	Limited	15-30 minutes	Cover long distances quickly to connect major regional destinations.

HP-3.0 – HPT Mode Selection

STA shall consider the strengths and weaknesses of various vehicle types in relation to the demands of the corridor being served.

A variety of transit vehicle types exists, each with its own set of benefits and weaknesses. Some vehicles have the capacity to move a dozen passengers, while others carry several hundred passengers at a time. Of course, these different vehicle types also have significantly different costs. These costs, both up-front and operational in nature, must be considered when selecting appropriate vehicles for HPT service. Mode selection is often part of an "alternatives analysis" conducted in a way to make the corridor project eligible for federal New Starts/Small Starts funding. If such funding is not sought, it may be appropriate to scale the mode selection process to take less time while still providing for public input. This may mean limiting the number of modes to be considered in a particular corridor.


*Not inclusive of all possible modes
Service Type by Color
Commuter Rail
Light Rail
Streetcar
Motor Bus
Bus Rapid Transit
Electric Trolleybus
Electric Bus

Mode	Strengths	Weaknesses	Service Type Application
Aerial Tram	Relatively quiet, creates new right of way with less property acquisition; can climb steep grades efficiently	Generally less effective when serving more than two points; costs are high	Red
Commuter Rail	Highest speed when operating in exclusive right of way; high capacity	Limited opportunities to establish right of way; requires tremendously high concentrations of employment to justify costs	Blue
Conventional bus (Urban Transit)	Flexibility in routing; readily serviceable due to knowledge, parts, etc	Localized emissions,	Green, Red
Conventional Bus (Over-the-Road Coach)	High capacity with greater comfort than typically urban buses	Localized emissions; only one egress makes inefficient for loading and unloading	Blue
Electric Trolley Bus	Relatively quiet, quick to accelerate and climbs hills well; can change lanes when necessary	Not as flexible as diesel bus; require more permanent routing over bus	Green, Red
Light Rail Vehicles	Can be coupled for increased capacity without increased labor costs; can operate at higher speeds when traveling on exclusive (or semi-exclusive) right of way	Higher investments costs that are more suitable at higher densities	Red, Blue
Maglev	Can achieve high speeds; subject only to air resistance and electromagnetic drag, making maglev efficient; quieter than conventional trains	Higher investments costs that are more suitable at higher densities; requires a separated right of way	Red, Blue
Streetcar	Relatively quiet, can be coupled for increased capacity without increased labor costs; speeds suitable for operating in street right of way	Cannot change lanes on urban streets; cannot climb steeper hills	Green, Red

HP-4.0 – Prioritization

STA shall prioritize the implementation of HPT corridors and selection of service types based on the principles outlined in this element.

High Performance Transit Connect Strategies

High Performance Transit Network Map

The High Performance Transit Network map is the foundation, framework, and basis for future service improvements.

The following map depicts how the High Performance Transit Network may look in 20 to 30 years. Many factors, including but not limited to, economic conditions, ridership demand, funding opportunities, and regional priorities will affect how quickly and where the network begins taking shape. Additionally, modifications to this map are likely after the development of each corridor and as land use patterns change. Although the full build out of this network is presently unfunded, this map will begin to take shape incrementally as directed by the policies found within this element.

Fixed-Route Service

Over a century of urban transportation system planning reveals the challenges and opportunities faced by those involved in the field. Economic efficiency, operating conflicts with the private automobile and other roadway users, and serving the general public versus responding to individual needs have made the logical assessment and improvement of fixed-route transit a difficult endeavor.

To illustrate this point, in 1919 the Federal government appointed an eight-member panel to the Federal Electric Railways Commission to investigate the challenges then facing operators of streetcars in American cities. The creation of the commission was preceded by several very difficult years for private companies whose transit systems carried millions of Americans each day. Inflation in energy prices, labor shortages, deferred maintenance, and fixed fares were among the many symptoms of these difficult years. While these more notable symptoms seem unrelated to good service design, the findings of the Commission are startling in their applicability to today's planning problems. Some of the findings and recommendations for streetcar companies include: reduction of stops to improve speeds; elimination of service in low-density areas; consolidation of competing lines; adjustments to fare structures to reflect cost variations that can exist between routes, and so forth.

In 1958 the National Committee on Urban Transportation assembled what was likely the first set of comprehensive standards for transit services and facilities in North America. This document recognized "that [standards, warrants, and objectives] must be directly related to the economical feasibility of providing services." Furthermore, it provided standards for routing which listed desirable routing characteristics such as: offering directness of travel with respect to origins and destinations; being free of duplication, except where routes converge; including a minimum number of turning movements; and so forth.

In 1982 Spokane Transit adopted its first Service Standards for fixed-route service. The standards included minimum frequencies, hours of service (span), loading, stop spacing and access. Service Planning Guidelines adopted by the STA Board in February 2000 made some modifications to these standards while adding additional guidance on service change procedures and service allocation.

This section of Connect Spokane draws from documents highlighted above as well as numerous samples of service guidelines and standards documents from other transit authorities. This document is intended to both express ideals and establish expectations for the design, quality and performance of Spokane Transit's fixed-route system.

The process of creating good transit service is perhaps new to most readers. However, the practice is similar to that of building a good

house. For example, first builders must ask, "What makes for a good house?" Most people generally agree that a good house should be energy efficient, comfortable, aesthetically pleasing, and protect its inhabitants from adverse weather. These are the principles of building a good house. Second, they ask, "How do I build a good house?" There are many ways to build a house, but construction of good houses must meet important regulations and standards to ensure safety, utility, consistency and proper urban form. These are the policies to follow when building a good house. Finally, builders ask, "Did I build a good house?" This can be measured by calculating energy efficiency, looking for leaks in the roof or analyzing the market value. These are the performance standards used to evaluate the need for remediation. If they didn't build a good house, builders must revisit the principles and follow the process again. This "understanding, implementing, and evaluating" analogy illustrates the similar process used to create and maintain first-rate fixed-route transit service.

There are three questions to ask about fixed-route design:

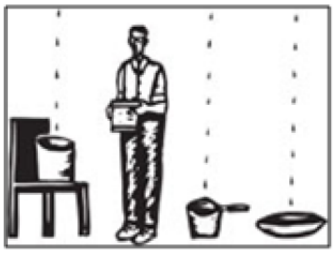
1. Principles-What makes for good service?

This section describes basic principles that affect the design of service, its utility to the public, and ultimately the performance of the route on many different levels. It is not meant to be policy; rather, it is information prepared to communicate to decision makers, customers and other groups interested in transit service the concepts that should be considered to ensure the most benefit is derived from investment in operating fixed-route service.

2. Policies-What guidelines do we follow to create good service?

This section articulates draft policy, based on principles, that defines transit network architecture, extent and service levels for fixed-route transit service. Issues of frequency of service, span (hours of operation), public input, and geographic extent are determined in policies to ensure consistency in service modifications, enhancements, and reductions.

3. Performance Standards-Did we build good service?
(Located in Annex 1: Performance Standards)



This section contains three primary standards that when not met result in evaluating alternatives for remediation. This may include routing changes, service reductions, or adjustments to related routes. The performance standards measure route performance based on ridership productivity, farebox recovery, and vehicle loads as it relates to the energy consumed for transporting passengers.

Fixed-Route Service Design Principles

The principles listed below provide guidelines for ensuring the most benefit is derived from investment in operating fixed-route service. Adherence to these principles grows in importance as demand and service expand. Smaller transit systems can afford, with relatively little risk, to design systems outside of the recommended principles below. Larger systems, such as STA, cannot afford the same luxury.

1. Network
Routes should be designed in the context of other routes and transit facilities.

No route is an island. Designing routes within the context of other routes and transit facilities provides for sound transit networks.

2. Independent Utility
Routes should be designed to access a mix of uses and have utility independent of transfers.

While route design should reflect network integration, each route should be developed to have utility independent of transfers. For instance, the notion of trunk and feeder suggests that feeders are dependent upon a trunk for utility and therefore taking people to a transit center or park and ride is adequate. STA's experience with such route has shown that they are suboptimal. While in most cases riders will transfer, a route that "feeds" a major line should access a mix of uses so that there are trips that could be served on the line without a transfer.

3. Generalized Service versus Specialized Service
Route design should focus more on generalized service, rather than specialized service, for greater ridership gains based upon equivalent capital investments.

Generalized service provides service for most of the day and can be folded into the travel patterns of a multitude of customers for many different purposes. Specialized service seeks to go out of its way to reach the front door of a specific employer or housing facility, is scheduled around specific work shifts, or is limited to peak travel times. In most cases, the more

specialized a service, the less capital intensive it should be. In the majority of cases, capital and operating investments in generalized service will result in greater ridership gains over comparable major capital investments in specialized service.

4. Multiple Destinations

Generalized service routes should be designed to serve multiple origins and destinations.

A generalized service route should serve multiple origins and destinations. While a downtown area will produce higher trip demand than many other destinations, ensuring a route has intermediate destinations allows for greater seat turnover and utility to riders.

5. Route Terminals

Routes should be designed with anchors in activity centers with healthy mixes of employment and housing.

Routes should be anchored in activity centers, ideally with a mix of jobs and housing. As much as possible, routes should not end in low density environments. Without proper anchors a route will chronically be empty at the end of the route and serve fewer people.

6. Interlining of Routes

Routes should be designed to interline with other routes, rather than terminating in a central business district (CBD).

It is common practice to radiate routes from a CBD. While it may support defining a route's destination, it provides less mobility than continuing through downtown, either after a pause and/or route number change, or as a singular route. Interlines should reflect utility to the rider; routes that are interlined and serve the same general geography or quadrant of the city (so the bus is effectively turning around downtown) are generally not useful to riders.

7. Route Length

Routes should be designed to be as long as practicable without being wasteful, unreliable, or inoperable due to the lack of recovery opportunities.

The longer a route, the more opportunities there are to match origins with destinations without requiring a transfer. This results in a higher load at any given point on a route. Ideally, no route should be less than two miles in length.

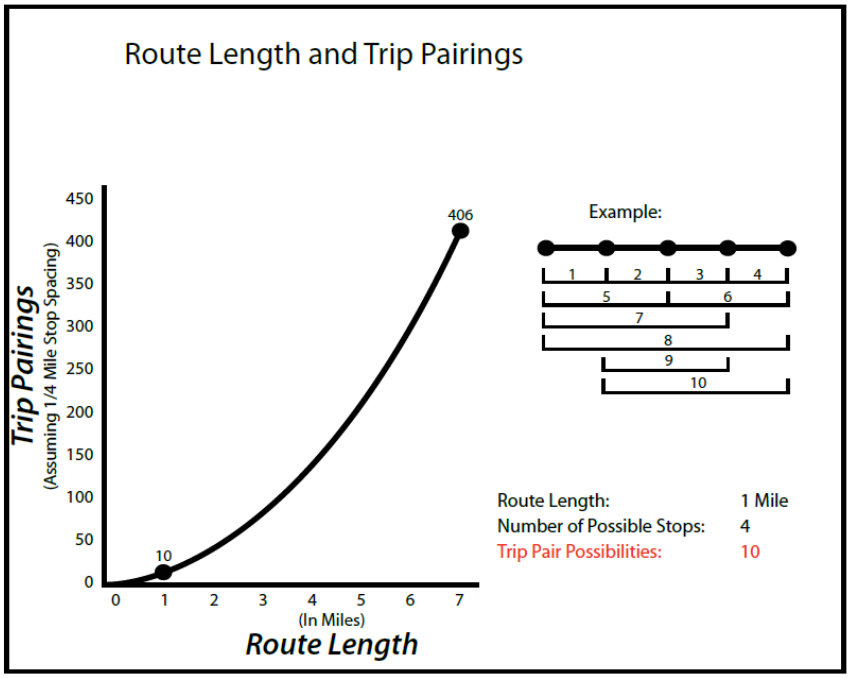


Figure 3- Route Length and Trip Pairings

8. Arterial Travel

Under most circumstances, routes should be designed to travel on arterials.

Travel on arterials generally provides a good balance between speed and access. Appropriate exceptions include the following: to accommodate route terminals where off-arterial travel is necessary to turn around; an alternative to a segment of arterial where grades or other inherent conditions prohibit regular transit operations; or, where a non-arterial street has been designated as a special transit corridor with enhanced and/ or exclusive infrastructure that is amenable to transit operations.

9. Speed versus Access

Routes should be designed specific to the speed and access needs of the areas/ populations they serve.

While people may prefer the fastest way between two points, point to point (non-stop) service is not available at a scale that would match the ubiquity of the automobile. Adding more access (i.e. pick-ups and drop-offs) can increase utility but can also reduce the service utility for some riders. Generally, access must decrease in order to increase speed.

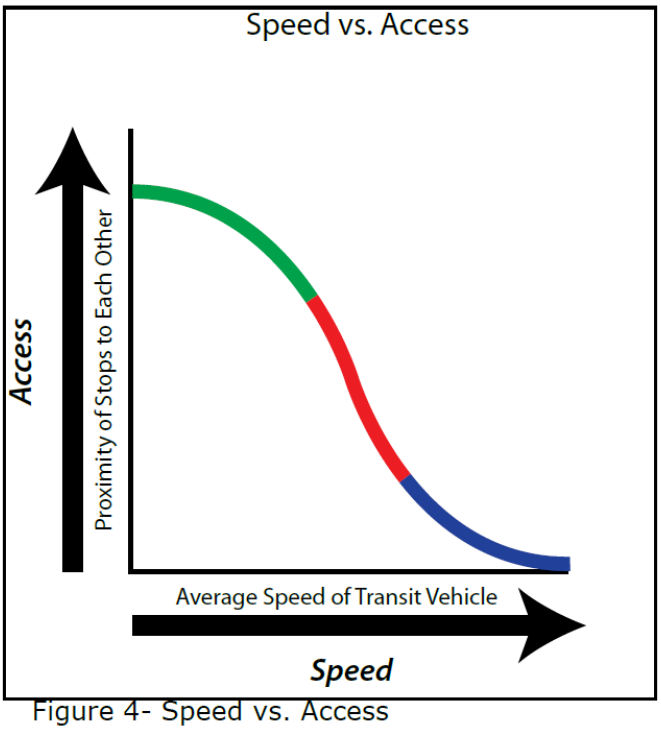


Figure 4- Speed vs. Access

10. Convergence of Routes

Routes should be designed to converge on higher density centers and corridors to increase frequency and facilitate short, spontaneous trips.

When approaching on higher density centers and corridors, such as a CBD or university campus, it is appropriate for routes to converge such that the combined frequency increases the capacity and quality of service. Focusing service on a common pathway can allow for very high frequencies that facilitate short, spontaneous trips by people who would otherwise not opt for transit as a preferred mode.

11. Route Spacing

Parallel routes should be spaced far enough apart so that service is not duplicative.

Numerous transit studies have shown that people will walk up to ¼ to ½ mile to catch a bus or train. Therefore, spacing of a minimum of ½ mile in most cases eliminates unnecessary duplication of service and simplifies the decision-making process for riders. It also tends to enable higher frequencies on a single corridor rather than a dilution of service over many streets.

12. Loops and Circles

Under most circumstances, routes should be designed to avoid loops and circles.

People generally prefer the most direct path between any two points.

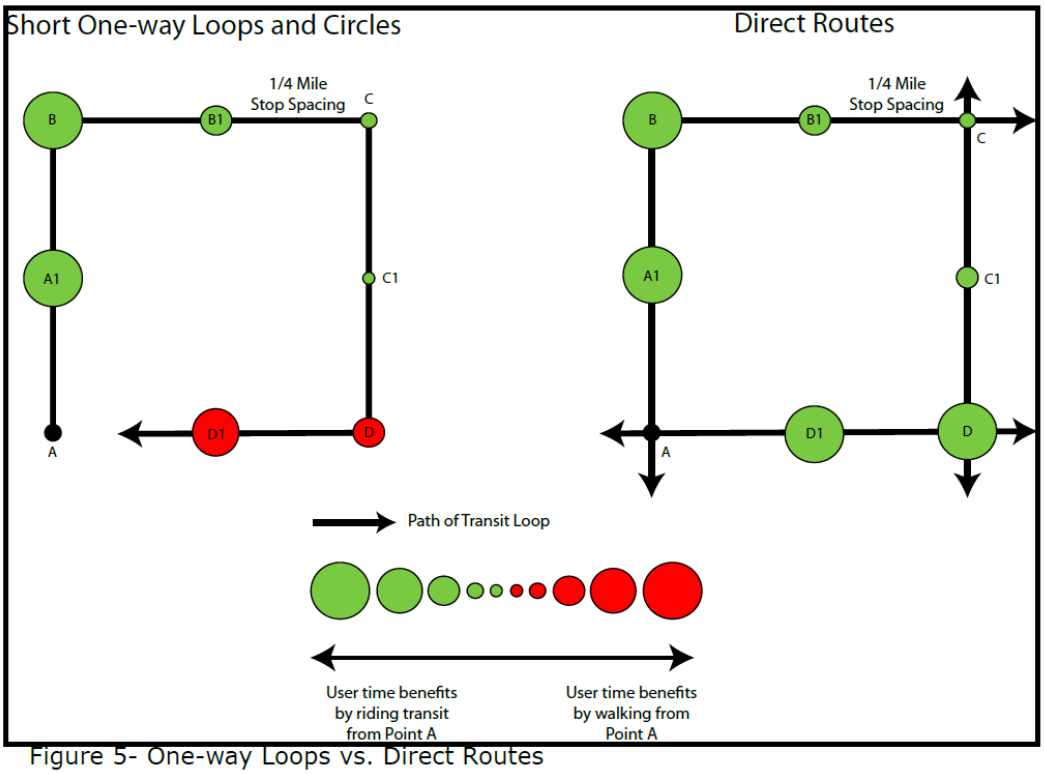


Figure 5- One-way Loops vs. Direct Routes

Providing a circular path, especially in a one-way fashion, can add cost and reduce the attractiveness of service. Some small loops that operate at route terminals or very large two-way loops where the circumference is sizable so that most riders will travel in a straight line or only a medium-sized arc about the loop may be appropriate.

13. Middle Ground

Where possible, routes should travel along corridors which have ridership generators on either side in such a way that the route bisects destinations rather than skirting the periphery or along physical barriers such as rivers, ledges or lakes.

14. Opportunity Cost and Change

Route design should focus more on providing good service and network design, rather than ridership preservation, to increase overall ridership.

Reallocation or restructuring of service to better fit good service and network design will typically result in increases in ridership. Despite this opportunity, there will always be pressure to maintain current service in order to preserve current riders' travel habits. Hence, ridership growth will always be pitted against ridership preservation.

Fixed-Route Service Design Policies

This section articulates policy, based on principles, that defines transit network architecture, extent and service levels for fixed-route transit service. These policies are intended to ensure consistency of existing service and for service modifications, enhancements, and reductions as well. The policies may be used by citizens, staff, and elected officials for the purposes of decision making, maintaining consistency, and network/route building guidelines. The following policies can be classified into two categories. The first set of policies can be applied to the system as a whole. The second set of policies is route-specific. The existing network, routes, and all proposed route changes should be in compliance with all of the policies to the greatest extent practicable.

Policy Summary	
System-wide Policies	
FR-1.0 Major Service Types	These policies define the types of service found in the fixed-route network.
1.1 HPTN	This is a network of routes selected for higher capital and operating investment.
1.2 Basic	This is the basic service level STA provides.
1.3 Commuter Peak	This service is focused on peak demands for specific travel markets.
1.4 Basic Service in Transition	Incremental investments in basic service that overlay proposed HPT routes may take place over time.
FR-2.0 Service Allocation	These policies identify targets for the allocation of service across service types and geography.
2.1 Geographic Extent	This policy defines the necessity of geographically extending service to serve the urbanized areas.
2.2 Service Type Allocation	This policy defines the minimum and maximum percentage of revenue service hours allocated to each service type.
2.3 Geographic Allocation	This policy defines the minimum requirements for serving each travel shed within the PTBA.
FR -3.0 Service Span	The Service Span policies identify target hours of operation during each day of the week.
3.1 Basic System Hours	This policy defines the system operating hours requirements for regular basic service.
3.2 Extended System Hours	This policy defines the system operating hours requirements for the HPTN.
Route-specific Policies	
FR -4.0 Headway	This policy defines the maximum headways for service by type.
FR -5.0 Stop Spacing and Placement	This policy states guidelines for stop placement and defines the maximum and minimum distances for stop spacing by service type.
FR -6.0 Route Numbering	This policy defines the standard numbering system for all routes.
FR -7.0 Service Implementation Plan	This describes the service revisions which are planned for the following two years.

FR-1.0 – Major Service Types

STA shall provide four major types of fixed-route service: High Performance Transit Network (HPT) Service, Basic Fixed-route Service, Commuter Peak Service, and Basic Service in Transition.

HPT and Basic service types are generalized service that are designed to serve the greatest number of people within the region's geographic area and STA's financial limitations. Commuter Peak is a specialized service focused on attracting and accommodating peak demand travelers to employment and education centers. Basic Service in Transition recognizes the transition time and investment a Basic Service route may require to develop into HPT-level service. The following descriptions describe a basic policy framework on which the attributes of each service type is constructed.

1.1 High Performance Transit Network Service

This generalized service is intended to be considered full-time service, operating in two directions. Spontaneous travel is supported by the relatively high frequency of service. The HPT routes are in major corridors where there is sufficient ridership to justify significant investments in passenger amenities and information. At this stage, three service sub-types – Green, Red, and Blue (see P-5.0 and P-6.0) – have been identified to reflect appropriate distinctions in speed, service frequency, and access (distance between stops) for each route or family of routes. At some stage, these service sub-type names may be replaced with more descriptive branding names. A specific route in the HPT service typology is considered a HPT Corridor.

1.2 Basic Fixed-route Service

This is the basic service level STA provides as general purpose service. It is intended to be sufficient enough to meet basic demand that exists in an area served while still being robust enough to meet many purposes throughout each day. For the purposes of service attributes of frequency and stop spacing, Basic Fixed-route Service is classified into two types: Basic Urban and Basic Interurban.

Basic Urban meets travel needs in urbanized areas where the average passenger trip length is less than or equal to three miles long. Basic Interurban provide service between urbanized or suburban areas, possibly traveling through semi-rural areas, where the average passenger trip length is more than three to five miles in length. The rationale for this distinction at three miles is based on the premise that service should generally be more frequent than a walking alternative. That is, if the average passenger can arrive at their destination within the same time as the full wait time in between trips by walking, the service becomes substantially less attractive. This distinction also reflects the financial aspects of basic service: 1) longer routes typically require a higher operating cost to achieve the same frequency as shorter routes and 2) at an equal fare for all basic routes, the longer a passenger trip, the more

favorably transit compares to the operating costs of the automobile.

1.3 Commuter Peak Route Service

This is a service that is focused on premium/express service to a major employment or education center on weekdays at peak periods for the destination. Such routes are typically one-way in each peak. It may be anchored by a park and ride facility or have a collection segment through residential areas before traveling limited stop to the employment/education center.

Commuter Peak routes should provide no less than five trips per peak in order to be adequate enough to provide for a range of start and quit times for various employees. The exception to this rule would be peak routes that are provided by using buses that would otherwise be out of service (deadheading routes). These routes should provide at least three trips per peak and are considered "Commuter Peak – Subordinate" routes for purposes of performance standards. Service headway for all Commuter Peak routes should be no more than every 30 minutes.

1.4 Basic Service in Transition

Basic Service routes that coincide with identified High Performance Transit Network Corridors for the majority of route miles should be the focus of incremental investments in increased frequency and hours of service (span) as well as investments in reliability treatments and enhanced passenger amenities to provide an incremental investment in the High Performance Transit Network. At such time a Basic Service route is more like a HPT corridor than Basic Service, route branding and communications should transition to reflect to the customer the higher quality and quantity of service provided.

FR -2.0 – Service Allocation

Transit agencies generally provide a service allocation policy to guide transit planning and support the agency's mission and goals. Common policies in other communities relate to geographic extent of service, spatial distribution of service among geographic partitions of an agency's service area, and distribution of operating outlays among service types. The Spokane Transit service allocation policy will include a hybrid of these three methods.

2.1 Geographic Extent

Basic or HPT service shall be available within no more than one-half mile of at least 85% of the PTBA population residing within urban areas.

Urban areas are defined as the Spokane "urbanized area" (UZA) and "urban clusters," as defined by the last available US Census. This policy recognizes the need to be geographically extended in order to be accessible and functional for the traveling public. It also highlights the position that fixed-route is a service made functional because it serves urban areas.

While rural areas will likely have some service, this service is incidental to a route's design. Using census data and geographical definitions, this policy can be measured.

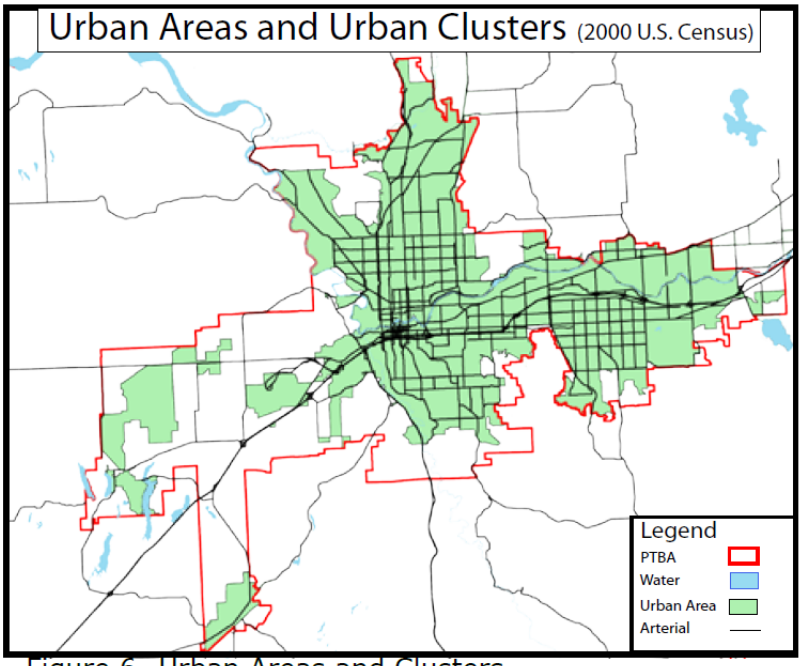


Figure 6- Urban Areas and Clusters

2.2 Service Type Allocation

STA shall allocate service hours in a way which maximizes overall system efficiency.

The following minimum and maximum allocation rates are considered ideal:

1) No more than 15% of annual fixed-route revenue service hours should be allocated to Commuter Peak service.
2) No more than 50% of annual fixed-route revenue service hours should be allocated to HPT service.
3) At least 35% of annual fixed-route revenue service hours should be allocated to Basic Service.

Past practice has included "blend formulas" that specified a precise percentage distribution among service types of "productivity, coverage, and equity." This sort of policy is neither practicable nor desirable. Rather than being a strict formula for distribution among service types, the policy is intended to provide checks and balance to service planning and implementation. Constraining the extent of Commuter Peak and HPT service types is reasonable given their higher capital investment requirements compared to Basic Service. Maintaining at least 35% of the service as Basic Service ensures coverage to areas that do not justify HPT

or Commuter Peak service. While current routes have not been developed with the three major service types in mind, existing service reflects the following make-up: 93.8% Basic Service; 5.7% Commuter Peak; and, 0.5% undefined service.

2.3 Geographic Allocation

STA shall ensure a geographic distribution among high quality service types.

The following allocations of service should be observed in allocating service among Travel Shed Partitions:

1) Each Travel Shed Partition should have at least one Commuter Peak route originating within the partition so long as it meets service performance standards.
2) Within 10 years of implementation of the first HPT corridor service, HPT service should operate within each travel shed partition.

Travel Shed Partitions will be defined as a service design tool in meeting this criteria. Conceptually these will be defined as North, South, East and West Plains. The intent of the partitions is to ensure a geographic distribution among high quality service types. Partition boundaries should not be defined by municipal boundaries; neither should tax revenues raised in a partition determine service provision. Rather, the partitions are merely for grouping component travel needs in order to ensure a minimum level of need satisfaction.

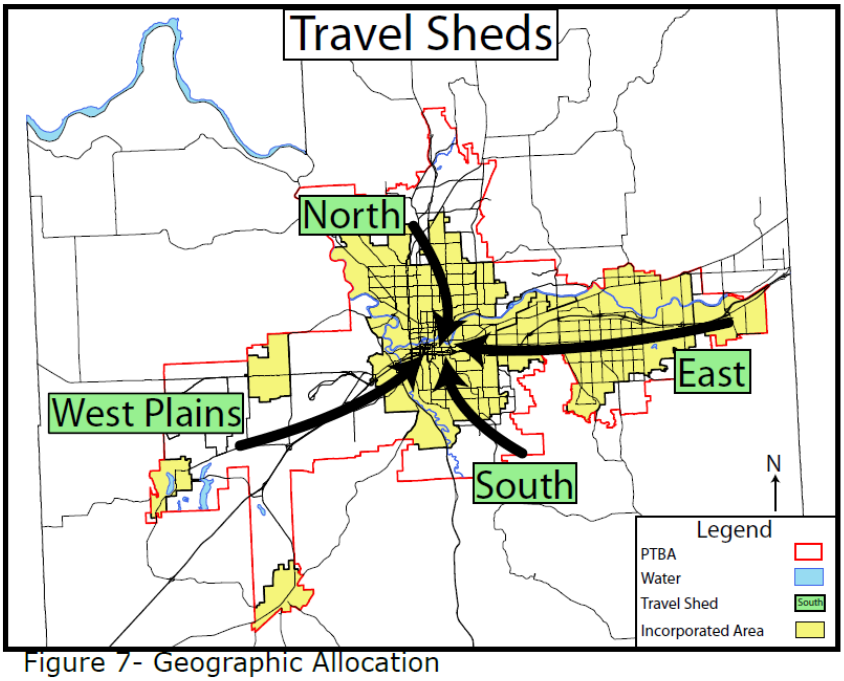


Figure 7- Geographic Allocation

FR -3.0 – Service Span Policy

3.1 Basic System Hours of Service (Span)

STA shall provide the maximum possible span of service for its Basic System.

The extent of each day in which the Basic System is in operation is as follows:

Day	Span
Weekdays	6 am to 11 pm
Saturdays	6 am to 10 pm
Sundays/Holidays	8 am to 9 pm

3.2 HPTN Hours of Service (Span)

Whenever operationally feasible, STA shall provide an HPTN span of service greater than that of the Basic System.

Day	Span
Weekdays	5 am to 1 am
Saturdays	6 am to 12 am
Sundays/Holidays	6 am to 10 pm

FR -4.0 – Headways for HPT Service/ Basic Service

STA shall adhere to maximum headway standards when determining a route's frequency.

The following headways are maximum intervals considered acceptable for the various general purpose fixed-route service types. The definition of Peak, Base and Sub-Base periods are relative to the travel demand, but generally Peak is between 6:30 am and 8:30 am and 4:00 pm and 6:30 pm on weekdays; Base is the period between weekday peaks as well the outside shoulders of Peak travel times; and Sub-Base is late-nights and weekends.

Service	Maximum Headways (minutes)			
	Span	Peak	Base	Sub-Base
HPT – Green	Extended	10	12	15
HPT – Red	Extended	12	15	30
HPT – Blue	Extended	15	30	60
Basic Urban	Basic	30	30	60
Basic Interurban	Basic	60	60	120

FR -5.0 – Stop Spacing and Placement

STA shall balance customer access, service reliability, and system performance when determining the spacing and placement of bus stops.

The fixed-route service stop defines whether service is provided in a geographic area. The optimal placement of stops plays a critical role in customer access, service reliability, and system performance. Past practice has encouraged the proliferation of stops with the view that the biggest hurdle to increased transit patronage was a lack of access to transit within a convenient walk. The result is that there are instances in STA's service area where one bus in service may stop more than once on the same block face. The stop spacing policy recognizes the influence access has on speed and ridership. Research and service design changes in other transit markets have taught the following lessons: 1) people are willing to walk greater distances (1/2 mile or more) for higher quality service and 2) stops closer than one-quarter mile generally don't provide more ridership; in most applications, ridership has grown after stops have been eliminated to meet a greater average distance between stops.

Service	Average Stop Spacing	Minimum Stop Spacing	Maximum Stop Spacing
HPT – Green	¼ mile	1000′	1500′
HPT – Red	½ mile	1300′	8000′
HPT – Blue	2.5 miles	5000′	N/A
Basic Urban	¼ mile	800′	1500′
Basic Interurban	½ mile	800′	N/A

Placement of a stop should consider the following:

1) Relationship to high demand destinations
2) Proximity to intersecting routes and transit facilities
3) The ability for customers to safely access the stop from both sides of the street
4) The ability for the bus to efficiently and safely re-enter general purpose traffic

Where considerations 3 and 4 negatively impact the ability to place a stop considered due to 1 and 2, STA will work with the appropriate jurisdiction to provide a solution.

FR -6.0 – Route Numbering

STA shall adopt a route numbering policy consistent with industry standards.

The following policy provides guidelines on a numbering system for all fixed-routes. A survey of various transit systems suggests that organizing route numbering series by service types and common geography (destination-based or travel-shed-based) is the most prevalent numbering logic outside of simple sequential numbering. A clear numbering system helps customers to make effective travel choices based on the service characteristics which are most important for their particular transportation needs.

STA routes are grouped in series with the first digit reflective of either common geographical attribute or common service characteristic (service type). As a policy, HPT routes, Basic Service in Transition, and Commuter Peak service should be in series reflecting service type while Basic Service can be grouped by common geography. To avoid confusion, no route number should conflict with a numbered Washington State highway passing through the PTBA. Any reintroduction of a route number on a substantially different route than its prior identity should occur after no less than two years of non-use.

Colors and letters can also be used to distinguish HPT or specialized routes. The use of colors and numbers, when introduced, should fit within a systems-approach to service communication and branding.

FR -7.0 – Service Implementation Plan

By April of each year, STA shall prepare a draft Service Implementation Plan to cover a three-year period beginning with the September service change.

This document should be prepared by April and adopted no later than July 1 of each year to guide the delivery of Fixed-Route Service. Developed in close coordination with the agency's six-year financial projections based in the Transit Development Plan, the SIP describes service additions and revisions proposed for the coming September service change and the preliminary proposal for changes in the following two years. The Route Performance Report required in the Monitoring and Improvement Element of the Comprehensive Plan will be incorporated into this document.

Fixed-Route Connect Strategies

Sustainable Service Map

The following map is a conceptual look at how STA may contract its services to meet revenue streams.

During challenging economic times, many transit agencies are forced to cut the amount of service provided to meet budgetary needs. Although there are many ways to cut service (days of service, span, frequency, geographic coverage, etc.), a strategic reduction which balances present day ridership with the planned future network is essential to paving the way for a speedier recovery of the transit system in the future. This is an early concept of 2012. With further analysis and public input, the actual outcome will undoubtedly change and more details will emerge.

Paratransit

Paratransit is a wheelchair-accessible shared-ride transportation service for individuals whose disability prevents them from using the regular fixed-route buses. This means that due to a disability a person must be unable to get to or from a bus stop, get on or off a lift or ramp equipped bus, or successfully travel by bus to or from their destination.

STA has a long history of collaboration and support regarding people with disabilities and people who are older. In 1990, the Americans with Disabilities Act (ADA) was passed, ushering in a number of compliances required of public transit agencies, including upgrading/retrofitting fixed-route buses to better accommodate people with disabilities, as well as establishing paratransit services to compliment fixed-route service. STA has consistently fulfilled these requirements. The paratransit fleet has grown to 67 vehicles and additional service is regularly contracted through another provider to meet demand.

Although paratransit service is an essential piece to the transit network, people are encouraged to use fixed-route whenever possible. The 2008 average cost per paratransit trip was $21.49, compared to $3.95 per fixed-route trip. Paratransit service expense represents approximately 20 percent of STA's total operating budget, yet accounts for approximately 5 percent of STA's total trips. As a result of a high level of service, as well as a relatively inexpensive fare, STA's paratransit ridership has grown considerably since the inception of ADA regulations. STA's paratransit ridership experienced intense average annual growth (10.1 percent) between 1990 and 1996. Due in part to several initiatives such as conditional eligibility, trip-by-trip scheduling, and mobility training, growth has slowed to an average annual growth rate of 1.2 percent. Balancing quality service with fiscal effectiveness remains a key concern of STA's Paratransit department.

Paratransit Goal

Paratransit shall meet ADA standards as a comparable service which compliments fixed-route service.

Paratransit Principles

The principles listed below identify the basic concepts of paratransit. These principles are unchanging, define the basic foundation of paratransit, and will continue to serve as guidance for new and existing paratransit policies.

1. Purpose

Paratransit service is an origin to destination, shared-ride service.

Paratransit is not a personalized taxi service. Rather, paratransit is a service intended to serve multiple people and destinations using a shared trip. Service begins at the door of a rider's origin and ends at the door of

their destination, usually making stops for other paratransit riders along the way.

2. Compliance

Paratransit service complies with the ADA service criteria.

As a requirement of operation, STA's paratransit service must comply with the ADA service criteria. Compliance is required in categories that include fares, travel time, eligibility, capacity constraints, service area, response time, transport of common people using wheelchairs, visitor service, no trip restrictions or waiting lists, no shows, and so forth. These compliance categories may change over time, but the principle of compliance requires STA to continually monitor changes at the federal level and adjust policies and practices to meet these requirements.

Paratransit Policies

Based on the paratransit principles, this section articulates policy and defines the intent and extent of the paratransit services provided by STA. These policies are intended to ensure consistency and coordination between existing service and future enhancements or reductions. The policies should be used for the purposes of decision making, maintaining consistency and service modifications.

PT-1.0 – Service Area

1.1 Geographic Area

Strictly adhere to a three-quarter mile geographic buffer around fixed-route lines of service.

STA provides paratransit service which is geographically comparable to fixed-route service. Paratransit service will be limited to origins and destinations located within a three-quarter mile radius of all fixed-routes.

1.2 Simple Boundary

Adhere to a consistent boundary for paratransit service availability relative to the maximum fixed-route service footprint and span provided.

Although paratransit boundaries are allowed to change in response to the specific hours a particular fixed-route is running, STA operates paratransit service within a static boundary of geography and span. The paratransit boundary adheres to the footprint created by the boundary associated with all of the fixed-routes at all times. Additionally, the span of paratransit service will mirror the span of the entire fixed-route system.

PT-2.0 – Service and Eligibility Standards

2.1 Travel Time

Travel time for a paratransit ride shall be comparable to a similar fixed-route trip.

The time of the typical paratransit ride should be comparable to the

time it would take to make the same trip using fixed-route service. The comparable time calculation for the fixed-route trip will consider the time that it would take to walk to the transit stop, wait for the transit vehicle and transfer to another vehicle if necessary.

2.2 Call Center

Provide paratransit call center capacity comparable to that of STA's general call center operation.

In an effort to offer comparable service to that of fixed-route, the paratransit call center should maintain the same relative capacity for calls as is expected for fixed-route.

2.3 Reservation Window

Provide a seven-day reservation window for paratransit service.

A seven-day reservation window allows customers to plan ahead. This is especially helpful for paratransit riders bound for medical appointments or other scheduled events.

2.4 Eligibility Determinations

Eligibility determinations will be based on trip-by-trip eligibility.

For those customers who are conditionally eligible, eligibility will be determined based on key factors of the nature of each particular trip vis-à-vis the customer's physical and cognitive abilities. For example, weather, terrain, accessibility, etc. may determine whether or not a customer with conditional eligibility is able to complete the trip with fixed-route or if they need paratransit service. This policy ensures that public resources are used responsibly and fairly.

2.5 Emergency Conditions

Emergency conditions may require trip prioritization at limited times.

STA is determined to refrain from prioritizing paratransit trips. However, severe weather or other emergency conditions may require STA to take the step of using prioritization techniques for paratransit vehicle trip assignments.

2.6 Safety

Securements for wheelchairs and safety/seat belts for all riders shall be required on all vehicles making paratransit trips.

Safety is the primary concern of STA. Requiring the use of securement devices on paratransit vehicles, as well as education on their proper use, is an important step towards keeping our riders and operators safe.

PT-3.0 – Service Structure

3.1 Balance

Sustain a service delivery architecture that provides for high productivity and operational flexibility (in-house, contracted) to meet the varying levels of service demand.

Due to an ever-changing operating environment, STA must balance productivity with flexibility when needed.

Paratransit Connect Strategies

Pick-up and drop-off locations

Designated pick-up and drop-off locations for those areas which have high paratransit activity or those locations which have multiple entrance and exit points should be evaluated and identified.

At times there is confusion about where the paratransit vehicle or passenger should wait at destinations like hospitals, malls, etc. Identifying pick-up and drop-off locations that are easily accessible to the passenger as well as the transit vehicle helps the service be more convenient and efficient for passengers.

Paratransit policies

The policies which exceed ADA standards should be reevaluated, including but not limited to implementing a time-dependent dynamic paratransit boundary.

By law, Spokane Transit Authority is required to provide paratransit service which is comparable to that of the fixed-route service provided. Any policy which exceeds the ADA requirements should be reevaluated.

New programs or service types

Evaluate the potential to add additional programs or types of service to paratransit.

Programs or activities which should be considered may include but is not limited to:

- A free fixed-route for paratransit customers program
- Dial-a-ride/flex-route opportunities in unique situations
- Feeder service opportunities
- Encouraging shared ride scheduling through education and incentives

Rideshare

To create a balanced and complete transit network, STA employs a variety of services. Just as fixed-route and paratransit services fill unique travel needs, STA's rideshare program offers an array of opportunities that meet needs not served by the other programs. Rideshare has traditionally focused on the vanpool program serving groups of commuters who travel longer distances to their workplace, but there are numerous opportunities to capitalize on the benefits of rideshare. In addition, through the implementation of other shared ride services like special use vans and vanshare, STA will be able to help efficiently improve the mobility of its customers. STA's rideshare program ridership has experienced considerable growth since its inception. Since 1999, vanpool ridership has maintained an average annual growth rate of more than 20 percent, resulting in approximately 210,000 annual passengers in 2009. The rideshare program holds considerable promise for enhancing the effectiveness and efficiency of STA's other services.

Rideshare Goal

Spokane Transit Authority's rideshare program will support the overall transit network as well as local and regional commute trip reduction efforts by offering specialized transit services.

Rideshare Principles

The principles listed below define rideshare. They provide guidelines for ensuring that the fundamental ideas behind rideshare service are understood by all. These principles are unchanging and will continue to serve as guidance for new and existing rideshare policies.

1. Purpose

Rideshare meets specialized needs that cannot be met with other transit modes.

Rideshare is not a fixed-route service. Rideshare is an on-demand shared-ride service which can efficiently move groups of people and can meet the specific needs of its customers while often requiring lower capital, operating, and energy resources.

2. Partnerships

Spokane Transit Authority's rideshare service is part of a partnership that extends across agencies.

Coordination between all national, state, and local agencies working towards the goal of reducing vehicle miles traveled is essential. Agencies that organize, advocate, and support rideshare need to work together to achieve statewide goals.

3. Regional Service

Rideshare is a regional service that can extend beyond the Public Transportation

Benefit Area, Spokane County and Washington State boundaries.

As a part of serving specialized transit needs, rideshare services provide for a larger region than fixed-route or paratransit services. Rideshare is able to extend into areas with limited access or into rural areas which cannot be supported by fixed-route transit.

4. Benefits Must Outweigh Alternatives

To be successful, collective benefits (cost, time, convenience, peace of mind, etc.) of using rideshare must be greater than driving alone.

Existing and potential riders are continually evaluating options and weighing the collective benefits of each mode of transportation. Riders rarely make decisions based on only one benefit, thus the rideshare program continually considers the collective benefits of its services compared to other options.

5. Availability

Rideshare is on-demand.

Rideshare has the flexibility to be scheduled around specific work shifts or events.

Rideshare Policies

The following rideshare policies articulate the guidelines for rideshare service standards and coordination. Each policy contributes to specificity and provides guidance towards reaching the overall goal of rideshare. As a whole, the collection of policies establishes a framework for the future development of rideshare services.

RS-1.0 – Service Standards

1.1 Service Types

STA rideshare service types may include vanpool, special use vans, and vanshare.

Each service is defined as the following:

Vanpool: A van provided by STA that is shared by people who live and work in approximately the same areas and can commute together to a place of employment. The driver is not an employee of STA.

Special Use Vans: Special use vans are awarded to select service providers in our area who primarily serve residents who travel to, from and within the PTBA. They are used for providing transportation for people with special needs and their caregivers.

Vanshare: A van used to bridge gaps between public transit and a group's final destination. It is particularly useful when a place of employment is not within walking distance of a major transit facility.

1.2 Geography

Begin or end all rideshare services within the PTBA.

Although rideshare trips may be entirely within the PTBA, this policy allows groups of people who live or work outside of the PTBA boundary to reach their destinations inside of the PTBA more efficiently. This policy reflects the reality that the regional employment base, and by extension, the travel shed extends well beyond the PTBA.

1.3 Safety

Support customer safety.

The safety of STA passengers is of great importance. All rideshare vehicles are equipped with seatbelts and safety devices to help ensure the safety of drivers and riders. Safety education programs for rideshare drivers and riders will help all customers ride more safely and comfortably.

RS-2.0 – Service Coordination

2.1 Complementary Service

Rideshare shall support fixed-route and paratransit services.

For STA's transit network to thrive, all services must connect to and complement each other. In cases where fixed-route service cannot meet the service design guidelines, rideshare can be an efficient way to serve places of work or residency with public transportation.

2.2 Coordination

Support rideshare coordination and connections with all modes of transportation, including pedestrians, bicycles, automobiles, and other transit services.

No transit trip is ever completed without the use of another mode. All trips begin and end with walking, riding a bicycle, or driving to reach the transit network. Improving and enhancing the ability for customers to reach transit can be just as important as the transit trip itself. Promoting coordination and connectivity between modes is essential.

Rideshare Connect Strategies

Innovation

Investigate ways to more efficiently utilize rideshare resources.

Explore options such as:

- Using vans in the off-peak hours for non-work related trips (possibly drive home).
- Creating a program which operates vans like a Flexcar.
- Exploring enhanced parking options for rideshare customers.

Promotion

Promote rideshare services by working with local jurisdictions, businesses and commuters.

Providing preferred rideshare parking stalls at park & rides and negotiating reduced parking rates with downtown Spokane parking lots and private businesses serving as rideshare destinations increases the collective benefits for riders. Additionally, signs reserving prime parking stalls for rideshare vehicles could entice others to consider using rideshare.

System Integration

The scope of Spokane Transit Authority's services is broad. Including fixed-route service, paratransit, rideshare, and the High-Performance Transit Network (HPTN), each of these system elements is sufficiently complex to warrant tasking entire departments with their administration. However, the interconnectedness of these elements adds to the system's overall effectiveness to provide public transportation services to the region. For this reason, both internally and in its communications with the public, STA should strive to promote the integration of its various system elements. A few examples of system integration within STA are listed below.

HPTN ⟷ Rideshare

Members of a rideshare are generally without access to a personal vehicle during the day. The HPTN provides an efficient form of transportation either for commute trip completion or for day-time mobility by making spontaneous transit trips as convenient as those made with a private vehicle.

HPTN ⟷ Other Fixed-Route Service

Customers of fixed-route service have varying needs. Some riders require more frequent stops to more easily access their destination, while others are willing to walk longer distances to use a faster, more frequent HPT service. The non-HPT routes also often serve to provide the essential "last mile" connection for a rider transferring from another transit vehicle with a higher speed and higher frequency.

HPTN ⟷ Paratransit

Some paratransit customers may only require paratransit services due to the distance or conditions between their home/destination and the nearest transit stop. By linking HPT stops with Paratransit services whenever possible, overall system efficiency increases by reducing the resources required to provide Paratransit services.

Rideshare ⟷ Fixed-Route Service

Rideshare, especially in its vanshare form, provides an essential link for riders between the fixed-route system and their final destination. The fixed-route network also provides rideshare customers with an efficient form of transportation for spontaneous trips throughout the day.

Rideshare ⟷ Paratransit

Many paratransit customers reside in group care facilities. By encouraging the use of rideshare's special use vans, efficiency develops by eliminating redundant trips. Instead of assigning multiple Paratransit vehicles to serve a group home over the course of a day, one special use van could meet riders' needs.

Fixed-Route Service ⟷ Paratransit

The paratransit service boundary is determined by the scope of the fixed-route service area. Therefore, no paratransit rider's origin or destination is ever more than ¾ of a mile from the nearest transit route. By easing use and accessibility of the fixed-route system, some current customers of paratransit may be able to consider the use of fixed-route service.