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### EXECUTIVE SUMMARY

Los Angeles County Metropolitan Transportation Authority (Metro) serves as transportation planner and coordinator, designer, builder and operator for Los Angeles County. More than 8.6 million people live, work, and play within its 1,469-square-mile service area.<sup>1</sup>

In 2018, the Board adopted Metro Vision 2028 as the agency's strategic plan. The plan outlines five goals to guide the development of transportation in LA County. Metro must ensure that: our customers feel safe when riding, that they do so in clean equipment, service is reliable and on-time, and our staff provides service in a courteous manner.

**Goal 1:** Provide high-quality mobility options that enable people to spend less time traveling

**Goal 2:** Deliver outstanding trip experiences for all users of the transportation system

**Goal 3:** Enhance communities and lives through mobility and access to opportunity

**Goal 4:** Transform LA County through regional collaboration and national leadership

**Goal 5:** Provide responsive, accountable, and trustworthy governance within the Metro organization

Metro's Transit Service Policy (TSP) establishes criteria and guidelines to ensure that the transit system is developed and managed consistent with policy guidance approved by the Metro Board of Directors, including a formal process for evaluating services, service design guidelines, and a process for implementing service changes.

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<sup>1</sup> FY19 National Transit Database

## SECTION 1: INTRODUCTION, PURPOSE & BACKGROUND

Metro operates a comprehensive bus and rail network that complements Metro Rail and municipal operator services. Determining the most appropriate transit service in a corridor depends on several factors such as level of demand, resource availability, site or corridor characteristics, environmental considerations, and community acceptance. The characteristics that determine which type of service is most appropriate are summarized in Table 1.1.

**Table 1.1** *Service Type Determination<sup>2</sup>*

Service Type	Corridor	Optimal Characteristics
<b>Heavy Rail</b> (Subway)	Operate 100% within an exclusive right of way.	- 2,500 boardings per route mile or more than 50,000 boardings per day. - Ability to construct a fully grade-separated facility.
<b>Light Rail</b>	Operate in mixed flow traffic or an exclusive right of way.	- 1,000 boardings per route mile or more than 25,000 boardings per day. - Ability to construct a guideway within or adjacent to the corridor.
<b>Commuter Routes</b>	Operate in mixed flow traffic in along either an HOV or HOT Lane and may operate a segment of their route on local streets.	300 or more boardings during peak-hour and in peak direction of travel.
<b>BRT and Rapid</b>	Operated using 40', 45' or 60' buses. - Metro G Line (Orange) (BRT) operates on a fixed guideway. - Metro Rapid and Hybrid Lines operate in exclusive bus lanes or mixed flow traffic on local streets with signal priority.	- 300 or more boardings during peak-hour and in peak direction of travel. - Daily average of more than 500 boardings per route mile or more than 10,000 daily boardings. - Ability to implement operating speed improvements in the corridor.
<b>Core, Convenience, Connectivity and Community Routes</b>	Operate in mixed flow traffic on local streets by 32', 40', 45', or 60' buses.	- The median bus route carries about 4,500 daily boardings. - Core and Convenience services are expected to carry more than the daily median, while Connectivity and Community are anticipated to carry less.

### Metro Bus

Metro currently operates 165 bus routes, of which 18 routes are contracted out. Metro serves nearly 14,000 bus stops, including station stops on the G Line (Orange) and J Line (Silver) BRT systems. On weekdays, Metro operates a fleet of over 2,300 buses. Metro's bus operations consist of both directly operated and contract operated services. Metro operates the largest

<sup>2</sup>Capacity limits adapted from TCRP, Research Results Digest, November 1999—Number 35, Highlight of Large Transit Capacity and Quality of Service Manual, Figure 1 Achievable Capacity (Peak direction passengers/hour)

share of all bus services provided in the region. Municipal and Local Return operators provide additional public bus and paratransit services in areas of the region where Metro provides limited service or no service at all.

Metro classifies its bus services into tiers stratified by the frequency of service. The tiers are assigned to individual routes in accordance with demand and propensity for future growth. Table 1.2 describes the features of each of Metro’s bus service types. Tier definitions are:

- **Core (Tier 1):** weekday all day headways of 7.5 minutes or better
- **Convenience (Tier 2):** 7.5 to 10 minutes
- **Connectivity (Tier 3):** 10 to 15 minutes
- **Community (Tier 4):** 15 to 30+ minutes
- **Commuter (Tier 5):** Varies

**Table 1.2** *Metro Bus Service Types and Features*

Feature	Bus Service Type			
	BRT	Rapid	Commuter	Core, Convenience, Connectivity, Community
Right of Way	Dedicated right-of-way	Major arterials	Major arterials and freeways.	Major arterials and local streets
Minimum Average Stop Spacing	1.25 miles	0.75 mile	1.25 miles	0.2 - 0.30 mile
Target Travel Market	Inter-community	Inter-community	Inter-community, regional	Inter-community, neighborhood
Vehicle Type	45/60-foot buses	40/45/60-foot buses	40-foot bus	40/45/60-foot buses
Communities Served	Multiple	Multiple	Multiple	Multiple
Signal Priority	Yes	Yes	No	
Fare Collection	On board /pre-pay	On Board	On Board	On Board
Passenger Amenities	Shelters and stations	Shelters and stations	Shelters and stations	Benches and shelters
Real-time Passenger Info	Yes	Yes	Yes	

Note: Proposed stop spacing standards provide for the average stop spacing in miles by type of service and spacing should fall within 0.1 mile of the specified average at least 90% of the time.

### Metro Bus Rapid Transit (BRT)

To support BRT, Metro incorporates a series of design features to reduce delays, increase reliability and improve customer comfort. Metro operates two high-capacity vehicle types: 45-foot buses with 46 seats and articulated 60-foot buses with 57 seats. Ideally, high-capacity vehicles should primarily be operated on high-volume trunk service routes with more than

10,000 total daily boardings. Metro BRT services operate on an exclusive right-of-way, major arterials, or in HOV/HOT lanes.

Metro operates two such routes: the G Line (Orange) which operates on its own exclusive right-of-way, and the J Line (Silver) which operates on the I-10 and I-110 ExpressLanes (freeway toll lanes) as well as surface streets through downtown. These are considered Tier 1 services. BRT services charge a premium fare.

- **Dedicated Bus Lanes:** A bus lane is an exclusive lane used by transit on urban streets along a roadway through widening or dedication of one or more existing general traffic or parking lanes for transit use. These lanes can be designated for transit use during peak periods only or all day. Bus lanes typically allow use by general traffic for right turn movements, bicycles, parking, and local access to and from driveway, and are most effective in those areas where there are very high bus or customer volumes and where operational efficiencies can be achieved. Bus lanes should be a minimum of 17 feet wide. This right of way provides fewer traffic conflicts and obstructions and reduces delays and travel time. Metro is currently studying the feasibility of adding bus lanes on several major corridors to further improve travel times.
- **High-Capacity Vehicles:** State-of-the-art high-capacity vehicles are used to meet high demand and provide greater customer comfort.
- **Transit-Signal Priority:** An operational strategy that facilitates the movements of in-service transit vehicles through signalized intersections to improve transit performance by extending the green phase or shortening the red phase of traffic signals.
- **Bus Stations and Shelters:** Stations and shelters provide customers with enhanced comfort and safety.
- **Streetscape:** Streetscape and other design features such as landscaping, pedestrian count-down signals, bicycle racks, and well-designed crosswalks make it easier for pedestrians and bicyclists to access the stations.
- **Improved Fare Collection:** For faster service and convenience, major stations have ticket vending machines (TVMs) which allow customer s to preload their TAP cards.
- **Park & Ride Facilities:** Provided in close proximity to major stops and stations. Adjacent development and joint use parking are encouraged.
- **Advanced Transportation Management Systems:** ATMS provide an array of technologies to improve service reliability and customer travel.

The advantage of their deployment is the opportunity to reduce vehicle requirements and service hours; however, deployment should not increase service intervals to the point where service quality is degraded. For this reason, bus lines with a peak headway of five minutes or less are ideal candidates for this type of vehicle. In evaluating services for higher capacity vehicles, other factors must be considered including facility compatibility, street design, and potential impacts to services where schedules have been interlined.

### Metro Rail

Metro operates two heavy and four light rail lines serving a total of 96 stations across approximately 101 route miles, with a fleet of 406 heavy and light rail cars.

Metro Rail operates in heavily congested travel corridors and provides connections to key multi-modal transportation hubs. Metro operates two types of rail service to better match the transit mode with specific customer demand and needs. Metro Rail is high-capacity rapid transit service operating along a dedicated right-of-way, serving full-scale transit stations, and powered by electricity. The rail system supports public transportation in the greater Los Angeles region, linking many key multi-modal transportation centers and destinations together.

Rail service operates in high-demand travel corridors and is offered in two forms – heavy rail and light rail. Metro’s heavy rail is the subway system served by the B and D Lines (Red, Purple) powered by a third rail. Metro’s four light rail lines – A (Blue), C (Green), L (Gold) and E (Expo) – are powered by overhead catenary wires, generally use shorter trains, and operate at slower speeds than heavy rail. Unlike heavy rail, light rail lines run along a right-of-way ranging from complete grade separation to at-grade in mixed flow traffic.

### Transit Service Policy (TSP)

The TSP was originally adopted in 1986 and is reviewed on an annual basis. This document sets forth the policies, principles, and service guidelines that are used by Metro staff in the design or modification of the bus network to better serve customers and make more beneficial use of available operating resources. This document outlines the service change process that provides the quantitative tools to evaluate the system, identifies opportunities for service improvements, and ensures the regional transit system is adjusted according to the service goals and objectives approved by the Metro Board.

The TSP is updated as needed to better reflect agency goals and objectives, major initiatives, and changes in local, state, and federal regulations and funding.

This document updates the most recent version adopted by the Board in FY2016.

### SECTION 2: DESIGNING A WORLD CLASS BUS SYSTEM

In 2018, the Board adopted Metro Vision 2028 as the agency's strategic plan. The plan outlines five goals to guide the development of transportation in LA County. The NextGen Bus Study was also initiated in 2018 to reimagine the Metro bus network to be more relevant, reflective of, and attractive to the diverse customer needs within Los Angeles County. NextGen addresses **Goal #1: Provide high quality mobility options that enable people to spend less time traveling.** The study also encompasses two sub-goals: 1) Target infrastructure and service investments towards those with the greatest mobility needs; and 2) Invest in a world class bus system that is reliable, convenient, safe, and attractive to more users for more trips.

In addition to the strategic plan, the Board adopted Motion 38.1 (June 2018), endorsing travel speed, service frequency, and system reliability as the highest priority service design objectives for the NextGen Bus Study. Finally, regardless of the level of resources expended on the bus network, optimizing system performance should always be an objective in network design to maximize benefit to the public.

These goals and objectives drive the development of the NextGen Service Plan, including routing, stop spacing, frequency, span of service, and coordination with municipal operators. In addition, a set of performance measures have been defined below to ensure the bus network continues to evolve consistent with the goals and objectives defined by the Board.

#### NextGen Service Plan

Metro Vision 2028 envisions building a World Class Transportation System in which a World Class Bus System is a cornerstone to its success. Building a World Class Bus System requires improving the attractiveness and competitiveness of the bus network. Attractiveness includes addressing issues such as safety and security, cleanliness, comfort, real time arrival information, easy fare payment, wayfinding and signage, and first/last mile access. Competitiveness requires developing a bus network that minimizes the overall travel time to complete a trip compared to the driving alternative. This travel time considers directness of route, access to the bus stop, waiting time, and onboard travel time.

NextGen's primary purpose is to improve the competitiveness of the bus network. However, through this process, improvements to certain aspects of attractiveness can also be achieved. The following outlines a strategy for how NextGen will set the foundation for building a World Class Bus System.

**Step 1: Reconnect Scenario:** Metro currently provides roughly 7 million revenue service hours (RSH) of bus service per year. The first step in creating a World Class Bus System is to redesign the routes and schedules to attract trips where and when there is the greatest market potential. The lessons learned in Phase 1 of the bus study present a path forward for reinventing the bus network:

- **85% of LA County residents have used transit at least once in the past year, THEREFORE, we should attempt to maintain coverage throughout the County by minimizing discontinued segments.**

- **Fast/Frequent/reliable service is key**; THEREFORE, we need to create a competitive transit network that reduces overall travel time by optimizing all components of the trip, including walking, waiting, and riding.
- **Metro’s current system is not always competitive to get people where they want to go**, THEREFORE routing should be adjusted to reflect the key origins and destinations identified in the cell phone location data.
- **The greatest opportunity to grow ridership is between midday & evening when many trips are short distance**, THEREFORE service levels should be improved for midday, evenings and weekends.
- **Need to integrate Metro’s Equity Framework into the planning process**, THEREFORE service improvements should be prioritized for equity-focused areas.

These lessons learned to “reconnect” routes and schedules with where and when people travel today were incorporated into the Service Design Guidelines outlined in Section 3 to develop the NextGen Reconnect service plan. Reconnect is estimated to increase ridership by 5% with no additional increase in revenue service hours.

**Step 2: Transit First Scenario:** Once the bus network is reestablished to reflect the travel patterns of today, the next step in building a World Class Bus System is to: 1) invest in speed and reliability infrastructure, 2) create safe and comfortable waiting environments, 3) improve the boarding and riding experience, and 4) establish facilities to optimize layovers. These capital improvements create a more competitive and attractive bus network while saving resources to be reinvested into more service.

- **Speed and Reliability Improvements** – As bus system speeds continue to decline, Metro must allocate an additional \$10 million cumulatively every year to provide the same amount of service. Not only does this reduce the opportunity to increase service, it degrades our competitiveness and attractiveness. Therefore, investing to improve the speed and reliability of the bus system is critical to the success of NextGen. Some improvements can be implemented within METRO’s control, such as optimizing stop spacing, all door boarding, and headway-based service management. However, other improvements can only be implemented through collaboration with local jurisdictions, including transit priorities, bus bulb outs, and bus only lanes. Under the Transit First scenario, \$750 million in capital improvements are proposed to support speed and reliability improvements for the regional bus network. This investment is anticipated to save 25%-34% in system speed if fully implemented.
- **Customer Wait Environment** – Through the significant public outreach conducted in Phase 1, as well as other Metro efforts such as the How Women Travel Study, we learned that an uncomfortable and unsecured wait environment is a significant barrier for customers in using the bus network. This is particularly concerning for women who account for over half of our customers and often travel with young children. Metro completed the Transfer Design Guideline in March 2018. Under the Transit First scenario, we plan to begin implementing the recommendations from this policy document at our busiest wait and transfer locations. This investment is anticipated to cost \$150 million

and address several of the safety and comfort issues identified in the NextGen outreach and How Women Travel Study.

- **Boarding and Riding Experience** – Metro has implemented All Door Boarding on several lines, including G Line (Orange), J Line (Silver), Line 720 (Wilshire), and Line 754 (Vermont). Experience on the J Line (Silver) showed that dwell times were reduced by 15% on average, on time performance improved, cash payment declined with more TAP penetration, and significant customer and operator satisfaction. Other strategies to improve boarding and on board experience include level boarding at key stops and improved on board information. These improvements are estimated at \$100 million systemwide.
- **Layover Optimization** – Due to limited curb space, many routes are extended purely to access a layover location. These unnecessary route extensions cost several million dollars in operating cost per year with little to no benefit to the customer. By investing in off street layover terminals to optimize layover locations, we can reallocate wasted resources and reallocate it to more productive use. In addition, these locations would provide facilities for better regional mobility coordination, a better wait and rest environment for customers and operators, improve bus service reliability, and opportunities for new en route Zero Emissions Bus (ZEB) charging infrastructure.

This \$1 billion capital program is expected to achieve resource savings by generating more revenue service miles/trips within the same revenue service hours. These savings would be reinvested into Transit First service improvements, including:

- Ensure that all bus lines operate seven days per week;
- Ensure no wider than 30 minute headways on any line between 6:00 am and 7:00 pm;
- Expand owl (overnight) service on an additional eight lines;
- Increase weekday midday and evening service levels;
- Increase weekday evening service levels.

Investing “one time” capital dollars into transit supportive infrastructure would increase the attractiveness and competitiveness of the bus network, while freeing resources to reinvest into service enhancements. Under the Transit First scenario, these benefits are expected to generate a 15-20% increase in ridership (10-15% over Reconnect) without additional increases in revenue service hours.

**Step 3: Future Funding Scenario:** Should future funding be secured through efforts such as de-congestion pricing, additional resources can be added to the Transit First network. However, without disincentives for driving, there will be diminishing returns on benefits since most customers would already have been served within the Transit First Scenario. Therefore a 34% increase in revenue service hours would only be expected to yield a 10% increase in ridership over Transit First.

### SECTION 3: SERVICE DESIGN GUIDELINES

#### Key Principles of Network Design

Three key elements are taken into consideration during the Network Development Process to identify when and where transit can be successful.

- **Transit Propensity** – Areas where the propensity to use transit is the greatest embody three main characteristics. First, there is a significantly large population of transit market segments, including people who rely on transit for most of their travel, commuters and students who use transit for work and school trips, and discretionary customers who choose transit for some or all their trips. Second, is the intensity of travel demand to and from areas based on population and employment densities, retail and entertainment, colleges and universities, and other trip generators. A pedestrian oriented street environment is also critical, including safe and well lighted pathways, sidewalks and curb-cuts, grid street network, and level topography.
- **Existing Service Performance** – It is important to identify the most productive segments of the existing bus network which articulates current transit demand. These corridors and routes should be optimized through the network development process, and lessons learned should be applied to other areas with similar demand and service characteristics.
- **Service Environment** - A transit-oriented service environment is also critical to the success of transit, including the pedestrian orientation of the streets and land use, barriers to other modes such as limited and costly parking supply, and transit supportive infrastructure including bus only lanes and transit priorities.

Once these key elements are taken into consideration in the Network Development Process, this transit orientation can then be translated into design considerations, including elements explained in the following sub-sections.

#### 3.1 Service Design Concepts

Service design concepts, developed as part of the NextGen Bus Study, are guidelines established based on the feedback received through the study's stakeholder and public outreach sessions. Network characteristics most important to the public include:

- Faster service
- Frequent service throughout the day
- More reliable service
- Better network connectivity
- Accessibility to key destinations
- Improved security

Based on these service themes, the following service design concepts will guide the design of the Metro bus network:

**Hybrid Local/Rapid Stop Spacing** – Currently stop spacing is determined by route classification. For example, local lines are planned with  $\frac{1}{4}$  mile stop spacing while Rapid lines have  $\frac{3}{4}$  to 1 mile stop spacing. As a result, customers travelling on local lines go slower between communities but have closer access to origins and destinations. Conversely, Rapid customers

travel faster along a corridor, but may be picked up or dropped off much further from their origin or destination. In addition, resources are split between the local and Rapid lines resulting in wider headways for each service. Therefore, overall end to end travel time including walking/rolling to the stop, waiting for the bus and finally the in-vehicle run time may result in longer travel times on the Rapid, especially for shorter distance trips.

Consolidating local and Rapid resources along a corridor will provide much better headways, and customizing stop spacing along the corridor based on changing land use densities along a corridor results in shorter wait times, faster on board travel times compared to the local, and shorter walk/roll compared to Rapid service. In addition, this standardizes the frequency along the entire corridor, vs inconsistent frequencies between local and Rapid services that have different speeds.

**Shorter Route Lengths and Subarea Transit Hubs** – The cell phone location based data indicates that almost half of all travel in Los Angeles County are within 1 to 5 miles. In addition, the origin-destination travel patterns indicate that many people travel locally and not necessarily regionally across the region. Creating shorter route lengths will improve schedule reliability. Being able to tie the lines to subarea transit hubs will improve network efficiencies and provide a safer and more convenient location for transfers.

**Municipal Operator Coordination** – Metro serves as LA County’s regional coordinator of transit services. Improved coordination between all operators and modes is vital to establishing an integrated regional transit network. Metro operates within a hierarchy of services, in which Metrolink provides the region’s commuter rail to serve high volume, longer distance trips. Metro Rail, Metro BRT [G Line (Orange) and J Line (Silver)], and Metro Bus serves as the backbone of the urban transit network, which is augmented by municipal operators. Municipal and local return operators complement the system with community and shuttle buses that serve specific neighborhood needs.

Roughly one third of transit service in LA County is provided by municipal bus operators and Metrolink. Their coverage is especially strong in Santa Monica, South Bay, Gateway Cities, and eastern San Gabriel Valley. Therefore, it is imperative that Metro bus service is closely coordinated with municipal transit service. Given that several of the municipal operators are currently undergoing their own system redesigns, there is an opportunity to work together to develop service change ideas between Metro and municipal services to improve overall coordination for customers.

**MicroTransit and Other On-Demand Services** – Some areas of the County are difficult to serve with fixed route transit due to terrain, narrow streets, and dispersed lower density destinations. In addition, travel activity in some areas are low during certain times of day or days of week. Metro is currently piloting Mobility on Demand and will be implementing a pilot program for MicroTransit. These service modes may be more appropriate for areas and times of day where fixed route cannot be competitive and will be considered for application in lieu of fixed route if warranted.

**Standardize Frequencies by Service Tiers** – Currently, schedules are written based on the Board-adopted load standard for frequent services (15 min or better) and based on policy for infrequent services (wider than 15 min). To ensure the core network has consistent frequencies and span of service, corridors will be categorized into tiers based on transit propensity, current ridership, and overall travel demand. Each tier will be assigned a frequency designation (e.g. 10 min peak/12 min base) to ensure that all services within the tier provide consistent service levels for ease of transfer along the network. If a line requires better frequencies than the tier designation, it will be set based on the Board-adopted load standard.

**Routing to Reflect Current Travel Patterns and Transit Propensity** – Currently corridors are being evaluated by segments. Based on the origin – destination travel patterns identified using the cell phone location based data as well as regional TAP data, the segments will be connected together to create lines. Better aligning the routing with travel patterns is expected to reduce the number of transfers required to make a trip and increase the distance travelable and access to opportunities along the network within 15 min, 30 min, etc. While resources will be focused in areas with high transit propensity, there will be a concerted effort to maintain service in areas of low demand but with the greatest mobility needs.

**Table 3.1** *Service Design Concepts*

	Faster service	Frequent service throughout the day	More reliable service	Better network connectivity	Access to key destinations	Improved security
Routing to reflect current travel patterns and transit propensity				X	X	X
Standardize Frequencies by Service Tiers	X	X				
Subarea transit hubs				X		X
Shorter route lengths			X			
Optimize stop spacing	X		X			
Municipal operator coordination				X	X	
MicroTransit and other on- demand		X			X	
Transit supportive infrastructure	X		X			X

**Transit Supportive Infrastructure** – The service design will identify transit supportive infrastructure that either improves overall travel time and reliability or reduces inefficiencies in the network. Speed and reliability improvements include bus only lanes, queue jumpers, bus bulb outs, signal retiming, All Door Boarding, fare payment technology, etc. improves the

attractiveness and competitiveness of transit while reducing revenue hours that can be reapplied to better use. Infrastructure that optimizes terminals and layover locations, reduce out of direction movements, and improves transfer movements will reduce non-revenue miles and hours that can be reallocated to revenue service.

Table 3.1 illustrates how each service concept will address the various themes expressed by the public and stakeholders.

### 3.2 Service Standards

Service standards are established to ensure that service levels are maintained based on board adopted standards.

#### Headways

The headway standard provides for the maximum scheduled gap (in minutes) between trips in the peak direction of travel at the maximum load point of a line by time of day, and it should not be exceeded for at least 90% of all hourly periods as summarized in Table 3.2.

**Table 3.2** *Maximum Headway by Service Type*

Service Type	Peak	Off-Peak
Heavy Rail	10	20
Light Rail	12	20
Core Network	7.5	7.5
Convenience Network	10	10
Connectivity Network	15	15
Community Network	30	30
Commuter Network	varies	varies
Micro-Transit	varies	varies

#### Passenger Loads

Passenger loading standards have been developed to ensure there is sufficient service capacity on Metro Bus and Rail service. The loading standard for bus is based on the maximum average ratio of customer s to available seating per vehicle size (i.e. 40-foot, 45-foot, and 60-foot buses). The loading standard for rail is based on the maximum average ratio of customer s per seat by service type (i.e. Heavy Rail and Light Rail). Current loading standards are shown in Table 3.3.

- **Bus Passenger Loading Standard** expresses the maximum average ratio of customer s to vehicle size and frequency by direction for a one-hour period that should not be exceeded for at least 95% of all hourly periods. This TSP sets the current loading standard for Metro bus to 1.3 as recommended by the 2016 APTA Peer Review Committee. Vehicles used for MicroTransit or Mobility-on-Demand will have a load standard of 1.0.

- **Rail Passenger Loading Standard** expresses the maximum average ratio of customers to seats by service type and by direction for one-hour period by time of day and should not be exceeded for at least 95% of all hourly periods.

**Table 3.3** *Passenger Loading Standards by Vehicle Type*

Service Type	Seats per Vehicle	Passengers per Seat	Maximum Passengers Onboard
Heavy Rail	54	2.30	124
Light rail	76	1.75	133
Bus – 40 foot	38	1.30	49
Bus – 45 foot	46	1.30	60
Bus – 60 foot	57	1.30	74

### Wheelchair Boardings and Pass ups.

Ideally, in a floating 6-month period, regular operating bus service will average of no more 6% pass-ups of customers who use wheelchairs or other mobility devices. Should the average increase to over the threshold of 6%, Service Planning will adjust service to better serve the ridership patterns of the route in such a way so as to minimize pass-ups.

### Network Route Spacing

Network Route Spacing refers to the average distance between two or more parallel bus and/or rail lines. It is generally accepted that customers are willing to walk up to 0.25 mile to a bus stop. Generally, bus routes operating parallel to each other in an urban area should be spaced 0.5 mile apart from one another and bus routes operating parallel to rail should be spaced a 0.5 mile apart on either side of a rail route. Bus routes operating parallel in a suburban area should be spaced no more than one mile apart from each other, and bus routes operating in low density or underdeveloped areas should be operated where needed in a cost-effective manner. Where possible, alternate delivery methods should be considered.

### Bus Stop/Station Spacing

Stop/Station spacing refers to the average distance between consecutive stops/stations along an entire bus/rail route. The standard is expressed as the maximum average stop/station spacing in miles by type of service and is not to be exceeded by at least 90% of all routes operated. Stop/Station spacing is established based on the goals and guidelines each service type is designed to achieve as discussed below. Metro's maximum average stop/station spacing by mode is summarized in Table 4.3.

- **Heavy/Light Rail Line** station spacing is greater than bus stop/station spacing to achieve the highest speed. Rail station location is determined during the design phase. Ideal average rail station spacing should be no greater than 1.50 miles.
- **BRT and Commuter Bus Routes** achieve the highest bus speeds through even greater stop spacing than Rapid, Core, Convenience, Connectivity, and Community routes. To ensure these services provide access to major activity centers and transfer points, average stop/station spacing should be no greater than 1.25 miles, though there may be exceptions due to geography or existing facility design. See Table 3.4 for further details.

- **Core, Convenience, Connectivity and Community Bus Routes** primarily operate on city streets and secondary streets respectively. These route types are designed to provide service closer to a customer's destination and reduce walking times. Therefore, average stop spacing should be no greater than 0.25 mile for convenient walk access.

Decisions regarding bus stop spacing and location call for analysis of ridership density, customer service requirements, the safety of customers, operators, equipment, the service type provided, interaction of stopped buses with general traffic flow. Stops should be closer together in major commercial districts and farther apart in outlying areas.

**Table 3.4** *Maximum Avg. Stop/Station Spacing*

Service Type	Stop/Station Spacing
Heavy Rail	1.50
Light Rail	1.50
BRT	1.25
Rapid	0.75
Commuter	1.25
Core, Convenience, Connectivity, Community	0.30

### 3.2 Bus/Rail Interface Planning

As the Metro Rail system expands, adjustments are made to the bus system to improve access to rail stations, take advantage of new transfer facilities, and reduce bus and rail service duplication. The following guidelines provide direction to routing and scheduling changes that will be necessary as the Metro Rail system is expanded:

#### Discontinuation of Parallel Limited and Express Service

Competing Commuter services that parallel the rail corridor will be discontinued when duplication exists.

#### Bus Route Deviation

Bus routes that run parallel to a rail line may be diverted to a station when:

- Walk time from the nearest station is greater than 3 minutes;
- Diversion time in one direction is 5 minutes or less; and
- Net travel time benefit for connecting customers exceeds increased travel for through travel.

Intersecting bus lines or ones that travel in a perpendicular direction to a rail line will be diverted to serve the closest rail station when:

- Diversion time in one direction is 5 minutes or less
- Net travel time benefit for connections and through travel

### Extend Terminating Lines

Bus routes that end within one mile of a rail station will be extended to terminate at the station. Routes that terminate at distances greater than one mile may be extended if the rerouting will create a valuable link to the rail system or will result in a reduction in travel time for a significant number of customers.

### New Bus Routes

New rail feeder service will be considered as part of the service change process if a need is demonstrated and if funding is available.

### Scheduling Rail/Bus Interface

Bus arrival and departure times should be governed by the rail arrival and departure times when predominant movement is from bus to rail. Bus routes with frequencies of 20 minutes or greater ending at a rail station should be scheduled to arrive 5 minutes before the rail departure time. When the predominant movement is from rail to bus, terminal buses should be scheduled to depart 5 minutes after the scheduled rail arrival time.

## 3.3 Metro Bus Routing Guidelines

An easy-to-understand-and-use transit system relies on simple network and route design. Consolidating duplicative services on the same or parallel corridors within a quarter-mile to a half-mile distance provides an opportunity to simplify the network for ease of use and reduce unused capacity. This concept requires better coordination of schedules and transfer points and will result in an easier-to-use and more convenient system while reducing wait time and overall travel time.

Metro's directly operated service primarily operates three types of buses: a standard 40-foot bus, a 45-foot bus, and a 60-foot "articulated" bus. To ensure that buses can adequately navigate route alignments and serve bus stops, Metro established the following standards:

- **Transit Centers /Bus Terminals**
  - Layover zones should be designed to accommodate various sizes of buses.
  - Re-striping of layover zones should be completed as needed based on the needs of the service and bus sizes scheduled.
  - Routes should be scheduled so that the amount of layover space needed is available. Layover zones should be placed as close as possible to the route terminal. Where not accommodated by the design, the added operating cost to serve the location will be computed and made part of the decision-making process for bus/rail interface.
- **Minimum turning radius clearance** required for each type size bus movement
  - 50 feet for 40-foot buses (Figure 3.1)
  - 47.5 feet for 45-foot buses (Figure 3.3)
  - 44 feet for 60-foot articulated buses (Figure 3.2)

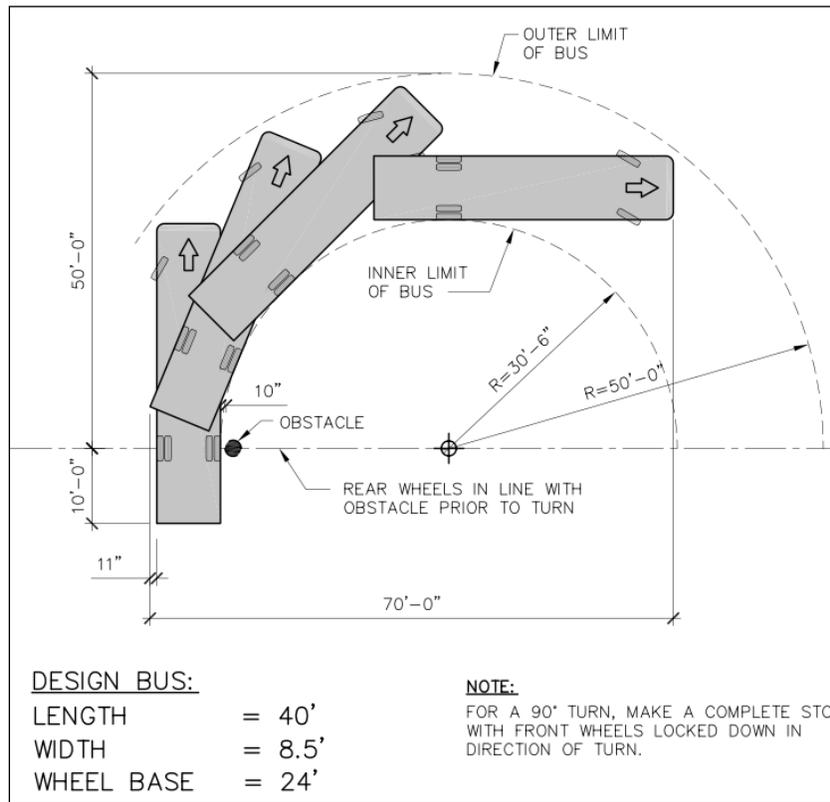


Figure 3.1 40-foot bus turning radius

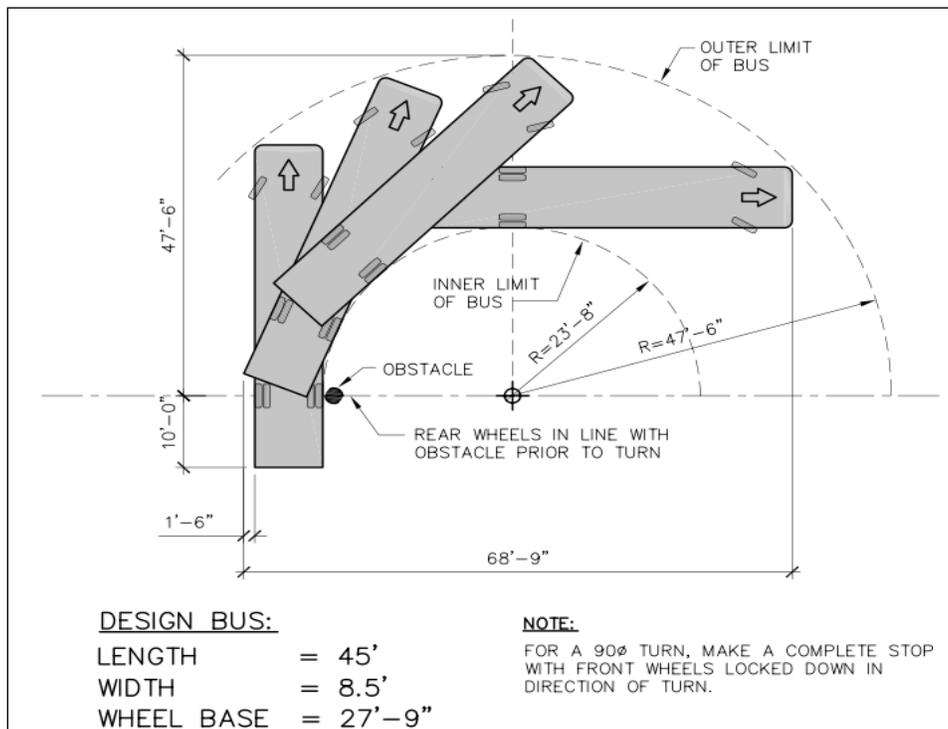


Figure 3.2 45-foot bus turning radius

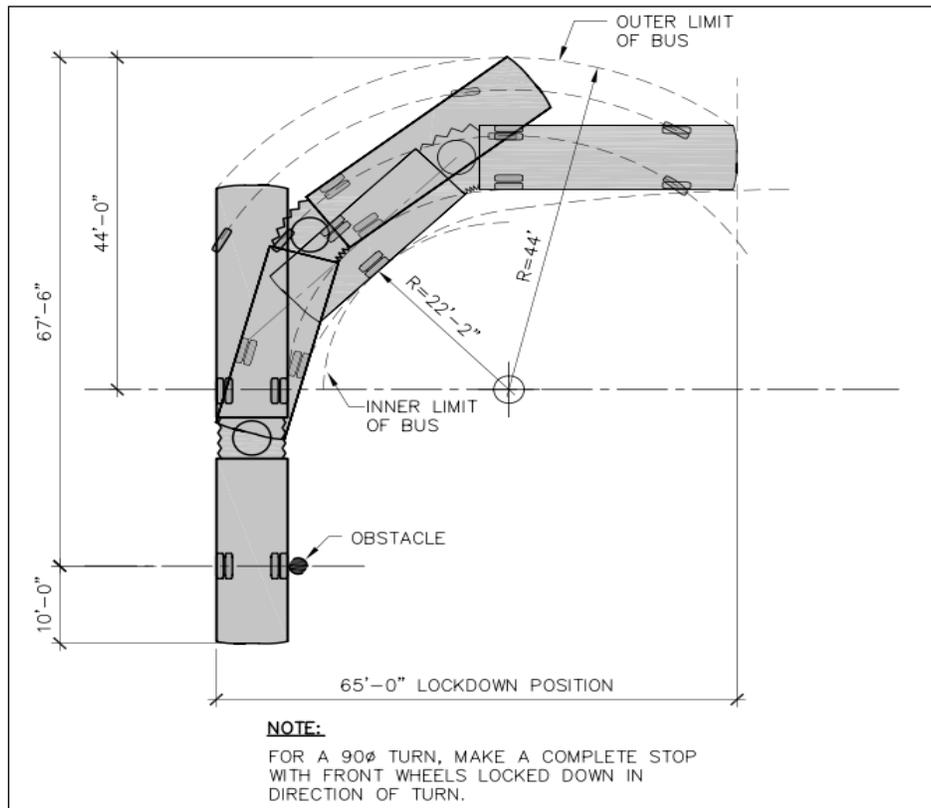


Figure 3.3 Articulated 60-foot bus turning radius

- Desired street lane widths for bus operations should be 12 feet or more.
- **Optimal Bus Stop Curb Lengths and Zone**  
40-foot buses should at minimum:
  - Far-side – 90 feet
  - Near-side – 100 feet
  - Mid-block – 150 feet

For two 40-foot buses servicing a stop simultaneously, add 50 feet. Additional bus stop curb length may be needed for 45-foot buses.

60-foot bus should at a minimum:

  - Far-side and mid-block – 120 feet
  - Near-side – 170 feet

For two 60-foot buses servicing a stop simultaneously, add 70 feet.
- **Bus Layover Zone** general space requirements based on frequency between scheduled trips:
  - One space – 15 minutes
  - Two spaces – 12 minutes
  - Four spaces – 6 minutes

### 3.4 Vehicle Assignment

Metro's goal is to ensure a consistent basis for assigning vehicles to facilities to meet operating needs at a minimal cost and improve quality of service. This policy ensures that operating needs are met at a minimal cost and improve quality of service.

Metro's transit system consists of light rail, heavy rail, and bus operations.<sup>3</sup> On any given weekday, Metro serves approximately 925,000 bus boardings and 297,000 rail boardings.<sup>4</sup>

- **Buses:** Buses will be assigned to individual facilities based on vehicle size requirements for lines supported by each facility.
- **Light Rail:** Light Rail cars will be assigned to individual lines based on compatibility of vehicle controllers with each line's signal system. Ideally, the number of vehicle types/manufacturers will be kept to no more than two at any facility to minimize parts storage and maximize maintenance expertise.
- **Heavy Rail:** Assignment policy is not applicable to Heavy Rail. The Metro B Line (Red) and D Line (Purple) operate out of the same division and both are operated by the same vehicle type.

### 3.5 School Trippers

School trippers are extra service operated to protect against overcrowding on bus routes serving schools. Metro's policy on school trippers is based on FTA regulations (49 CFR Part 605). These regulations are directed at protecting the private sector against unfair competition and ensuring that FTA funding is focused on providing services that meet the needs of the public. School tripper service may be operated if it meets the following criteria:

- There is sufficient demand to warrant the operation of a tripper;
- There are sufficient resources to operate a tripper;
- The school tripper will not result in a significant increase in travel time for regular customers; and
- The school tripper is operated as part of the regularly-scheduled public transportation service.

School tripper service must meet the following requirements:

- All school trippers must fully comply with established policies and procedures;
- All regularly scheduled school trippers must be published on public timetables;

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<sup>3</sup> Source: [lacmta.sharepoint.com/sites/MyMetro/Operations/Pages/Home.aspx](http://lacmta.sharepoint.com/sites/MyMetro/Operations/Pages/Home.aspx)

<sup>4</sup> Figures taken from October 2019 data; selected for seasonal average and adjusted for Blue Line closure.

- All locations where trippers board or alight customers, including the bus stops at deviated routes, must be marked with Metro signage including the bus line numbers servicing the stop;
- School tripper changes must be provided to the public by a service change notice or on the Metro website at [www.metro.net](http://www.metro.net); and
- Requests for new school trippers or modifications to existing school trippers will be considered when a notice is given at least two weeks in advance providing ample time to complete an appropriate analysis of the request and to allow appropriate notification of changes to the public.

School tripper services changes must comply with the following procedures

- Service Development Managers (SDM) in the Service Planning & Scheduling Department are responsible for certifying that all school trippers in their respective service area fully comply with Metro’s School Tripper Policy as discussed herein. Each SDM will submit a report prior to each major service change program that details all existing and proposed school tripper service.
- School tripper “pink letters” require notification to the public through use of a service change notice or on Metro’s webpage.
- Uniform standards for the documentation of school tripper pink letters must be employed. This includes standardizing the pink letter form and oversight of the pink letter information being input into the SLS 2000 system to ensure accuracy. All requests for new school trippers and modifications to existing school trippers must be logged into the SLS2000 regardless if the requested new or modified school tripper is implemented.
- SDMs are responsible for working with school districts in their service area which use school tripper service. For example, a specific protocol has been established with LAUSD in which their monthly Operations Coordinators’ Meeting has a standing agenda item, “Metro Coordination,” where special events and bell-time changes are disseminated to Metro through communication with staff and the meeting’s minutes.

### 3.5 Charter Service

As a grantee of Federal funds, Metro is prohibited from using its federally-funded equipment and facilities to provide charter service except on an incidental basis and when one or more of the applicable exceptions below apply:

- Charter service shall be incidental to the mass transportation service and shall be provided only during times of the day when vehicles are not needed for regularly scheduled service.
- Charter service will only be considered when one of the following exceptions apply:
  - There are no willing or able private charter operators;
  - For special events the private operators are not capable of providing the service;

- When there is a formal agreement regarding the provision of charter services between the recipient and all private charter operators who have been identified to be willing and able; and
  - For government or certain non-profit organizations, if the trip involves a significant number of handicapped persons, or if the organization is a qualified social service agency, or if it receives public welfare assistance funds whose implementation may require transportation services.
- All requests for Charter Service must be approved by the Chief Executive Officer and may require a waiver from the Federal Transit Administration. Petitions for a waiver should be requested in writing 90 days in advance of the event whenever possible.
  - The rates for charter service shall equal or exceed the annual fully allocated cost, including depreciation, of providing charter bus operations, and Metro shall deduct the mileage and hours from the useful life of the buses.
  - The operation of charter service also must comply with relevant state laws, including Section 30630.5 of the California Public Utilities Code.

Charter service is the use of buses, vans or facilities (rail system) to provide a group of persons under a single contract, at a fixed charge, with the exclusive use of the vehicle or service to travel together under an itinerary either specified in advance or modified after having left the place of origin. Generally, for service not to be considered charter, it must meet the following tests:

- Be available to the public;
- Operate within the system’s normal scope (existing routings, fit within normal hours of operation and established fare structure);
- Provide a published timetable; and
- Customers must pay their own fare.

### 3.6 Special Event Service

Special event services are bus routes designed to take customers to a specific venue and are not part of regularly scheduled operations. Metro will provide service under contract to other entities only if the provision of these services does not interfere with Metro’s ability to meet regularly scheduled service obligations and fits within the scope of the agency’s regular operation in terms of route structure, fares, and span of service. Special event services will be provided on a full cost recovery basis and in conformance with the agency’s charter bus policy.

### 3.7 Service Transfer Guideline

The regional public transit network consists of 17 “Included or Eligible” fixed route operators (including Metro). Included operators (and routes) are those that were operating within LA County in 1971 at the time of adoption of the TDA/STA statute. Eligible operators (and routes) are those added to the Formula Allocation Procedure (FAP) since that time.

Much of the funding for operation of “Included or Eligible” fixed route public transit service in LA County is distributed according to an adopted FAP. The FAP allocates sales tax receipts for public transit each fiscal year in support of public transit throughout the region. Many of the “Included and Eligible” systems operate under the guidelines of the “reserve service areas” established in 1971. Municipal operators have also grown, providing an expanded route network that has improved connections to Metro’s regional lines. In addition, there are numerous Local Return fixed route transit providers who are not eligible for FAP funding, but instead are funded through Propositions A and C (1990 sales tax initiative), Measure R (2008 sales tax initiative), and Measure M (2016 sales tax initiative). These Operators are funded as “Local Return” operators (see Appendix B for a list of operators funded as Local Return and/or Included/Eligible Municipal operators).

Policy guidance states that the network should be well integrated, coordinated, reduce service duplication, and simplify service. Therefore, the evaluation of transit corridors for consideration to be operated in the future by another operator should include:

- Existing performance relative to the system average;
- Value to the customer through integration into an established nearby transit provider;
- Net cost to each operator and the region;
- Completion of another operator’s route network;
- Provide improved connections to a Municipal Operator’s established network;
- Impacts to exiting and projected ridership;
- Generation of a net cost savings to Metro based on Metro’s calculation of the FAP impacts for all service realignment proposals.

Any transfer of directly operated Metro services to a municipal or contract operator must adhere to the terms and conditions governing such transfers as agreed to within the adopted collective bargaining and other superseding agreements between the affected labor unions and Metro.

If a proposed service change is adopted that results in a reduction of service, Metro should reinvest at least half of the net savings (operating cost less customer and FAP reduction) to improve service on Metro’s core network of regionally significant lines in the service area from which the savings were drawn.

Any significant service modifications will be subject to review under Title VI of the Civil Rights Act of 1964, as amended, the approval of the appropriate Metro Service Council(s) and the local transit provider’s Board of Governance, and must be in compliance with local, regional, and labor legislation or agreements. Finally, the agency that assumes service will be required to maintain or improve the days, spread, and frequency of the exiting service for at least a one-year period. In addition, the assuming agency must be a participant in the regional TAP program to minimize fare change impacts.

### 3.8 Alternative Service Delivery Options

Alternative service delivery options generally refers to services not directly operated by Metro, such as contract services, Municipal and Local Return Operators, taxis and other flexible destination operations. These alternatives can complement traditional transit service. In addition, Access Services provides mandatory ADA complimentary paratransit services for functionally disabled individuals in Los Angeles County. Access transportation service is available for any ADA paratransit eligible individual to any location within  $\frac{3}{4}$  of a mile of any fixed bus operated by the Los Angeles County public fixed route bus operators and within  $\frac{3}{4}$  of a mile around Metro Rail stations during the hours that the systems are operational. Complementary paratransit service is not required to complement commuter rail and commuter bus services, since the ADA does not require that these services provide complementary paratransit service.<sup>5</sup>

Metro has launched two pilot programs to leverage demand-responsive technology to improve mobility, customer experience, and system performance by providing additional first-mile and last-mile service options: Mobility on Demand and MicroTransit.

The Mobility on Demand pilot launched in January 2019 and will operate for 12 months. Metro has partnered with Via, a provider of on-demand shared rides, to develop on-demand technology to increase access to Metro's transit system by offering service to and from three of Metro's transit stations: North Hollywood, Artesia, and El Monte. This pilot program is funded in part by a \$1.35-million Mobility on Demand (MOD) Sandbox Demonstrations grant from the Federal Transit Administration (FTA).

The MicroTransit Pilot Project is anticipated to launch in late 2019. Metro is partnering with RideCo, NoMad/Via, and Transdev to develop on-demand technology to increase access to Metro's transit system. MicroTransit short trips will be approximately 20 mins in vehicle and run one to five miles in distance. These short trips may connect customers to Metro operated services and to municipal operators.

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<sup>5</sup> [https://accessla.org/riding\\_access/overview.html](https://accessla.org/riding_access/overview.html)

### SECTION 4: CUSTOMER INFORMATION AND AMENITIES

Customer information instructs both regular customers and infrequent customers on how to use transit as a viable mode of transportation to and from their destinations. Clear, accurate, and timely information is an important adjunct to service quality, particularly when bus and rail services are not operating as planned. Amenities aid in the comfort and security of customers.

#### 4.1 Customer Information

Customers need to know how to use transit: where to go to access it, where to alight to access their destination, whether transfers are required, when transit services are scheduled to depart and arrive, and how planned and unplanned service changes or disruptions impact travel. Both regular and infrequent users require specific route information when they need to travel to a location they rarely visit or that is new to them. Information must be provided in accessible formats. Metro provides customer trip planning and help information via telephone, customer service representatives, on-board announcements, mobile device applications and text/SMS messaging, by mail, online at the metro.net website, and by email.

- **Signage** at transit infrastructures such as stations and shelters, signs directing motorists to Park & Ride lots, and bus stop signs that indicate the presence of service to people not currently using transit.
- **Audible Announcements** at bus stops, rail stations and on-board vehicles to assist customers with visual impairments and customers unfamiliar with the route or area.
- **Online Information** is available 24-hours to anyone with Internet access such as:
  - Nextrip’s next bus arrival (detour notices should be posted on this service, Metro’s website, as well as other transit applications)
  - Google, Apple, and Bing Maps
  - Route maps and timetables, fare information, and Trip Planner
  - Specialized guides (Bikes, Riders with Disabilities, Safety & Security)
  - Commuter program information (carpools, vanpools, employer programs, etc.)
  - News and media information
  - Latest projects and programs
  - Contact information
  - Special event information
  - Social media accounts
- **Bus and Train Real-Time Information:** Accurate, timely, relevant, and readily available trip information is useful for reassuring customers when the next transit vehicle will arrive or how long the expected delay time is if there has been a service disruption. It should provide them with enough information to help them decide whether to continue to wait for the next transit vehicle, consider alternate routes, or take another mode of transportation to complete their trip.
- **Printed and Distributed Information**, such as timetables, maps, service change notices, customer newsletters, etc., preferably available at multiple locations.

- **Posted Information**, such as system maps, bus cubes posted at stops, stations, and on board transit vehicles.
- **Route Numbering Convention** at stops and on transit vehicle head signs assist customers to quickly identify what stops to wait at and what transit vehicle to board related to printed and posted information. See Appendix A.
- **Wayfinding** is the process of communicating information to support the ability to navigate using signage, system/route maps, kiosks, bus cubes, directions, etc. so that customers can easily determine where they are, where they want to go, and how to get there.
- **Visual Displays** to assist customers with hearing impairments and to supplement on-board announcements that may be muffled by other noise.
- **Customer Information Panels (CIPs)** are interactive touch screen panels that display vehicle arrivals, service alerts, system and local maps, Metro Arts programming, advertising, and Agency PSAs.

### 4.2 Customer Amenities

Customer amenities are those elements provided at a transit stops, transit centers, and station stops to enhance comfort, convenience, and security. Amenities include items such as shelters, benches, vending machines, trash receptacles, lighting, restrooms, and telephones. In some instances, Metro coordinates with municipalities to provide appropriate amenities. Metro provides a minimum set of customer amenities at all rail stations and major Metro-owned off-street bus facilities that allow for boarding as summarized in Table 4.1.

- **Benches** provide comfort for waiting customers, help identify the stop or station, and provide an affordable alternative to shelters.
- **Elevator/Escalators** provide accessibility for those who otherwise cannot use stairs to elevated or lowered station stops.
- **Lighting** increases visibility, security, and discourages misuse of bus stops when transit operations are not in service.
- **Public Restrooms** may be provided at major transit centers and maintained for public safety and convenience.
- **Shelters** provide comfort for waiting customers, protection from climate conditions, and help identify the stop or station. Metro does not own or install benches and shelters but will coordinate with local jurisdictions on their placement where appropriate.
- **Telephones/Intercoms** provide access to transit information and emergency services.
- **Trash receptacles** provide a place to discard trash and contribute to keeping bus stops and surroundings clean. Trash receptacles are placed and maintained by individual municipalities at bus stop locations.

Table 4.1 *Customer Information and Amenities*

Amenity	Service Type	Allocation
Shelters:	Heavy Rail:	n/a
	Light Rail:	At least 80 linear ft. per bay
	Bus Facilities:	At least 6 linear ft. per bay
Seating:	Heavy Rail:	At least 12 seats
	Light Rail:	At least 10 seats
	Bus Facilities:	At least 3 seats per bay
Info Displays:	Heavy Rail:	At least 12
	Light Rail:	At least 10
	Bus Facilities:	At least 3
LED Displays:	Heavy Rail:	At least 8 arrival/departure screens
	Light Rail:	n/a
	Bus Facilities:	n/a
TVMs:	Heavy Rail:	At least 2
	Light Rail:	At least 2
	Bus Facilities:	n/a
Elevators:	Heavy Rail:	At least 2
	Light Rail:	At least 1 for elevated/underground
	Bus Facilities:	At least 1 for multi-level terminals
Escalators:	Heavy Rail:	At least 4 (2 Up/2 Down)
	Light Rail:	n/a
	Bus Facilities:	n/a
Trash receptacles:	Heavy Rail:	At least 6
	Light Rail:	At least 2
	Bus Facilities:	At least 1 per 3 bays/2 per facility

### 4.3 Rail Stations and Major Off-Street Bus Facilities

When transit service is not provided near one’s origin, driving to a Park & Ride lot or utilizing another first-last mile option such as a bicycle or scooter to transit may be viable alternatives. Park & Ride lots, bicycle storage, and micro-mobility parking areas are important amenities for transit customers.

- **Park & Ride/Station Parking Facilities** provide parking for transit customers who use their cars to access a bus or train. Park & Ride facilities are usually provided at station stops or transit centers such as the Metro El Monte Station, Harbor Gateway Transit Center, and at various rail stations. Park & Ride lots also can be found in suburbs to serve as a staging area for commuter customers.

- **Bicycle Storage** may be provided at transit stations where demand exists and space allows, and on transit vehicles. Bicycle racks, lockers, and hubs may be provided at transit center and stations. On transit vehicles, bicycles may be transported on bus-mounted racks located in front of a bus or on board a rail car in designated spaces. Bike racks provide a simple, relatively low-cost approach and can hold many bicycles in a relatively small space, but bicycles are subject to potential damage and theft. Enclosed bicycle lockers and hubs provide added protection from theft and from weather but cost more and require more space.
- **Micro Mobility Vehicle Parking** is being tested at key Metro system locations as a pilot program. At their July 25, 2019 meeting, the Metro Board adopted a parking ordinance to regulate parking of electric scooters and other similar devices. As part of the pilot, Metro has designated parking areas at select stations and transit hubs for parking of devices; the private firms seeking to park their vehicles at Metro sites must pay a fee for use of the parking facilities.<sup>6</sup>

#### 4.4 Bus Stop Amenities

There are no standards for bus stop amenities because apart from painting the curb red and erecting bus stop signage, Metro has no jurisdiction over street-sitting fixtures or other appurtenances; those are installed by the municipality where the stop is located and often contracted to third parties who support installation and maintenance through advertising revenues.

Transit services are supported by bus stop, transit center and stations facilities. These locations are often the first and last points of contact with the customer. These facilities are an essential component of transit infrastructure that direct customers to existing transit services, provide a safe and comfortable environment in which to wait for service, and facilitate safe and efficient transfers between services. Given their importance, it is vital that transit routes and schedules are developed in consideration of the quality, appropriateness, and availability of facilities.

Bus stops are locations along the route of a bus line where customers safely wait to board or alight from a bus in service. Bus stops consist of a pole with a sign that includes route line number, destination and service qualification signage, and curb markings or parking restriction signage. Select bus stops also include a bus information cube affixed to the pole. Most bus stops are located along the curb of a street; others are located at offsite facilities such as transit centers or rail stations that are owned and maintained by the local municipality or by Metro.

Transit stations are stops along a fixed guideway and have features such as loading platforms, TVMs for fare pre-payment, shelters, benches, lighting, information displays, trash receptacles, bike racks and lockers, and emergency call boxes. Many are located adjacent to Park & Ride lots and customer pick-up/drop off areas.

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<sup>6</sup> Planning and Programming Committee File #2019-0085; LACMTA Administrative Code Title 8: Metro Parking Ordinance

Transit centers are high volume transfer points for multiple transit services and layover spaces for end-of-line bus storage and turn around. Features include customer loading and alighting areas, benches, shelters, lighting, information displays, bicycle racks and lockers, trash receptacles, and bus layover bays.

On-street bus layover zones are designated stopover points for buses at or near the end of the line. They may or may not allow for customer boarding and alighting. Bus terminals are major offsite layover areas for multiple bus lines and may or may not allow for customer boarding and alighting.

Locating bus facilities (other than on-street stops) in heavily congested or urbanized areas increases the burden on the transit operator to find layover spaces for buses and operator restrooms. The extension of a line to a specific terminal may prove uneconomical and at the very least add costs to an already budget constrained operation.

Cost and minimization of customer disruptions are significant concerns when locating facilities for bus operations. Metro Operations continues to evaluate routes and layovers to reduce costs and improve efficiency. As a key internal stakeholder in the environmental planning process, the Service Development Department should be involved early in the analysis of alternatives to and the development of mitigation measures to ensure adequate accommodations are incorporated to foster connectivity of future projects.

Capital costs of new support facilities are an important determinant; but more significant is the added operating cost that may be incurred due to inadequate facilities.

### **4.5 Bus Stop/Station Location, Design and Guidelines**

Bus stops and station stops allow for boarding and alighting of customers; their locations should balance safe, convenient access with pedestrian safety. Locations should support efficient transfers, minimize walking distances and unnecessary crosswalk movements, and preferably be located at a signalized crosswalk to prevent potential jaywalking. Bus stops are generally located adjacent to a bus/rail station or within a short walk to medical facilities, schools, shopping centers, office buildings, multi-unit apartments, or other major activity centers to provide access for uses that generally attract transit customers. Hospitals and schools have high priority when considering new bus stop locations and/or when relocating existing bus stops.

BRT/Rail station locations are determined during the design phase of a fixed guideway/right-of-way. There are criteria associated with station location, but this is beyond the scope of this TSP. Generally, stations are located at major transfer points with bus or rail and provide access to major activity centers. No standard type of stop can be recommended for all locations, as each intersection has its own unique characteristics. An inventory of land uses that serve as major trip producers and attractors within a 0.25-mile corridor of the road under consideration should be taken prior to establishment. The location of a transit stop requires concurrence of the municipality in which the stop is located in.

In general, far-side stops are preferable, particularly at signalized intersections; however, near side or mid-block stops may be justified in certain situations. A summary of advantages and disadvantages to each location are provided in Table 4.2. TCRP Report 19 “Guidelines for the Location and Design of Bus Stops” (1996) provides a more detailed discussion.

**Table 4.2** *Comparative Analysis of Bus Stop Locations*

Stop Type	Advantages	Disadvantages
<b>Near-Side</b>	<ul style="list-style-type: none"> <li>▪ Minimizes interference when traffic is heavy on the far side of the intersection</li> <li>▪ customers access buses closest to crosswalk</li> <li>▪ Intersection available to assist in pulling away from curb</li> <li>▪ Buses can service customers while stopped at a red light</li> <li>▪ Provides driver with opportunity to look for oncoming traffic including other buses with potential customers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Conflicts with right turning vehicles are increased</li> <li>▪ Stopped buses may obscure curbside traffic control devices and crossing pedestrians</li> <li>▪ Sight distance is obscured for crossing vehicles stopped to the right of the bus.</li> <li>▪ The through lane may be blocked during peak periods by queuing buses</li> <li>▪ Increases sight distance problems for crossing pedestrians</li> </ul>
<b>Far-Side</b>	<ul style="list-style-type: none"> <li>▪ Minimizes conflicts between right turning vehicles</li> <li>▪ Provides additional right turn capacity by making curb lane available for traffic</li> <li>▪ Minimizes sight distance problems on approaches to intersection</li> <li>▪ Encourages pedestrians to cross behind the bus</li> <li>▪ Requires shorter deceleration distances for buses</li> <li>▪ Gaps in traffic flow are created for buses re-entering the flow of traffic at signalized intersections</li> <li>▪ Allows bus routes that operate signal priority to take advantage this technology at signalized intersections.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Intersections may be blocked during peak periods by queuing buses</li> <li>▪ Sight distance may be obscured for crossing vehicles</li> <li>▪ Increases sight distance problems for crossing pedestrians</li> <li>▪ May increase number of rear-end accidents since drivers do not expect buses to stop again after stopping at a red light</li> </ul>
<b>Mid-Block</b>	<ul style="list-style-type: none"> <li>▪ Minimizes sight distance problems for vehicles and pedestrians</li> <li>▪ Passenger waiting areas experience less pedestrian congestion</li> </ul>	<ul style="list-style-type: none"> <li>▪ Requires additional distance for no-parking restrictions</li> <li>▪ Encourages customers to cross street at mid-block (jaywalking)</li> <li>▪ Increases walking distance for customers crossing at intersections and for transferring customers</li> </ul>

Source: FTA webpage ([http://www.fta.dot.gov/12351\\_4361.html](http://www.fta.dot.gov/12351_4361.html))

When two or more bus routes operate along the same corridor, stops should be consolidated to avoid unnecessary crosswalk movements and minimize confusion as to which stop customers should wait to catch their bus wherever possible. However, if a group of bus lines operating along the same street, in the same direction, serving the same intersection (such as in the downtown environment), it may be necessary to implement two stop locations (e.g.

nearside and farside) to minimize congestion and negatively impact bus operations under the following circumstances:

- Some bus lines will queue up to make a right turn while other lines continue through the intersection (unsafe right turn movements)
- Lack of space availability and no room to lengthen zone due to business owner objection, jurisdiction refusal to extend, a loading zone being located behind the current stop, etc.)
- Bus Stop/Station Accessibility: All stops and stations should be fully accessible in accordance with the 1990 Americans with Disabilities Act. This includes ensuring there are no obstructions preventing the boarding and alighting of customers who use a wheelchair or other assistive mobility devices, and that pathways to and from a stop or station are unobstructed. If obstructions do exist, every effort must be made to mitigate the issue(s) with the respective municipalities. In the case of bus stops, they can either be moved to a new location on a permanent basis or temporary basis depending on situations, such as during construction.

The following renderings (Figures 4.1 – 4.4) illustrate a typical bus stop/zone design and offers guideline for near-side, far-side, and mid-block locations. TCRP Report 19 “Guidelines for the Location and Design of Bus Stops” (1996) provides a more detailed discussion.

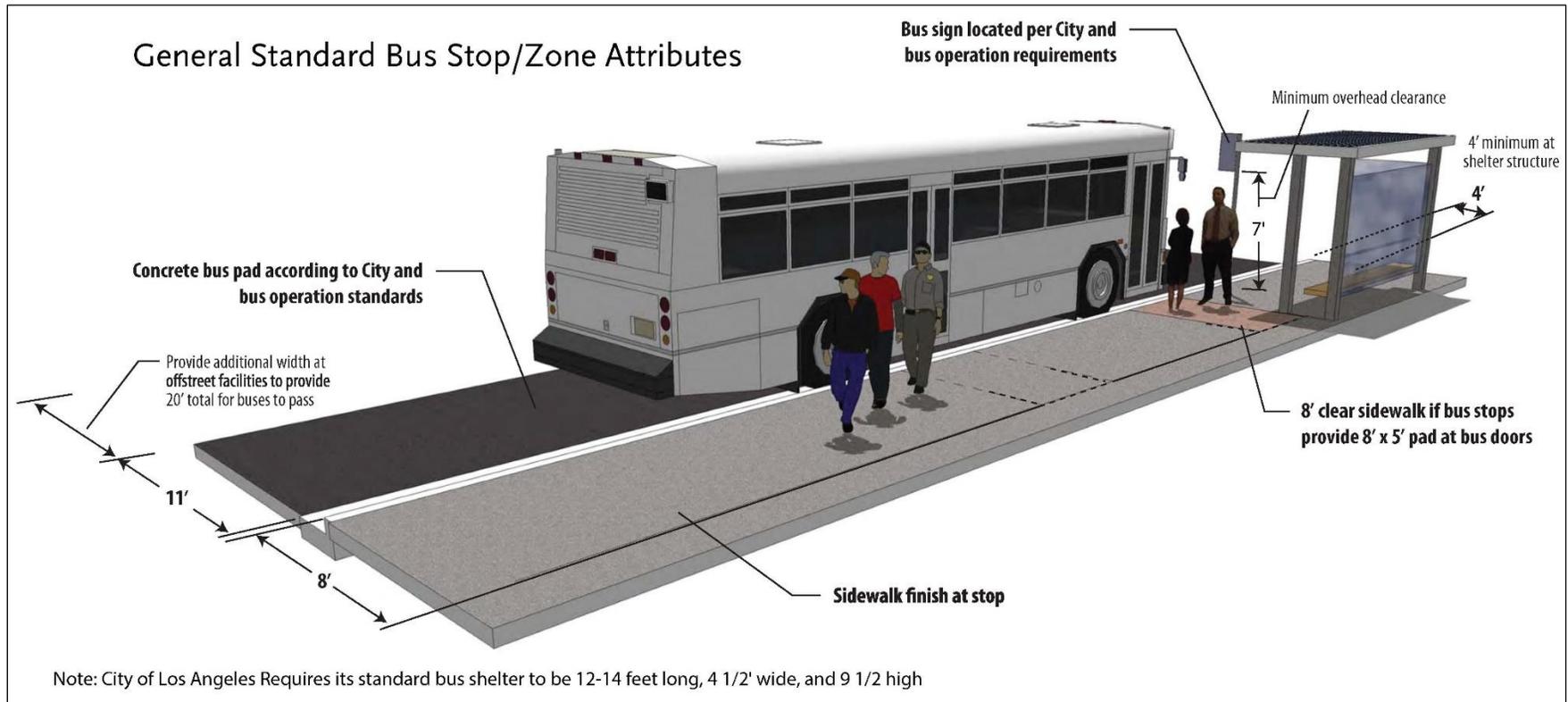


Figure 4.1 General Standard Bus Stop/Zone Attributes

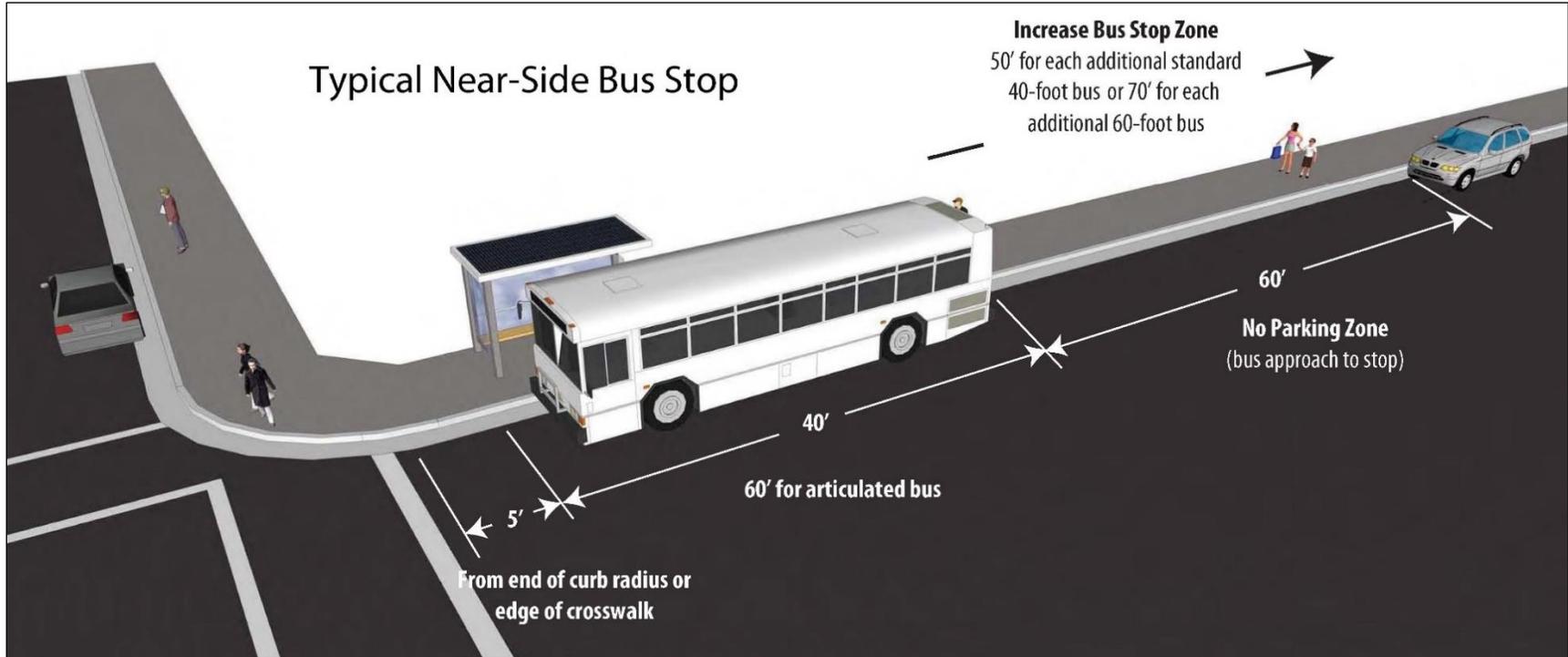


Figure 4.2 Typical Near-Side Bus Stop

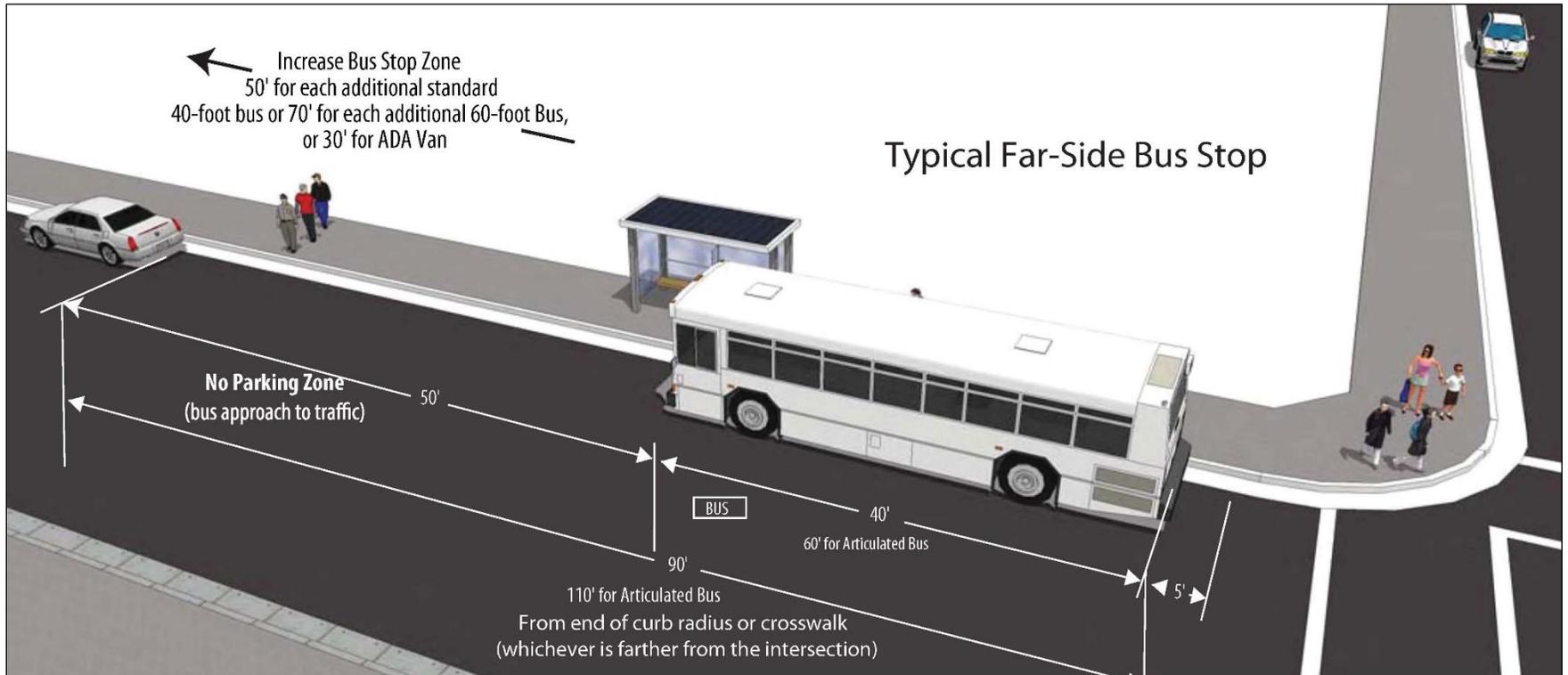


Figure 4.3 Typical Far-Side Bus Stop

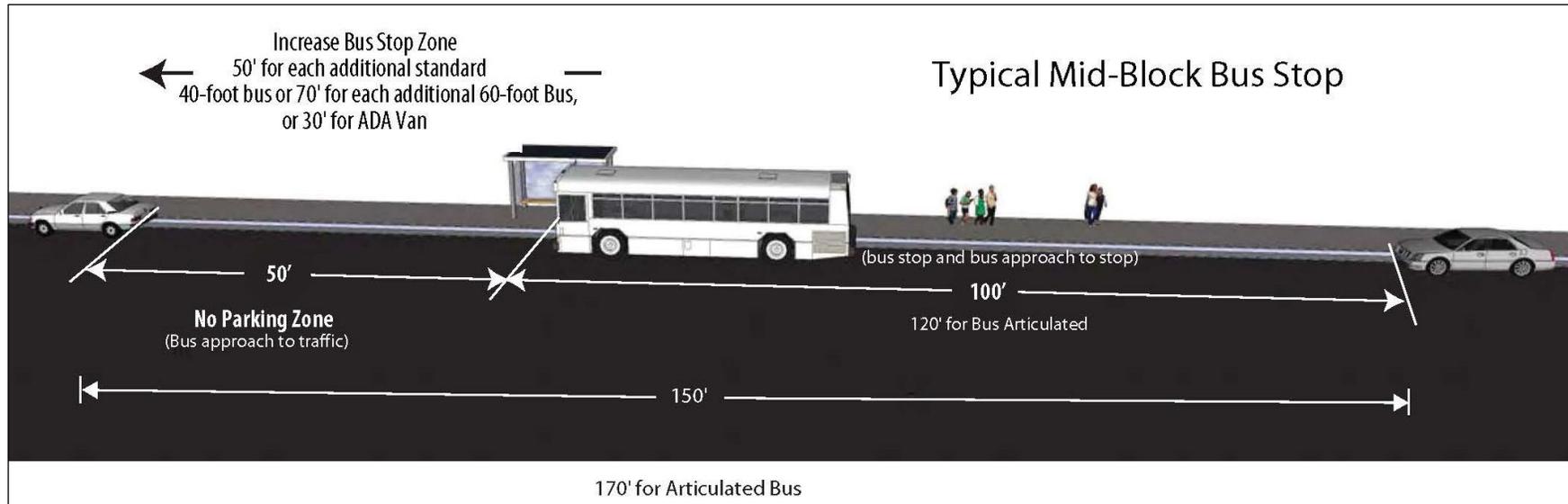


Figure 4.4 Typical Mid-Block Bus Stop

### SECTION 5: SERVICE PERFORMANCE EVALUATION

The 2019 Metro TSP establishes a set of performance criteria and standards that balances optimization for efficiency and productivity with customer experience measures of success. Optimization of key performance indicators ensures that the services being provided generate the maximum benefit in terms of ridership at the lowest cost. Customer experience criterion measure how well the transit system can attract customers to use the system more often and for new trip purposes.

#### 5.1 Route Performance Index

The Route Performance Index (RPI) is a conventional industry measure used to ensure Metro services are effective and provide a reasonable return on investment. The RPI is designed to provide an objective measure of bus route performance relative to system performance. The index is based on system ridership and financial targets from the current fiscal year Metro Budget.

This measure is applied to all Metro bus lines that have been in operation for more than one year. The RPI is used to identify under-performing lines. Specific corrective actions are taken during the service change process. Corrective actions may include marketing, service restructuring, implementing an alternative service, or discontinuation of service.

##### Defining RPI Variables

The RPI considers the following three variables in creating the index. No weight is given to an individual measure; rather the selected statistics represent all facets of the operation in terms of cost efficiency, service effectiveness, and customer use.

- **Utilization of Resources:** Passenger Boardings per Revenue Service Hour (RSH) is used as a measure to determine how effectively resources are used on a given line. This measure is determined by dividing the total number of boardings by the RSHs operated. A route having a higher number of boardings per RSH represents a better utilization of resources such as buses, operators and fuel.
- **Utilization of Capacity:** Passenger Miles per Seat Mile is the measure used to evaluate how the seating capacity of the system is being used. Passenger miles are calculated by multiplying the average distance traveled per customer by the number of customers using the service. Seat miles are calculated by determining the number of seats per vehicle by the number of service miles operated. A higher resulting number indicates greater utilization of system capacity.
- **Fiscal Responsibility:** Subsidy per Passenger is the measure for fiscal responsibility. Subsidy refers to the amount of public funding required to cover the difference between the cost of operation and the customer revenues collected. Higher subsidy services require more public funding support.

The formula for calculation of the RPI for each Metro Bus line is as follows:

$$\text{RPI} = ((\text{Passengers/RSH/System Avg.}) + (\text{Passengers Miles per Seat Mile/System Avg.}) + (\text{Subsidy per Passenger / System Avg.}))/3$$

Lines with an index of 1.0 perform at the system average, while lines with an index of less than 1.0 perform below the average. Lines with an RPI lower than 0.6 are defined as performing poorly and targeted for corrective action. Lines that have been subjected to corrective actions and do not meet the 0.60 productivity index after six additional months of operation may be discontinued, subject to Metro Service Council and Board approval.

The RPI is calculated and reported quarterly by Metro's Service Planning & Scheduling Department. The performance measurement standards for each route are set annually relative to the percentage improvement of overall system performance relative to the previous year's performance. This percentage improvement will be based on the performance objectives outlined in the Metro Annual Operating Budget.

### 5.2 Customer Experience

Providing high quality mobility options that enable people to spend less time traveling on the transit network requires that we are available when and where our customers want to travel, we are competitive enough to have them try us over other options, and we are attractive enough to ensure they return for the same trip and ideally for more trips. Therefore, our recommended measures of success are aimed at evaluating the bus network within these three stages of Find, Try, and Rely. These customer focused measures help to balance our traditional metrics of productivity and efficiency (e.g. ridership, boardings per hour, subsidy per boarding). Several of these measures (italicized below) will be used to evaluate the network through the lens of equity.

**Find** - How well do people understand how effectively transit can serve their needs? Is the system easy to understand and use? Proposed measures include:

- Services and information is Readily Available
  - Percentage of trip ends within ¼ mile of transit stop
  - Trip planner, app, and website usage rates
  - *Percent of public considering transit (survey-based)*
- The Bus System is Easy to Understand and Use
  - Percentage of out of direction travel
  - Percentage of route miles with all-day frequent service (<15 min headways)
  - *Percent of public understand how to use system (survey-based)*

**Try** - How can we encourage customers to try the regional transit system? (Metro and Municipal Bus Operators) Proposed measures include:

- Bus Goes Where/When Customers Want
  - *Percentage of trips compatible with transit by time of day and day of week*
  - *Number of jobs and activity centers accessible within a 15 minute and 30 minute transit ride*
  - Number of unique transit users

- Bus system is Competitive
  - *Door-to-door travel times*
  - *Competitiveness of transit time to drive time*
  - System-wide boardings
- Coverage is Adequate
  - *Population within ¼-mile of transit stops by frequency of service*
- Transit Journeys are Simple
  - Average number of transfers
  - Percent of trips that are one-seat rides

**Rely** - How can we provide services that customers can rely on for their travel needs? Proposed measures include:

- Bus System is Effective and Productive
  - *Competitive transit paths for short, evening, midday, and weekend trips*
  - Number of frequent customers
  - Boardings by time of day and day of week
  - Boardings per revenue hours and miles
  - Cost per passenger mile
- Buses are Reliable
  - Headway regularity on frequent routes
  - On-time performance
  - Real time arrival accuracy
- Customers are Satisfied
  - Rides per week for frequent and infrequent users
  - *Percentage of customers satisfied with Metro services (survey-based)*

### 5.3 Service Evaluation Process

Services are evaluated monthly, quarterly, and biannually based on the network, lines and segments (geographic, time of day, and day of week) . Services that are inconsistent with demand or do not meet system standards are identified for restructuring, reduction, or discontinuation. Services that have potential for exceeding existing performance will be identified for possible enhancements as should markets that are currently not well served. The following priorities will be considered when restructuring the Metro system:

- **Priority 1** – Restructure services to increase system speed, on-time performance, and balance loads.
- **Priority 2** – Restructure services that are duplicative with Metro Rail, other Metro Bus routes, and Municipal and Local Return operator services. Such services will be identified for discontinuation, consolidation, reduction and/or reallocation to achieve greater productivity and cost efficiency.

- **Priority 3** – Restructure remaining services (constrained by existing budget) based on the service concept and to address major gaps and deficiencies. Prioritize these service adjustments.
- **Priority 4** – Develop new services (unconstrained) to address all gaps and deficiencies. Prioritize these new services.

Significant changes to municipal operator services are incorporated into the evaluation of existing and new services as possible enhancements to address identified gaps or deficiencies in service.

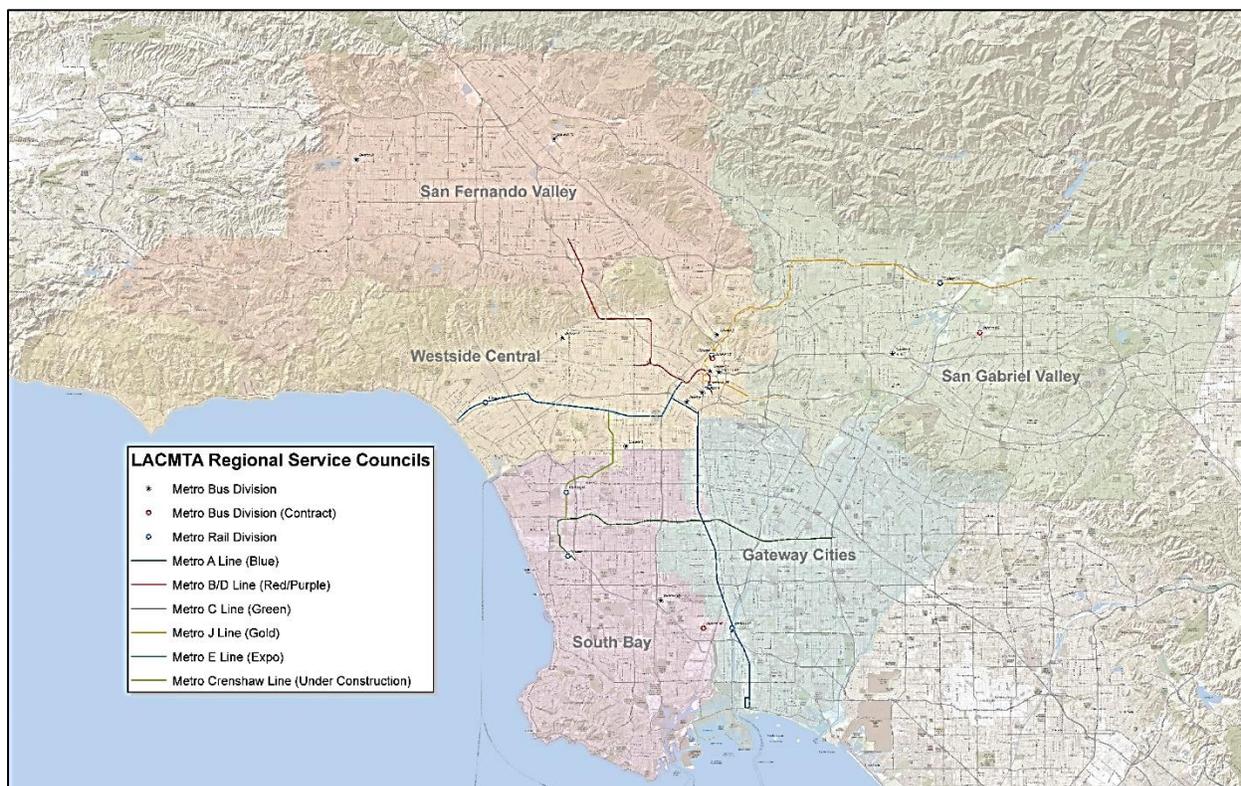
### Service Change Performance Evaluation

Schedule adjustments to bus or rail should be evaluated shortly after implementation to determine if there are any obvious issues. This should include line rides and visits to the operating divisions to receive comments and recommendations from customers, operators and supervisors. Appropriate adjustments should be made as required. After three months of operations, the schedules should be evaluated in detail to begin the process of schedule adjustments for the next service change cycle.

Route modifications to bus service should also be evaluated shortly after implementation like the schedule evaluation outlined above. The overall goals of the service changes such as reducing costs, improving connections, increasing bus speeds, and increasing ridership, among others, should have near term goals that are established prior to the service change process. At about 6 months after service implementation, the performance of the changes should be evaluated relative to the established goals. Remedial actions, if necessary, should be developed and considered for the next service change cycle.

### SECTION 6: SERVICE CHANGE PROCESS

In 2003 Metro created five localized service areas (Figure 6.1), each to be overseen by a Governance Council. In 2011, Metro restructured and re-established a centralized bus-controlled operation to include the service planning and scheduling function, while maintaining the authority and responsibility of the Councils to help coordinate service changes. Metro restructured the roles and responsibilities of the Governance Councils, now referred to as Service Councils.



**Figure 6.1** Metro Service Council Areas

Metro Service Councils provide locally accessible public forums for community members, transit users, and local municipal operators to voice concerns, suggestions, and questions on how Metro can best serve customers. Through these forums, Service Council members can:

- better understand customer needs and make recommendations;
- evaluate opportunities and service coordination issues;
- advise and approve the planning and implementation of service changes within their areas.

As stated in the 2011 update to the Service Council bylaws, one of the Service Council's primary responsibilities is to render decisions on proposed bus route changes considering staff's recommendations and public comments. Metro Service Councils (MSC) will be responsible for approving all proposed permanent route changes, excluding turnaround and out of service route modifications, which exceed a cumulative \$100,000 annual operating cost change. All

major service level changes that require public hearings will be brought to the MSCs who will conduct public hearings then vote to approve, modify, or deny the service change proposals. Any significant temporary service change should be brought to the Council for their information but not approval.

Each MSC will be responsible for holding public hearings that relate to major service changes to Metro bus and rail lines that provide significant service within their Region, consistent with State and Federal laws and with Metro policies pertaining to public hearings. Following receipt of public input, the Councils is responsible for approving all major service changes that are to be implemented that modify, add or delete Metro bus routes within the Service Council's jurisdiction in conformance with Metro service standards, collective bargaining agreements and Metro policies. When a major service change program requires three or more Councils to hold public hearings, an additional hearing will be held at a central location, normally at the Metro headquarters building, on an appropriate Saturday.

**Table 6.1** *Service Change Timeline*

Key Activities	Required Lead Time (Months Prior to Implementation)
Initiate Planning Process	12
Develop Preliminary Recommendations	7-8
Impact Analysis for Proposed Changes	6-7
Title VI Equity Analysis on Major Service Change and Fare Change Proposals	5-7
Service Council Review and Input	6-7
Confer with Labor Relation and Union Representatives	6-7
Public Review and Input	5
Finalize Service Change Program	4-5
Program Approval	3-4
Develop New Service Schedules	2-4
Print Public Timetables and Operator Assignments	1-2
Fabricate Decals for Bus Blades	1-2
Take Ones/Rider Alerts on Buses	1

All route and major service changes that are approved by the MSC will be brought to the Metro Board of Directors as an information item. Should the Metro Board decide to move a Service Council approved service change to an Action Item, the Service Council will be notified of this change, prior to the next Service Council monthly meeting. Table 6.1 provides the established service change timeline.

### 6.1 Service Change Programs

Service change programs are developed based on input generated by a wide variety of sources including customer and employee input, service restructuring studies, requests from other local operators, and performance monitoring results. The service change process includes public review of the proposals, a technical evaluation of ridership impact, and Title VI equity analysis. In accordance with contractual agreements with the Sheet Metal Air, Rail and Transit Union (SMART)<sup>7</sup>, bi-annual service changes will be implemented in June and December. Metro service changes are conducted to modify service based on customer demand, running time adjustments, performance monitoring results, and budget considerations. A service change process workflow is provided in Figure 6.2.

Other factors considered are service performance, availability of alternatives, and mitigation strategies. As part of the evaluation process, resource impacts to in-service hours and required vehicles are also tracked to ensure compliance with budget parameters. In summary, the purpose of an evaluation on proposed service changes is to:

- Define and evaluate the impact on customers
- Determine whether a proposed major service change or fare increase will have disparate adverse impact on minorities or a disproportionate burden on low-income individuals by performing a Title VI Equity Analysis
- Consider alternatives if a disparate adverse impact to minorities or disproportionate burden on low-income individuals are identified
- Develop appropriate mitigation measures if needed
- Determine whether a public hearing is required

Changes to the rail system occur less frequently. They generally relate to the opening of a new line or adjustments to the frequency or hours of operation for existing service. Changes in rail and bus service follow the same planning and implementation process.

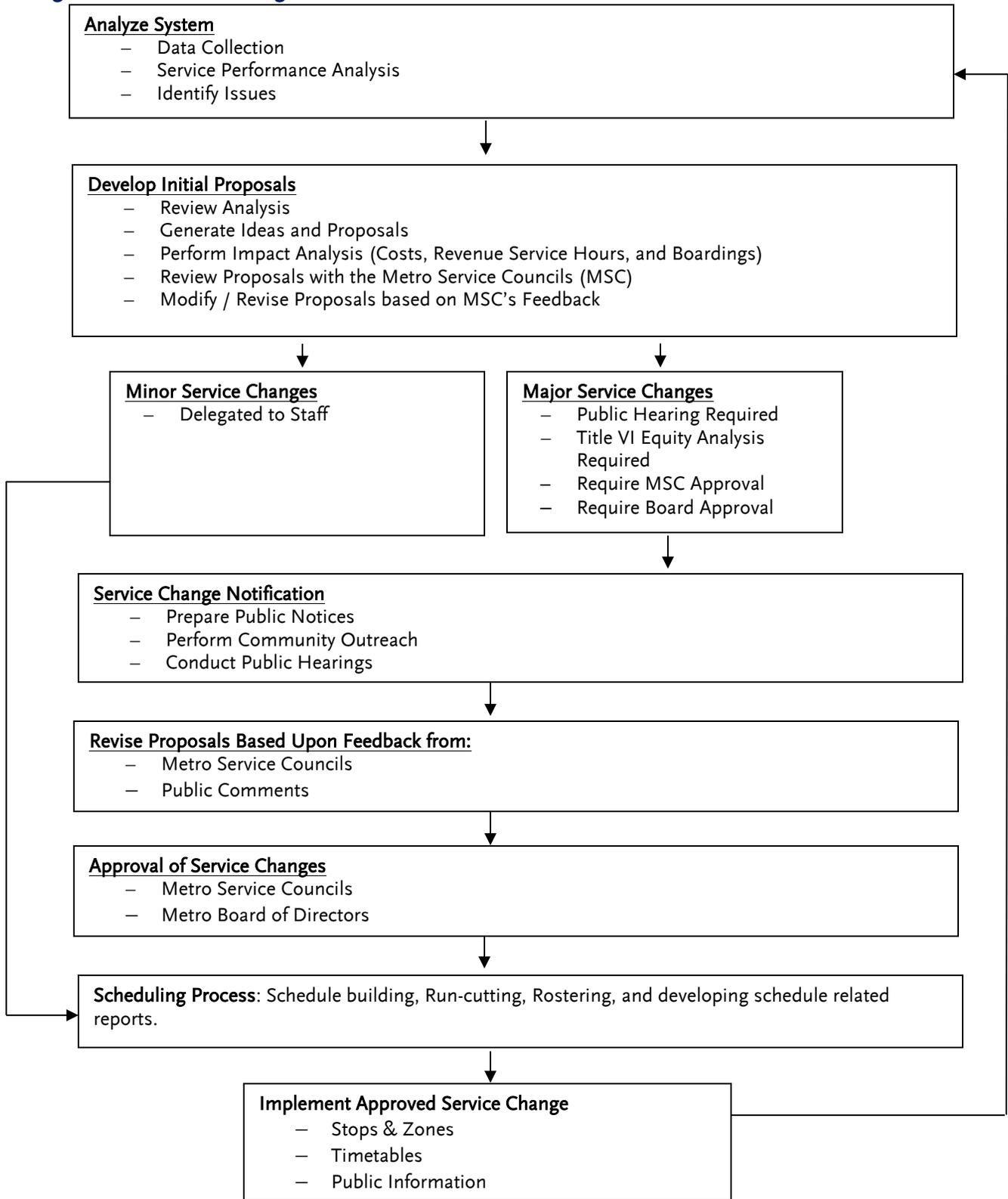
### 6.2 Title VI and Metro's Equity Platform

Metro's Equity Platform was adopted in February 2017. The framework for equity begins with Title VI of the Civil Rights Act of 1964 which protects minority and low-income communities from disparate and disproportionate negative impacts as a result of major transit service changes.

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<sup>7</sup> The United Transportation Union (UTU) merged with the Sheet Metal Workers Union in 2014 to form SMART.

Figure 6.2 Service Change Process



### 6.3 Title VI Equity Analysis

In addition, Metro will ensure a Title VI Equity Analysis is performed on all major service change and fare change proposals to determine if these proposals will have a disparate adverse impact on minorities or disproportionate burden on low-income individuals prior to a public hearing. If it is determined that these proposed changes will have a disparate adverse impact on minorities or a disproportionate burden on low-income individuals, Metro will make a good-faith effort to mitigate or reduce the adverse impacts by looking for alternatives.

The framework for equity begins with Title VI of the Civil Rights Act of 1964 which protects people from discrimination based on race, color, or national origin. Impacts on minority and low-income communities must be analyzed to identify disparate and disproportionate negative impacts resulting from a fare change or major transit service changes.

In accordance with FTA's Title VI Circular 4702.1B "Title VI Requirements and Guidelines for Federal Transit Administration Recipients" (Effective October 1, 2012), Metro's Administrative Code was revised to incorporate FTA's requirements under Title VI. The Metro Board adopted the updated Administrative Code in January 2013. Based on this Circular, Metro is required to perform a Title VI Equity Analysis on all proposed major service changes or fare changes prior to implementation. The goal is to ensure there is no *disparate adverse impact* to minorities or *disproportionate burden* on low-income individuals created by a major service or fare change. The following definitions and criteria were updated and adopted by the Board in September 2019. The Administrative Code now contains a reference to these definitions so that it need not be amended every time there is a need to modify the definitions:

#### Disparate Impact Policy:

Disparate impact refers to a facially neutral policy or practice that disproportionately affects members of a group identified by race, color or national origin and the policy lacks a substantial legitimate justification, including one or more alternatives that would serve the same legitimate objectives but with less disproportionate effects on the basis of race, color or national origin. This policy defines the threshold Metro will utilize when analyzing the impacts to minority populations and/or minority customers.

- a. For major service changes, a disparate impact will be deemed to have occurred if the absolute difference between the percentage of minority adversely affected and the overall percentage of minorities is at least five percent (5%).
- b. For any applicable fare changes, a disparate impact will be deemed to have occurred if the absolute difference between the percentage of minority adversely affected and the overall percentage of minorities is at least five percent (5%)

#### Disproportionate Burden Policy:

Disproportionate burden refers to a facially neutral policy or practice that disproportionately affects low-income populations more than those populations that are not low-income. A finding of disproportionate burden for major service and fare changes requires Metro to evaluate alternatives and mitigate burdens where practicable.

1. For major service changes, a disproportionate burden will be deemed to exist if an absolute difference between percentage of low-income adversely affected by the service change and the overall percentage of low-income persons is at least five percent (5%).
2. For fare changes, a disproportionate burden will be deemed to exist if an absolute difference between the percentage of low-income adversely affected and the overall percentage of low-income is at least five percent (5%)

### Discretion of the Metro Board of Directors

A *major service change or fare increase* may be implemented even if the Title VI Equity Analysis determines a *disparate adverse impact* to minorities was created by the change. However, the Metro Board of Directors must first ensure these changes meet two tests:

- There is a substantial legitimate justification for adopting the proposed major service change or fare increase, meaning the selected service change or fare increase meets a goal that is integral to the mission of Metro; and
- The selected alternative would have a less severe adverse effect on Title VI protected populations than other alternatives that were studied.

### Major Service Change

Major service changes are defined in Metro's Administrative Code in Chapter 2-50 Public Hearings Subsection 2-50-010 as any service change that meets at least one of the following criteria:

1. A revision to an existing transit route that increases or decreases the route miles and/or the revenue miles operated by 25% or more at one time or cumulatively in any period within 36 consecutive months since the last major service change;
2. A revision to an existing transit service that increases or decreases the scheduled trips operated by at least 25% at one time or cumulatively in any period within 36 consecutive months since the last major service change;
3. An increase or decrease to the span of service of a transit line of at least 25% at any one time or cumulatively in any period within 36 consecutive months since the last major service change;
4. The implementation of a new transit route that provides at least 50% of its route miles without duplicating other routes;
5. Six months prior to the opening of any new fixed guideway project (e.g. BRT line or rail line) regardless of whether or not the amount of service being changed meets the requirements in the subsections 1-5 above to be inclusive of any bus/rail interface changes.
6. Experimental, demonstration or emergency service changes may be instituted for one year or less without a Title VI Equity Analysis being completed and considered by the Board of Directors. If the service is required to be operated beyond one year the Title VI Equity Analysis must be completed and considered by the Board of Directors before the end of the one year experimental, demonstration or emergency.

7. A Title VI Equity Analysis shall not be required if a Metro transit service is replaced by a different route, mode, or operator providing a service with the same headways, fare, transfer options, span of service and stops.

### Fare Changes

Any fare change requires an equity evaluation consistent with the following guidance:

1. A Fare Equity Analysis shall be prepared for any fare change (increase or decrease). This includes but is not limited to permanent fare changes, temporary changes, promotional fare changes, and pilot fare programs. The analysis will evaluate the effects of fare changes on Title VI protected populations and low-income populations. The analysis will be done for fares not available to the general public such as special discount programs for students, groups or employers.
2. If fare changes are planned due to the opening of a new fixed guideway project, an equity analysis shall be completed six months prior to opening of the service.
3. Each Title VI Fare Equity Analysis shall be completed and presented for consideration of the Board of Directors in advance of the approval of the proposed fare or fare media change by the Board of Directors. The Equity Analysis will then be forwarded to the FTA with a record of action taken by the Board.
4. A Title VI analysis is not required when:
  - a) A change is instituted that provides free fares for all customers;
  - b) Temporary fare reductions are provided to mitigate for other actions taken by Metro;
  - c) Promotional fare reductions are less than six months in duration. An equity analysis must be conducted prior to making any temporary fare change into a permanent part of the fare system.

### 6.4 Metro's Equity Platform

Metro's Equity Platform builds upon Title VI in two distinct ways. First, it goes beyond ethnicity and income to determine communities with the greatest mobility needs. Through market research, surveys, and public input, other groups most reliant on transit include non-English speaking new immigrants, youth and seniors, persons without access to an automobile either by choice or necessity, persons with disabilities, and women who tend to make more transit trips than men.

Second, NextGen Bus Study aims to go above and beyond Title VI, to not only protect against negative impacts, but to further improve service for communities with the greatest mobility needs. To do this, the Four Pillars of the Equity Platform have been integrated into the NextGen Bus Study planning and public engagement process.

- I. **Define and Measure** – Use Title VI as a baseline for identifying communities with the greatest needs, and supplement those with market research to identify the segments of population and trips with the highest propensity for transit use. Evaluate bus

network changes based on the customer focused performance metrics established within this report with particular focus on communities with the greatest mobility needs as identified above.

- II. **Listen & Learn** –The technical work of the NextGen Bus Study identified important information about Metro’s current and potential customers. This data was validated by the robust countywide public engagement effort, including engaging customers onboard buses, outreach sessions at community events, stakeholder briefings, interactive public workshops, digital engagement and print advertising. Comments received will be incorporated into the systemwide service design as well as individual route changes.
- III. **Focus & Deliver** – Service design concepts (discussed above) have been established to address the recurring themes identified from the public outreach and market research, including faster and more frequent service, better reliability and accessibility to key destinations, better connectivity particularly with the municipal operators, and improved perception of security on board buses and at bus stops. These concepts, described below, will be used to redesign the routes and schedules.

In addition, a Transit Propensity Index score has been developed and assigned to every Census Tract in Los Angeles County. This index score considers the various market segments likelihood to use transit, the transit orientation of the environment being served, and the travel demand within the area. Areas with high scores should be prioritized for high quality transit service.

Lastly, other customer experience enhancements such as improved security, accurate real time arrival information, cleanliness, and improved first/last mile service are critical to attracting customers to use transit.

- IV. **Train & Grow** – The Board adopted Transit Service Policy will be updated to reflect the Regional Service Concept as adopted by the Board, including the goals and objectives of the bus network, measures of success, route and network design concepts based on public input and data analysis, and framework for balancing tradeoffs in consideration of Metro’s Equity Platform. In addition, an annual monitoring program will be established to track the progress of achievement towards the goals and objectives, and to inform on necessary adjustments.

### 6.4 Public Outreach

Prior to a public hearing, several public outreach efforts are made so that the greatest number of customers may respond to the changes at either a public hearing or by submitting written comments at a hearing, or via email, mail, or fax. In accordance with Metro’s Administrative Code in Chapter 2-50 Public Hearings Subsection 2-50-025:

1. Any public hearing required by Section 2-20-020 shall be conducted as set forth in this section.
2. Notice of the hearing shall be published in at least one English language and Spanish language newspaper of general circulation and at least thirty (30) days prior to the date

of the hearing. Notice at least thirty (30) days prior to the date of the hearing shall also be published in the neighborhood and foreign language and ethnic newspapers as appropriate to provide notice to the members of the public most likely to be impacted by the proposed action.

3. Notice of the public hearing shall also be announced by brochures in English, Spanish and other appropriate languages on transit vehicles serving the areas to be impacted and at customer service centers.
4. To ensure that the views and comments expressed by the public are taken into consideration, MTA staff shall prepare a written response to the issues raised at the public hearing. That response should also include a general assessment of the social, economic and environmental impacts of the proposed change, including any impact on energy conservation.
5. The public hearing related to a recommendation to increase transit fares charged the public shall be held before the Board of Directors and any action taken to increase the fares charged the general public must be approved by a two-thirds vote of the members of the Board of Directors. The Board of Directors may delegate to another body or a hearing officer appointed by the Chief Executive Officer the authority to hold the public hearing related to a change in transit service.

**Table 6.2** *Timeline for Public Notification Activities*

Activity	Months Prior to Service Change
Service Planning staff reviews preliminary proposals.	7
Metro Service Councils set dates of public meetings, publish hearing notices in local newspapers and send LEP and minority communities written notification to elected officials, other operators and key stakeholder groups. Confer with Labor Relations and Union representatives.	5-6
Service Planning staff provides information on proposed changes to the Metro Bus Operators Subcommittee and at quarterly meetings held with the region's municipal and local operators.	3
Communication Department posts information proposed changes on Metro's website.	5
Operations staff distributes meeting notices on board vehicles. Public outreach at key transportation centers, bus stops, and on-board customer interface occurs as well.	Minimum one month prior to public hearings
Metro Service Councils conduct public hearings.	4
Metro Service Councils approve final service change program.	3
Metro Board receives the Service Councils' approved service change program as a Receive and File item.	2
Communication Department prepares press releases on final program and program brochures are distributed on-board Metro vehicles and other outlets.	1

The distribution of information will include line number, line name, route change information, and/or fare change proposals. Other public outreach occurs at key transportation centers, bus stops, and bus and rail stations 30 days prior to the public hearing date. These efforts are made to reach and engage customers who may not have time to attend a public hearing and to inform them of alternative communication methods available to file public comments. Public participation in the public hearing process is an important step in assisting staff and Metro Service Councils in developing and approving final service change proposals. Table 6.2 provides a timeline for public notification activities.

### **6.5 Public Hearing Process**

Once a Service Change Program has been developed by Metro Service Planning Staff, the Metro Service Councils are asked to set a date, time and place for their public hearings. During the period between publication of the hearing notices and public hearings, each Service Council is provided a detailed presentation on service change proposals and given an opportunity to discuss the changes that will be the subject of public comment. After each hearing, each Service Council will meet to consider and approve, modify, or deny all proposed service changes. These actions will then be summarized and presented in an informational report to the Metro Board of Directors.

Under Metro's Service Council by-laws, all service changes must be reviewed and approved by their respective Service Council(s). Public hearings are usually held at the same location where the Service Councils hold their meetings but may be held at other locations at their discretion. When a major service change program requires three or more Councils to hold public hearings, an additional hearing will be held at a central location, normally at the Metro headquarters building, on an appropriate Saturday. In accordance with Metro's Administrative Code in Chapter 2-50 Public Hearings Subsection 2-50-020, Metro will hold a public hearing on all major service change or fare change proposals that are subject to a Title VI Equity Analysis. These proposals are subject to Metro Service Council and Metro Board approval.

### **6.6 Implementing Minor Changes on an Interim Basis**

Minor service changes are generally route modifications that can be accommodated without impacting the vehicle or operator requirements of the service. Minor service changes do not require a public hearing but are shared with the relevant Service Councils as a courtesy and can be implemented at the discretion of staff.

APPENDICES

### APPENDIX A: Metro Line Identification

The purpose of establishing transit service line identification standards is to create a simple way for customers to identify, locate, and reference Metro services, and thereby make the services easier for customers to use.

The line identification standards shall be adhered to when identifying Metro Bus and Metro Rail lines by name. The standards shall be implemented across all internal and external mediums including but not limited to, rail station signs, bus stop signs, bus station signs, vehicle head signs, vehicle destination signs, timetables, the Metro Transit Trip Planner, HASTUS and ATMS<sup>8</sup>. The descriptions and chart below help explain the standards, and how and when they should be implemented.

#### General Standards

- Transit service lines will be identified using a combination of line number, destinations (both terminals) and the corridor(s) the line travels along. Metro Rail and Metro BRT service which previously used the established operational names (e.g., Metro Red Line, Metro Purple Line, Metro Orange Line) are being transitioned to names based on a letter designation. To ensure consistent usage of transitional naming for Rail and BRT lines, updates to customer information should be referred to the Communications Department.
- Acceptable destination names include a city, community, major landmark, transit center or rail station. Street intersections are no longer to be used as a destination, unless the intersection is required to identify short-line service.
- The destination points will be listed in a West to East or North to South order, consistent with how the line would be read on a map. Destinations on head signs, destination signs, timetables, and physical signage must always be consistent.
- Lines that have Downtown LA as one of the line's end points will list it first, as Downtown LA.
- The name of the line will also list at least one major corridor on which it travels.
- Name abbreviations, street extensions and other topics will be dictated by the Metro Signage Guidelines.

#### Printed Materials and Electronic Customer Information

- The line will be presented using the full name, listing both the destinations and major corridor(s).
- Printed materials include, but are not limited to, timetables, service change announcements, brochures, system maps, and service reports.

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<sup>8</sup> HASTUS (Horaires et Assignments pour Systems de Transport Urban et Semi-Urban) refers to the software used to create schedules. ATMS (Advanced Transportation Management System)

- Electronic customer information includes the line information presented on metro.net and underlying electronic databases such as HASTUS and ATMS.
- The Metro Transit Trip Planner will present the line name similarly to what will be shown on the vehicle head sign and bus stop sign, so customers can easily locate the appropriate line at the stop.

### Rail Station Signage

- The line will be presented using the line letter designation, and destination point that the vehicle is traveling to in each direction.

### Bus Stop Signage

- The line will be presented using the line number, service brand, color and destination point that the vehicle is traveling to in each direction.
- The main corridor(s) will also be listed as well as special service qualifiers including, but not limited to, rush-hour service and weekday-only service.
- Short-line trip destinations will not be shown on bus stop signs.

### Vehicle Head Signs

- Head signs will list the destination in which the vehicle is traveling towards in one frame.
- Head signs on Rail and BRT vehicles will list the line letter designation in one frame.
- For short-line trips, the line number and destination shown will be the destination of that trip and not of the entire line.
- When the line is not in service, the sign will read “Not in Service” and display the route number per Operations Notice #09-18.

### Automatic Voice Announcements

- External On-Board Announcements:
  - The line will be identified in automatic external voice announcements using the line number and destination point that the vehicle is traveling to in each direction.
  - For short-line trips, the destination noted will be the destination of that trip and not of the entire line.
- Internal On-Board Announcements:
  - When the automatic voice announcement system identifies a stop, the end destination of that line will follow.
  - The stops and stations announced onboard should be consistent with names used on maps, timetables and other printed materials.

### Assigning Line Identifiers

It is expected that the standards will be easily applied to the majority of lines; however, it is also understood that exceptions will have to be made for some lines due to unfamiliar end points or corridors, or where temporary solutions are necessary due to construction, temporary service changes, or pilot program deployment. In these limited cases, Service Planning staff and Communications must be in consensus regarding these changes before deciding to deviate from the standards. The Stop and Zones Department may also deploy temporary signage at bus and rail facilities as needed when emergency closures or other service changes impact scheduled service. For detailed guidance on using Metro signage standards, Metro Signage and Environmental Graphic Design Standards documents may be obtained from the Communications Department.

**Metro’s Rail Line Identification, Naming, and Color Conventions**

Rail and BRT lines previously denoted by a color will transition to a letter/color combination beginning in November 2019 when the Metro Blue Line reopens after an extended upgrade. Metro’s BRT lines will also transition to this naming convention. The letters assigned to each rail line generally conform to the order in which each line went into operation.

The current planned designations follow:

Prior Designation	Updated Designation	Updated Line Badge
Blue Line	A Line	
Red Line	B Line	
Green Line	C Line	
Purple Line	D Line	
Expo Line	E Line	
Orange Line	G Line	
Silver Line	J Line	
Gold Line	L Line	

The Gold Line has been assigned the letter L for clarity and consistency systemwide while service plans are being developed for the Regional Connector Project. When the Regional Connector is completed, the appropriate sections of the Gold Line will become the A Line or the E Line.

APPENDIX B: Los Angeles County Local Fixed and Demand Response Route Transit Operators

Operator	Municipal	Local Return
Agoura Hills		X
Alhambra		X
AVTA	X	X
Artesia		X
Avalon		X
Azusa		X
Baldwin Park		X
Beach Cities	X	X
Bell		X
Bell Gardens		X
Bellflower		X
Beverly Hills		X
Burbank		X
Calabasas		X
Carson		X
Cerritos		X
Commerce	X	X
Compton		X
Covina		X
Cudahy		X
Culver City	X	X
Downey		X
Duarte		X
El Monte		X
El Segundo		X
Foothill	X	X
Gardena	X	X
Glendale		X
Glendora		X
Hawthorne		X
Huntington Park		X
Inglewood		X

Operator	Municipal	Local Return
La Puente		X
Lawndale		X
Long Beach	X	X
Los Angeles	X	X
Los Angeles County		X
Lynwood		X
Manhattan Beach		X
Malibu		X
Maywood		X
Monrovia		X
Montebello	X	X
Monterey Park		X
Norwalk	X	X
Palos Verdes Estates		X
Paramount		X
Pasadena		X
Pico Rivera		X
Pomona		X
Redondo Beach		X
Rosemead		X
San Fernando		X
SCVTA	X	X
Santa Fe Springs		X
Santa Monica	X	X
Sierra Madre		X
South Gate		X
Torrance	X	X
West Covina		X
West Hollywood		X
Westlake Village		X
Whittier		X
<b>Total</b>	<b>12</b>	<b>62</b>

Many of the Local Return systems listed above do not provide fixed route service but instead provide Demand Response services: Hawthorne, Malibu, and Manhattan Beach are examples.