JTRAN

Fixed Route Service Guidelines

Contents

1 Introduction

1.1 Purpose of the Guidelines

Purpose

This document serves as an objective and transparent framework for designing, modifying, and evaluating JTRAN's fixed route services. It includes non-binding design guidelines and performance standards intended to assist decision-makers in service planning.

Note: In the event of an emergency, JTRAN may temporarily suspend some or all of the guidelines and standards in this policy in accordance with established safety plans and emergency procedures

1.2 Components of the Guidelines

Route Design Guidelines

- Ensure service design consistency and quality
- Address routing and scheduling

Bus Stop Design Guidelines

- Ensure facility design consistency and quality
- Address infrastructure and passenger amenities

Performance Standards

- Establish performance targets
- Evaluate productivity and service quality

Monitoring and Making Changes

- Monitor route performance
- Change service to address performance or other issues

1.3 Types of Fixed Route Service

Local

- Local streets and major corridors
- 60 minute frequencies
- Closer stop spacing

Core

- Major corridors
- 30 minute frequencies
- Closer stop spacing

Rapid Transit (Future)

- Major corridors
- Faster, more frequent service
- Wider stop spacing

Other Fixed Route Services

- **Supplemental Service** – supplements existing service with increased capacity. For example, buses may be added to regular service if an event or activity is expected to generate demand significant enough to cause overcrowding.

- **Special Service –** a one-time or infrequent service designed to transport a large number of passengers directly to/from an event, usually along a route that doesn't already exist within the system. Special service only operates during time periods when the event is generating demand (typically prior to and after the event).

Fixed Route Time Periods

- **AM Peak**: 6:00 AM – 9:00 AM
- **Midday Off-Peak**: 9:00 AM – 3:00 PM
- **PM Peak**: 3:00 PM – 6:00 PM
- **Evening Off-Peak**: 6:00 PM – 8:00 PM
- **Saturday**: 6:00 AM – 7:00 PM

2 Route Design Guidelines

2.1 Frequency

What is it?

Frequency refers to how often a bus or other transit vehicle picks up passengers at a stop. For example, a bus stop on a route with a frequency of 60 minutes has a vehicle arriving every 60 minutes per direction of travel. Frequencies can vary by time of day or day of week.

Why does it matter?

Providing the appropriate frequency of service is important for reducing passenger wait times, ensuring reliability and flexibility for passengers, and avoiding overcrowding in high-demand areas. At a minimum, 60-minute frequencies should be provided unless there are unique circumstances. Route frequencies should be coordinated so that riders can easily time connections between routes. Routes with high ridership demand or overcrowding may be candidates for higher frequencies.

Frequencies of 15 minutes or better are considered high-frequency transit and this level of service typically reduces passengers' reliance on schedules, attracts more discretionary riders, and fosters Transit Oriented Development.

How is it measured?

For any given transit route, frequency is measured as the amount of time between consecutive trips in the same direction of travel. Frequency should be measured separately for peak times and off-peak times as well as for Weekdays and Saturdays. For time periods with differing frequencies, an average should be used.

For example, a route where a trip occurs every 30 minutes during peak times and every 60 minutes during off-peak times has a peak frequency of 30 minutes and an off-peak frequency of 60 minutes.

Table 2-1: Minimum, Frequency Guidelines

		Local	Core	Rapid Transit
Weekdays	Peak	60 min	30 min	15 min
	Off-Peak	60 min	30 min	20 min
Saturdays	Peak	60 min	30 min	15-20 min
	Off-Peak	60 min	30 min	20 min

2.2 Span of Service

What is it?

Span of service refers to the hours of operation for a transit route, from the beginning of the first trip of the day to the end of the last trip of the day. Span of service may vary by day of the week.

Why does it matter?

Span of service dictates the availability of transit service and therefore directly impacts reliability from the rider's perspective and their ability to access their desired destinations. While providing a long span of service would be ideal for riders, demand and ridership productivity vary throughout the day and can be very low during evening and late night/early morning hours.

How is it measured?

Span of service is measured as the time period that service is provided. The guidelines provide a recommendation for the beginning time (start of the first trip) and end time (end of the last trip) for a route. These guidelines are recommended minimums and shorter or longer spans of service may be warranted based on local demand.

Table 2-2: Minimum Span of Service Guidelines

		Local	Core	Rapid Transit
Weekdays	Begin no later than	7:00 AM	7:00 AM	7:00 AM
	End no earlier than	7:00 PM	7:00 PM	7:00 PM
Saturdays	Begin no later than	7:00 AM	7:00 AM	7:00 AM
	End no earlier than	7:00 PM	7:00 PM	7:00 PM

2.3 Stop Spacing

What is it?
Stop spacing is the distance between stops along a route.

Why does it matter?
The distance between stops impacts riders in two ways. It impacts their ability to access a transit route and it impacts the speed and reliability of the transit route they are trying to access. Closer stop spacing is better for providing access to transit but it slows down transit service and makes it less reliable. Further stop spacing means some people will have to walk longer distances to a transit route but that service will be faster and more reliable.

At its core, stop spacing is all about balancing the need for coverage (access) with quality (speed and reliability).

How is it measured?
Stop spacing is measured as the average stop spacing of a route. This average is calculated by dividing the total distance (all directions) of a route by the total number of stops on the route (all directions). This measure provides average stop spacing distance in feet.

While the average stop spacing of a route should be within the guidelines below, the spacing along a route does not need to be uniform. The distance between any two stops on a route can and should vary based on local conditions such as roadway design and connectivity, the pedestrian environment, land use, and topography. Spacing may be closer in more developed areas and further apart in less developed areas along a route.

Table 2-3: Stop Spacing Guidelines

	Local	Core	Rapid Transit
Average Spacing	4-5 stops/mile	4-5 stops/mile	2-4 stops/mile
Average Distance	1,056-1,320 ft	1,056-1,320 ft	1,320-2,640 ft

2.4 Directness

What is it?

Directness is the “straightness” of a route between its starting point and end point. A direct route follows a consistent path, usually along major roadways, and makes few deviations from this path.

Why does it matter?

Direct routes are easier for riders to understand and make it easier to provide faster, more frequent service. They are also more reliable for riders and more efficient to operate. However, directness has an inverse relationship with coverage and providing direct service often means less coverage.

While direct routes will reduce coverage and force some riders to utilize multiple routes to reach their destination, overall travel times for riders will be shorter.

How is it measured?

Service directness can be measured by comparing the distance (mileage) from a route’s beginning point to its end point to the distance between those same points when traveling by car. Directness should be calculated for all directions or patterns of a route. The shortest path by car can be calculated using trip planning features of services like Google Maps.

Local routes should not be more than 50 percent longer in route mileage distance than a comparable route by car. Core and rapid transit routes should not be more than 20 percent longer. The directness ratio can be calculated with the following formula:

> *Directness Ratio = mileage from beginning point to end point by transit / mileage from beginning point to end point by driving*

The directness ratio should not be exceeded in any route direction or pattern (inbound, outbound, etc.) but small deviations may be acceptable. For loop routes, the route should be split into two or more directions or patterns at a midpoint or other location.

Table 2-4: Directness Guidelines

	Local	Core	Rapid Transit
Ratio of Transit Route Distance to Driving by Car Distance	1.5	1.2	1.2

2.5 Coordination

What is it?
Coordination refers to synchronizing route schedules and avoiding duplication of service with no added value.

Why does it matter?
Without coordination, an otherwise well-designed service plan can be wasteful and difficult for passengers to navigate.

In general, overlapping routes should be avoided. Sometimes this unavoidable, such as near the convergence of a major hub or where the roadway network does not have attractive alternatives. In these instances, schedules can be staggered to provide more frequent service along the corridor with overlapping routes. Without staggering the schedules, routes will be more prone to bunching and there will be no added benefit of having multiple routes along the same corridor.

Uncoordinated schedules in general also present a potential obstacle for passengers. The schedules for routes serving hubs and transfer points should be coordinated to the extent possible so as to minimize the wait time that passengers experience when transferring from one route to another.

How is it measured?
This guideline is not intended to be measured.

2.6 Schedule Efficiency

What is it?

Schedule efficiency refers to the amount of time that a vehicle spends at layovers versus the amount of time that it spends traveling along its route. Layovers occur at the end of a trip while waiting for the next trip to begin.

Why does it matter?

Layover time is a valuable tool for giving drivers breaks and allowing drivers to recoup time from unanticipated delays. However, too much layover time is an inefficient use of resources.

Schedules should be optimized to allow for sufficient but not excessive layover time.

How is it measured?

Schedule efficiency can be measured by calculating the percentage of the total cycle time dedicated to layover. Cycle time is the total time needed to make a round trip on a route. It includes the time spent traveling in all directions (e.g. inbound and outbound) as well as layover time. Layover time is the down time between a trip end and the next trip start.

Layover time should only account for 10 to 15 percent of the total cycle time for any trip of a route.

In some instances, lower or higher layover percentages are acceptable. For example, layover percentages may be lower for interlined routes and they may be higher for routes where a clock-face frequency is utilized. Furthermore, a reduction in layover time may be considered if it results in lower vehicle requirements without compromising the schedule.

Table 2-5: Schedule Efficiency Guidelines

	Local	Core	Rapid Transit
Layover Percentage of Total Cycle Time	10-15%	10-15%	10-15%

3 Bus Stop Design Guidelines

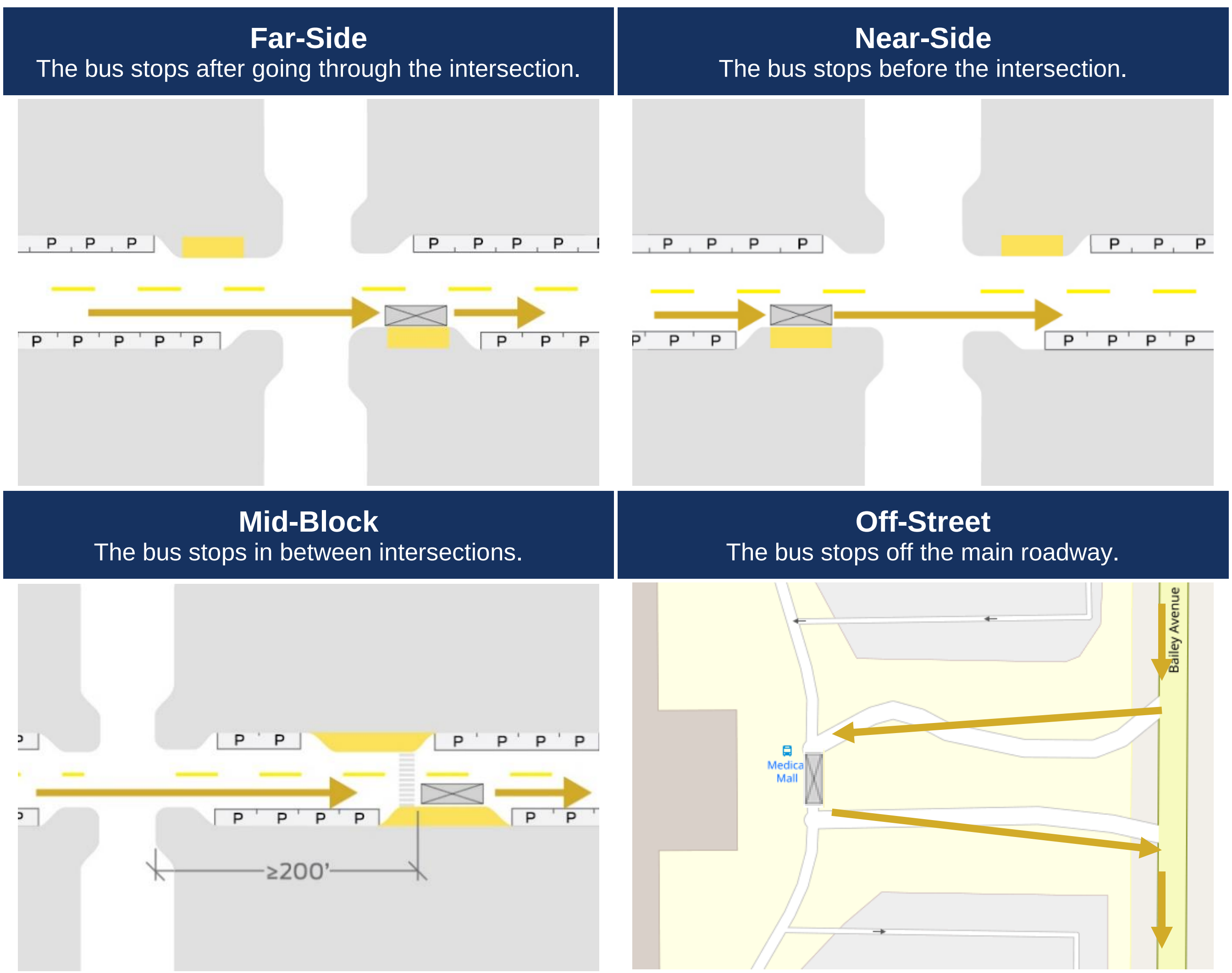
3.1 Stop Location Options

The location of bus stops will greatly impact the safety, reliability, accessibility, and comfort of a transit route. There are four location options for bus stops: far-side, near-side, mid-block, and off-street, as shown in Figure 3-1. Any of these options may operate in-lane (as shown) or with a pull-out.

Many factors are considered when locating bus stops, such as site-specific safety considerations, traffic patterns, intersection geometry, passenger origins and destinations, pedestrian accessibility, route design and available space.

JTRAN staff determine which stop location type is most appropriate for each individual situation and may use the guidelines in Table 3-1 on the following page to help make that decision.

Figure 3-1: Types of Bus Stop Locations



Source: NACTO Transit Street Design Guide and Neel-Schaffer, Inc.

Table 3-1: Bus Stop Location Guidelines

Stop Location	Advantages	Disadvantages
Near-Side Preferred if: • Not near signalized intersection; or • Destinations are focused at the near-side corner; or • Route pattern calls for near-side location; or • Available space is limited on far-side.	• Minimizes interferences when traffic is heavy on the far side of the intersection • Allows passengers to access buses close to crosswalk • Allows passengers to board and alight while bus stopped for red light • Intersection width available for bus to pull away from the curb • Eliminates potential for double stopping • Allows driver to look for oncoming traffic, including other buses with passengers	• Conflicts with right-turning vehicles • Buses obscure curbside traffic control devices and crossing pedestrians • Sight distance obscured for side street vehicles • Increases sight distance problems for crossing pedestrians • Complicates bus signal priority operation • Difficulty merging into traffic
Far-Side Preferred if: • Near signalized intersection; or • Destinations are on both sides of street or on the far side of the intersection.	• Minimizes conflicts between right-turning vehicles and buses • Provides additional right-turn capacity lane • Minimizes sight distance problems on intersection approaches • Encourages pedestrians to cross behind the bus • Creates shorter deceleration distances for buses • Allows buses to enter traffic gaps created by signalized intersections • Facilitates bus signal priority operation	• Could result in traffic queued into intersection when a bus stops in the travel lane • May obscure sight distance for crossing vehicles • May increase sight distance problems for crossing pedestrians • Can cause a bus to stop far side after stopping for a red light, interfering with both bus operations and all other traffic • May increase the number of rear-end crashes since drivers may not expect buses to stop again after stopping at a red light
Mid-Block Preferred if: • Block size is large and/or destinations are focused mid-block; or • Route pattern calls for mid-block stop.	• Minimizes sight distance problems for vehicles and pedestrians • May result in passenger waiting areas experiencing less pedestrian congestion	• Requires additional distance for no-parking restrictions • Encourages passengers to cross street mid-block (jaywalking) • Increases walking distance for passengers crossing at intersections
Off-Street Preferred if: • Access to a major destination would be greatly improved	• Provides direct, easy access to major destination • Improved accessibility for people with disabilities	• Additional delay as opposed to remaining inline or along the main travel corridor

3.2 In-Street Bus Stop Design Options

This section addresses how in-street bus zones, or passenger loading/unloading areas along roadways, should be designed. Off-street bus zones are less common due to the schedule delay they induce and are typically reserved for major destinations like regional malls, universities, and hospitals.

JTRAN typically considers four in-street bus stop designs: **Curbside Stop**, **Bus Pullout / Bus Bay**, **Open Bus Bay**, and **Bulbout**. These concepts are illustrated in Figure 3-2 below.

Determining which design is most appropriate depends on safety considerations, street design, available space, ridership, and other factors. Table 3-2 illustrates the tradeoffs for each design option and Figure 3-3 provides a decision tree that JTRAN may utilize for selecting a design.

Figure 3-2: Types of In-Street Bus Stop Design Options

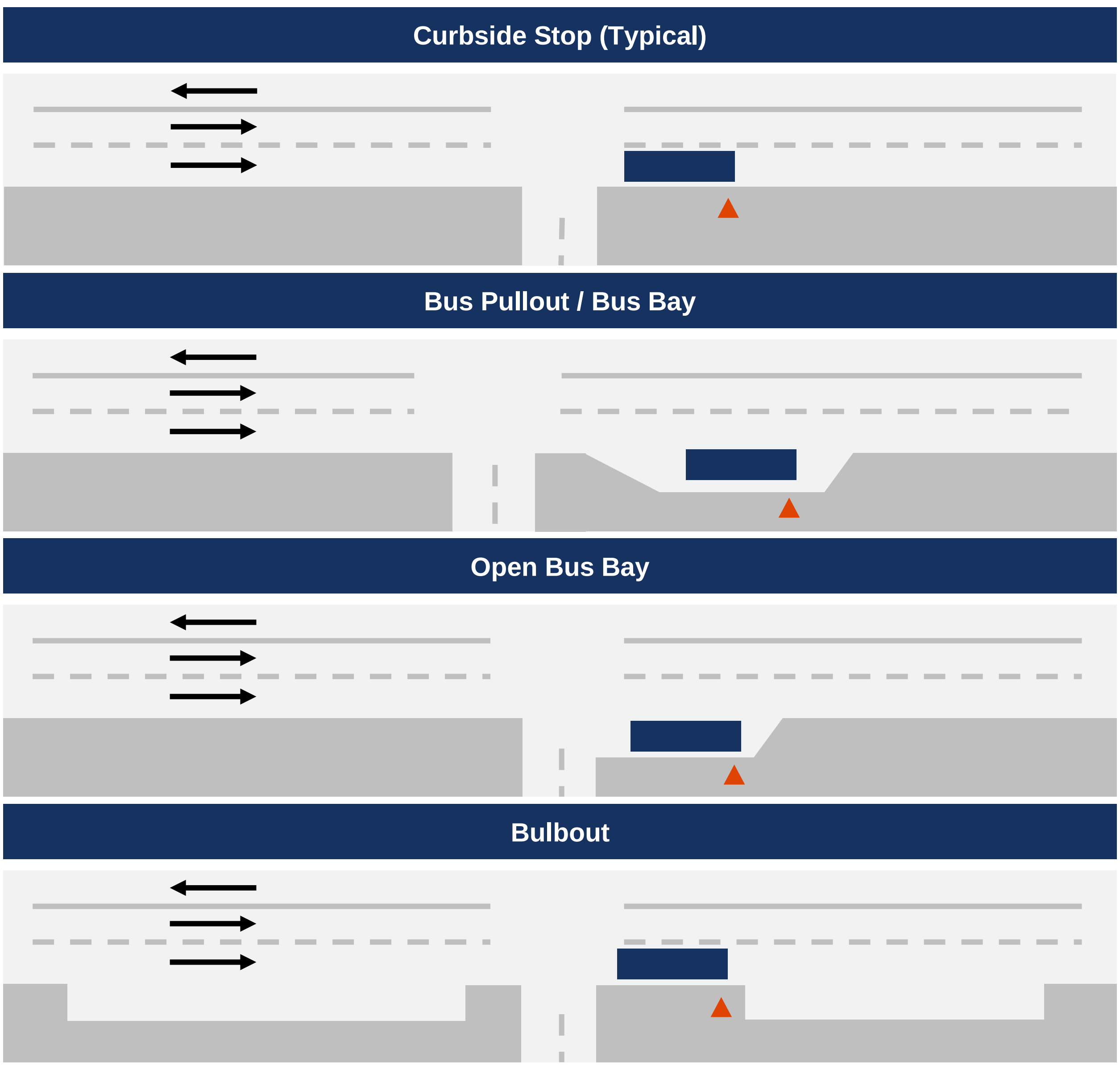
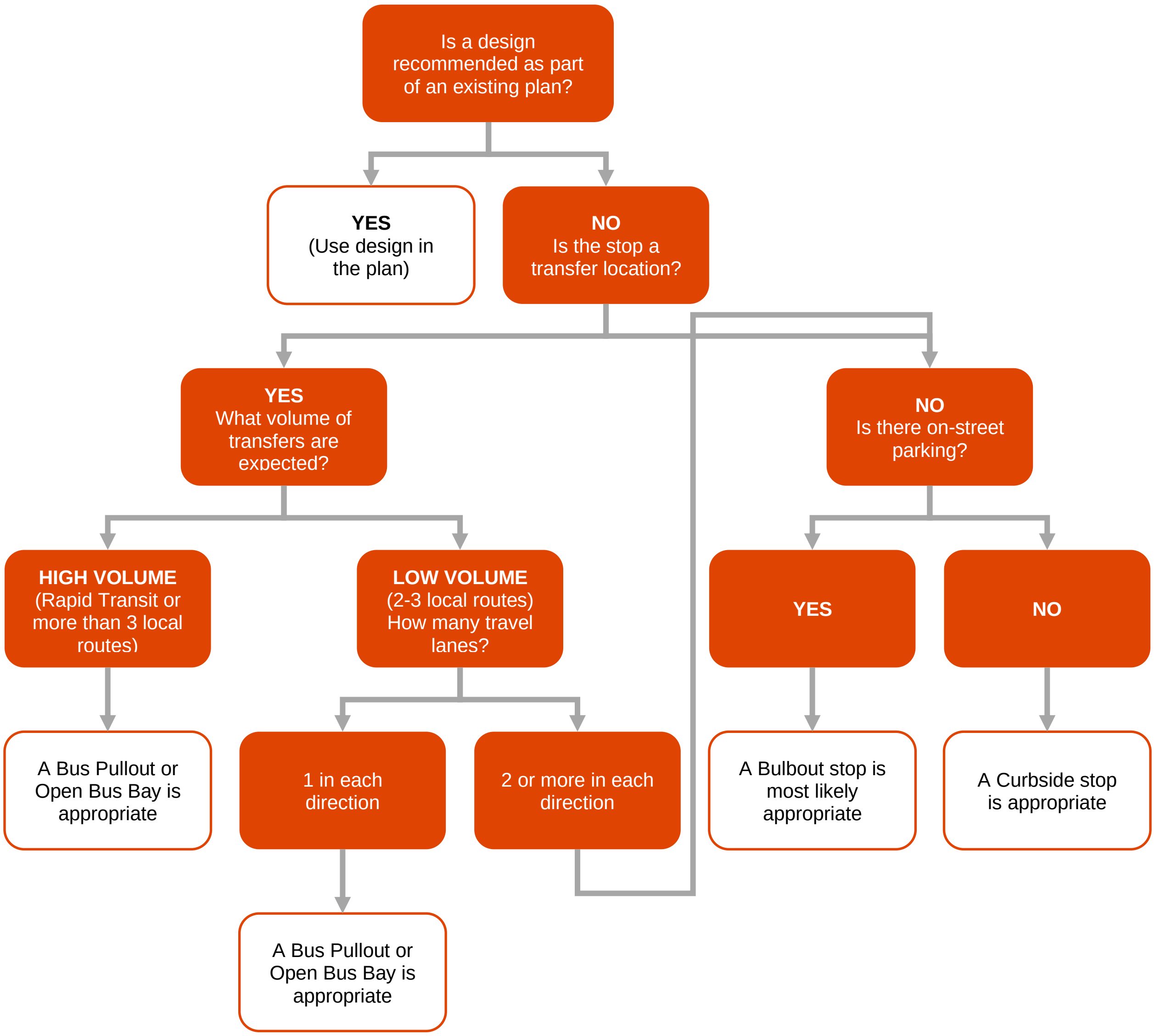


Table 3-2: Tradeoffs with In-Street Bus Stop Design Options

Stop Location	Advantages	Disadvantages
Curbside Stop (Typical)	• Provides easy approach for bus drivers and results in minimal delay to the bus • Simple design and inexpensive to install • Easy to relocate	• Can cause traffic delays since bus stops in the travel lane • May cause drivers to make unsafe passing maneuvers
Bus Pullout / Bus Bay	• Bus is out of travel lane, minimizing delay to traffic • Passengers board/alight out of traffic	• Re-entry into congested traffic can be difficult and cause delays • Expensive to install, making relocation difficult/expensive
Open Bus Bay	• Allows the bus to decelerate in the intersection • See Bus Pullout advantages	• See Bus Pullout disadvantages
Bulbout	• Removes fewer parking spaces than others • Decreases walking distances to bus stops for pedestrians • Provides additional sidewalk area for passengers • Results in minimal delay for buses	• Costs more to install compared to curbside stops • See Curbside Stop disadvantages

Figure 3-3: Decision Tree for In-Street Bus Stop Design Options



3.3 Bicycle and Pedestrian Accessibility

Stops should be designed to be accessible for all types of potential users, regardless of age or ability. Most passengers arrive to or depart from a bus stop by walking and a growing number of riders utilize bicycles for this purpose. These first-and-last mile modes of transportation require unique accessibility accommodations.

Bicycle Accessibility

The following should be considered when designing or redesigning a bus stop:

- **Bicycle Facility Integration** – For stops where existing or planned bicycle facilities are nearby, JTRAN should consider the needs of bicyclists and impacts to bicycle facilities. This may change the preferred location of a stop the preferred in-street design option.
- **Bicycle Storage** – Some stops may need bicycle storage facilities, such as bike racks, in order to safely and conveniently accommodate bicyclists. Bicycle storage facilities will also ensure that shelters or other street furniture are not utilized as bicycle storage and that adequate space for waiting or moving through the bus stop is preserved. Section 3.5 provides guidance on when bicycle storage should be considered.

Pedestrian Accessibility

The Americans with Disabilities Act of 1990 (ADA) introduced enforceable accessibility standards for new construction and alterations to places of public accommodation, including bus stops. The 2010 ADA Standards for Accessible Design, the most recent guidance, outlines the following four basic principles to ensuring ADA accessibility at new or redesigned bus stops:

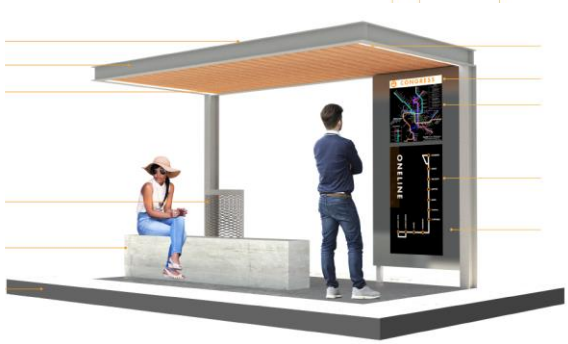
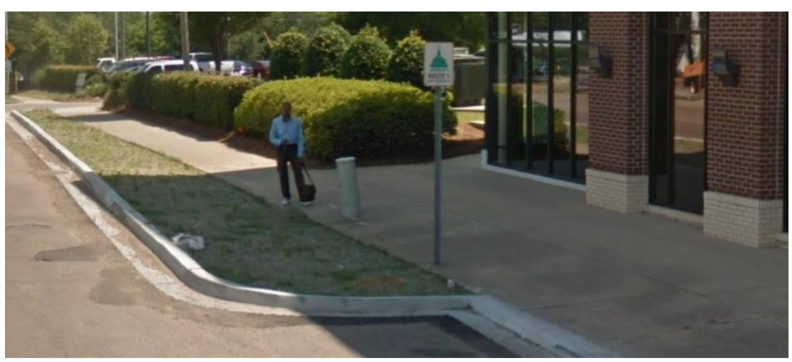
- **Surface** – Bus stop boarding and alighting areas shall have a firm, stable surface.
- **Dimensions** – Bus stop boarding and alighting areas shall provide a clear length of 96 inches minimum, measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches minimum, measured parallel to the vehicle roadway.
- **Connection** – Bus stop boarding and alighting areas shall be connected to streets, sidewalks, or pedestrian paths by an accessible, ADA-compliant route.
- **Slope** – Parallel to the roadway, the slope of the bus stop boarding and alighting area shall be the same as the roadway, to the maximum extent practicable. Perpendicular to the roadway, the slope of the bus stop boarding and alighting area shall not be steeper than 1:48.

3.4 Types of Bus Stops

JTRAN categorizes its bus stops into three types, largely based on function and ridership patterns. While all bus stop will include a sign at a minimum, the type of bus stop will influence what type of amenities and infrastructure are provided. Bus stop types include:

- **Type I – Union Station / Transfer Center / Rapid Transit (Future)**
  - Stops serving as a transfer or layover area or stops along a Rapid Transit route.
- **Type II – High-Priority Stop**
  - Stops with at least 15 average daily boardings on Weekdays or Saturdays, or at least 2 average wheelchair boardings on Weekdays or Saturdays, or near a special district.
- **Type III – Basic Stop**
  - All other stops

Figure 3-4: Types of Bus Stops

Stop Type	Example Photo
Type I Union Station / Transfer Center / Rapid Transit (Future)	
Type II High-Priority Stop	
Type III Basic Stop	

Source: City of Jackson ONELINE project; Google Streetview

3.5 Bus Stop Amenities

Amenities are the stop-level infrastructure and technology that go beyond the minimum requirements of providing bus stop signage and pedestrian accessibility. The presence of amenities will greatly impact the passenger experience and can make the difference in retaining existing passengers and attracting new passengers.

While amenities cannot always be provided due to site-specific constraints, JTRAN will strive to provide amenities based on bus stop type, using the guidelines in Table 3-3. Where practical, a bus stop may be relocated slightly to accommodate amenities.

All bus stop amenities should be located within public right-of-way or within a dedicated easement.

Table 3-3: Bus Stop Amenity Guidelines by Stop Type

Amenities	**Type I** Union Station / Rapid Transit (Future) / Transfer Center	**Type II** High-Priority Stop	**Type III** Basic Stop
Bench	Required	Recommended	Optional
Shelter	Required	Recommended	Optional
Trash Can	Required	Recommended	Optional
Bicycle Rack	Required	Optional	Optional
Lighting	Required	Recommended	Optional
System Map Display	Required	Recommended	
Route Map Display	Recommended	Optional	
Digital ETA Display	Required	Optional	
Security Cameras	Required	Optional	
Secure Bike Parking	Recommended		
Wayfinding Signage	Recommended		

Legend

- Required Amenity (green)
- Recommended Amenity (orange)
- Optional Amenity (gray)

4 Performance Standards

4.1 Service Availability

What is it?
Service Availability refers to the population's ability to access and use fixed route transit service.

Why does it matter?
Service Availability standards ensure that bus routes are provided where they are needed the most. With limited resources, it is not practical for every household or business to be served by a bus route. Instead, JTRAN must make decisions on how to allocate transit service and where bus routes should be located.

High-density areas, or areas with higher concentrations of homes and jobs, have higher demand for fixed route transit service. Furthermore, areas with disproportionately high shares of low-income households or minority residents represent Environmental Justice or Equity Focus areas and should be well served by transit.

How is it measured?
Service Availability is measured separately for high-density areas, disproportionately low-income areas, and disproportionately minority areas. These areas are defined as follows:

- **High-Density Areas** – Traffic Analysis Zones (TAZs) with at least 15 residents or jobs per acre. This data comes from the regional travel demand model maintained by the Jackson Metropolitan Planning Organization and is updated every five years.
- **Disproportionately Low-Income Areas –** Block Groups with more households living in poverty than the service area as a whole. This data comes from the American Community Survey.
- **Disproportionately Minority Areas** – Block Groups with more residents of color than the service area as a whole. This data comes from the American Community Survey.

For each type of area, JTRAN calculates the percentage of TAZs or block groups in the service area that have centroids within a half mile of a bus route. Then, these percentages are compared to the performance standards below.

Table 4-1: Service Availability Performance Standards

Standard	Local, Core, or Rapid Transit
% of High-Density TAZs with fixed route service	90%
% of Disproportionately Low-Income Block Groups with fixed route service	75%
% of Disproportionately Minority Block Groups with fixed route service	75%

4.2 Distribution of Stop Amenities

What is it?

Stop amenities are enhancements to a bus stop that improve the passenger experience. Two of the most important amenities for passengers are shelters and benches.

The distribution of amenities refers the number of bus stops that have a shelter or bench. These amenities cannot be provided at every stop and should be prioritized for high-priority stops.

Why does it matter?

Shelters and benches provide many benefits for passengers. Most notably, these amenities provide protection from the elements (rain, sun, etc.) and a comfortable place to wait for the bus.

The provision of shelters and benches at bus stops greatly impacts the passenger experience and can make the difference in retaining existing passengers and attracting new passengers.

How is it measured?

Distribution of Stop Amenities is measured as the percentage of all high-priority bus stops with a shelter or bench. See Section 3.4 for what constitutes a high-priority bus stop.

To calculate the percentage, JTRAN identifies the number of high-priority stops with a shelter or bench and then divides that number by the total number of high-priority stops. This is a systemwide measure and is not calculated separately for each route.

Data for this performance standard comes from JTRAN's Bus Stop Inventory and List of High-Priority Bus Stops, which should be updated annually.

Table 4-2: Distribution of Stop Amenities Performance Standards

Standard	Local	Core	Rapid Transit
% of High-Priority Stops with Shelter or Bench	90%	90%	90%

4.3 Vehicle Load

What is it?

Vehicle Load is the number of passengers on board a vehicle at any given time and Max Load is the number of passengers on board at the busiest point along a route during peak periods.

By comparing Max Load to a typical vehicle's seating capacity, JTRAN can better understand how full or overcrowded a route can be during peak periods.

Why does it matter?

Passengers prefer to have a seat available for their ride and if a vehicle is overcrowded, the quality of service for passengers is diminished. Vehicle load measures help JTRAN identify if and when routes may be overcrowded and require additional service (increased frequency) or vehicles with more seating capacity.

How is it measured?

For each route, Automated Passenger Count (APC) data and/or manual ride checks are used to identify the stop with the highest average Max Load during peak periods during a given month. Then, this Max Load value is divided by the seating capacity of a typical vehicle used on that route to a calculate the Vehicle Load ratio for a route for a given month.

For JTRAN, the peak period is 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM.

Table 4-3: Max Load Factor Performance Standards

Max Load Factor	Local	Core	Rapid Transit
Weekday Average	130%	130%	130%
Saturday Average	130%	130%	130%

Table 4-4: Vehicle Capacities

Bus Type	Seating Capacity	Preferred Max Load
40' Low Floor Bus	44	≤57
35' Low Floor Bus	38	≤49
29' Low Floor Bus	32	≤42

Note: These may be hybrid or non-hybrid buses.

4.4 Productivity

What is it?

Productivity, or boardings per revenue hour, is a performance indicator that compares ridership (boardings) to the amount of transit service supplied (revenue hours). It can be measured at the route level or systemwide.

Why does it matter?

Productivity helps JTRAN understand which routes are most effective at attracting ridership. Typically, routes with more frequent service or a longer span of service will experience higher overall ridership. Evaluating the number of boardings per revenue hour normalizes route performance and allows for comparison across routes, regardless of the level of service.

How is it measured?

For each route, divide monthly unlinked passenger trips by monthly revenue hours (the hours that vehicles assigned to that route are scheduled to or actually travel while picking up passengers, including layover time). Then compare this productivity measure to the standards below.

Standards vary by type of route because more premium service requires higher productivity to justify the additional operating and capital costs.

Table 4-5: Productivity Performance Standards

Boardings per Revenue Hour	Local	Core	Rapid Transit
Weekday Average	10	20	25
Saturday Average	8	15	20

4.5 On-Time Performance

What is it?

On-Time Performance measures the reliability and punctuality of a route by identifying how often transit service arrives on schedule.

Why does it matter?

On-Time Performance is a major determinant of transit service quality. If buses are not consistently arriving on-time, then the transit service will be less useful and attractive.

Service that is consistently late or early will result in longer, inconsistent travel times for passengers and can cause “bus bunching” where an overcrowded bus is followed closely behind by a nearly empty bus following the same route.

Many factors can cause delay for buses and negatively impact on-time performance, including traffic, construction, collisions, detours, volume of passengers, and weather.

How is it measured?

JTRAN measures On-Time Performance for each trip at key timepoints along a route and then summarizes the timepoint data to the route level. A trip is considered on-time at a timepoint if it arrives no more than five minutes late or one minute early, relative to the scheduled arrival time. Then, the On-Time Performance rate is calculated by dividing the number of on-time records by the total records, for each route.

The On-Time Performance standards for JTRAN are the same for all types of fixed route service. While 100% would be an ideal target, some causes of delay are inevitable and unavoidable. Therefore a target of 90% has been established.

Table 4-6: On-Time Performance Standards

On-Time Performance	Local	Core	Rapid Transit
Weekday Average	90%	90%	90%
Saturday Average	90%	90%	90%

4.6 Customer Complaints

What is it?

Customer complaints are formal complaints that are filed by passengers or the general public to JTRAN. These complaints may address any issue and the complaint form asks for individuals to indicate which route is the subject of their complaint. JTRAN then logs and maintains records of these complaints.

Why does it matter?

Customer complaints convey customer satisfaction and help identify service strengths or weaknesses. A high volume of complaints related to a specific route or a specific issue can inform service change decisions.

How is it measured?

Customer complaints are measured by route, per 100,000 boardings. Normalizing the complaints by boardings allows for comparison across routes.

JTRAN has established the standard of no more than 20 complaints per 100,000 boardings on any given route. There is no variation in the standard across different types of routes.

Table 4-7: Customer Complaints Performance Standards

Complaints per 100,000 Boardings	Local	Core	Rapid Transit
Weekday Average	≤20	≤20	≤20
Saturday Average	≤20	≤20	≤20

5 Monitoring and Making Changes

5.1 Monitoring and Reporting Performance

JTRAN will regularly monitor and report fixed route performance for the performance standards provided in this document. This will allow for JTRAN to regularly evaluate performance and develop service plans or bus stop improvement plans.

Monitoring performance is a coordinated effort that involves:

- **Data Collection** – Most of the data required to monitor performance is already collected regularly through existing JTRAN procedures. Some will require new data collection efforts. For Service Availability, JTRAN or the Metropolitan Planning Organization staff will need to acquire updated socioeconomic data and route GIS data. For the Distribution of Stop Amenities, JTRAN staff will need to regularly update its Bus Stop Inventory and ensure consistency with its current GTFS feed.
- **Database Management** – In addition to collecting data, JTRAN will need to maintain and manage databases to ensure that data is comprehensive, accurate, and up-to-date. Databases should also keep track of detours, supplemental service, and special service. Detours and supplemental service will impact performance and may offer insight during performance evaluations. Special service should be separated out from other routes because it is not intended to meet the performance standards.
- **Annual Reporting** – JTRAN will annually report the performance standards to City Leadership by preparing a short, concise summary document that compares actual performance to the guideline standards and summarizes key findings.

Table 5-1: Performance Standard Monitoring and Reporting Approach

Performance Standard	Level of Detail	Reporting Unit	Data Collection / Management	Data Source
Service Availability	Systemwide	Yearly	End of Year	JTRAN / MPO
Distribution of Stop Amenities	Systemwide	Yearly	Ongoing	JTRAN
Vehicle Load	Route Level	Monthly	Ongoing	JTRAN
Productivity	Route Level	Monthly	Ongoing	JTRAN
On-Time Performance	Route Level	Monthly	Ongoing	JTRAN
Customer Complaints	Route Level	Monthly	Ongoing	JTRAN

5.2 Route Change Process

The intent of the route change process is to continually update the fixed route system, route by route, to ensure that it reflects the ever-evolving needs of the community. This is done by routinely evaluating routes, identifying route change needs, and implementing these changes.

Figure 5-1: Route Change Process

When does poor performance warrant a route change?

After two consecutive quarters of underperformance.

How long should a trial period for a new route last?

At least two years to mature and reach performance standards.

5.3 Bus Stop Improvement Process

The intent of the Bus Stop Improvement Process is to replace and incrementally expand the number of JTRAN stops with adequate passenger amenities. This is done by routinely evaluating stops, identifying and prioritizing improvements, and implementing these improvements.

Figure 5-2: Bus Stop Improvement Process

What if a stop location cannot support amenities needed?

Slight relocation of the stop may be considered or an amenity downgrade.