



Pioneer Valley Transit Authority
COMPREHENSIVE SERVICE ANALYSIS

SERVICE GUIDELINES

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PVTA

N NELSON
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ASG PLANNING

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1 INTRODUCTION

The Pioneer Valley Transportation Authority (PVTA) strives to serve the most riders in its area as cost-effectively, reliably and equitably as possible. To do so, PVTA must make a number of competing decisions on where demand is greatest, on which types of service would work best and be most appropriate, and how limited resources can and should be used.

As a framework to guide system development, PVTA developed this set of service guidelines to:

- ➔ Determine where service should be provided
- ➔ Design service
- ➔ Determine appropriate service levels
- ➔ Measure and establish minimum levels of service performance

PVTA is the largest regional transit authority in Massachusetts serving 24 towns and communities. Given the size of its service area and diversity of communities, PVTA operates a variety of services intended to meet local needs. These services include urban fixed-route routes, university shuttles, express bus routes, regional connectors, community circulators and ADA paratransit. From a service design perspective, PVTA service is organized around four main hubs located in Springfield, Holyoke, Northampton and at the University of Massachusetts Amherst. PVTA anticipates that ridership growth experienced over the last few years will continue over the near-term as systemwide improvements are introduced.

The service guidelines will be applied to the entire family of services provided by PVTA and are intended to bring clarity and consistency to the process of continually adjusting and improving transit services to meet varied and changing customer needs. This document addresses the design and scheduling of service and does not address amenities at transit stops and stations.

The service guidelines define the types of service that should be provided to meet the needs of specific local markets – whether densely populated urban corridors or connections between two regional activity centers. The intent is to identify minimum thresholds that should be met in order to provide attractive and effective service within these market areas, and to use the guidelines to continually monitor and adjust service to meet customer needs. In many cases, PVTA services may exceed these minimum thresholds; in others they may not. If a route continues to attract new riders and perform well, it may warrant additional service. Conversely, if a route is not performing well, PVTA must reassess the market being served, the purpose of the service, and make adjustments to improve overall effectiveness.

Finally, it should be noted that these guidelines are also designed to—within limits—provide flexibility to respond to varied customer needs and community expectation in an accountable, equitable, and efficient manner.

Adherence to these service guidelines is dependent upon resource availability, and in particular, the amounts of funding provided by the Commonwealth of Massachusetts and other PVTA partners. In the event of constrained resources, PVTA will strive to meet these guidelines as closely as possible and will work to achieve consistency as resources permit.

2 PVTA SERVICES

A hierarchy of PVTA services has been developed to reflect the array of travel markets and customer needs within the greater Springfield area. Eight different route classifications have been identified to help guide the design and scheduling of service for general public transit services route. These categories include:

1. Bus Rapid Transit/ Key Regional Routes: Tier I
2. Key Regional Routes: Tier II
3. Urban Radial Routes
4. Campus Services – Shuttles
5. Campus Services – Five College Routes
6. Village Connectors
7. Community Circulators / Flex Services
8. Express Routes

The specific routes included in each class are shown in Appendix A. Complementary ADA paratransit services must be designed in accordance with specific federal guidelines and are not addressed in this document.

BUS RAPID TRANSIT (BRT) / TIER I KEY REGIONAL ROUTES

Bus Rapid Transit (BRT) and Tier I key regional routes form the “backbone” of PVTA’s system and provide connections between the system’s four primary hubs. BRT or enhanced bus service entails increased investment for corridor improvements such as transit signal priority or queue jump lanes. The service is recommended on the corridors along State Street in Springfield and Route 9 between Amherst and Northampton. Tier I key corridor routes operate along primary arterials and offer direct service between Springfield, Amherst, Northampton and Holyoke. These routes play an important role by connecting major urban centers and other activity centers in the greater Springfield area. These routes should offer frequent and consistent weekday service, as well as weekend service where warranted.

TIER II KEY REGIONAL ROUTES

Similar to Tier I corridors, Tier II has high ridership but includes slightly less dense corridors and a correspondingly slightly reduced frequency. Transit services along these corridors would be increased from the existing system with predictable service 7 days a week, but at slightly lower frequency than Tier I routes.

URBAN RADIAL ROUTES

Urban radial routes are those that operate to and from downtown Springfield. Certain urban radials may extend outside of Holyoke to other urban centers (e.g. Westfield, Ludlow, etc.), but their primary role is to serve the downtown core. In several locations, urban radial routes come together in downtown Springfield and operate in a relatively high intensity transit corridor (e.g. State, Liberty or Main Streets). These key corridors may be targeted for passenger amenities, and roadway/corridor improvements in cooperation with MassDOT and local communities on a case by case basis.

There may also be a need to create two tiers of the urban radial routes to recognize key corridors within the Springfield network.

CAMPUS SERVICES - SHUTTLES

Campus shuttle routes serve the University of Massachusetts (UMass) Amherst campus, providing frequent connections between dormitories, other residential areas, campus buildings and Amherst center. Due to the large student population, these routes display relatively high ridership throughout the day and frequent daily service is provided. Evening and weekend service is provided where warranted and very late night service may be provided to ensure student safety. While the routes have a fare, students, faculty and staff associated with any of the Five Colleges can ride the routes for free.

Most campus services adjust service levels to reflect academic calendars and times when fewer students are on campus. This means there may time periods when no service is provided, such as the winter break, and times when reduced service are provided, such as the summer time.

CAMPUS SERVICES – FIVE COLLEGE ROUTES

Five College routes connect the Five Colleges network, serving UMass, Smith, Holyoke, Hampshire and Amherst. These routes operate much like key regional routes, but adhere to separate guidelines as they are designed to specifically to meet the unique needs of the student and college market. Students, faculty and staff associated with any of the Five Colleges can ride the routes for free.

Most campus services adjust service levels to reflect academic calendars and times when fewer students are on campus. This means there may time periods when no service is provided, such as the winter break, and times when reduced service are provided, such as the summer time.

VILLAGE CONNECTORS

Village Connectors operate primarily outside of the Springfield core. While some may serve the Springfield Bus Terminal, their primarily function is to serve passengers outside of the urban core. Village Connectors are designed to serve connect outlying rural village centers without going through downtown Springfield (e.g. Holyoke – Chicopee).

COMMUNITY CIRCULATORS / FLEX

Community circulators and Flex services are designed to provide flexible transportation and circulation within individual communities and lower density areas, especially those with relatively high populations of seniors and/or registered ADA paratransit users. Ideally, these routes also provide connections to Village Connectors or Regional routes in order to integrate rural areas with the larger PVTA service area.

Both services travel between fixed bus stops according to a regular schedule. Passengers must make reservations in order to be picked up at locations other than fixed bus stops, and may also request to be dropped off at locations that are not directly on the scheduled route, as long as they are in the service zone. On Village Circulators, passengers may also “flag down” a vehicle to be picked up along the route.

EXPRESS ROUTES

Express routes are designed primarily to provide fast direct service for commuters and others traveling between the region’s key downtown cores and other major activity centers. Express routes provide high-speed service, use freeways or major arterials, and make direct connection to provide more predictable, faster trips.

These routes generally operate on weekdays only, and many operate only during peak periods. However, depending upon demand, some express routes operate for longer hours or provide a mid-day trip.

3 SERVICE DESIGN GUIDELINES

PVTA strives to serve as many local area residents, students, workers, and visitors as it can with its available resources. Service features that attract one type of rider to transit can deter other riders, and PVTA must balance these types of competing demands. However, there are certain service design principles that will improve service for nearly all riders; this section describes the guidelines PVTA aims to follow in order to attract the most riders and balance competing demands.

SERVICE SHOULD BE SIMPLE

For people to use transit, service should be designed so that it is easy to understand. In this way, current and potential riders can grasp and use the transportation options available to take them where and when they want to go with ease. Most of the guidelines in this section are aimed at making service intuitive, logical, and easy to understand.

SERVICE SHOULD BE FAST AND DIRECT

Passengers and potential passengers alike prefer faster, more direct transit services. In order to remain competitive with the automobile, special attention should be placed on designing routes to operate as directly as possible to maximize average speed for the bus and minimize travel time for passengers while maintaining access to service. Travel times and directness of service are affected by a series of factors, some under PVTA's control, and others related more to the environment in which service operates. Some of these factors include:

SERVICE FACTORS WITHIN PVTA'S CONTROL

- Directness of individual routes Length of route
- Connectivity throughout route network (transfers)
- Operating characteristics (number of stops, express/local operation, etc.)

ENVIRONMENTAL FACTORS BEYOND PVTA'S CONTROL

- Traffic congestion
- Geography
- Accessibility of streets from adjacent areas
- Street geometry and turning movements
- Traffic signals and controls

ROUTE DEVIATIONS SHOULD BE MINIMIZED

Routes should not deviate from the most direct alignment unless there is a compelling reason. The use of route deviations—the deviation of service off of the most direct route—should be minimized.

However, there are instances when the deviation of service off of the most direct route is appropriate, for example to avoid a bottleneck or to provide service to major shopping centers, employment sites, schools, etc. In these cases, the benefits of operating the route off of the main route must be weighed against the inconvenience caused to passengers already on board. Route deviations should be implemented only if:

1. The deviation will result in an increase in overall route productivity.
2. The number of new passengers that would be served is equal to or greater than 25% of the number of passengers who would be inconvenienced by the additional travel time on any particular deviated trip.

3. The deviation would not interfere with the provision of regular service frequencies and/or the provision of coordinated service with other routes operating in the same corridor.

In most cases, where route deviations are provided, they should be provided on an all day basis. Exceptions are during times when the sites that the route deviations serve have no activity—for example route deviations to shopping centers do not need to serve those locations early in the morning before employees start commuting to work.

STOPS SHOULD BE SPACED APPROPRIATELY

The distance between stops is of key concern to PVTA. More closely spaced stops provide customers with more convenient access as they are likely to experience a shorter walk to the nearest bus stop. However, transit stops are also the major reason that transit service is slower than automobile trips, since each additional stop with activity requires the bus to decelerate, come a complete stop, load and unload riders, and then accelerate and re-merge into traffic. Since most riders want service that balances convenience and speed, the number and location of stops is a key component of determining that balance.

PVTA provides different types of transit services that are tailored toward serving different types of trips and needs. In general, services that emphasize speed (e.g. Key Regional or Express routes) should have fewer stops, while services that emphasize accessibility should have more frequent stops.

The minimum stop spacing (or maximum stops per mile) is shown in Table 1. Where multiple routes operate in the same corridor, the standard for the higher service type applies. Express/commuter services are not required to serve every stop in a corridor. Exceptions to these guidelines should only be made in locations where walking conditions are particularly dangerous, significant topographical challenges impede pedestrian access, and factors compromise safe bus operations and dwelling.

TABLE 1 | BUS STOP SPACING GUIDELINES

	BRT / KEY REGIONAL TIER I	KEY REGIONAL TIER II	URBAN RADIAL	CAMPUS SHUTTLES	FIVE COLLEGES	VILLAGE CONNECTOR	COMMUNITY / FLEX	EXPRESS
Minimum Stop Spacing (feet)								
Moderate to High Density Areas	900	900	900	660	900	660	660	900
Low Density Areas	1,100*	1,300	1,300	1,100	1,100	1,100	1,100	1,100
Maximum Stops per Mile								
Moderate to High Density Areas	6	6	6	8	6	8	6	6
Low Density Areas	4	4	4	5	5	5	5	5

Notes: Moderate to high density = greater than or equal to 4,000 persons per square mile; low density = less than 4,000 persons per square mile

**BRT stops vary by type and the surrounding environment*

ROUTES SHOULD BE SYMMETRICAL

Routes should operate along the same alignment in both directions to make it easy for riders to know how to return to their trip origin location. For example, if a route follows State Street into downtown, it should use State Street on its outbound trip. Exceptions can be made in cases where such operation is not possible due to one-way streets or turn restrictions. In those cases, routes should be designed so that the opposite directions parallel each other as closely as possible.

MAJOR ROUTES SHOULD OPERATE ALONG ARTERIALS

Key Regional, Urban Radial and Express routes should operate on major roadways and should avoid deviations to provide local circulation. The operation of bus service along arterials makes transit service

faster and easier for riders to understand and use. Current and potential riders typically have a general knowledge of an area's arterial road system and use that knowledge for geographic points of reference.

ROUTES SHOULD SERVE WELL-DEFINED MARKETS

To make service easy to understand and to eliminate service duplication, service should be developed to serve well-defined markets. For example, there should only be one Key Regional route between urban areas, and multiple Urban Arterials should only operate through the same corridor when they serve unique destinations.

SERVICE SHOULD BE CONSISTENT

Routes should operate along consistent alignments and at regular intervals (headways). People can easily remember repeating patterns but have difficulty remembering irregular sequences. For example, routes that provide four trips an hour should depart from their terminals every 15 minutes. Limited exceptions can be made to reduce overcrowding on individual trips (e.g. where demand spikes during a short period).

Most routes intersect with other routes at transfer centers, stations, and street intersections. At major transfer locations, schedules should be coordinated to the greatest extent possible to minimize connection times for the predominant transfer flows.

SERVICES SHOULD BE WELL-COORDINATED

When multiple routes operate through the same corridor but to different destinations, service should be coordinated to maximize its utility and minimize redundancy. To avoid bunching of buses and to balance loads, major routes of the same route type that serve the same corridor should be scheduled to operate at the same service frequencies and should alternate trips at even intervals.

SERVICE DESIGN SHOULD MAXIMIZE SERVICE

Service design can significantly impact schedule efficiency. Service should be designed to maximize in-service time and minimize out-of-service time. In other words, the length of the route and the time it takes to make each trip impacts how long of a layover is required at each end and how many buses are needed to provide the service. Often, it may be more efficient to extend a route to pick up a few more passengers and limit the amount of layover time.

VEHICLE TYPE SHOULD BE APPROPRIATE FOR SERVICE

PVTA's owns a range a vehicle types and sizes. Standard fixed-route buses range from 30' to 40' in length and seat anywhere from 23 to 45 passengers, and are appropriate for most services. Four 60' articulated buses have recently been added to the fleet to reduce overcrowding on high ridership routes; these vehicles seat 55 passengers. Smaller 24' mini-buses are used on the Route 39E service between Mount Holyoke and Smith, and as Flex/Vans. These vehicles seat 22 passengers.

4 SERVICE LEVEL GUIDELINES

Service level guidelines define when service should be provided and how often it should be provided. Four types of guidelines are used:

1. Service Coverage
 2. Minimum Span of Service
 3. Minimum Service Frequencies
 4. Maximum Passenger Loadings

These guidelines, in combination with the productivity guidelines presented in Section 5, are used to determine appropriate service levels for each route. At a minimum, service should be provided to meet the minimum span of service and minimum service frequency guidelines. Beyond that, additional service may be added to meet passenger loading guidelines and to extend the span of service earlier in the morning and later at night, as long as minimum productivity guidelines (see Section 5) can still be met.

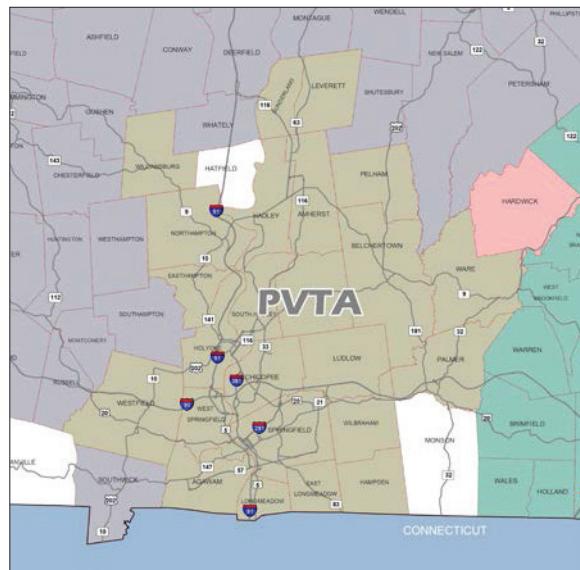
On an ongoing basis, service should be added when ridership increases to levels that exceed maximum passenger loading guidelines. Conversely, service should also be reduced when ridership falls below the minimum productivity guidelines.

SERVICE COVERAGE

PVTA currently serves 24 communities:

Agawam, Amherst, Belchertown, Chicopee,
Easthampton, East Longmeadow, Granby, Hadley,
Hampden, Holyoke, Leverett, Longmeadow, Ludlow,
Northampton, Palmer, Pelham, South Hadley,
Springfield, Sutherland, Ware, Westfield, West
Springfield, Wilbraham and Williamsburg.

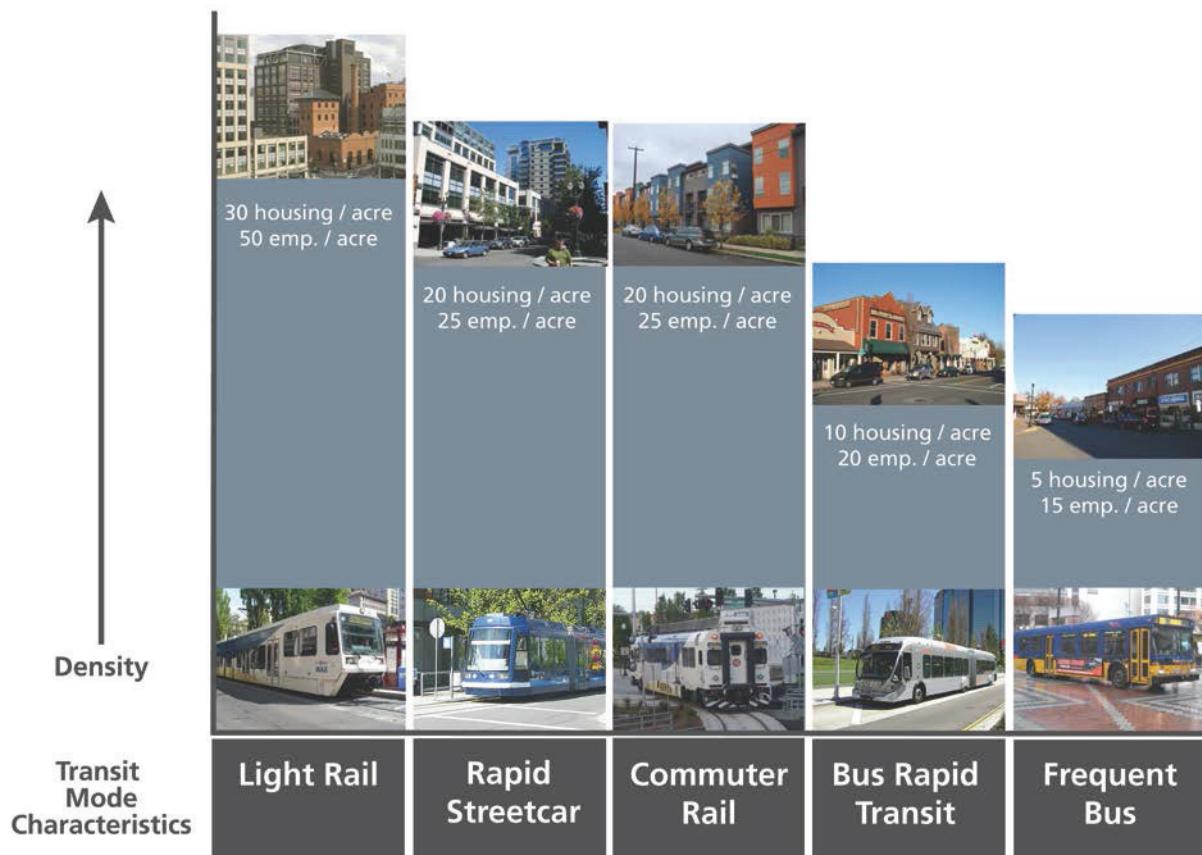
These communities range from densely populated urban areas to traditional New England villages, and are generally separated by relatively low density rural areas. PVTA often receives requests for service from citizens who are not within walking distance of any route, or who desire that existing routes be expanded to serve new destinations. And, it is possible that, in the future, other adjacent communities could join the Authority. While PVTA strives to provide services to those who need it the most, transit cannot be effective and productive in all environments. It is challenging to provide attractive and effective service in minimally populated areas. These service coverage guidelines provide a basis to help identify those areas likely to be most transit-supportive.



Population and employment densities are two of the strongest indicators of potential transit demand, and can be used to evaluate the potential for new transit services. Figure 1 provides a general guideline for where different levels of transit service may be warranted. Once densities begin to exceed 3 to 6 households per acre or 4 jobs per acre, fixed route bus services may be viable. More densely developed areas may warrant higher levels of transit service.

If densities are relatively high along a continuous corridor, or if the corridor connects major activity centers or hubs, a higher level of service may be warranted. If densities meet the minimum guidelines, but only exist in small or scattered areas, travel demand may not be sufficient to support transit. Or, a lower level of transit – such as Flex/Van services – may be warranted.

FIGURE 1 | TRANSIT SUPPORTIVE POPULATION AND EMPLOYMENT DENSITIES



Source: Composite data compiled by Nelson\Nygaard from various sources.

Other factors must also be considered when deciding whether an area can support productive transit service. These include demographic data within the corridor, such as the number of transit dependant individuals and household incomes. Local conditions, such as the cost of parking, can increase transit demand. Note that these guidelines only apply to the evaluation of potential service; existing service should not be evaluated with these service coverage guidelines, but according to actual performance.

MINIMUM SPAN OF SERVICE

The number of hours per day when transit service is provided along a route, or between two locations, plays a role in determining the effectiveness of transit service for potential users. Transit service must be

available near the time a trip needs to be made in order for transit to be a travel option. Ideally, transit service should operate according to the standard time periods specified (peak rush hours, midday, night, etc.) to minimize customer uncertainty.

Passenger needs and PVTA's financial capacity are key considerations in setting weekday service spans, and in deciding which routes are operated on Saturdays and Sundays. Weekday routes should permit workers and students to make their morning start times, and should end late enough to provide return trips home for second shift workers. Service oriented to non-work travel can start later and end sooner. Sunday service may not be necessary on many routes.

Minimum span of service guidelines are presented in Table 2 and define the **minimum** period of time that different types of service should operate. Service could be started earlier and/or end later if demand warrants, but the extra service would be subject to the minimum performance guidelines presented in Section 5. Also, these guidelines may not apply to some services on certain days (e.g. no express service on weekends). Service may still be provided on these days (to meet other guidelines, for example), though it would not be subject to minimum span of service guidelines.

TABLE 2 | MINIMUM SPAN OF SERVICE GUIDELINES

	BRT / KEY REGIONAL TIER I	KEY REGIONAL TIER II	URBAN RADIAL	CAMPUS SHUTTLES	FIVE COLLEGES	VILLAGE CONNECTORS	COMMUNITY / FLEX	EXPRESS
Weekdays								
Begin	6:00 AM	6:00 AM	6:00 AM	8:00 AM	7:00 AM	7:00 AM	8:00 AM	6:00 AM
End	10:00 PM	9:00 PM	7:00 PM	10:00 PM*	9:00 PM*	6:00 PM	5:00 PM	7:00 PM
Saturdays								
Begin	6:00 AM	7:00 AM	7:00 AM	8:00 AM	10:00 AM	8:00 AM	—	—
End	9:00 PM	8:00 PM	6:00 PM	10:00 PM*	9:00 PM*	5:00 PM	—	—
Sundays								
Begin	9:00 AM	10:00 AM	9:00 AM	8:00 AM	7:00 AM	—	—	—
End	5:00 PM	5:00 PM	5:00 PM	10:00 PM	9:00 PM	—	—	—
	6:00 PM (BRT)							

Notes: The beginning span of service refers to the departure of the first inbound trip, and the ending span of service refers to the departure time of the last peak direction trip. A blank or “—” indicates that the guideline does not apply.

** Varies by night (i.e. Thursday, Friday and Saturday night may warrant later schedules).*

MINIMUM SERVICE FREQUENCIES

Service frequency (the time interval between two vehicles traveling in the same direction on the same route) has a major influence on transit ridership; high frequency service is considered more attractive to users who don't need to wait as long in between buses. At the same time, frequency has a significant impact on operating costs, and service requirements increase exponentially with improvements in frequency.

Because of the expense of high frequency service, transit service frequency is normally scheduled based upon existing or potential demand. This often translates into variations in service frequency throughout the day, with higher frequency in peak periods, and less frequent service outside of the peak.

In general, frequencies are established to provide enough vehicles (past the maximum load point) on a route to accommodate the passenger volume and stay within recommended loading standards. Minimum service frequency guidelines are presented in Table 3. Note that when a corridor is served by multiple routes, the overall service frequency in the corridor is effectively more frequent than for individual routes. For certain routes serving outlying areas, service frequencies may be reduced to maintain satisfactory

farebox recovery ratios. As with all standards, this service frequency matrix should be considered a guide, not an absolute measure.

Clock-face service intervals (e.g. every 10, 12, 15, 20, 30 or 60 minutes) are easier for passengers to remember and can help facilitate better transfer connections between routes. Whenever possible, frequencies should be set at regular clock-face intervals. However, there are two key exceptions:

- Where individual trips must be adjusted away from clock-face intervals to meet shift times, work times, transfer connections, or other special circumstances;
- Where the desired frequency of service causes round trip recovery time to exceed 20% of the total round trip vehicle time, leading to inefficient service.

TABLE 3 | MINIMUM SERVICE FREQUENCY GUIDELINES (MINUTES)

	BRT/ KEY REGIONAL TIER I	KEY REGIONAL TIER II	URBAN RADIAL	CAMPUS SHUTTLES	FIVE COLLEGES	VILLAGE CONNECTORS	COMMUNITY/ FLEX	EXPRESS
Weekdays								
Early AM	30	60	60	60	60	60	—	60*
AM Peak	15/20	30	30	15	60	60	60	60*
Midday	15/20	30	60	15	60	60	60	60*
PM Peak	15/20	30	30	15	60	60	60	60*
Night	30	60	60	60*	60*	60	—	60*
Saturdays								
Day	30	30	60	60	60	60	—	—
Night	30	60	60	60	60	60	—	—
Sundays								
All Day	60	60	60	60	60	—	—	—

Note: “—” indicates that the guideline does not apply.

* Varies by route (i.e. Thursday, Friday and Saturday night may warrant higher frequencies).

VEHICLE LOADING

PVTA will design its services to keep the number of passengers on its vehicles at a comfortable level, always within the limits of safety. In peak periods, this means that some passengers may be expected to stand for part of the trip. In off-peak periods and for service that operates for long distances, service will be designed to try to provide a seat to all customers.

Two different techniques are used to keep passenger loads within acceptable levels. The first is to match vehicle types with ridership levels, and to use larger vehicles on higher ridership routes. The second method is to provide more frequent service at times of high demand, with service frequencies set to keep passenger loads within the limits presented in Table 4.

The vehicle load standard is calculated on the basis of an average for both the peak and off-peak periods, at the busiest point on the route. For instance, if a service operates at 15-minute frequency, then 4 buses would pass the busiest point in an hour. The average number of passengers for these 4 buses must fall within the service standards, even though any one bus may be more crowded than the average. If the standard is exceeded for the average calculation, PVTA will consider more frequent service or larger vehicles to improve the situation.

TABLE 4 | AVERAGE VEHICLE LOADING MAXIMUMS

	BRT/ KEY REGIONAL TIER I	KEY REGIONAL TIER II	URBAN RADIAL	CAMPUS SHUTTLES	FIVE COLLEGES	VILLAGE CONNECTORS	COMMUNITY/FLEX	EXPRESS
Peak	120%	120%	120%	120%	120%	120%	100%	100%
Off-Peak	100%	100%	100%	100%	100%	100%	100%	—

Note: Maximums are averages over one-hour periods; individual trips may exceed averages.

TABLE 5 | VEHICLE CAPACITIES

	60' ARTICULATED BUS	40' BUS	35' BUS	30' BUS	24' MINI-BUS
100% of Seating Capacity	55	40	32	23	18
120% of Seating Capacity	66	50	39	28	22

5 PERFORMANCE GUIDELINES

PVTA must use its resources effectively and all routes should achieve a minimum level of productivity. The two primary guidelines to assess performance are:

1. Productivity in terms of “Passengers per Revenue Vehicle Hour” for most services, and “Passengers per Trip” for Regional and Express services that typically carry passengers for long distances with little passenger turnover.
2. Cost-Effectiveness, in terms of Farebox Recovery, which is the percentage of operating expenses recouped by farebox revenues.

PASSENGERS PER REVENUE HOUR

With limited exceptions, all service should attract a minimum level of ridership. For routes that experience a significant amount of ridership turnover along the route (all services except Regional and Express routes), this minimum level of ridership is expressed in terms of Passengers per Revenue Service Hour, or in simpler terms, the average number of passengers that a bus should serve for each hour it is in service. For Regional and Express routes, which often travel for long distances with little ridership turnover, the minimum level of ridership is expressed in terms of Passengers per Bus Trip. These minimum productivity levels are presented in Table 6.

TABLE 6 | MINIMUM PRODUCTIVITY LEVELS (PASSENGERS PER REVENUE VEHICLE HOUR)

	PASSENGERS PER REVENUE SERVICE HOUR				PASSENGERS PER TRIP		
	URBAN RADIAL	CAMPUS SHUTTLES	FIVE COLLEGES	COMMUNITY/FLEX	BR/T KEY REGIONAL TIER I	KEY REGIONAL TIERII	EXPRESS
Weekdays							
All Day	20	20	15	5	20	20	25
Early Morning	10	10	10	5	15	15	15
Late Night	10	10	10	5	15	15	15
Saturdays							
All Day	15	15	10	5	15	15	—
Early Morning	10	10	10	5	15	15	—
Late Night	10	10	10	5	15	15	—
Sundays							
All Day	15	15	10	5	15	15	—
Early Morning	10	10	10	5	15	15	—
Late Night	10	10	10	5	15	15	—

Note: “Early morning” and “Late Night” refers to service before and after the minimum span of service. All day refers to the complete span of service, including early morning and late night service. “—” indicates that the standard does not apply. Productivity for Regional and Express routes is measured as a minimum number of passengers per trip.

FAREBOX RECOVERY

The second performance measure is farebox recovery, which is the percentage of operating expenses recouped by farebox revenues. Minimum farebox recovery percentages are shown in Table 7.

TABLE 7 | MINIMUM FAREBOX RECOVERY

	BRT/ KEY REGIONAL TIER I	KEY REGIONAL TIER II	URBAN RADIAL	CAMPUS SHUTTLES	FIVE COLLEGES	VILLAGE CONNECTORS	COMMUNITY / FLEX	EXPRESS
Weekday	20%	20%	20%	n/a	n/a	20%	5%	n/a
Saturday	15%	15%	15%	n/a	n/a	15%	5%	n/a
Sunday	15%	15%	15%	n/a	n/a	15%	5%	n/a

APPLICATION OF PERFORMANCE GUIDELINES

In cases where routes do not meet minimum performance guidelines, changes should be made to improve route performance. These changes can include a variety of measures, including reconfiguring the route alignment to attract more passengers, targeted marketing, eliminating particularly unproductive segments, and reducing service levels. If no changes can be identified that improve performance, steps may be taken to discontinue the route unless it serves a demonstrable critical need that is not served by other routes or services (including paratransit service).

In cases where service expansion is considered, ridership and productivity estimates should be developed that indicate that there is a reasonable certainty that the new service will meet the performance guidelines within 12 months of implementation.