

January 2025









RIPTA TRANSIT SERVICE GUIDELINES

Table of Contents

1	Introduction	3
2	Service Types	5
3	Service Design Principles Service Design Best Practices	12 12
4	Service Coverage and Appropriate Service Types Population Employment	20 20 27
5	Service Levels Service Spans Service Frequencies and Advance Reservations	34 34 35
6	Service Quality On-Time Performance Maximum Passenger Loads	38
7	Productivity Passengers per Revenue Hour or trip Farebox Recovery	41 41
8	Service Evaluation and Changes Regular Service Change Process Service Changes Related to Changes in Funding Levels	43 43 46
9	Bus Stops Bus Stop Spacing Bus Stop Typologies	49 49 51
10	Service Partnerships	53
11	Appendices Appendix A: Service Maps Fixed-Route Transit Appendix B: Existing Services by Type	56

Table of Figures & Tables

Figure I	R-Line Rapid Bus	6
Figure 2	Route 20 Elmwood Ave/T.F. Green Airport Frequent Bus	7
Figure 3	Route 34 East Providence/Seekonk Square Local Bus	8
Figure 4	Route 66 URI/CCRI Warwick/Providence Regional Bus	9
Figure 5	Route 204 Westerly Flex Service	10
Figure 6	RIPTA RIde Paratransit Service	11
Figure 7	Downtown Providence Mixed-Use Environment	17
Figure 8	Bus Lane on Dorrance Street in Providence	19
Figure 9	Rhode Island Population Density (2022)	21
Figure 10	Relative Propensity to Use Transit Based on Socioeconomic Characteristics	
	(2022)	24
Figure 11	(2022) Adjusted Population Density Based on Relative Transit Propensity (2022)	24 26
Figure 11 Figure 12	(2022) Adjusted Population Density Based on Relative Transit Propensity (2022) Employment Density by Census Block Group (2022)	24 26 28
Figure 11 Figure 12 Figure 13	(2022) Adjusted Population Density Based on Relative Transit Propensity (2022) Employment Density by Census Block Group (2022) Development of Underlying Demand Estimates	24 26 28 29
Figure 11 Figure 12 Figure 13 Figure 14	(2022) Adjusted Population Density Based on Relative Transit Propensity (2022) Employment Density by Census Block Group (2022) Development of Underlying Demand Estimates Total Transit Demand by Census Block Group (2022)	24 26 28 29 31
Figure 11 Figure 12 Figure 13 Figure 14 Figure 15	(2022) Adjusted Population Density Based on Relative Transit Propensity (2022) Employment Density by Census Block Group (2022) Development of Underlying Demand Estimates Total Transit Demand by Census Block Group (2022) Underlying Transit Demand and Generally Appropriate Transit Types	24 26 28 29 31 32
Figure 11 Figure 12 Figure 13 Figure 14 Figure 15 Figure 16	(2022) Adjusted Population Density Based on Relative Transit Propensity (2022) Employment Density by Census Block Group (2022) Development of Underlying Demand Estimates Total Transit Demand by Census Block Group (2022) Underlying Transit Demand and Generally Appropriate Transit Types RIPTA Bus Stop Types and Required, Preferred, and Optional Amenities	24 26 28 29 31 32 32
Figure 11 Figure 12 Figure 13 Figure 14 Figure 15 Figure 16 Figure 17	(2022) Adjusted Population Density Based on Relative Transit Propensity (2022) Employment Density by Census Block Group (2022) Development of Underlying Demand Estimates Total Transit Demand by Census Block Group (2022) Underlying Transit Demand and Generally Appropriate Transit Types RIPTA Bus Stop Types and Required, Preferred, and Optional Amenities RIPTA Statewide System Map (2022)	24 26 28 31 32 52 57

Table 1	Relative Transit Propensity (2022)	
Table 2	Transit Demand Index and Underlying Transit Demand	
Table 3	Minimum Span of Service Guidelines	
Table 4	Minimum Service Frequencies	
Table 5	On-Time Performance Measures and Goals	
Table 6	Average Vehicle Loading Maximums	
Table 7	Vehicle Capacities	40
Table 8	Productivity Guidelines by Service Type	41
Table 9	Minimum Farebox Recovery	
Table 10	Productivity Targets for New and Upgraded Routes	45
Table 11	Bus Stop Spacing Guidelines	50
Table 12	RIPTA Bus Stop Typologies	51
Table 13	Existing Services by Type	

1 INTRODUCTION

The Rhode Island Public Transportation Authority (RIPTA) strives to provide quality transit service in a cost-effective manner that is consistent and equitable. To do so, RIPTA 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 where limited resources can and should be used. To do this, RIPTA has developed these service guidelines that will be used to:

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

This document presents the following service guidelines by chapter:

- **1. Introduction**, which provides a description of the contents included in this document and overview of the following sections
- **2. Service Types**, which describes the different types of service that RIPTA now provides and may provide in the future
- 3. Service Design Principles, which describes how RIPTA designs its services
- **4. Service Coverage and Appropriate Service Types**, which describes how RIPTA decides where and which types of service to provide
- 5. Service Levels, which describes how RIPTA determines how much service to provide
- **6. Service Quality**, which describes how RIPTA measures services quality and its performance goals
- 7. Productivity, which describes how RIPTA ensures that its services are productive
- 8. Service Evaluation and Service Changes, which describes how RIPTA evaluates the effectiveness of its services and makes revisions
- **9. Bus Stops**, which provide guidance on bus stop spacing, stop location considerations, and amenities
- **10. Service Partnerships**, which lays out RIPTA's policies and approaches to working with outside partners to fund additional RIPTA service

The service guidelines will be applied to the entire family of services provided by RIPTA 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. In most cases, the service guidelines define minimum thresholds that must be met, and most services would exceed

the minimum thresholds. However, the guidelines are also designed to—within limits— provide flexibility to respond to varied customer needs and community expectations in an accountable, equitable, and efficient manner. Finally, it should be noted that adherence to these service guidelines is dependent upon resource availability, and particularly the amounts of funding provided by RIPTA's local partners. In the event of constrained resources, RIPTA will meet these guidelines as closely as possible and will work to achieve consistency as resources permit.

2 SERVICE TYPES

RIPTA provides a family of service types that are designed to meet a wide array of travel needs. The specific routes and services included in each class are presented in Appendix B. The types of public transit service are:

- Light Rail (LRT)
- Bus Rapid Transit (BRT)
- Rapid Bus
- Frequent Bus (15 minutes or better)
- Local Bus
- Regional Bus
- Flex
- Specialized Services
- Paratransit (RIde)

Light Rail

Light rail (LRT) is a type of rail service that generally operates in exclusive lanes in the median of major arterials. It is designed to provide very high quality and frequent service in high volume travel corridors. Operation in exclusive lanes, transit signal priority at intersections, and raised platforms, among other features, helps make service fast and reliable and high-quality stations provide comfortable places to wait for the trains. Service is frequent and operates for long hours. Light rail is the highest level of service that may be operated in the future but does require the greatest level of investment. Light rail has the ability to stimulate development and help create more livable corridors.

As of 2024, RIPTA does not operate light rail, but RIPTA is currently performing an alternatives analysis study called the Metro Connector per <u>Transit Master Plan</u> recommendations. If light rail is determined, then RIPTA will produce guidelines in the future.

Bus Rapid Transit

Bus Rapid Transit (BRT) is a type of bus service that operates in a very similar manner to light rail, with buses operating in exclusive lanes for at least 50% of revenue miles. BRT operates along major arterials where transit volumes are very high. Like light rail, BRT couples exclusive lanes with transit signal priority at intersections and level platform boarding to make service fast and reliable. BRT stops are at stations that are very similar to light rail. Moreover, BRT provides frequent service for

long hours and can stimulate development and create more livable corridors. BRT services also feature unique branding in the form of special route name designations and high-quality bus stops, premium amenities, and signage.

As of 2024, RIPTA does not operate BRT, but RIPTA is currently performing an alternatives analysis study called the Metro Connector per <u>Transit Master Plan</u> recommendations. If BRT is determined, then RIPTA will produce guidelines in the future.

Rapid Bus

Rapid Bus service includes most of the same elements as BRT, but with the key difference that it operates mostly in mixed traffic. Like BRT, Rapid Bus uses transit signal priority and level boarding to make service faster and more reliable, and often includes some sections with bus lanes. More typically, Rapid Bus uses queue jump lanes, which are short bus lanes leading up to intersections to bypass queued traffic. Rapid Bus features frequent service for long hours. Stations are more modest than BRT stations, but do include high quality amenities such as shade, seating, real-time information, and more. RIPTA's current Rapid Bus service, the R-Line, includes exclusive branding and can be differentiated from other services by their long service hours, frequent service, and higher quality stations.



Figure 1 R-Line Rapid Bus

As of 2024, RIPTA operates one Rapid Bus route, the "R-Line" that operates between Pawtucket and the Providence/Cranston line via Downtown. RIPTA's <u>Transit Master Plan</u> recommends that an additional six (6) routes be upgraded to Rapid Bus service in the future.

Frequent Bus

Frequent Bus service is an important part of <u>RIPTA's Transit Master Plan</u> recommendations which includes 9 high-capacity transit lines and 10 frequent local services. Frequent bus routes are high ridership routes that operate at least every 15 minutes for most of the day, seven days a week. These routes may include some segments with Rapid Bus-like features but generally do not. As of 2024, RIPTA operates eight (8) Frequent bus routes that are designed to complement light rail, BRT, and Rapid Bus lines to provide a robust network of frequent services to make it convenient to travel to most of Rhode Island's most important destinations.



Figure 2 Route 20 Elmwood Ave/T.F. Green Airport Frequent Bus

Local Bus

Local Bus service is RIPTA's most common type of bus service and are bus routes that operate less frequently than every 15 minutes. RIPTA does employ some Rapid Bus and BRT-type elements on Local Bus routes such as level-boarding platforms, bus lanes, and transit signal priority, but the routes generally operate in mixed-traffic without transit priority measures and with standard bus stop facilities.

Local Bus routes are intended to serve a wide spectrum of transit demand levels ranging from moderately high to moderately low, and most of RIPTA's routes are local routes.



Figure 3 Route 34 East Providence/Seekonk Square Local Bus

Regional Bus

Regional Bus routes are designed primarily to provide commuter and recreational trip service to and from Downtown Providence. These routes typically make a limited number of stops in outer areas and then travel non-stop to their final destinations on highways and other major roads. As of 2024, RIPTA operates four Regional Bus routes.

Figure 4 Route 66 URI/CCRI Warwick/Providence Regional Bus



Flex

As of 2024, RIPTA operates six flex routes, Flex service is shared van or small vehicle service designed to provide service to lower demand markets within designated zones, connections to fixed-route services, and service to special destinations such as supermarkets and medical facilities.

To use Flex Service, passengers can either make a reservation 24 hours in advance via phone or when boarding the Flex Vehicle at any of the scheduled Flex Stops within the Flex Zone.

Flex Service expands the menu of mobility options for residents living outside of urban areas, providing them with convenient, affordable transportation within their communities and an opportunity to make seamless connections to other destinations in Rhode Island.

Figure 5 Route 204 Westerly Flex Service



Specialized Services

Specialized Service routes provide service for different circumstances such as large events and longterm service deviations, with specific schedules. Specialized Service routes also include express routes that typically operate a limited number of trips on weekdays during peak periods only.

Paratransit

RIPTA's RIde Paratransit program is a shared-ride, door-to-door program available for those who are functionally unable to independently use RIPTA's fixed-route system either all the time, temporarily or under certain circumstances. The paratransit service is available to customers who have been deemed eligible through an evaluation process based on one's ability to use the fixed-route system, which may be determined through an in-person functional ability assessment process. Disability alone does not determine eligibility. The functional assessment includes a mock trip to and from the bus and evaluates skills such as balance, strength, coordination and range of motion.

RIPTA's provides paratransit service to all areas of the state within ³/₄ of a mile of all existing RIPTA fixed-route services.

Paratransit trips can be scheduled for any purpose as late as the day before. Standing Orders, which are trips that occur on a daily or weekly basis such as trips to work or school, may be scheduled once. Passengers can book a trip via phone between 8:30 AM to 4:30 PM Monday through Saturday except holidays.





3 SERVICE DESIGN PRINCIPLES

RIPTA strives to serve as many of Rhode Island residents, workers, and visitors as possible with the resources that it has available. To do so effectively, RIPTA needs to serve a wide variety of riders, trip types, and demands and RIPTA must strike a balance that works for most passengers and prospective riders. In many cases, and as described in the previous chapter, this is done by providing a variety of types of services. While the characteristics of each type of service varies, there are many overarching principles that RIPTA follows to design high-quality service for nearly all riders.

SERVICE DESIGN BEST PRACTICES



Service Should be Simple

Transit service should be designed so that it is easy to understand. This allows existing and potential riders to learn about the options that are available to take them where and when they want to go without experiencing frustration. Simpler routes attract new riders more quickly and are better able to serve occasional riders. Simpler routes also reduce operational challenges. Most of the guidelines in this chapter are aimed at making service intuitive, logical, and easy to understand.



Fast is Better than Slow

Everyone wants to get where they are going quickly and easily. Faster service doesn't just save people minutes. It also means that they can reach more jobs and services in a reasonable amount of time. Less time spent riding the bus means more time to do things that are more productive, more necessary, and more fun. Faster service can also make the community more equitable – people with lower incomes spend more time waiting for almost everything – and waits for buses, transfers, and slow trips make this worse. Finally, faster service requires fewer resources for the RIPTA to provide than slow service, freeing up buses to be used for both higher frequency and additional coverage.



Transit Service Types Should be Matched to Market Demands

As described in the previous chapter, RIPTA provides many different types of services that are designed to serve different types of markets. The types of services that RIPTA provides are determined based on a combination of transit demand, travel patterns, land use, locations of key destinations, and other related factors. In many areas, more than one type of service will be provided. For example, areas where frequent bus service operates along a major corridor will also have regular bus service operating on streets that cross it. Outer areas where a Regional Bus route provides service to downtown Providence may also have a Flex zone providing local service and connections to local routes. Additionally, paratransit operates in all areas within ³/₄- mile of fixed-route bus service.

Routes Should Operate Along a Direct Path

The fewer directional changes a route makes, the easier it is to understand. Conversely, circuitous alignments are disorienting and difficult for riders to remember. Routes should not deviate from the most direct alignment unless there is a compelling reason.



BETTER

WORSE

Major Transit Routes Should Operate Along Arterials

Potential transit users have at least a basic knowledge of the region's arterial road system and use that knowledge as points of reference. The operation of bus service along arterials therefore makes transit service easier to figure out and to use. It also makes service faster.



Route Variants Should be Minimized

To make service direct, the use of route deviations – the deviation of service from the most direct route on some trips – should be minimized.

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

- Overall route productivity (in terms of the number of people served per revenue vehicle hour) would be equal to or better than without the deviation.
- The amount of time saved for people using the deviation would be equal to or greater than the additional time for other passengers.
- 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 variants serve have no activity – for example, route deviations to shopping centers do not need to serve those locations early in the morning before retail employees start commuting to work.

Routes Should be Symmetrical

Routes should operate along the same alignment in both directions to make it easy for riders to know how to get back to where they came from. Routes should operate along the same alignment in both directions except in cases where such operation is not possible due to one-way streets or turn restrictions. In those cases, routes are designed so that the opposite directions parallel each other as closely as possible.



Routes Should Serve Well-Defined Markets

The most effective transit routes serve key destinations where demand is high throughout the day, such as downtown Providence. Other key destinations include CCRI (Community College of Rhode Island), Brown University, Rhode Island School of Design (RISD), hospitals and larger clinics, grocery stores, major retailers, employment centers and event venues. All routes should serve at least one major destination or provide connections to routes that do.



FREQUENT & LOCAL BUS

REGIONAL BUS & SPECIALIZED SERVICES



Stops Should be Spaced to Balance Access and Speed

Transit stops are the access points for transit services and should be conveniently located, for example, near major activity centers and close to crosswalks. However, transit stops are also the major reason that transit service is slower than driving. Most riders want service that balances convenience and speed, and the number and location of stops is a key component of determining that balance. With fixedroute services, most passengers prioritize speed over short walks, and RIPTA's stop spacing guidelines, which are described in <u>RIPTA's Rhode</u> <u>Island Bus Stop Design Guide</u>, reflect this. Stop spacing for most fixedroute services are described in terms of the maximum number of stops per mile, with ranges to reflect local conditions.

A different approach is used for Flex service, that picks people up at designated stops located throughout a defined service zone. This service's stop spacing guidelines are given in terms of stops per square mile. These services carry low volumes of passengers and consequently make fewer stops. Because of this, closer stop spacings do not slow service and more stops are made available. The stops are distributed throughout the zones in a manner that developed areas are within a convenient walking distance of stops.

EQUITY CONSIDERATIONS

RIPTA strives to provide service to everyone who lives, works, and visits developed areas in Rhode Island and to match the amount of service provided to transit need and ridership. Many of the region's residents need and use transit to a much greater extent than others, particularly minority residents, households with low incomes, and those without a car or with few cars in their households. For example, Black residents use transit at over two times of the average resident, and those without cars use transit 7 times as much. In deciding where to provide service and how much service to provide, RIPTA doesn't just look at just how many people live in different places but also at the characteristics of the people who live there. This enables the agency to provide services that make everyday activities easier and to provide important links to opportunities.



Service Levels Should be Matched with Demand

Within the parameters set by these service guidelines, RIPTA matches service spans and frequencies with demand, with more service provided where demand is high, and less service provided where use is low. This helps RIPTA provide service where it is most needed and to ensure that services are not overcrowded.

Service Should Operate at Regular Intervals



People can easily remember repeating patterns. For this reason, to the greatest extent possible, RIPTA schedules services to operate at regular headways – for example, every 15, 30, or 45 minutes.

Con Con

Timepoints Should be Used to Keep Service on Schedule

Buses can get off schedule for many reasons. These include unexpected traffic congestion, the fact that some trips stop at more or fewer bus stops, some trips get more green lights while others hit more red lights, or differences in boarding speed of customers served. To get buses back on schedule when they are delayed, RIPTA includes some slack in its schedules and sets timepoints along routes. Buses that are running early hold at timepoints until a scheduled departure time, while those that are running on-time or late operate straight through. While it can be frustrating for passengers on buses that are running early to hold at a timepoint, this practice helps keep buses on-schedule and ensures that people don't miss buses that are running early.

How Others Can Help

The service design principles presented above describe the best practices that RIPTA follows to provide the best service that it can. However, it is also important to note that RIPTA provides transit in an environment that is largely controlled by others such as RIDOT and the state's cities and towns. In addition, decisions made by others, such as developers, can significantly impact the effectiveness of transit. RIPTA strives to collaborate closely with all relevant local and regional partners on projects and decisions that impact the public realm and transit operations.

Land Use & Development

Transportation and land use are fundamentally inter-connected, and development patterns influence transportation choices. For people to be able to use transit, they must easily be able to get to and from it. The overwhelming majority of transit riders – over 90% – do this by walking. Consequently, all other factors equal, more people will use transit in areas with good pedestrian conditions. People

are also willing to walk farther in areas with comfortable walking conditions. Conversely, in areas with disconnected street networks, more people will choose to drive.

Development patterns vary throughout Rhode Island. Many urban areas (e.g., Pawtucket, Providence) were developed with interconnected street networks that make it easy to get to and from the arterials where most transit operates. However, developments in suburban and rural areas provide only limited connections to nearby arterials, including enclosing walls that require long walks, and are set far back from the roadway. RIPTA provides transit to both types of areas, and ridership in some areas where walking conditions are difficult is very high. However, ridership will always be higher when land use and development patterns suit transit. Looking forward, a stronger focus on new development and roadway design that provides convenient access to transit will help to encourage transit ridership and minimize increases in traffic.

At the same time, there is also a trend toward mixed-use development that works very well with transit. Looking forward, a stronger focus on new mixed-use development that provides convenient access to transit can also help to encourage transit ridership and minimize increases in traffic. Jurisdictions can promote these efforts through zoning and other land-use measures, subsidies, and incentives.



Figure 7 Downtown Providence Mixed-Use Environment

Pedestrian Comfort and Safety

Pedestrian comfort and safety play heavily into people's decisions on whether they will use transit. In areas with poor and/or unsafe pedestrian conditions, they will only walk short distances, while in areas with good conditions, they will walk much longer distances.

Pedestrian conditions vary greatly throughout Rhode Island. In some areas they are uncomfortable, with either no sidewalks or narrow sidewalks that are very close to fast moving traffic. Crossing the street can also be very difficult. There are signalized crossings at major intersections but wait times to cross are often long.

To make walking more comfortable and safer for everyone, developers and jurisdictions can ensure that wide sidewalks with buffer zones are built into new roadway and development projects and curb cuts are located away from signalized crossing to allow for bus stops as close to crosswalks as possible. Mid-block crossings can also be installed in locations where large numbers of people cross streets.

Statewide, Rhode Island has implemented a Complete Streets Initiative that provides guidance on additional ways to improve pedestrian comfort, convenience and safety. Information on these types of improvements can be viewed at: <u>RIDOT Statewide Programs & Initiatives - Rhode Island Rhode</u> <u>Island Department of Transportation</u>

Transit Priority

Taking transit is slower than driving, primarily because transit vehicles need to stop to pick up and drop off passengers. Slower service discourages many people from using transit. One way to reduce the time difference is by implementing transit priority treatments, such as:

- Bus-only travel lanes
- Queue jump lanes, which are short sections of bus lanes that allow buses to bypass queues at signalized intersections
- Transit signal priority, which is a technology that turns lights green earlier for buses or extends green times until they clear the intersection

Some corridors, including Dyer Street, Dorrance Street, and Eddy Street already have bus lanes, and new bus lanes are planned for future Rapid Bus projects. Where key bus routes operate, communities can also help by including transit priority in roadway projects and developers and property owners can assist by making right-of-way available.



Figure 8 Bus Lane on Dorrance Street in Providence

4 SERVICE COVERAGE AND APPROPRIATE SERVICE TYPES

Two of the most fundamental decisions that RIPTA must make are where to provide transit and what types of transit to provide. These decisions are based on several factors, the most important of which are RIPTA's financial capacity, patterns of demand for transit service throughout the region, and equity.

RIPTA works to provide some level of service to all of Rhode Island's developed areas based on population density, socioeconomic characteristics, and employment density. These characteristics also provide a strong indication of the types of services that should be provided in different areas. High population and employment densities can support high-capacity transit services such as light rail and Bus Rapid Transit, while low density areas are supportive of less frequent services such as microtransit or demand response service.

POPULATION

In places with high population densities, large concentrations of people will be able to easily access and use transit. Higher numbers of passengers, in turn, require higher volumes of transit service to serve effectively. More frequent service makes transit more convenient, further increasing ridership. Conversely, in places with low population densities, there are fewer people to use public transit, and the lower ridership does not support service that is as frequent as in higher density areas.

As shown in Figure 9, population densities vary greatly throughout the region, with the highest population densities in:

- Pawtucket
- Central Falls
- East Cranston
- Woonsocket
- Newport



Figure 9 Rhode Island Population Density (2022)

Socioeconomic Characteristics

For a number of reasons, many individuals are more or less likely to use transit. For example, many lower income households have less than one vehicle per adult, and people in these households will use transit to a much greater extent than people from wealthier households with more cars.

For the purpose of determining what types of service to provide and where, RIPTA uses three socioeconomic characteristics that have proven to be particularly strong indicators of demand for transit:

- Vehicle ownership
- Household income
- Race and ethnicity

RIPTA uses American Community Survey data to quantify the impacts of these characteristics on transit use in Rhode Island and account for them when measuring population density. Demographic groups with a transit propensity greater than 1 are more likely to use transit than the general population. As shown in Table 1, people from households without cars are nearly 8 times more likely to use transit in Rhode Island, and black residents are twice as likely.

Socioeconomic Characteristic	Propensity to Use Transit Relative to Rhode Island Average						
Vehicle Ownership							
No Car	7.70						
1 Vehicle	1.24						
2+ Vehicles	0.70						
Annual Inc	ome						
Less than \$10,000	1.54						
\$10,000 to \$14,999	1.44						
\$15,000 to \$24,999	1.40						
\$25,000 to \$34,999	1.09						
\$35,000 to \$49,999	0.83						
\$50,000-\$64,999	0.83						
\$60,000-\$74,999	0.54						
\$75,000 or Higher	0.86						
Race and Et	hnicity						
White	0.73						
Black or African American	2.05						
Hispanic/Latino	1.43						

Table 1 Relative Transit Propensity (2022)

RIPTA TRANSIT SERVICE GUIDELINES

Asian (Not Hispanic/Latino)	1.22
Other Race (Not Hispanic/Latino)	1.63

Source: U.S. Census American Community Survey 5-year Estimates (2022)

When considering these characteristics together, as shown in Figure 10, residents of the region's capital are more likely to use transit, while residents of outer areas are much less likely to use transit. Areas where there are more residents likely to use transit include:

- Providence
- Central Falls
- Pawtucket
- Eastern Cranston
- East Providence



Figure 10 Relative Propensity to Use Transit Based on Socioeconomic Characteristics (2022)

RIPTA then uses these rates to adjust the population density figures to reflect these demographic differences by multiplying the population density of each block group by its total transit propensity. For example, an area with 10 residents per acre that has many zero-car households will have much higher transit demand than an area with 10 residents per acre and few households with zero cars. This adjusted population demand is shown in Figure 11. Areas with very high demand for transit based on a combination of population density and socioeconomic characteristics are concentrated in:

- Providence
- North Providence
- Pawtucket
- Central Falls



Figure 11 Adjusted Population Density Based on Relative Transit Propensity (2022)

EMPLOYMENT

Throughout Rhode Island, most car and transit trips are for commuting. Consequently, employment levels and densities are another major indicator of where demand for transit service exists. As shown in Figure 12, employment densities are highest where there are larger concentrations of large employers and key activity centers such as hospitals, shopping centers, and universities. These areas include Providence, East Cranston, Warwick, and Pawtucket. Elsewhere, higher densities are scattered throughout the region (e.g., Smithfield, Lincoln).



Figure 12 Employment Density by Census Block Group (2022)

Total Underlying Demand

To gauge the total underlying demand for transit throughout the region, RIPTA combines the population density, socioeconomic characteristics, and employment density data to each Census block group in the region. The starting point for this is the population density figures, which are then adjusted up or down by applying the socioeconomic transit propensity rates to the number of residents in each socioeconomic category. Next, employment densities are multiplied by 2, which reflects the relative importance of job-related demand, and added to the adjusted population densities (see Figure 13).





The resulting totals are then used as a Transit Demand Index, with the index values related to the underlying demand for transit in terms of Very High, High, Moderate, Low, and Very Low (see Table 2).

Transit Demand Index (Combined Population + Employment per Acre)	Transit Demand
>45	Very High
30-45	High
15-30	Moderate
10-15	Low
<10	Very Low

 Table 2
 Transit Demand Index and Underlying Transit Demand

As described in the following section, areas with higher levels of Transit Demand can support more frequent and higher capacity service. Demand is particularly high in downtown Providence and areas surrounding Providence including Central Falls, Pawtucket, and Warwick. Outside of these areas demand is high in the southern part of the state including Newport, Quonset, and Bristol (see Figure 14).



Figure 14 Total Transit Demand by Census Block Group (2022)

Appropriate Service Types

Underlying transit demand is strongly indicative of the types of transit services that are appropriate in different areas, with higher capacity and more frequent services in areas where underlying demand is high and lower capacity and less frequent service in areas where demand is lower (see Figure 15). As such, RIPTA uses the underlying transit demand information as a starting point to determine the types of services that should be provided. In doing so, RIPTA also considers other information such as the location of major activity centers like universities and other schools, and medical facilities, as well as travel patterns, (i.e., where people are traveling from to where they are traveling to).

TRANSIT DEMAND	Very High	High	Moderate	Low	Very Low
POPULATION + JOBS	>45	30-45	15-30	10-15	<10
EXAMPLE LAND USES	Downtown Providence	Regional Downtowns	Local Downtowns	M Suburban Single-Family Neighborhoods	க் க் Fringe Suburbs
	Major Employment Centers	Urban Mixed-Use	Mixed Neighborhoods	Industrial Areas	newly Developing
		High-Density Commercial	Al Dense Single-Family Neighborhoods	Low-Density Commercial	ff Rural
		High-Density Residential			
TRANSIT SERVICES					
🚊 LRT & BRT	 Image: A second s	 Image: A second s			
📮 Rapid Bus	1	1	1		
🖵 Frequent Bus	1	1	 Image: A second s		
📮 🛛 Local Bus	~	1	~	1	
📮 Regional Bus			1	1	1
🛱 Flex/Microtransit	Limited	Limited	Limited		
Paratransit	~	 Image: A second s	~	~	
Specialized Services	 V 	1	1	1	1
TYPICAL SERVICE FREQUENCY (MIN)	10 or less	10 - 15	15 - 30	30-60	More than 60/ On-demand

Figure 15 Underlying Transit Demand and Generally Appropriate Transit Types

It should also be noted that reflective of the street network and built environment of Rhode Island, most RIPTA routes are long and serve many different areas where land uses and underlying demand vary. In these cases, routes are typically designed to match the predominant levels of their underlying demand. Additionally, in many areas, demand accumulates along a route as passengers board a route and stay on until it reaches its major destination. For example, passengers boarding a route in Warwick may stay on the bus until it arrives in downtown Providence, while others continue to board and few alight. Often, this dynamic creates demand for a higher level of service than the underlying demand in individual areas indicates and is another reason why travel patterns also play a role in how RIPTA designs transit service.

5 SERVICE LEVELS

For each type of service, RIPTA defines the minimum hours that service should operate and minimum service frequencies. In some cases, based on ridership levels and time of day demand, RIPTA will provide service for longer hours and more frequently than specified by the minimums. In other cases, based on actual ridership levels as well as financial constraints, RIPTA may also provide less service.

SERVICE SPANS

For people to be able to use transit, it must be available when they need it. Service spans by route type are presented in Table 3. These hours are targeted minimums. Actual hours on specific routes may be longer if demand warrants and funding is available. If demand is very low or funding shortfalls occur, some routes may operate shorter hours.

Ser D	rvice Pay	Light Rail Transit (LRT)	Bus Rapid Transit (BRT)	Rapid Bus	Frequent Bus	Local Bus*	Regional Bus	Flex	Specialized Services
days	Begin	_	—	5:00 AM	6:00 AM	6:00 AM	6:00 AM	5:45 AM	—
Week	End	_	—	12:00 AM	11:00 PM	10:00 PM	11:00 PM	6:30 PM	_
days	Begin	_	—	6:00 AM	7:00 AM	7:00 AM	8:00 AM	10:00 AM	—
Satur	End			12:00 AM	11:00 PM	8:00 PM	11:00 PM	5:00 PM	_
ays	Begin	—	—	7:00 AM	7:00 AM	8:00 AM	8:00 AM	10:00 AM	—
Sund	End	_	_	12:00 AM	9:00 PM	7:00 PM	10:00 PM	5:00 PM	_

 Table 3
 Minimum Span of Service Guidelines

Note: "—" indicates that the guideline does not apply or that RIPTA currently does not operate a specific service type. *There are five (5) RIPTA routes that do not provide weekend service. For routes that do provide weekend service, minimum spans are as shown.

LRT and BRT spans will be determined once those services begin operation. Specialized Service routes are set to match peak travel/demand and organized special event times, therefore there are no defined spans for this type of service. ADA Paratransit service operates during the same hours that the fixed route bus runs.

SERVICE FREQUENCIES AND ADVANCE RESERVATIONS

Service frequencies, or the amount of time between buses, have a major influence on transit ridership. Frequent service is one of the key features that make transit attractive and convenient. At the same time, frequency is a major driver of operating costs, and frequent service is expensive to provide. To reflect this dynamic, RIPTA balances service frequencies with demand by providing more frequent service on routes where ridership is higher and less on routes where ridership is lower. Similarly, RIPTA also adjusts service frequencies by day and time-of-day to reflect changes in demand using the following time periods:

- Early AM: 5 AM 7 AM
- **AM Peak**: 7 AM 9 AM
- Midday: 9 AM 3 PM
- **PM Peak**: 3 PM 6 PM
- Night: 6 PM 12 AM
- Saturday: 6 AM 12 AM
- **Sunday**: 7 AM 12 AM

For each time period, RIPTA sets service frequencies for a route using two primary considerations:

- The minimum service frequencies are set based on the frequency guidelines presented in Table 4, to the extent that funding is available
- Maximum loads, with additional service provided to ensure that the maximum number of people on the bus at any given time do not exceed the acceptable maximum loads presented in Chapter 6.

The minimum service frequency guidelines set a floor on the amount of service provided with additional service provided as needed to ensure that routes are not overcrowded. Additionally, in corridors that are served by more than one route, RIPTA sets the frequencies on those routes to be the same so that service can be coordinated to provide more frequent service in the corridors than the individual routes provide – for example, two routes that operate every 30 minutes would be scheduled to alternate to provide service in the corridor every 15 minutes.

Flex, Specialized, and RIde services do not operate with fixed schedules. In those cases, the amount of service that is provided is based on average wait times, with the average wait time guideline set relative to fixed-route wait times.

	Early AM	AM Peak	Midday	PM Peak	Night	Saturday	Sunday
Light Rail Transit (LRT)	_	_	_	_	_	_	_
Bus Rapid Transit (BRT)	_		_		_	_	_
Rapid Bus	30	10	10	10	30	15	15
Frequent Bus	30	15	15	15	30	20	20
Local Bus	60	60	60	60	60	60	60
Regional Bus	60	30	30	30	60	60	60
Specialized Services	_		_	_		_	_

Table 4 Minimum Service Frequencies

Note: "—" indicates that the guideline does not apply or that RIPTA currently does not operate a specific service type. For fixed-route services, this is because the service span guidelines do not require service during these periods. For they do not apply because service does not operate on a fixed-schedule.

Paratransit and Flex Advance Reservations

Paratransit Service

Paratransit reservations can be made via phone (401) 461-9760 between 8:30 AM to 4:30 PM Monday through Saturday. Reservations may be placed on Sunday by leaving a detailed voicemail message between 8:30 AM and 4:30 PM. The RIde office is closed on RIPTA recognized holidays.

A RIde Customer Service Agent will give riders a scheduled pick-up window upon booking their trip. Riders must be ready to be picked up at any time within the scheduled window. Please do not call the office to check on your ride during this 20-minute period. Some RIde trips are served by taxicabs.

Flex Service

Flex reservations can be made in advance (at least 24 hours before a trip) via phone (401) 784-9500 ext. 1220. Reservations are required for riders choosing their own pick-up or drop-off point within

the designated Flex Zone. Reservations are not required if a rider intends to board the Flex Vehicle at any of the scheduled Flex Stops within the Flex Zone.

6 SERVICE QUALITY

Several factors influence the way riders view the quality of transit service. Two of the most important are on-time performance (OTP) and their ability to get a seat.

ON-TIME PERFORMANCE

Riders need to be able to rely on RIPTA to get them where they are going when they need to be there. RIPTA works to ensure that nearly all buses leave on time, but once they leave, events on the street mean that they often get delayed. These events include unusual traffic congestion, buses stopping at more red lights than usual, higher than typical ridership, higher than average numbers of wheelchair boardings, unplanned roadway construction, accidents, and passenger incidents, and more.

For these reasons, RIPTA cannot ensure that all service is always on time. However, there are many things that RIPTA does to keep on-time performance as high as possible. For fixed-route services, these include:

- Including enough time in schedules to ensure that late arrivals on one trip do not cause late departures on the next trip.
- Including enough time in schedules to accommodate minor delays.
- Setting timepoints at key points along the route where early buses hold until their scheduled departure time. This practice reflects that early service often impacts passengers more than late departures as the wait for the next bus is almost always longer than the short hold time.

For fixed-bus routes, RIPTA measures on-time performance at each timepoint on a route, with ontime defined as no more than one minute early and no more than five minutes late. RIPTA's goal is that 80% of all service departs from each timepoint within this window.

For rapid routes, on-time performance can be measured based on headway adherence which measures bunching and gapping:

- Bunched is defined as less than two minutes between each bus
- Gapped is defined as five minutes more than the expected headway

Type of Service	On-Time Performance Goal			
Fixed-Route	80% of service no more than 1 minute early to 5 minutes late at timepoints			
Rapid Bus	80% of service no more than 1 minute early to 5 minutes late at timepoints, 15% of service gapping, 5% of service bunching			
Flex	80% of service no more than 1 minute early to 5 minutes late at timepoints*			

Table 5 On-Time Performance Measures and Goals

Note*: For Flex service, scheduled arrivals at timepoints should serve as the primary benchmark for measuring ontime performance (OTP). When a bus deviates from its route to accommodate passenger pick-ups or drop-offs, OTP should be adjusted to reflect the additional travel time incurred before arriving at the next scheduled timepoint. To ensure service reliability, buffer time should be incorporated into Flex route schedules to reflect variability caused by deviations.

MAXIMUM PASSENGER LOADS

Passenger volumes vary greatly along the length of most routes. For example, on some trips passengers board inbound trips and the number of people on board generally increases from only a few to full buses. On other routes, passengers board and alight all along the routes, and the number of passengers on board goes up and down. When scheduling service, RIPTA seeks to balance passenger comfort with service efficiency. In this context, service efficiency means minimizing the amount of excess capacity that is provided.

For fixed-route services, vehicle load guidelines are calculated on the basis of an average for both peak and off-peak periods, at the busiest point on the route. RIPTA schedules services so that most passengers will have a seat for their entire trip. However, due to fluctuations in demand and when there are high numbers of people on a bus for a very short time, RIPTA considers some standing loads to be acceptable and schedules service so that, on a typical day, maximum loads should not exceed the levels shown in Table 6. For Flex and paratransit (RIde) services, which are provided with smaller vehicles that don't have enough space or headroom for standees, these services should not exceed seating capacity.

	Light Rail Transit (LRT)	Bus Rapid Transit (BRT)	Rapid Bus	Frequent Bus	Local Bus	Regional Bus	Flex	Specialized Services
Average Maximum Passenger Loading (as a percentage of seating capacity)								
Peak	120%	120%	120%	120%	120%	100%	100%	100%
Off-Peak	100%	100%	100%	100%	100%	100%	100%	

Table 6 Average Vehicle Loading Maximums

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

RIPTA's 40' transit buses are assigned to most RIPTA routes. RIPTA uses two different techniques to keep passenger loads at acceptable levels and to avoid overcrowding:

- Match vehicle types with ridership levels, and to use larger vehicles on higher ridership routes.
- Provide more frequent service, with service frequencies set to keep passenger loads within a specified calculated limit.

	60' Articulated Bus	40' Bus	35' Bus	29' Bus	35' Trolley	Flex Vehicle
100% of Seating Capacity	55	40	32	28	28	12*
120% of Seating Capacity	66	48	38	33	34	_

Table 7 Vehicle Capacities

Note: RIPTA does not currently operate articulated vehicles but may do so in the future.

* Capacity for two wheelchairs in addition to seated capacity

7 PRODUCTIVITY

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

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

PASSENGERS PER REVENUE HOUR OR TRIP

RIPTA measures productivity in terms of the number of passengers its vehicles serve while they are in service, with very high volumes expected for frequent services and much lower volumes expected for services for specialty markets (Table 8).

		Passengers Per Revenue Service Hour						Passenge	ers Per Trip
S	Service Day	Light Rail Transit (LRT)	Bus Rapid Transit (BRT)	Rapid Bus	Frequent Bus	Local Bus	Flex	Regional Bus	Specialized Services
ys	Early Morning	_	_	20	15	10	5	15	_
/eekda	Late Night	_	_	20	15	10	5	15	_
5	All Day	_	_	50	35	15	5	20	_
ıys	Early Morning	_	_	20	10	10	5	15	_
aturda	Late Night	—	_	20	10	10	5	15	—
S	All Day	—	_	30	20	10	5	15	_
s/	Early Morning	—	_	20	10	10	5	15	_
Sunday	Late Night	_	_	20	10	10	5	15	_
	All Day	_	_	30	15	10	5	15	_

Table 8 Productivity Guidelines by Service Type

Note: "—" indicates that the guideline does not apply or that RIPTA currently does not operate a specific service type.

Productivity is one of the most important measures that RIPTA uses to determine route classification and when to provide more or less service. Specialized services are not included in Table 8 as these services can be provided with a variety of vehicles. However, RIPTA schedules these services so that buses will be full or nearly full. Another exception is paratransit, which is mandated by federal law. RIPTA internally tracks the productivity of paratransit service and works to maximize it wherever possible but there is no minimum productivity target.

- When routes significantly exceed the productivity minimums, RIPTA works to provide more service. This is done in two different ways. The first is to ensure that the route meets the service frequency minimums for all time periods. The second is to shift the route into a higher service classification and to increase service frequencies and spans to corresponding levels.
- When routes do not meet productivity minimums, RIPTA first works to identify service improvements that could increase ridership so that it would meet the minimum target. RIPTA may also consider reducing non-weekday daytime frequencies if productivity during those days or hours is significantly dragging down overall performance, creating an exception to the minimum service frequencies outlined in Table 4.

FAREBOX RECOVERY

RIPTA uses farebox recovery percentages to understand how much of the agency's operating costs are recovered from fares – this metric is not compared by service type or route. Farebox recovery ratios are a measure of cost effectiveness that considers the ratio of service inputs to service consumption and measures how well the service is being utilized (Table 9).

Service Day	Light Rail Transit (LRT)	Bus Rapid Transit (BRT)	Rapid Bus	Frequent Bus	Local Bus	Flex	Regional Bus	Specialized Services
Weekday	_	_	30%	20%	20%	5%	_	_
Saturday	_	-	20%	15%	15%	5%	-	_
Sunday	_	_	20%	15%	15%	5%	_	_

Note: "—" indicates that the guideline does not apply or that RIPTA currently does not operate a specific service type.

8 SERVICE EVALUATION AND CHANGES

In order to provide the best service, RIPTA systematically evaluates its services on an ongoing basis using the guidelines presented in this document. This chapter describes the processes that RIPTA uses for evaluating new and mature routes.

Changes in funding levels can also result in service changes. For example, additional funding can support increased service frequencies and spans. And reduced funding must necessarily result in reductions to service frequencies and spans. This chapter also includes the prioritization process for adding or removing service in response to changed service levels.

REGULAR SERVICE CHANGE PROCESS

RIPTA has two processes for evaluating service changes on a regular basis. When funding is stable, RIPTA follows these processes to ensure that service is being delivered in the most efficient and costeffective way possible:

- A process for mature routes, or those that have been in operation for at least three years. These routes are considered to be mature in that – as currently designed – they have reached their full ridership potential.
- 2. A process for new routes that are not yet mature. It takes a minimum of six months to a year for people to learn about a new route, and often up to three years. RIPTA uses the three-year threshold to ensure that all new services are given the full amount of time needed to reach their full potential.

Evaluation Process for Established Routes

All mature routes and services, or those that have been in operation for at least three years, are evaluated annually. The evaluation assesses the degree to which each route and service meets the guidelines set forth in this document. For routes that perform well, this is often a high-level assessment, with more detailed analysis focused on routes that are either underperforming or overperforming. In these cases, RIPTA examines ridership, productivity, and passengers loads by route segment, and on a monthly, daily, and per trip basis.

Underperforming Routes

Most routes perform consistently with the service categories. RIPTA evaluates these routes on a regular basis to determine whether changes could be made to make service more attractive. These

types of changes include alignment and zone changes, service frequency and span adjustments, extensions to new areas, timing adjustments to improve on-time performance, and the use of high-capacity vehicles to reduce crowding.

For routes or services that perform below their productivity targets, RIPTA starts by considering several types of different changes:

- Alignment and Zone Changes: RIPTA's first step in examining underperforming fixed-route services is to examine productivity by segment. This helps to identify whether routes extend too far outward or whether some inner segments are underperforming. In cases where outer segments are underperforming, RIPTA may introduce a short trip/long trip strategy in which all service operates along most of the route and only some trips operate to the outer end or shorten the route altogether. There are generally fewer opportunities to revise middle segments of routes, but RIPTA also examines these as appropriate and consistent with the service design principles presented in <u>Chapter 3</u>. For zone-based services such as microtransit, RIPTA examines pick-up and drop-off locations, which can indicate whether zone boundary adjustments should be made.
- Route Reclassifications: RIPTA also uses productivity and loading measures to determine whether routes should be reclassified. In the case of underperforming routes, this would be a reclassification to a lower category, with the reclassification triggering changes to service frequencies and service spans.
- Frequency and Span of Service Adjustments: As described earlier in this document, frequencies and spans are primarily set based on a route's or service's service classification. However, if a route or service is underperforming and ridership is low during only certain periods, RIPTA could reduce service frequencies during those periods and/or shorten the span of services.
- **Elimination or consolidation**: In cases where RIPTA cannot identify any ways to operate a route or service consistent with the service guidelines, it could be eliminated or have its most productive segments or zone areas consolidated with another route.
- **Exceptions to the Service Guidelines:** These service guidelines provide a framework through which RIPTA designs and delivers its services. However, there are sometimes cases where exceptions are warranted, and RIPTA will make exceptions that are consistent with the spirit of the guidelines (for example, the service and span adjustments described above).

When routes are modified, their performance will be tracked to determine whether they have been brought into compliance with the service guidelines or are trending that way. Routes that still fail to meet the productivity guidelines within a year will be re-evaluated for additional changes.

Overperforming Routes

Overperforming routes are those that operate with productivity levels that do or could exceed the minimum productivity target for the next highest service category. This, in turn, indicates that, subject to available funding, additional service should be provided. This can be done in two ways:

- **Route Reclassifications**: The route can be reclassified to the next highest category, with the reclassification triggering changes to service frequencies and service spans.
- **Frequency and Span of Service Adjustments:** If ridership is particularly high during some periods but not at the levels that would be expected at the next higher classification, RIPTA can improve service frequencies during those periods and/or lengthen the span of services.

In cases where trips are overcrowded, RIPTA can alleviate crowding by either providing more frequent service or providing service with larger vehicles. Generally, it is less expensive to increase vehicle size than increase frequencies. However, more frequent service is more convenient for passengers as it reduces wait and transfer times and reduces running times as passengers are distributed among more trips, which reduces dwell times. For these reasons, RIPTA prefers to increase frequencies to reduce crowding and generally only shifts to the use of larger vehicles on routes that already operate every 20 minutes or better or that experience very concentrated spikes in passenger loads, such as around high school bell times.

Evaluation Process for New and Upgraded Routes

New routes and those that have recently been upgraded take time to reach their full ridership potential – sometimes up to three years. During this period, RIPTA tracks performance to ensure that productivity is trending toward meeting the productivity target within the three-year timeframe. The expectations for each route are shown in Table 10.

Milestone	Minimum Productivity Target
First 6 months	Monitor monthly ridership
6 Months	50% of minimum productivity guideline
12 Months	75% of minimum productivity guideline
2 Years	90% of minimum productivity guideline
3 Years	Fully meet minimum productivity guideline

Table 10	Productivity	Targets	for New and	Upgraded	Routes

RIPTA will also consider the likelihood of whether a route will be able to meet the productivity targets when considering the introduction of a new route or service and will only implement new routes that it believes can be successful on this basis. Finally, new or modified routes that fail to meet the targets will be considered underperforming and subject to the actions described above in the Underperforming Routes section.

SERVICE CHANGES RELATED TO CHANGES IN FUNDING LEVELS

<u>RIPTA's Transit Master Plan</u> lays out a plan for future service investments as additional resources and funding become available. The short-, mid-, and long-term service improvements recommended within the plan address RIPTA's top service priorities while allowing for flexibility in the case of funding opportunities or cost constraints. RIPTA will need to conduct an ongoing evaluation on the performance of its routes to understand which routes and zones should be prioritized for an increase in service or, in the case of reduced funding, should be prioritized for decreased service. This section describes the processes RIPTA follows when funding levels fluctuate.

- 1. When funding is anticipated to be meaningfully higher so that RIPTA can operate additional revenue hours of service.
- 2. When funding is anticipated to be insufficient to continue operating current service levels, RIPTA will be forced to reduce service.

When Additional Funding Comes Available

Additional funding can be used to add service so that existing services meet the frequency, span of service, and load guidelines presented in this document. Additional funding can also be used to further increase service on the best performing routes. In some cases, RIPTA may want to use additional funding to introduce new services.

Ensure Existing Services Conform to Service Guidelines

Most RIPTA routes meet their productivity targets. However, due to financial constraints, some operate less frequently and/or for shorter hours than set forth in these service guidelines. When additional funding is available, RIPTA places a high priority on improving service frequencies and extending spans of service to meet the frequency and span guidelines.

Add More Service to High Performing Routes

Many routes exceed their productivity targets while conforming to the minimum span of service, frequency, and load guidelines laid out in this document. RIPTA can add additional service frequency or expand the span of service on the highest performing routes to improve the convenience of the region's most popular and effective services.

Introduce New Service to New Areas

Due to funding constraints, there may exist some regions or corridors where RIPTA would like to provide service but cannot. RIPTA can leverage additional funding to expand service to new areas. When introducing new service, RIPTA follows the service design guidelines laid out in this document. Any new services are subject to RIPTA's productivity guidelines.

When Funding Levels are Reduced

In cases where funding is reduced and service must be reduced, RIPTA focuses on making reductions on routes and services that are the least productive and serve the fewest riders in a manner consistent with the Federal Transit Administration's Title VI requirements. However, exceptions can be made within suburban and rural areas that have lower transit demand. In these areas, other service types should be explored to better match transit demand and needs to increase productivity while maintaining coverage.

TITLE VI

FTA Circular 4702.1B requires that recipients of Federal Transit Administration funding prepare and submit service equity analyses for proposed major service changes or any fare change. The purpose of this policy is to establish a threshold which identifies when the adverse effects of a fare change or major service change, (defined as a 25% or greater) addition or reduction in service, are borne disproportionately by minority populations. The Disparate Impact threshold is defined as follows: Should the impact of any major service change require a minority population to bear adverse effects (20% more or less than those adverse effects borne by the non-minority population), that impact will be considered a disparate impact. Should a proposed major service change result in disparate impact, RIPTA will consider modifying the proposed change to avoid, minimize or mitigate the disparate impact of the change. If RIPTA finds potential disparate impacts and then modifies the proposed changes to avoid, minimize or mitigate the potential disparate impacts of the changes. RIPTA's Title VI policy can be found online at https://www.ripta.com/civil-rights-title-vi/.

There are several ways that RIPTA can reduce service, which include:

- Reducing service spans
- Reducing service frequencies
- Restructuring routes and services
- Discontinuing service

Reducing Service Spans

For fixed-route service, RIPTA examines ridership per trip at the beginning and end of service routes to determine if there are trips or times where ridership is low. In these cases, RIPTA will start service later or end service earlier. A similar approach is used for microtransit, except that the examination is based on passengers per revenue vehicle hour instead of per trip.

Reducing Service Frequencies/Increasing Wait Times

To determine whether frequency reductions should be made, RIPTA starts by examining ridership per revenue vehicle hour for each route and microtransit service over the course of each service day to identify periods and trips where ridership may be particularly low. In cases where it is, RIPTA then identifies options for reducing service – for example, service on a 30-minute route could be reduced to every 40 minutes for all or part of the day on weekdays, Saturdays, and/or Sundays. Similarly, wait times on microtransit could be increased from 30 to 40 minutes. When RIPTA must make service reductions in this manner, it seeks to minimize the timespan over which the reductions are made.

In determining how to reduce service, RIPTA uses the guidelines in the Maximum Passenger Loads and performance relative to the guidelines. For example, RIPTA would target reductions on a route that performs farther below the guideline before on a route that operates just below the guideline. When implementing reductions, RIPTA also ensures that they will not create crowding problems

Restructuring Routes

Services may be restructured to reduce costs by discontinuing or reducing service to low ridership locations. The primary types of changes that RIPTA considers are:

- Changes to fixed-route service to discontinue service to lower ridership locations. This
 includes alignment changes, shortening routes, and branching strategies.
- Reductions in the size of microtransit zones

Discontinuing Service

As a last resort, RIPTA will consider discontinuing routes and microtransit services. When this must be done, RIPTA focuses on reducing service in a manner that will impact the fewest people, and in particular lower performing routes that operate in areas where there are other alternative services.

9 BUS STOPS

RIPTA's Bus Stop Design Guide (BSDG) provides bus stop-related guidance to planners, engineers, landscape architects and others in establishing bus stop zones that support RIPTA's operational needs, meet ADA requirements, provide rider comfort, and maintain a safe pedestrian environment.

For more specific bus-stop related content including bus stop placement, stop configuration, RIPTA's accessibility guidelines, and amenities and placement criteria, readers of the service guidelines should reference RIPTA's BSDG to improve access and mobility within a community, and to ensure that operational changes do not negatively impact rider accessibility and safety available. RIPTA's Bus Stops Design Guide (2024) is available on RIPTA's website [Link].

BUS STOP SPACING

The distance between stops impacts travel times, reliability, and passenger walk distances to and from stops. On one hand, more closely spaced stops provide customers with more convenient access. However, closely spaced stops are a major reason that transit service is slower than automobile trips, since each additional stop with activity requires the bus to decelerate, come to a complete stop, load and unload riders, and then accelerate and re-merge into traffic. Closely spaced stops also make service more unreliable. Trips that stop at more stops are slower, while those that stop at fewer stops are faster. This creates gaps in service as well as bus bunching. Since most riders want service that balances the convenience of walk distances with speed and reliability, the number and location of stops is a key component of determining that balance.

RIPTA 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. Rapid Bus and 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) are shown in Table 11. Where multiple routes operate in the same corridor, the guideline for the higher service type should be applied. 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.

Measure	Light Rail Transit (LRT)	Bus Rapid Transit (BRT)	Rapid Bus	Frequent Bus	Local Bus	Regional	Specialized Services
Minimum Distance between Stops (Feet)	_	_	1,100 - 1,300	900 - 1,300	900 - 1,300	900 - 1,100	_
Maximum Stops per Mile		_	5	6	6	6	_

Table 11 Bus Stop Spacing Guidelines

Note: "—" indicates that the guideline does not apply or that RIPTA currently does not operate a specific service type.

Stop Location Considerations

- **Stop Pairing** locating stops in pairs makes service easier and more predictable to use and stops easier to maintain. Stop pairs serving should ideally be situated across the street from one another so that riders can easily locate the stop for their return trip.
- Stop-to-Stop Connectivity stop pairs should ideally be connected via a crosswalk so that
 riders have safe crossings for both directions of their trip. The addition of a crosswalk to
 connect bus stops should be evaluated using Federal Highway Administration (FHWA) Safe
 Transportation for Every Pedestrian (STEP) guidance and will need to be approved by the
 municipality, or on RIDOT roadways by the State Traffic Commission.
- **Even Stop Spacing** Optimal stop spacing is more or less equidistant and maximizes efficiency of the service.
- Adequate Stop Length When adjusting existing stops or placing new stops, the curbside space available must allow for buses to enter and exit a bus stop, and to become parallel with the curb so that riders can board and alight the vehicle safely.

Users of these service guidelines are encouraged to review RIPTA's stop spacing policy, shown in Table 11 for bus stop improvements.

BUS STOP TYPOLOGIES

RIPTA Bus Stop Types

RIPTA provides bus service to many unique communities and neighborhoods in Rhode Island and varying land uses including urban, rural, suburban, and historic. These factors create a range of operating environments that influence the levels of service provided, ridership volumes, and travel patterns. There are six bus stop types described in Table 12, this typology categorizes RIPTA bus stops by operational characteristics, service frequency, ridership, and adjacent land uses.

Stop Type	Description
Transit Center/ Mobility Hubs	Transit centers and mobility hubs typically have at least two bus berths with a high level of passenger amenity. These stops provide connections to other routes and other transit services or modes of travel (e.g., MBTA Commuter Rail), and provide a comfortable waiting environment for riders as well as additional amenities for RIPTA staff during layovers and breaks.
Downtown Transit Connector (DTC)	Stops that are designed with a unique and highly-visible identity and serve high-frequency transit service (5 minutes or better) between the Providence Train Station and the Hospital District. This stop type is located along a high-frequency corridor with transit priority elements including dedicated bus lanes and transit signal priority.
Transit Emphasis Corridor Stops (TEC)	Stops on corridors with high-frequency routes (10 minutes or better) with direct and efficient service. These stops are most likely to be served by 3 or more routes, with truncated service. These stops are in dense neighborhoods that are very walkable and provide connections between major activity centers.
High Activity Stops	Stops where ridership experiences 50 to 75 average daily boarding and/or adjacent to a major trip generator (e.g., hospital, university)
Standard Stops	Stops that are typical within Rhode Island with lower ridership volumes.
Park & Ride Lots	Park & Ride lots are mostly located in suburban and rural environments that allow riders to park their vehicle and transfer to RIPTA local and express bus routes for the remainder of their trip. Park & Ride lots may be located on private property or RIPTA-owned right-of-way)

 Table 12
 RIPTA Bus Stop Typologies

In addition to the descriptions shown in Table 12, Figure 16 summarizes the required, preferred, and optional amenities for all bus stop types. This table provides guidance for the acceptable amenities at each stop type but should only be placed/considered if all amenities adhere to RIPTA's accessibility requirements.

Amenity	Transit Center/ Mobility Hubs	Downtown Transit Connector Stops	Transit Emphasis Corridor Stops	High Activity Stops	Standard Stops	Park & Ride Lots
Bus Stop Sign	Required	Required	Required	Required	Required	Required
Shelter	Required	Required	Required	Required	Preferred	Preferred
Bench/Leaning Rail	Required	Required	Required	Required	Preferred	Optional
Trash and Recycling Receptacles	Required	Required	Required	Required	Optional	Required
Bicycle Parking/Bikeshare	Required	Preferred	Preferred	Preferred	Preferred	Preferred
Passenger Information (e.g., system/ route map, wayfinding display)	Required	Required	Required	Preferred	Optional	Preferred
Real-time Information	Required	Required	Preferred	Optional	Optional	
Digital Advertising Screen	Preferred	Required	Optional	Optional	Optional	
Fare Machine	Preferred	Required	Optional			
Solar Powered Shelter Lighting	Preferred	Preferred	Preferred	Preferred	Preferred	Preferred
Safety and Security Elements	Required	Preferred				Preferred
Car Parking	Optional					Required

Figure 16	RIPTA Bus Stop	Types and Required,	Preferred, and O	ptional Amenities
i iguic io		i ypco una negunea,		puona Amendo

Source: RIPTA Bus Stop Design Guide (2024)

10 SERVICE PARTNERSHIPS

RIPTA seeks to provide as much transit service as possible, although demand for transit service consistently exceeds currently available resources. One way that RIPTA works to provide additional service is through service partnerships in which jurisdictions, businesses, schools and universities, event organizers, human service organizations, and others provide funding for additional services and transit-related programs. Current examples in Rhode Island include partnerships with institutions of higher education (U-PASS) for funding free transit passes for students, faculty, and staff. Examples from other areas include Seattle, where Amazon funded more frequent streetcar service and the city provided funding for Rapid Bus lines and more frequent bus service, and Rochester, New York, where office parks have funded more frequent service and route extensions.

Through service partnerships, RIPTA can leverage additional resources to expand and improve transit service. RIPTA encourages a number of different types of service partnerships, examples of which include:

- Funding for expanded service, which can include longer hours of service, more frequent service, route extensions, and new routes
- Funding for capital improvements, such as upgrading local routes to Rapid Bus
- Development of transit priority as part of roadway projects
- Development of bus stop facilities and amenities
- Fare subsidy programs

RIPTA will consider all proposals for service partnerships and encourages partners to be creative and innovative. The types of partnerships that are particularly important to RIPTA are those that:

- Improve service to high-need populations, such as low-income residents, people who live in households with no or few cars, veterans, and seniors.
- Fill gaps in RIPTA's existing network for example, microtransit service to supermarkets and medical facilities for people who live more than ¹/₄ mile from fixed-route transit
- Expand service to new areas for example route extensions and microtransit services that provide first and last mile connections to the fixed route network
- Improve service quality for example, more frequent service, longer hours of service on existing services and route extensions
- Help RIPTA meet local funding requirements for major capital initiatives such as light rail, BRT, and Rapid Bus.
- Fund or facilitate the development of transit priority
- Improve service for the general public in addition to any specifically targeted markets for example, an extension to an office park that would also serve other riders along the way.

Assessment and Prioritization of Partnership Proposals

RIPTA assesses and prioritizes service partnership proposals based on:

- Proposed funding
- Projected ridership and productivity
- The degree to which proposed services and programs would complement RIPTA's existing services
- Consistency with the service guidelines presented in this document
- Provision of better service for people from high need populations
- Financial capacity and vehicle availability

In addition, fares for all partnership services must be consistent with RIPTA's fare structure. However, partners can subsidize or make payments in lieu of fares for their clientele.

Proposed Funding

RIPTA does not have any set funding requirements for service partnerships. However, the amount of funding that project proponents will contribute is an important factor in RIPTA's prioritization of partnerships. In cases where project proponents propose to fund all costs and RIPTA has the capacity to implement the service, it will generally do so. In cases where partial funding is proposed, and as described in more detail in the following sections, RIPTA will weigh the proposed partnership against other service improvement opportunities.

Projected Ridership and Cost-Effectiveness

RIPTA regularly expands its services based on available resources and decisions to enter into service partnerships would be in lieu of other improvements. For this reason, for service-related partnerships, RIPTA will weigh the cost-effectiveness of the proposed service, in terms of net cost per passenger, relative to other potential improvements. RIPTA will also weigh the number of high need residents who would be served relative to other potential improvements.

Integration with Existing Services

As described in this document, RIPTA operates a large and expanding variety of services that are designed to meet a variety of service needs. All service partnerships improvements should build upon this existing network in a manner that complements existing services.

Compliance with Service Guidelines

All services provided through service partnerships must be consistent with the frequency and span of service guidelines presented in this document. The service should also meet the productivity guidelines unless partner funding contributions offset lower productivity levels. The additional funding required to offset lower productivity should be equal to or greater than the difference

between the fare revenue that would be generated at the minimum productivity levels versus actual productivity.

Service to Disadvantaged Populations

A large proportion of RIPTA's riders are from disadvantaged populations for whom better transit means better access to opportunities, which is an important priority for RIPTA.

Financial Capacity and Vehicle Availability

For all service partnerships, RIPTA must determine that it has the financial capacity to implement the improvement, and as applicable, has enough vehicles available to operate the proposed service. In most cases, this would be accomplished by implementing service partnership improvements in lieu of other improvements. However, there may be cases in which service partners would need to provide additional funding, including for the purchase of the required vehicles.

11 APPENDICES

APPENDIX A: SERVICE MAPS FIXED-ROUTE TRANSIT



Figure 17 RIPTA Statewide System Map (2022)



Figure 18 RIPTA Metro Providence System Map (2022)

APPENDIX B: EXISTING SERVICES BY TYPE

This appendix includes a list of all existing RIPTA services categorized by service type (as of July 2024).

Table 13Existing Services by Type

Route Number	Route Name	Service Type
1	Eddy/Hope/Benefit	Frequent Route
20	Elmwood Ave/T.F. Green Airport	Frequent Route
27	Broadway/Manton	Frequent Route
28	Broadway/Hartford	Frequent Route
31	Cranston St	Frequent Route
50	Douglas Ave/Bryant University	Frequent Route
56	Chalkstone Ave	Frequent Route
92	RI College/Federal Hill/East Side	Frequent Route
3	Oakland Beach	Local Route
4	Warwick Neck	Local Route
6	Prairie/Roger Williams Park Zoo	Local Route
13	Coventry/Arctic/CCRI	Local Route
16	Bald Hill/NEIT/ Quonset	Local Route
18	Union Ave	Local Route
19	Plainfield/Westminster	Local Route
21	Reservoir/Garden City/CCRI	Local Route
22	Pontiac Ave	Local Route
23	Arctic/Crompton/Centre of NE	Local Route
29	CCRI Warwick/Conimicut	Local Route
32	E. Prov/Wampanoag/Seekonk Sq.	Local Route
33	Riverside	Local Route
34	East Providence/Seekonk Square	Local Route
35	Rumford/Newport Ave	Local Route
40	Butler/Elmgrove	Local Route
51	Charles St/Twin River/CCRI	Local Route
55	Admiral/Providence College	Local Route
57	Smith St	Local Route
58	Mineral Spring/North Providence	Local Route

63	Broadway/Middletown Shops	Local Route
64	Newport/URI Kingston	Local Route
67	Bellevue/Salve Regina Univ.	Local Route
68	CCRI NPT/Mem. Blvd./First Beach	Local Route
69	Narragansett / Galilee	Local Route
71	Broad St/Pawtucket Ave	Local Route
72	Weeden/Central Falls	Local Route
73	Mineral Spring/Twin River/CCRI	Local Route
75	Dexter/Lincoln Mall	Local Route
76	Central Ave	Local Route
78	Beverage Hill Ave/East Providence	Local Route
80	Armistice Blvd	Local Route
87	Fairmount/Walnut Hill	Local Route
11	R-Line Broad/North Main	Rapid Bus Route
14	West Bay	Regional Route
54	Lincoln/Woonsocket	Regional Route
60	Providence/Newport	Regional Route
66	URI / CCRI Warwick / Providence	Regional Route
9X	Pascoag Park & Ride	Specialized Service
10X	North Scituate Park & Ride	Specialized Service
12X	Arctic/117 Express Park & Ride	Specialized Service
24L	Newport/Fall River/Providence	Specialized Service
59X	N. Smithfield/Lincoln Mall Park & Ride	Specialized Service
61X	Tiverton/East Bay Park & Ride	Specialized Service
65X	Wakefield Park & Ride	Specialized Service
88	Simmons Village Service	Specialized Service
89	Thursday Only Walmart Cranston	Specialized Service
95X	Westerly Park & Ride	Specialized Service
QX	Quonset Express	Specialized Service
204	Westerly Flex	Flex Service
231	South Aquidneck Flex	Flex Service
242	West Warwick/Coventry Flex	Flex Service
281	Woonsocket/Manville Flex	Flex Service
282	Pascoag/Slatersville Flex	Flex Service